JOFLOWS

FLOOD RISK & DRAINAGE

FLOOD RISK ASSESSMENT
43 Lothian Avenue, Hayes, UB4 0EG

Doc ref. JOF0118-RP-FRA-001 REV (-)
Mr Sonu

Flood risk. Drainage. Hydraulic Modelling.

JOFLOWS

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October 2024

REPORT REF: JOF0118-RP-FRA-001 REV (-)

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REGISTRATION OF AMENDMENTS

Date	Rev	Comment	Status	Prepared By
October 2024	(-)	First issue	Issue for client comment.	**Joao Gil** **BSc. MSc. GMICE** Civil Engineer

EXECUTIVE SUMMARY

Site Address	43 Lothian Avenue, Hayes, UB4 0EG
Site Description and Setting	The Application Site (210m^2) comprises a dwelling house, associated rear garden and off-road parking facing Lothian Avenue.
Proposed Development	The development is for the erection of an outbuilding (48.6m^2) to the rear garden of a dwelling house.
Flood Risk	In accordance with the Flood Map for Planning, the Application Site is affected by Flood Zone 2 and Flood Zone 3. The Environment Agency's Product 6 and the West London Level 1 SFRA show the Application Site to remain unaffected up to the defended 1.0%AEP20CC fluvial flood event. In the absence of outputs for a breach or overtopping scenario, the design fluvial flood level was taken as 29.35m AOD, which corresponds to the defended 1.0%AEP30CC. This event is shown to overtop the defences upstream of the Application Site. Given the impracticability to raise FFL's to 600mm above the design flood level, the main mitigation measure will consist of setting FFL's to 29.35m AOD (defended fluvial 1.0%AEP30CC), alongside flood resilience and resistance measures to a minimum level of 29.95m AOD i.e. 600mm above the design flood level. Furthermore, no 'more vulnerable' uses (bedrooms) are proposed in the new outbuilding. Albeit the West London Level 1 SFRA shows Application Site to be affected by the 1%AEP and 0.1%AEP surface water flood events, the *webmaps* do not appear to take flood defences along the banks of Yeading Brook into account. Therefore, the fluvial design flood level is deemed to be representative of the surface water flood patterns near the Application Site, as these are strongly influence by Yeading Brook. No other flood mitigation measures are deemed required, apart from a site-specific drainage strategy to mitigate the additional surface water runoff arising as a result of the development. Future residents should follow a development-specific Flood Warning and Evacuation Plan in the event of flooding, which should be implemented prior to occupation of the dwelling. Residents are also recommended to sing up for Flood Alerts & Warnings and follow the advice from emergency services.
Sequential & Exception Tests	The Sequential Test Guidance set out in the West London Level 1 SFRA states that minor developments may be acceptable within Flood Zone 3, provided the developed site does not increase (and ideally reduces) flood risk as part of the wider development. The new outbuilding is located within the defended 1.0%AEP20CC fluvial flood extents, meaning that no displacement of flood waters is envisaged under normal conditions.
This summary should be read in conjunction with the full report and reflects an assessment of the site based on information received at the time of production. No liability is accepted for issues arising as a result of limitations in the information provided.	

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Joflows has been commissioned by Mr Sonu (hereafter referred to as 'the Client') to produce a flood risk assessment for the erection of an outbuilding at 43 Lothian Avenue, Hayes, UB4 0EG (hereafter referred to as 'Application Site'). The development plans are included in **Appendix A**.

1.2 The proposed development takes place at E510958, N181845. The total footprint of the Application Site covers circa 210m^2, and includes the footprint of no.43, as well as the respective rear garden and off-road parking.

1.3 The assessment has been prepared using our best engineering judgement however there are levels of uncertainty implicit in the historical data and methods of analysis. The report is based on the following information:

- The Environment Agency's Flood Map for Planning and Long-Term Flood Risk Map;
- British Geological Survey (BGS);
- Proposed plans and elevations ref. DWG/UB40EG/102;

1.4 No intrusive investigations had been undertaken to infer the risk of groundwater flooding at the date this report was written. No site-specific topographic survey was available at the date this report was written.

1.5 London Borough of Hillingdon is the Local Planning Authority and the Lead Local Flood Authority for the area.

Disclaimer

1.6 Joflows has completed this report for the benefit of the individuals referred to in paragraph 1.1 and any relevant statutory authority which may require a reference in relation to approvals for the proposed development.

1.7 Joflows accepts no responsibility or liability for:

- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned i.e. to inform a planning application;
- Any damages to third-parties resulting from the limited information and dataset(s) available at the date this report was written;
- The issue of this document to any third party with whom approval for use has not been agreed.

2.0 SITE DESCRIPTION & FLOOD RISK

Site Location & Proposals

2.1 The Application Site covers an area of approximately 210m^2 (red line) and comprises an existing residential dwelling with associated off-road parking and rear garden. A site location aerial view is shown in Figure 1.

2.2 The proposals are for a new outbuilding in the rear garden, adjacent to the northeast fence of the site. The new outbuilding has an associated footprint of 48.6m^2.

2.3 The site location plan and proposed floor plans of the outbuilding can be found in **Appendix A.** Albeit the site plan does not show the exact location of the outbuilding, it is known that this element will be constructed against the northeast edge of the garden.

Figure 1 – Location plan of the Application Site (red line). Imagery extracted from Google Earh Pro.

Fluvial and Surface Water Flood Risk

2.4 Information relating to the current flood risk to the Application Site has been obtained from the Environment Agency and *gov.uk* websites and *wms* datasets. Other sources of flood risk information are discussed throughout Chapter 4.0.

2.5 The publicly available Environment Agency's *wms* datasets show the Application Site to be located within the undefended present-day Flood Zones 2 (at an yearly chance of flooding of between 0.1% and 1%) and Flood Zone 3 (at an yearly chance of flooding equal to or greater than 1%) – Figure 2.

