

Haringey Civic Centre

Flood Risk Assessment

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Contents

1	Executive Summary	6
2	Introduction	7
2.1	Background	7
2.2	Site Description	7
2.3	Proposed Development	8
3	Planning Context	9
3.1	Overview	9
3.2	National Planning Policy Framework	9
3.2.1	Flood Zone Assessment	9
3.2.2	Climate Change	9
3.3	London Plan	9
3.4	Strategic Flood Risk Assessment	9
3.5	Haringey Local Plan Strategic Policies	10
3.6	Haringey Development Management DPD	10
4	Appraising the Risk	11
4.1	Historic Flood Events	11
4.2	Flood Mechanisms	11
4.2.1	Fluvial Flood Risk	11
4.2.1	Tidal Flooding	12
4.2.2	Flooding from Surface Water	12
4.2.2.1	Baseline Condition	12
4.2.2.2	Proposed Condition	12
4.2.3	Flooding from Groundwater	12
4.2.4	Flooding from Artificial Sources	12
4.2.5	Flooding from Failure of Infrastructure Development	12
5	Summary and Conclusion	14
 Table of Tables		
Table 3-1 - Climate change allowances for peak rainfall intensity in the 1% AEP event		9

Table 4-1 - Flood risk vulnerability and flood zone compatibility table	11
Table 4-2 - Combined surface water and foul water discharge rates	13
Table of Figures	
Figure 2-1 - Site Location Plan	7
Figure 2-2 – Existing Site Plan (Source: Hawkins Brown, HCC-HBA-ZZ-RF-DR-A-000001, Rev. P1, 24 th January 2022)	7
Figure 2-3 – Existing Site Levels (Source: LIDAR Composite DTM 2020 – 2m, DEFRA, 2020)	8
Figure 2-4 - Proposed development (Source: Churchman Thornhill Finch, HCC-CTF-ZZ-XX-SK-L-100002, Rev. P7, updated 13 th March 2023)	8
Figure 4-1 - Environment Agency Historic Flood Extents overlaid with the site boundary (February 2023) © Environment Agency copyright and/or database right 2018. All rights reserved.	11
Figure 4-2 - Environment Agency Flood Zone Map overlaid with Site Boundary (February 2022) © Environment Agency copyright and/or database right 2018. All rights reserved.	11
Figure 4-3 - Environment Agency Surface Water Flood Risk overlaid with the site boundary (February 2022) © Environment Agency copyright and/or database right 2015. All rights reserved.	12
Figure 4-4 - Environment Agency Reservoir Flood Extents overlaid with the site boundary (February 2022) © Environment Agency copyright and/or database right 2021. All rights reserved.	12

Glossary

Term	Definition
AEP	Annual Exceedance Probability
AOD	Above Ordnance Datum
DPD	Development Plan Document
EA	Environment Agency
FRA	Flood Risk Assessment
HCC	Haringey Civic Centre
NPPF	National Planning Policy Framework
PPG	Practical Planning Guidance
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems

1 Executive Summary

This Flood Risk Assessment (FRA) has been prepared by Buro Happold on behalf of Hawkins Brown Architecture Ltd for the proposed redevelopment of Haringey Civic Centre. It has been developed in compliance with the National Planning Policy Framework (NPPF), the London Borough of Haringey Level 2 Strategic Flood Risk Assessment (SFRA) (February 2015) and the London Plan (2021).

The proposed development consists of the renovation of the existing Haringey Civic Centre and construction of an annexing office block extension.

According to the national flood map produced by the Environment Agency (EA), the site is situated entirely within Flood Zone 1, which is defined as having a low risk of flooding. The development is deemed appropriate in accordance with the London Plan as the office space is classed as *Less Vulnerable* by the NPPF.

Surface water is proposed to be discharged to the combined sewer at a restricted rate that is equal to the calculated greenfield run-off rate for the site in accordance with the London Plan. A combination of sustainable drainage features in the public realm and via green roofs and harvest tanks will attenuate a volume of 472m³, limiting the surface water run-off discharge rate to 5.9l/s for the 100-year rainfall event with 40% allowance for climate change. With the surface water drainage strategy in place, the risk of surface water flooding is considered to be low.

Foul water from the proposed development will be discharged to the combined sewer at a rate of 6.69l/s, which is an increase from the existing rate of 2.99l/s.

The combined discharge of foul and surface water from the proposed development is 12.59l/s, a reduction of over 130l/s from the existing combined rate. The risk of surface water flooding and flooding from combined sewers is therefore considered to be low with the proposed foul and surface water drainage strategy.

The risk of flooding from groundwater and artificial sources is also considered to be low.

It is concluded that the risk of flooding from all sources for the entire design life of the proposal is considered to be low and that the proposed development will not increase the risk of flooding elsewhere. The reduction in surface water discharge rate will provide a degree of betterment to the existing condition of the site.

2 Introduction

2.1 Background

This site-specific Flood Risk Assessment (FRA) has been prepared by Buro Happold on behalf of Hawkins Brown Architecture Ltd as part of the planning application for the proposed redevelopment of Haringey Civic Centre (HCC) and construction of an annexing office extension, hereafter referred to as the proposed development.