2.6 The EA's surface water flood risk *wms* layers show the Application Site to be significantly affected by surface water flood extents, with the vast majority of the Application Site to be affected by the 0.1%AEP.

The Application Site is also shown to be affected by surface water flood events as low as the 1%AEP at the location of the new outbuilding.

Figure 2 – EA's Flood Map for Planning *wms* dataset. Application Site shown in red.

2.7 An extract from the EA's surface water flood extents *wms* layer is shown in Figure 3.

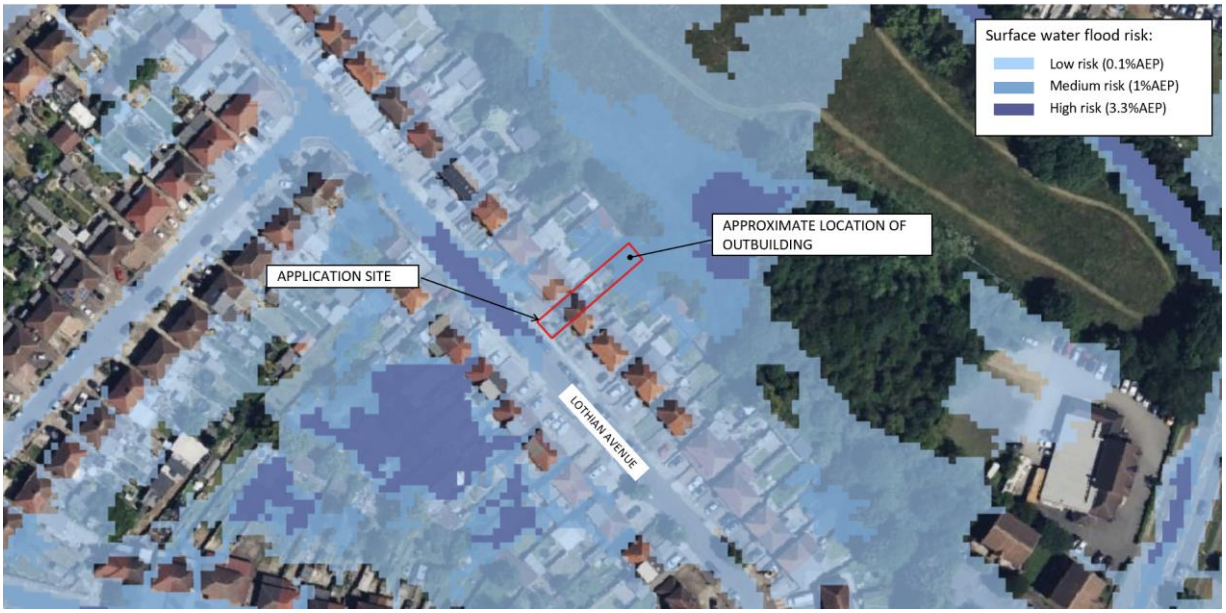

Figure 3 – EA's surface water flood depth for the 3.3%AEP, 1.0%AEP and 0.1%AEP storm events. Application Site shown in red. Extract from EA's surface water flood extent *wms* layers.

Geological Data

2.8 Information published by the BGS indicates that the Application Site is underlain by London Clay Formation (Clay, Silt and Sand). The nearest publicly available borehole record is located approximately 100m to the southeast of the Application Site and shows the local strata to contain clayey soils from a depth as shallow as 1ft.

2.9 It is therefore not expected that infiltration SuDS are a viable method to dispose surface water runoff.

Rivers & Watercourses

2.10 The Environment Agency *wms* layers shows an EA designated Main River 125m to the northeast of the Application Site – the Yeading Brook.

2.11 The Yeading Brook adjoins River Crane approximately 1.5mi to the south of the Application Site.

Hydrology

2.12 The Application Site falls within a predominantly urban catchment, drained by traditional drainage arrangements comprising gullies and underground pipework along public highways.

2.13 The pre-development greenfield runoff rates and volumes were estimated via ICP SuDS (IH124) and FSR. This method is deemed acceptable given the limited applicability of greenfield runoff rates in this study.

2.14 The greenfield runoff rates and volumes were estimated for an area of 1ha and pro-rated to an area of 48.6m^2, which corresponds to the footprint of the new outbuilding. The Autodesk Infodrainage greenfield calculations are included **Appendix B**.

Table 1 – ICP SuDS (IH124) greenfield runoff rates and FSR volumes for the 50%AEP, 3.3%AEP and 1%AEP storm events.

Annual Exceedance Probability	Standard Area (1ha)		Extension (48.6m^2)	
	Greenfield runoff (l/s)	Greenfield Volume (m^3) **	Greenfield runoff (l/s)	Greenfield Volume (m^3) **
50%AEP	3.6	-	0.02	-
3.3%AEP	9.6	-	0.05	-
1%AEP	13.3	264.6	0.06	1.29

** 6hrs storm event

Topographic Data

2.15 No site-specific topographic survey was made available at the date of this report.

2.16 Alternatively, the Environment Agency's publicly available LiDAR was used to inform this assessment. As shown in Figure 4, the ground levels at the Application Site range between 29.15m AOD at the

northeast boundary of the rear garden and 29.75m AOD at the off-road parking facing Lothian Avenue.

2.17 At the location of the new outbuilding, the ground levels are shown to be circa 29.15m AOD and this level will be adopted to assess flood risk throughout this report.

2.18 It is worth noting that LiDAR has an RSME of -/+ 150mm, albeit this can be significantly affected by trees, buildings and presence of water features (e.g. watercourses). The levels presented in this report should be confirmed with a site-specific topographic survey prior to construction.

Public Sewers

2.19 No public sewer asset records were available at the date of this study.

2.20 However, given the density of dwellings in the area, the presence of public sewers in the area is likely.

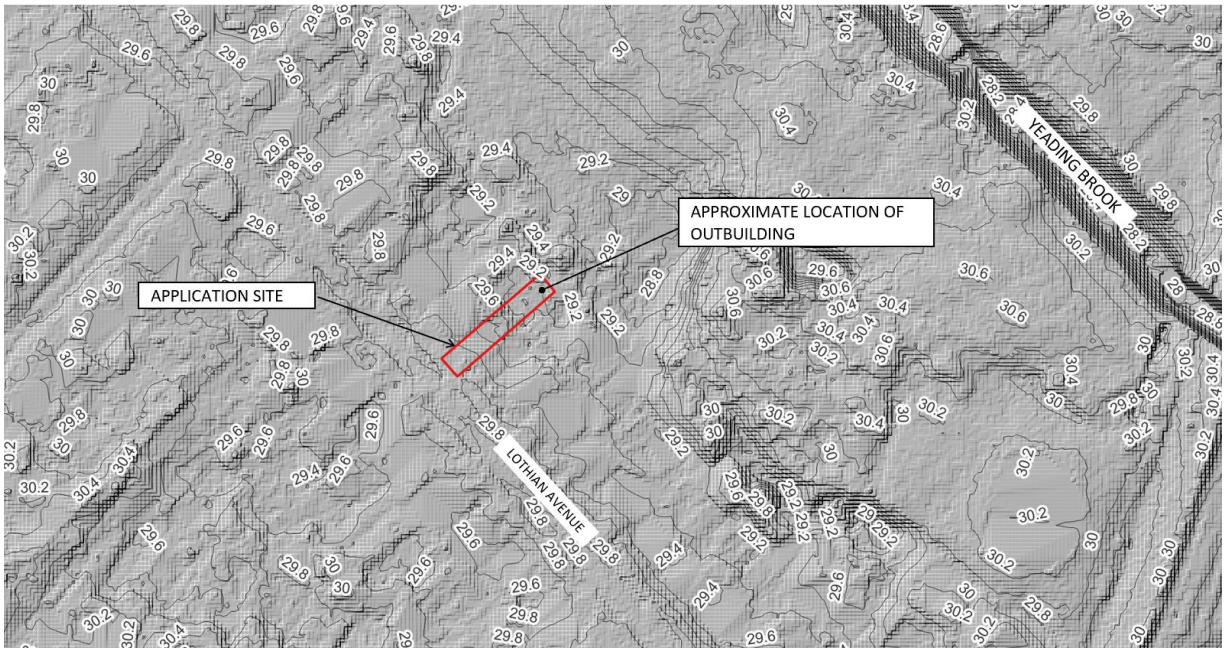

Figure 4 – Topographic contours derived from publicly available LiDAR. Content available under the Open Government Licence v3.0 © Crown Copyright 2024.

3.0 CONSULTATION

National Planning Policy Framework

3.1 The National Planning Policy Framework sets out strict tests to protect people and property from flooding which all local planning authorities are expected to follow measures to avoid, control, manage and mitigate flood risk should also not increase flood risk elsewhere.

3.1 The development is classed as a non-major development from a flood risk point of view.

3.2 The NPPF maintains a strong policy on avoiding and managing flood risk, based on local planning authorities preparing local plans and deciding planning applications and granting planning permissions.

Hillingdon Local Plan: Part 1 – Strategic Policies (November 2012)

3.3 Policy EM6 of the Hillingdon Local Plan requires that new development is directed away from Flood Zone 2 and Flood Zone 3. The council also requires that all development across the borough uses SuDS unless demonstrated that is unviable.

3.4 Policy EM1 of the Hillingdon Local Plan sets out that climate change adaptation should be addressed by locating development to minimise the probability and impacts of flooding, as well as by considering the whole water cycle impact that includes flood risk management.

3.5 The Hillingdon Local Plan does not present any specific requirements for minor developments or householder development.

West London Strategic Flood Risk Assessment r the boroughs of Barnet, Brent, Ealing, Harrow, Hillingdon and Hounslow[1] (webversion)

3.6 The West London Level 1 SFRA *webmaps* show the location of the proposed outbuilding to remain unaffected for the 1%AEP25CC fluvial flood event. Albeit nothing is specifically stated, it is deemed that these correspond to a defended scenario, as the Application Site falls within an area with reduced risk due to defences. The *webmaps* show the location of the outbuilding to be affected by the 1%AEP35CC fluvial flood event (mainly at the location of the new outbuilding).

3.7 The West London Level 1 SFRA also shows the Application Site to be covered by a Flood Alert and a Flood Warning Area.

3.8 According to this reference, the vast majority of the Application Site is shown to be affected by the 0.1%AEP surface water flood extents. The flood depths at the location of the proposed outbuilding appear to reach as much as 1.2m. Nonetheless, this map does appear to show some of the flooding to be conveyed along Yeading Brook to spill onto the floodplain without any consideration for the existing flood defences.

3.9 The EA's susceptibility to groundwater flooding dataset shows the Application Site to be located within

[1] https://westlondonsfra.london/

an area at a susceptibility equal to 25% or lower. The same source does not show the Application Site to be at an increased potential for elevated groundwater.

3.10 The Level 1 SFRA shows the Application Site to be located in an area with no previous records of sewer flooding.

3.11 The Level 1 SFRA (Table 4.2) states that Minor Developments that introduce a new householder building structure to the site need to follow the Sequential Test and Exception Test guidance stated in the document. The guidance states that the undeveloped Function Flood plain should be protected, but development may be permitted within the curtilage of a developed site if it does not increase flood risk as part of a wider development and there is no net loss of floodplain storage.