This FRA has been prepared in accordance with the National Planning Policy Framework (NPPF), Haringey Council Level 2 Strategic Flood Risk Assessment (SFRA) (2015) and the London Plan (2021).

2.2 Site Description

The HCC, shown in Figure 2-1, is located in Wood Green, in the London Borough of Haringey (LBH), at an OS Grid Reference at approximately TQ 30862 90721. The site can be accessed via the north car park from Trinity Road to the north, the south car park via Bounds Green Road (A109), and parking bays via High Road (A105) to the east.



Figure 2-1 - Site Location Plan

The existing site consists of the HCC (≈15%), soft landscaped areas (≈40%) and hard landscaped areas (≈45%). There is an electrical substation located within the south car park.

The HCC is approximately 160m in length and 35m wide parallel to High Road, with the west wing protruding by 75m at a width of 22m, displayed below in Figure 2-2. The building is made up of three sections: the Office Block, Council Chambers and West Wing. The main body of the HCC (excluding the west wing) is a four-storey building with an

additional basement level, whilst the west wing extension is a two-storey building. The building is currently vacant and surrounded by site hoarding.

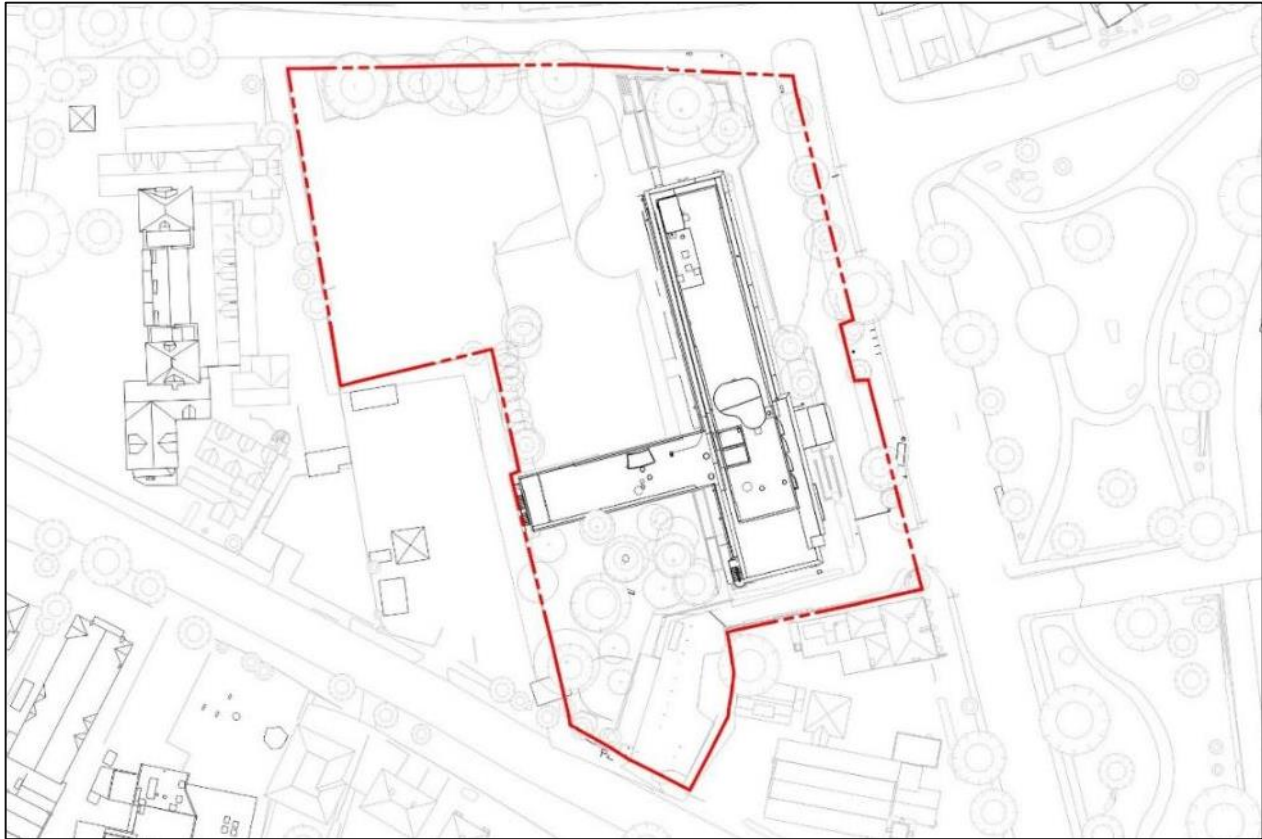


Figure 2-2 – Existing Site Plan (Source: Hawkins Brown, HCC-HBA-ZZ-RF-DR-A-000001, Rev. P1, 24th January 2022)

Ordnance survey data has been superimposed onto the site boundaries to gauge the levels of the site, displayed in Figure 2-3. The ground level of the site gradually increases from approximately 35.5m AOD at the north car park to approximately 37m AOD at the south car park. The soft landscaping sits at approximately 37m AOD with areas towards the north-east of the site reaching 38m AOD.