Environment Agency (Product 5 and Product 6)

3.12 The Environment Agency (EA) was consulted and provide detailed flood risk data (Product 6) at the Application Site.

3.13 The EA Product 6 shows the Application Site to benefit from flood defences and to remain unaffected for the defended 1.0%AEP20CC fluvial flood event. The location of the outbuilding is however affected by the defended 1.0%AEP30CC flood event, which is shown to overtop the flood defences upstream of the Application Site and trigger a floodplain flood mechanism.

3.14 By comparing the EA's Product 6 flood extents against LiDAR-derived contours, the 1.0%AEP20CC is estimated as 28.60m AOD.

3.15 Product 5 also provide the TH 735 – River Craine SFRM Modelling and Mapping Study Report. The report shows a medium confidence level in the stretch of Yeading Brook near the Application Site.

4.0 FLOOD RISK ALLOCATION

Fluvial Flood Risk

4.1 The EA's Flood Map for Planning shows the Application Site to be affected by Flood Zone2 (1%AEP to 0.1%AEP), with the location of the new outbuilding to be affected by Flood Zone 3 (equal to or greater than the 1%AEP). Note that the Flood Map for Planning does not show the effect of flood defences.

4.2 The EA's Product 6 was used throughout this assessment to assess the fluvial flood risk to the Application Site. This is considered to be the most up to date hydraulic model and shown to be in line with the West London SFRA *webmaps*.

4.3 The defended scenario for the 1.0%AEP20CC fluvial flood event is shown in Figure 5, whilst the defended scenario for the 1.0%AEP30CC fluvial flood event is shown in Figure 6. The modelling outputs from the Environment Agency suggest that the Application Site is protected up to the 1.0%AEP20CC flood event.

4.4 It is worth highlighting that the latest *gov.uk* flood risk guidance requires flood risk assessments to adopt the central allowance for 'more vulnerable' developments when assessing peak river flows. This allowance currently stands at 17% for the London Management Catchment.

4.5 The defended 1.0%AEP20CC fluvial flood level was estimated as 28.60m AOD by comparing flood extents against publicly available LiDAR.

4.6 In the absence of a breach scenario, the defended 1%AEP30CC fluvial flood event was taken as the design fluvial flood event. This event shows flood defences to be overtopped upstream of the Application Site and triggering a flood mechanism in the floodplain, which affects the lower parts of the Application Site, where the outbuilding is proposed. **The 1.0%AEP30CC fluvial flood level (design fluvial flood level) was estimated as 29.35m AOD**, by comparing flood extents against publicly available LiDAR.

4.7 The flood defences along the banks of Yeading Brook are known to comprise mostly raised ground along the banks.

Surface Water Flood Risk Allocation

4.8 The surface water flood extents presented in the West London SFRA appear to agree with the EA's Risk of Flooding from Surface Water extents.

4.9 Albeit the EA's surface water flood extents shown in Figure 3 suggest that the vast majority of the Application Site is affected by the 0.1%AEP surface water flood extents, it is worth noting that this dataset likely ignores the presence of flood defences along the banks of Yeading Brook.

4.10 Figure 7 shows a comparison between the EA's surface water flood extents (1%AEP) and the EA's Product 6 defended fluvial flood extents (1%AEP30CC). Both events show an alignment between the surface water and fluvial flood mechanism in the flood plain near the Application Site, with flood extents remaining similar. As such, it is concluded that the EA's surface water flood extents do not take into account the presence of flood defences in sufficient detail and the respective extents are not representative of defended conditions.

4.11 For the purpose of this assessment, the design surface water flood level will therefore be assumed as the

fluvial defended 1%AEP30CC fluvial flood event (29.35m AOD).

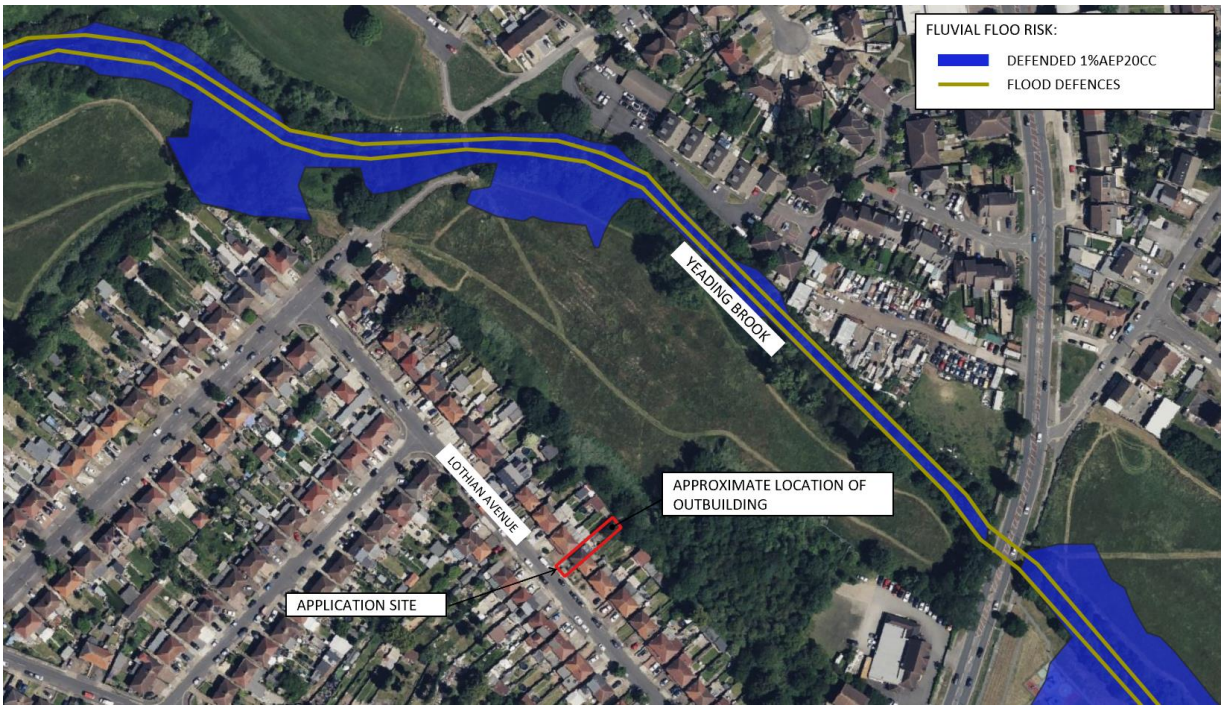

Figure 5 – Extract from the EA's Product 6 1%AEP20CC defended fluvial flood extents. Application Site shown in red.

Figure 6 – Extract from the EA's Product 6 1%AEP30CC defended fluvial flood extents. Application Site shown in red.

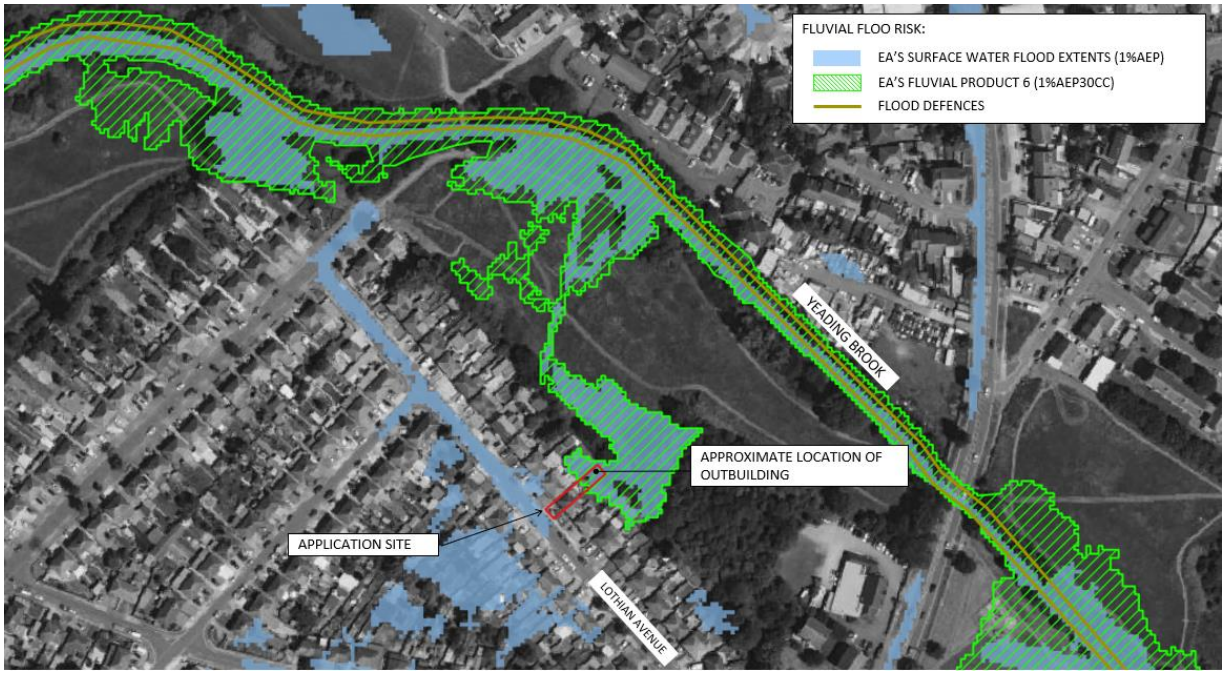

Figure 7 – Comparison between the EA's Product 6 defended fluvial flood extents (1%AEP30CC) and the EA's surface water flood extents (1%AEP). Application Site shown in red.

Flood Risk from Other Sources

4.12 The West London Level 1 SFRA does show the Application Site to be at risk of flooding from reservoir inundation. The inundation level was assessed as 30.20m AOD in the vicinity of the Application Site. As a residual floor risk, this level should be used to inform flood levels and mitigation measures for the new development. However, it would be unpracticable to set mitigation measures up to this level.

4.13 The EA's susceptibility to groundwater flooding dataset shows the Application Site to be located within an area at a susceptibility equal to 25% or lower. This is compatible with the presence of the London Clay Formation in the area.

Historic Flood Record

3.16 The Historic Records provided by the EA's *wms dataset* and by the West London Level 1 SFRA do not show the Application Site to have been affected by flooding.

4.14 The Level 1 SFRA presents historic sewer flood incidents recorded by Thames Water. No sewer records were recorded in the immediate vicinity of the Application Site.

5.0 FLOOD RISK ASSESSMENT & MITIGATION

Flood Risk Assessment Methodology & Objectives

5.1 It is essential that the proposed development does not increase flood risk to adjacent land or downstream of the site, and protects the development from flooding itself. Current guidance on development and flood risk identifies several key aims for development to ensure that it is sustainable in flood risk terms:

- The development should not be at significant risk of flooding and should not be susceptible to damage due to flooding;
- The development should not be exposed to flood risk such that the health, safety and welfare of the users of the development, or the population elsewhere, are threatened;
- Safe access/egress to and from the development should be possible during flood events (without relying on emergency services, as much as reasonably practicable);
- The development should not increase flood risk elsewhere;
- The development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;
- The development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;
- Future users of the development should be made aware of any flood risk issues relating to the development;
- The development should not lead to the degradation of the environment; and
- The development should meet all of the above criteria for its entire lifetime, including consideration of the potential effects of climate change.

5.2 As a householder development, the new outbuilding falls into the classification of minor development.

Project Scope

5.3 In order to achieve the aims outlined above, this Flood Risk Assessment has been undertaken in accordance with current best-practice guidance, including the National Planning Practice Guidance. A scoping study was initially undertaken to identify all potential sources of flooding at the site, which may warrant further consideration. Any potential flooding issues identified in the scoping study have subsequently been considered within this Flood Risk Assessment. The aim of the scoping study is to review all available information and provide a qualitative assessment of the flood risk to the site and the impact of the site on flood risk elsewhere. The report has been undertaken with due regard to the EA's National Standing Advice on Development and Flood Risk.