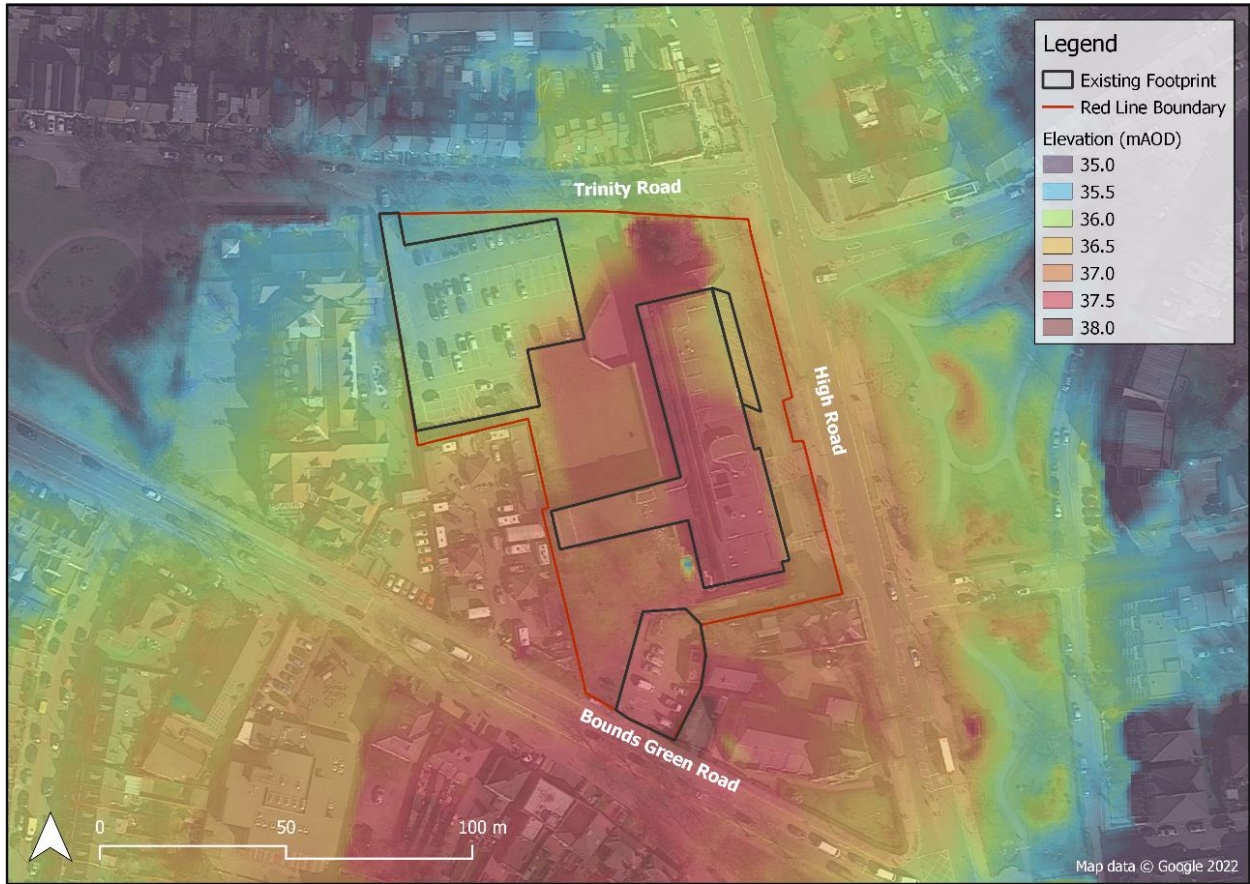


Figure 2-3 – Existing Site Levels (Source: LIDAR Composite DTM 2020 – 2m, DEFRA, 2020)

2.3 Proposed Development

The proposed development will both renovate the existing building and create an extension in the place of the north car park, as seen in Figure 2-4. The renovations to the existing building are not expected to alter the exterior of the building and will be solely confined to the interior. The new structure will be four stories and connect to the existing building via the west wing and the north-west of the main body.

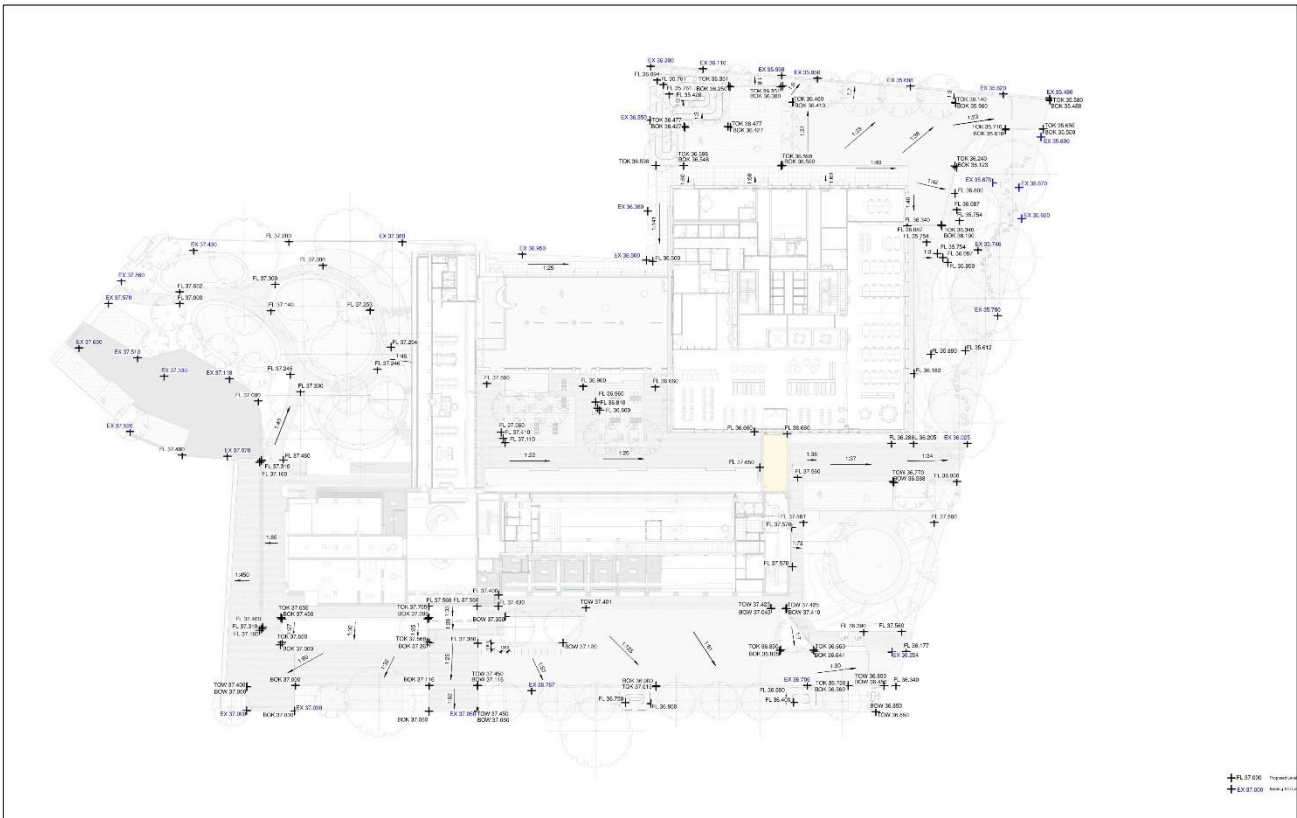


Figure 2-4 - Proposed development (Source: Churchman Thornhill Finch, HCC-CTF-ZZ-XX-SK-L-100002, Rev. P7, updated 13th March 2023)

3 Planning Context

3.1 Overview

This FRA has been prepared in accordance with the policies and guidance applicable to the proposed development, outlined within the following publications:

- National Planning Policy Framework (March 2012, revised July 2021);
- Planning Practice Guidance; Flood Risk and Coastal Change (updated August 2022);
- Haringey Council Strategic Flood Risk Assessment (February 2015),
- Haringey Council Surface Water Management Plan (August 2011),
- Haringey Local Plan Strategic Policies (March 2013, updated with alterations in 2017)
- Haringey Development Management DPD (July 2017)
- The London Plan (March 2021).

3.2 National Planning Policy Framework

3.2.1 Flood Zone Assessment

This FRA has been conducted in accordance with the NPPF. The guiding principles behind the NPPF is to steer development in a way that places them in areas that are at lowest risk of flooding and to avoid inappropriate development in areas at risk of flooding.

The Planning Practice Guidance (PPG) to the NPPF contains a series of tables that help identify the risk of flooding to a development:

- Table 1 defines four Flood Zones on the Annual Exceedance Probability (AEP) of rivers and sea flooding;
- Table 2 identifies specific land use types for each of the five flood risk vulnerability classifications; and,
- Table 3 identifies what development is appropriate for each flood risk vulnerability classification based on the Flood Zones and whether the Exception Test is required.

In accordance with the NPPF, the Flood Zones identified by the Environment Agency are defined as follows:

Flood Zone 1	Low probability: Less than 1 in 1000 annual probability of flooding in any year (<0.1% chance) of river or sea flooding.
Flood Zone 2	Medium probability: Between 1 in 100 and 1 in 1000 annual probability of flooding in any year (1% - 0.1% chance) for river flooding, or between 1 in 200 and 1 in 1000 annual probability of flooding in any year (0.5% - 0.1% chance) for from sea flooding.
Flood Zone 3a	High probability: 1 in 100 or greater annual probability of flooding in any year (≥1% chance) for river flooding, or 1 in 200 or greater annual probability of flooding in any year (≥0.5% chance) for flooding from the sea
Flood Zone 3b	High probability: Functional Flood Plain where water must flow or be stored during flood events; with an annual probability of 1 in 20 or greater (>5% chance).