Scoping Study

5.4 All potential sources of flooding must be considered for any proposed development.

5.5 Using the EA Flood Zone mapping, EA's publicly available LiDAR and Ordnance Survey maps, a summary of the potential sources of flooding and a review of the potential risk posed by each source on

the Application Site is presented in Table 2.

Table 2 – Potential Risks posed by Flooding Sources in accordance with the Long-Term Flood Risk Map and the Level 1 SFRA. Not quantifiable risks highlighted as 'N/Q'.

Sources of Flooding	Risk Classification			
	High	Medium	Low	Very low
Fluvial				x (residual under defended conditions)
Tidal				n/a
Surface Water			X (assuming defended conditions)	
Groundwater				x (residual)
Sewer			N/Q	
Artificial water bodies				x (residual)

Fluvial Flood Risk Mitigation

5.6 In the absence of a breach scenario to assess the residual flood risk at the Application Site, the design fluvial flood level was taken as the defended 1.0%AEP30CC, assessed as **29.35m AOD**. This puts the Application Site under a maximum flood depth of 200mm at the location of the proposed outbuilding.

5.7 The ground levels at the location of the proposed outbuilding are assessed as 29.15m AOD, which makes it unviable to raise FFL 600mm above the design flood level. As such, it is proposed that FFL's are set to a minimum of 29.35m AOD, and flood resilience measures are incorporated to a minimum level of **29.95m AOD**, which corresponds to 600mm above the design flood level.

5.8 Given the Application Site is shown to be wholly out of the future flood plain under defended conditions, no offset for the loss of floodplain storage is required.

5.9 As such, mitigation measures (flood resilience and resistance) are proposed in 5.11 to 5.14 to address residual fluvial flood risk.

5.10 Furthermore, no 'vulnerable uses' (bedrooms) are proposed in the new outbuilding.

Flood Resilience and Resistance

5.11 Any flood resilience and resistance measures described in this report should be set to a minimum level of 29.95m AOD, unless otherwise specified. This approach is deemed to be as close to the *gov.uk* guidance for vulnerable developments as reasonably practicable.

5.12 The *gov.uk* guidance stipulates that flood resilience measures should be in line with the CIRIA Code of

Practice for Property Flood Resilience (C790F), whilst installation and retrofit of resistance measures should be implemented in accordance to BS851188-1:2019+A1:2021.

5.13 Flood resilience works are measures to make the fabric and services of the building more robust and easier to clean, dry out, and reinstate and enable the building to be reoccupied quickly in the event of floodwater entering the building. On the other hand, flood resistance measures oppose or delay the ingress of water into properties. It is recommended the following be implemented at the development:

- Property level protection including passive flood defences such as anti-flood air bricks, flood doors and sealed windows;
- Raising equipment in the building and any stored goods or equipment above the maximum residual risk flood level;
- Incorporating a slight fall to assist pumping out any floodwater entering the new outbuilding;
- Raising gas and electric intakes and piping/cabling, and electric sockets and cabling, to the minimum level of 29.95m AOD;
- Installing backflow valves on sanitary drains to prevent sewage surging up through W. C's, sinks, baths and showers in the event of a flood;
- Using flood resistant materials for floors, walls and fixtures.

5.14 Further guidance on flood resilient techniques can be found in Improving the Flood Performance of Buildings[2].

Access and egress from site

5.15 At the time of this report, no information was available in terms of flood hazard during a fluvial flood event. Nonetheless, the Application Site is shown to remain unaffected during the defended 1%AEP20CC flood event, which means that flood hazard is not deemed relevant.

5.16 In terms of flood risk, the 0.1%AEP shows Lothian Avenue to be affected by flood hazard indices as high as 2.5, which corresponds to danger for most users[3]. Should egress be required during a flood event, egress towards the southeast part of Lothian Avenue should be preferred, where the estimated surface water flood hazard is in the range of 0.75 to 1.25 (and below). Albeit this represents danger for some users, include children and vulnerable users, a safe access and egress is deemed possible provided particular attention is provided to these users.

5.17 The surface water flood hazard is presented in Figure 8.

Flood Warning and Evacuation

5.18 The Application Site is located within an EA-designated Flood Alert & Warning Area and it is recommended that the site users sign up for flood alerts with the Environment Agency using the respective post code. This can be done online at (https://www.gov.uk/sign-up-for-flood- warnings) or

[2] Improving the Flood Performance of New Buildings, by Department for Communities and Local Government: London (May 2007)
[3] Flood Risks to People Phase 2 ref. FD2321/TR2 Guidance Document, by DeFRA (March 2006)

through the Flood Line telephone service on 0345 988 1188.

5.19 As the Application Site and surrounding area could be at risk from significant flood depths during the design fluvial and surface water flood event, the development could be isolated from flood waters. Under these circumstances, the West London Level 1 SFRA requires a development-specific Flood Warning and Emergency Plan (FWEP).

5.20 Upon a Flood Alert, residents should be ready to follow the FWEP, have the insurance documents and medications ready and move any livestock and equipment away from areas likely to flood.

5.21 If a Flood Warning is received, residents should protect themselves and their loved ones by moving themselves to a safer place (upper floors in the existing dwelling house), turn off the gas, electricity and gas, as should put flood protection equipment in place. Most importantly, residents should follow the recommendations of emergency services and be ready to evacuate at any moment.

5.22 The property is advised to develop a Personal Flood Plan including contact details for friends and family and also local Hotels that can be used for Temporary Accommodation until the area is deemed safe to return to after a flood. Ultimately at times of flood, all residents should follow the advice of emergency services.