¹ Environment Agency, October 2021. *Flood Risk Assessments: Climate Change Allowances*. [online] Available at: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> [Accessed 2 February 2023].

3.2.2 Climate Change

NPPF guidance states that allowances for the predicted effects of climate change must be considered whilst preparing the FRA. The guidance¹ published by the Environment Agency (EA) to support the NPPF contains sensitivity ranges that are recommended to be applied to peak river flow, peak rainfall intensity, sea level rise, offshore wind speed and extreme wave height. The general trend is for each parameter to increase in the future, which in turn increases the risk of flooding to any site. Due to the location of the site, the peak rainfall intensity poses the most significant risk to the site. The proposed development is situated within the London Management Catchment, and the peak rainfall allowances for different epochs are shown in Table 3-1.

Table 3-1 - Climate change allowances for peak rainfall intensity in the 1% AEP event

Allowance	'2050s' for up to 2060	'2070s' for 2061 - 2125
Upper End	40%	40%
Central	20%	25%

EA guidance dictates that the upper end allowance should be considered during the design of the drainage system for site development. As a result, the surface water drainage strategy has made an allowance of a 40% increase in peak rainfall intensity to ensure that the site is safe from surface water flooding in this extreme scenario.

3.3 London Plan

The London Plan (March 2021) provides an overall strategic plan for London, setting out economic, environmental, transport and social framework for London developments over the next 20-25 years. This includes policies that development plans must use SFRA as well as local flood risk management strategies to “*identify areas where particular flood risk issues identify risks and develop actions aimed at reducing these risks*”.

The London plan dictates that development proposals should utilise sustainable drainage systems (SuDS) and aim to achieve greenfield run-off rates whilst ensuring that surface water run-off is managed as close to its source as possible. In addition, there is a preference for green sustainable drainage features with the drainage hierarchy as follows:

1. Rainwater as a resource (e.g. rainwater harvesting or blue roofs for irrigation)
2. Rainwater infiltration to ground at or close to source
3. Rainwater attenuation in green infrastructure features for gradual release (e.g. green roofs and rain gardens)
4. Rainwater discharge directly to a watercourse
5. Controlled rainwater discharge to a surface water sewer or drain
6. Controlled rainwater discharge to a combined sewer.

3.4 Strategic Flood Risk Assessment

Local authorities are required to carry out a SFRA that can be used by developers as guidance on the authority’s approach to avoiding, reducing and managing flood risk. Throughout this FRA, the Haringey Council Level 2 SFRA (February 2015) has been reviewed to consider the risk of flooding from the following sources:

- Fluvial flooding from rivers;
- Artificial watercourses;
- Sewers;
- Groundwater; and
- Surface water.

3.5 Haringey Local Plan Strategic Policies

The Local Plan sets out a vision and key policies for the future development of the borough up to 2026. This states that all development shall:

- Improve the water environment, water quality and drainage systems;
- Minimise water use and illustrate how development would contribute to general and flash flooding;
- Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF and will apply the NPPF Sequential Test and Exception Test;
- Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding;
- Implement Sustainable Drainage Systems from strategic to individual site level to improve water attenuation, quality and amenity;
- Restore and enhance the Blue Ribbon Network including Pymmes Brook, Moselle Brook, the River Lee and its tributaries, deculverting wherever feasible, to improve water quality and amenity of these waterways and to help reduce flood risk (in line with London River Action Plan); and
- Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection.

3.6 Haringey Development Management DPD

The Development Management DPD gives effect to Haringey's spatial strategy and the key objectives of the Strategic Policies Local Plan by giving further framework for resisting development that would be at odds with the Local Plan. This states that in order to manage and reduce flood risk:

- The Council will ensure that all proposals for new development avoid and reduce the risk of flooding to future occupants and do not increase the risk of flooding;
- All proposals for new development within Flood Zone 2 and 3a will be required to provide sufficient evidence for the Council to assess whether the requirements of the Sequential Test and Exception Test, where required, have been satisfied. Proposals must be informed by a site-specific Flood Risk Assessment (FRA) taking account of all potential sources of flooding and should:
 - Demonstrate the application of a sequential approach for the development of individual sites to ensure that the most vulnerable land uses are located in areas of the site that are at lowest risk of flooding;
 - Preserve overland flood and flow routes and ensure there is no net loss of flood storage. Adequate flood storage and compensation should be provided on site, or if this is not possible, provided off site where circumstances allow;
 - Where appropriate, set out the mitigation measures that will be incorporated on site to manage residual flood risk including:
 - Finished floor levels set no lower than 300mm above the 1 in 100 flood event in any given year, including an allowance for climate change, flood level; and
 - Ensure safe access and egress for future users of the development or an appropriate emergency evacuation plan.
 - Contribute to naturalising watercourses where opportunities arise;
- All proposals for new development will be required to:
 - Manage and reduce surface water run-off; and
 - Manage water and wastewater discharges;
- With the exception of water compatible uses and essential infrastructure, development in areas designated in Haringey's Strategic Flood Risk Assessment as being within Flood Zone 3b will not be permitted.