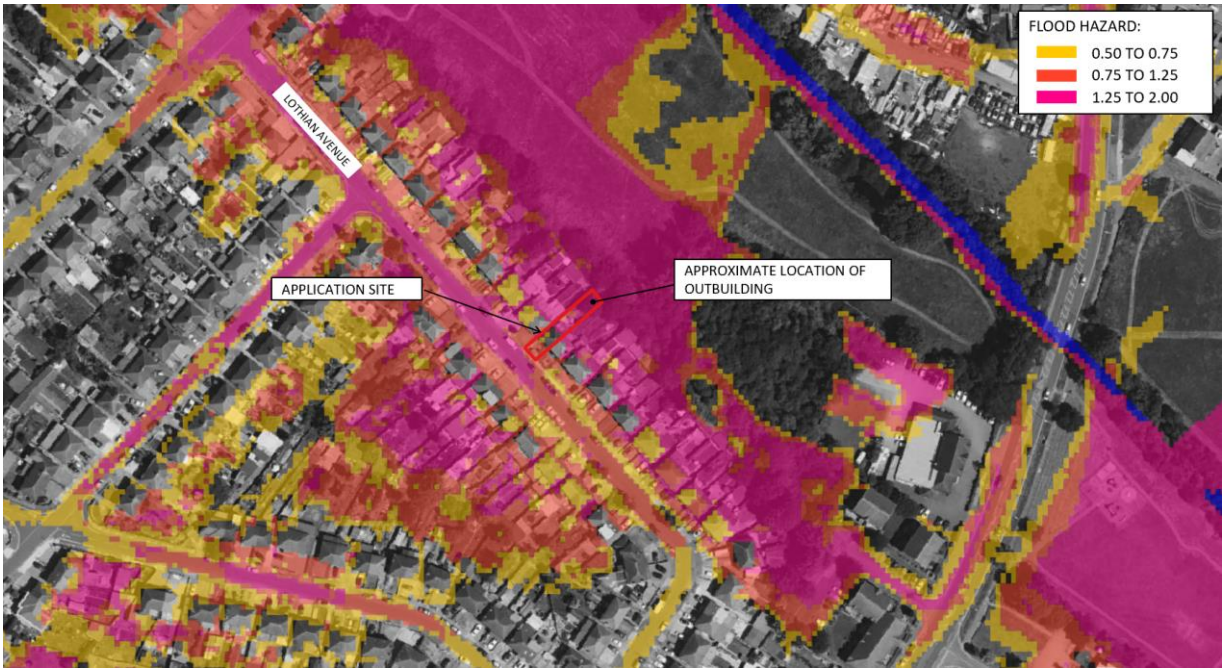

Figure 8 – Environment Agency's surface water flood hazard in the immediate vicinity of the Application Site. Application Site shown in red.

Surface Water Flood Risk Mitigation

5.23 The comparison between the undefended 1%AEP surface water flood event and the defended 1%AEP30CC fluvial flood event suggests that the surface water flood mechanism in the floodplain is strongly influenced by Yeading Brook.

5.24 As the design surface water flood level is assessed to be identical to the design fluvial flood event, this

risk is considered to be mitigated by resilience and resistance measures stipulated to address fluvial flooding.

Flood Risk Mitigation from Other Sources

5.25 No other mitigation measures are required as the risk of flooding from other sources is residual to very low. The only exception is in terms of drainage arrangements, with the site requiring a surface water drainage strategy to manage the additional surface water runoff arising as a result of the development.

5.26 Note that albeit the residual risk of reservoir breach remains, it would not be viable to raise FFL's or provide mitigation measures up to 30.2m AOD.

Vulnerability Classification of Proposed Development

5.27 The National Planning Practice Guidance: Flood Zone and Flood Risk Tables provide information on the vulnerability classification of various developments. As the outbuilding is part of a residential development, the end use of this site falls in the "more vulnerable" classification.

5.28 More vulnerable developments are compatible with Flood Zone 2 (0.5%AEP to 0.1%AEP) and Flood Zone 3a (3.3%AEP to 1%AEP), the later subject to the Exception Test.

5.29 The development is shown to be affected by the undefended Flood Zone 3 and therefore both the Sequential Test and Exception Test are required.

5.30 **Sequential & Exception Tests**

5.31 The purpose of the Sequential test is to guide development to areas at lowest risk of flooding, by requiring applicants to demonstrate that there are no alternative lower risk sites available where the development could take place.

5.32 Should the Sequential Test fail to identify other sites at lower risk of flooding, an Exception Test will be required to demonstrate the development will provide sustainability benefits to the community that out weight flood risk, and the development will be safe for its lifetime taking in account the vulnerability of its users.

5.33 The Sequential and Exception Test guidance in the West London Level 1 SFRA (Table 4-2) states that minor developments may be acceptable within Flood Zone 3, if the developed site does not increase (and ideally reduces) flood risk as part of the wider development. The new outbuilding is located within the defended 1%AEP20CC fluvial flood extents, meaning that no displacement of flood waters is envisaged under normal conditions of operation of flood defences.

5.34 Table 4-2 also states that Flood Compensation Storage is required for developments in surface water flood areas up to the 1%AEP flood event. In terms of surface water flood risk, the Application Site is deemed to also be protected by the defences along the banks of Yeading Brook, thus not deemed to displace water for the 1.0%AEP storm event.

5.35 The new development is shown to be address the Sequential Test Guidance for minor developments, in accordance with the West London Level 1 SFRA.

5.36 Therefore, the development is deemed to successfully pass the Sequential Test for Minor Developments. The Exception Test is deemed to be satisfied under the following grounds:

- The development is considered to bring sustainable benefits to the community by allowing a greater enjoyment of residential premises, including sports activities;
- Resistance and Resilience flood measures will be put in place to at least 600mm above the design flood levels, taken as the defended 1.0%AEP30CC fluvial flood level, in the absence of flood maps for a breach/overtopping scenario.
- The Application Site will also likely continue to benefit from the increasing investment in the local flood defence system.