4 Appraising the Risk

4.1 Historic Flood Events

There are no records of historic flood events within the site boundary or the nearby area. The records show that the nearest historical flood event was 4.5km to the east of the proposed development, as shown in Figure 4-1 below:

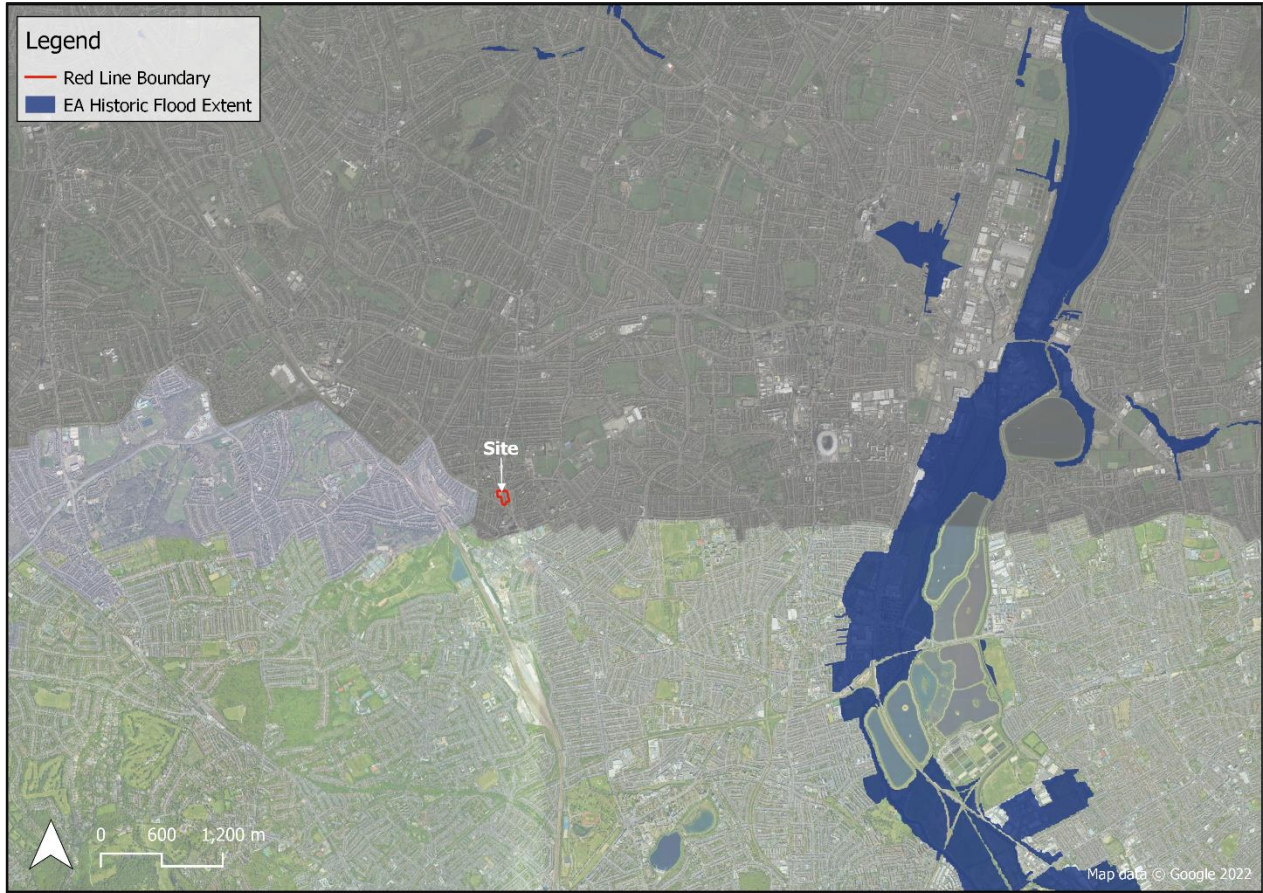


Figure 4-1 - Environment Agency Historic Flood Extents overlaid with the site boundary (February 2023) © Environment Agency copyright and/or database right 2018. All rights reserved.

4.2 Flood Mechanisms

In accordance with the NPPF all forms of flooding are addressed in the sections that follow. This includes fluvial flood risk, tidal flooding, flooding from surface water, flooding from groundwater, and flooding from artificial sources.

4.2.1 Fluvial Flood Risk

Figure 4-2 shows the EA Flood Zone Map overlaid with the site boundaries.

Flood zone 1 (low risk) is left unshaded, Flood Zone 2 (medium risk) is identified by light blue shading and Flood Zone 3 (high risk) by dark blue shading. The flood extents shown assume that no formal protection from flood defences is in place. This is the standard EA procedure for defining flood zones.

Superimposing the site boundary onto the Flood Map shows that the site lies within Zone 1, with Figure 4-2 showing that the site is approximately 1.4km from Flood Zones 2 and 3.

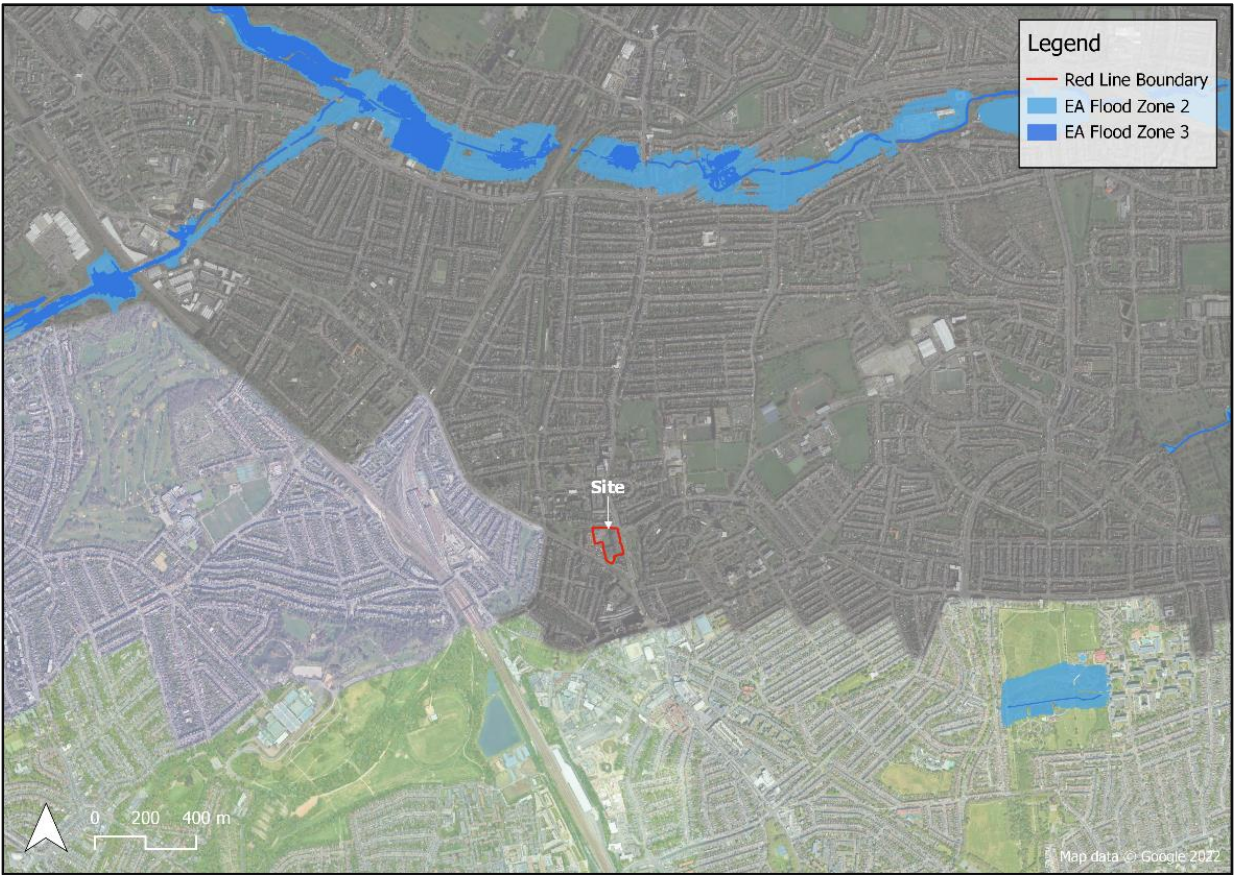


Figure 4-2 - Environment Agency Flood Zone Map overlaid with Site Boundary (February 2022) © Environment Agency copyright and/or database right 2018. All rights reserved.

The proposed development is situated within Flood Zone 1 and is at a low risk of fluvial flooding.

Table 2 from the NPPF flood risk and coastal change guidance defines developments as either essential infrastructure, highly vulnerable, more vulnerable, less vulnerable or water compatible. Table 4-1 below shows the Flood risk vulnerability and flood zone compatibility table, with the tick representing that the development is appropriate.

As the proposed development is an office, this is classified as a *less vulnerable* development, and is deemed appropriate as seen in Table 4-1.

Table 4-1 - Flood risk vulnerability and flood zone compatibility table

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

4.2.1 Tidal Flooding

The SFRA concluded that Haringey is not at risk from tidal flooding.

4.2.2 Flooding from Surface Water

4.2.2.1 Baseline Condition

Figure 4-3 displays that the site is has a small area in the north-west that is susceptible to low-risk surface water flooding. The proposed development is not expected to obstruct this area, however the site consists of several impermeable surfaces such as paving and roofing. This limits the potential for infiltration and, without known current surface water attenuation measures present, it is therefore assumed that all areas discharge freely into the existing sewer network.