6.0 CONCLUSIONS

6.1 Joflows was commissioned by Mr Harjit Kaurto produce a site-specific Flood Risk Assessment to inform the development of a new outbuilding to rear of 43 Lothian Avenue. The conclusions of this assessment are as follows:

- The development proposals are for a new outbuilding to rear of 43 Lothian Avenue.
- Albeit the Flood Map for Planning and the EA's Flood Maps put the Application Site within Flood Zone 2 and Flood Zone 3, the EA's Product 6 and the West London Level 1 SFRA show the Application Site to remain unaffected up to the defended 1.0%AEP20CC fluvial flood event. The *gov.uk* peak river flow 2080 central allowance stands at 17% for the London Management Catchment.
- In the absence of outputs for a breach or overtopping scenario, the design fluvial flood level was taken as 29.35m AOD, which corresponds to the defended 1.0%AEP30CC. This event is shown to overtop the defences upstream of the Application Site.
- Albeit the West London Level 1 SFRA shows Application Site to be affected by the 0.1%AEP and 1%AEP surface water flood events, this reference does not appear to take flood defences along the banks of Yeading Brook into account. Therefore, the fluvial design flood level is deemed to be representative of the surface water flood patterns near the Application Site, as these are strongly influence by Yeading Brook.
- Given the impracticability to raise FFL's to 600mm above the design flood level, the main mitigation measure will consist of setting FFL's to 29.35m AOD (defended fluvial 1.0%AEP30CC), alongside flood resilience and resistance measures to a minimum level of 29.95m AOD i.e. 600mm above the design flood level. Furthermore, no 'more vulnerable' uses (bedrooms) are proposed in the new outbuilding.
- No other flood mitigation measures are required, apart from a site-specific drainage strategy to mitigate the additional surface water runoff generated as a result of the development.
- Future residents should follow a development-specific Flood Warning and Evacuation Plan in the event of flooding, which should be implemented prior to occupation of the dwelling. Residents are also recommended to sing up for Flood Alerts & Warnings and follow the advice from emergency services.

6.2 With the above measures in place, the development of the site is deemed to remain safe throughout its lifetime and will not exacerbate flood risk for the wider area. Furthermore, the development fully addresses the requirements from London Borough of Hillingdon, including compliance with Policy EM1 and EM6 of the Hillingdon Local Plan: Part 1 – Strategic Policies.

APPENDIX A

SITE PLANS

SITE LOCATION PLAN
SCALE 1:1250
SITE BOUNDRY :

Scale 1:1250

0 10 20 30 40 50 60 70 80 90 100m

SPARROW
DESIGN & BUILD

SPARROW DESIGN & BUILD
167 UXBRIDGE RD,
LODON W7 3TH.
T.07817594515
E.info@sparrow-db.co.uk
W.www.sparrow-db.co.uk

NOTES:

1. DO NOT SCALE FROM THIS DRAWING, ANY DIMENSIONS SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO VERIFICATION ON SITE.THE CONTRACTOR IS TO SET OUT, CHECK AND COORDINATE ALL DIMENSIONS ON SITE DURING THE COURSE OF THE WORKS. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ARCHITECTURAL PLANS, STRUCTURAL CALCULATIONS AND SPECIFICATIONS.
2. PRIOR TO COMMENCEMENT OF ANY WORK ON SITE, LOCAL AUTHORITIES APPROVAL MUST BE ACHIEVED.
3. ALL TEMPORARY WORK TO BE CLIENT / CONTRACTORS RESPONSIBILITY.
4. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE LATEST APPROPRIATE CODES OF PRACTICE.
5. VERIFY THE LOCATION AND THE DETAILS OF ALL THE SERVICES PRIOR TO ANY EXCAVATION WORK.
6. WHERE WORKS AFFECT A PARTY WALL OR INVOLVE EXCAVATIONS WITH IN 3m OF ADJOINING BUILDINGS, PARTY WALL AGREEMENT SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF ANY WORKS.
7. TILL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT TECHNICAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION.

STAGE:	PLANNING
CLIENT:	Mr Sonu 43 LOTHIAN AVENUE HAYES UB4 0EG
PROJECT:	PROPOSED REAR OUTBUILDING
FILE:	DWG/UB40EG/101 SITE LOCATION PLAN
REVISION: A	DRAWN: V.P
SCALE: 1:1250/A2	DATE: 24.07.2024
SHEET:	101

APPENDIX B

AUTODESK INFODRAINAGE GREENFIELD CALCULATION OUTPUTS

JOF0117: 43 Lothian Avenue UB4 0EG	Date: 12/10/2024		
	Designed by: JG	Checked by:	Approved By:
Report Title: UK and Ireland Rural Runoff Calculator	JOFLOWS:		

ICP SUDS / IH 124

Details

Method	ICP SUDS
Area (ha)	1.00
SAAR (mm)	619.0
Soil	0.47
Region	Region 6
Urban	0
Return Period (years)	2

Results

Region	QBAR Rural (L/s)	QBAR Urban (L/s)	Q 2 (years) (L/s)	Q 1 (years) (L/s)	Q 30 (years) (L/s)	Q 100 (years) (L/s)
Region 6	4.2	4.2	3.7	3.6	9.5	13.3

Greenfield Volume

FSR

Details

Region	England And Wales
M5-60 (mm)	20.0
Ratio R	0.4
Area (ha)	1.00
SAAR (mm)	619.0
CWI	90.420
Urban 1990	0
Areal Reduction Factor	1.00
SPR	47
Storm Duration (mins)	360
Return Period (years)	100

Results

PR%	42.33
Greenfield Runoff Volume (m^3)	264.619