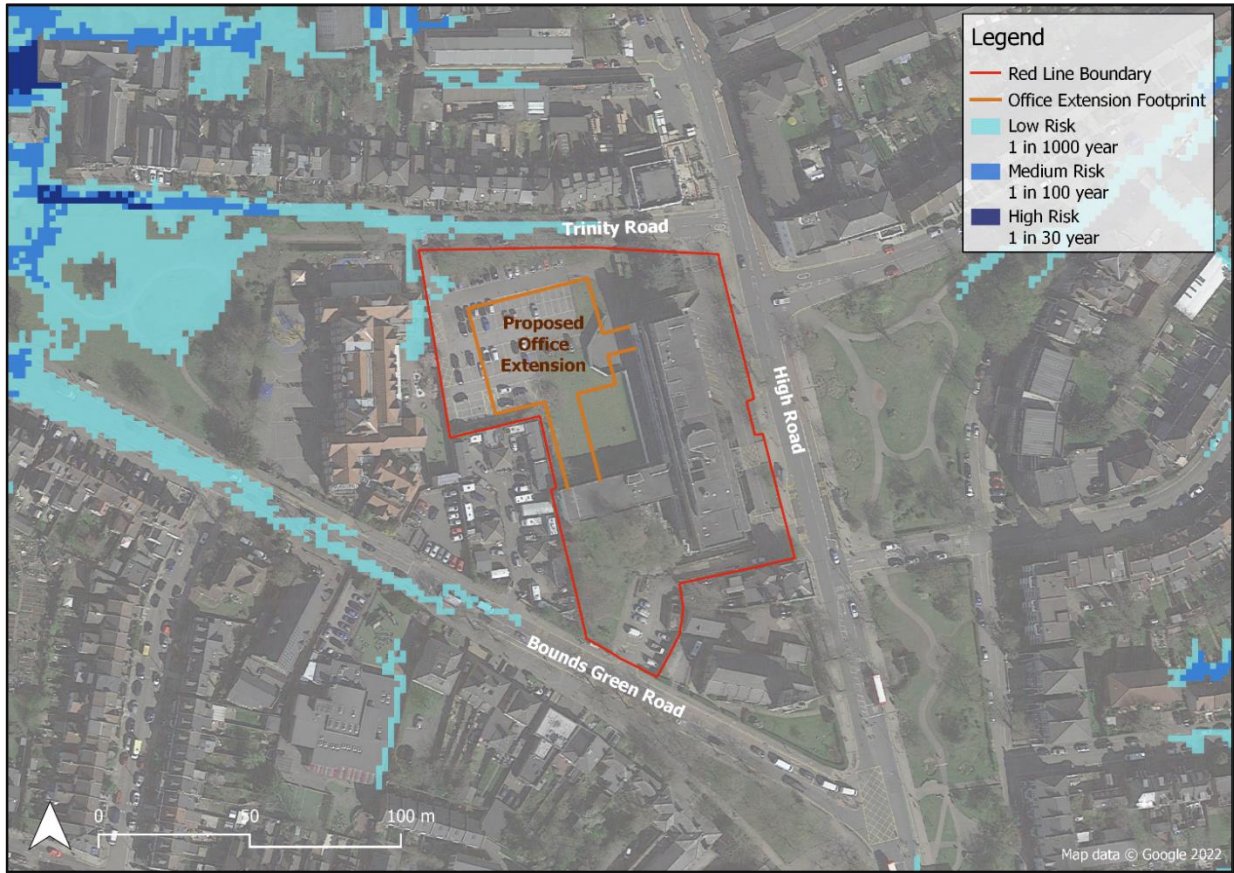


Figure 4-3 - Environment Agency Surface Water Flood Risk overlaid with the site boundary (February 2022) © Environment Agency copyright and/or database right 2015. All rights reserved.

4.2.2.2 Proposed Condition

The proposed surface water drainage system will incorporate a new dedicated network separate to the foul water flows that will gravitate into the public surface water sewer system at one existing and one new connection point. This will serve the existing Civic Centre, proposed office extension and public realm within the planning application boundary. In accordance with the London Plan, the proposed surface water drainage system will utilise SuDS where possible with the strategy to attenuate surface water at the source before discharging into the surface water public sewer network. The restriction of surface water flows will be achieved by installing flow controls on the drainage network to minimise flood risk on the downstream drainage network.

The required attenuation has been calculated to provide suitable attenuation for a 1 in 100-year rainfall event with a 40% allowance for climate change, resulting in a storage requirement of 472m³. This ensures that the resulting proposed run-off rate matches the calculated greenfield run-off rate in accordance with the London Plan. As the existing site does not provide attenuation, the surface water run-off restriction from the proposed development will significantly reduce the risk of surface water flooding.

4.2.3 Flooding from Groundwater

The SFRA concludes that Haringey is not at risk from groundwater flooding.

4.2.4 Flooding from Artificial Sources

Figure 4-4 below shows that reservoir flood extents do not reach the site boundaries. The proposed development is not at risk of flooding from artificial sources.

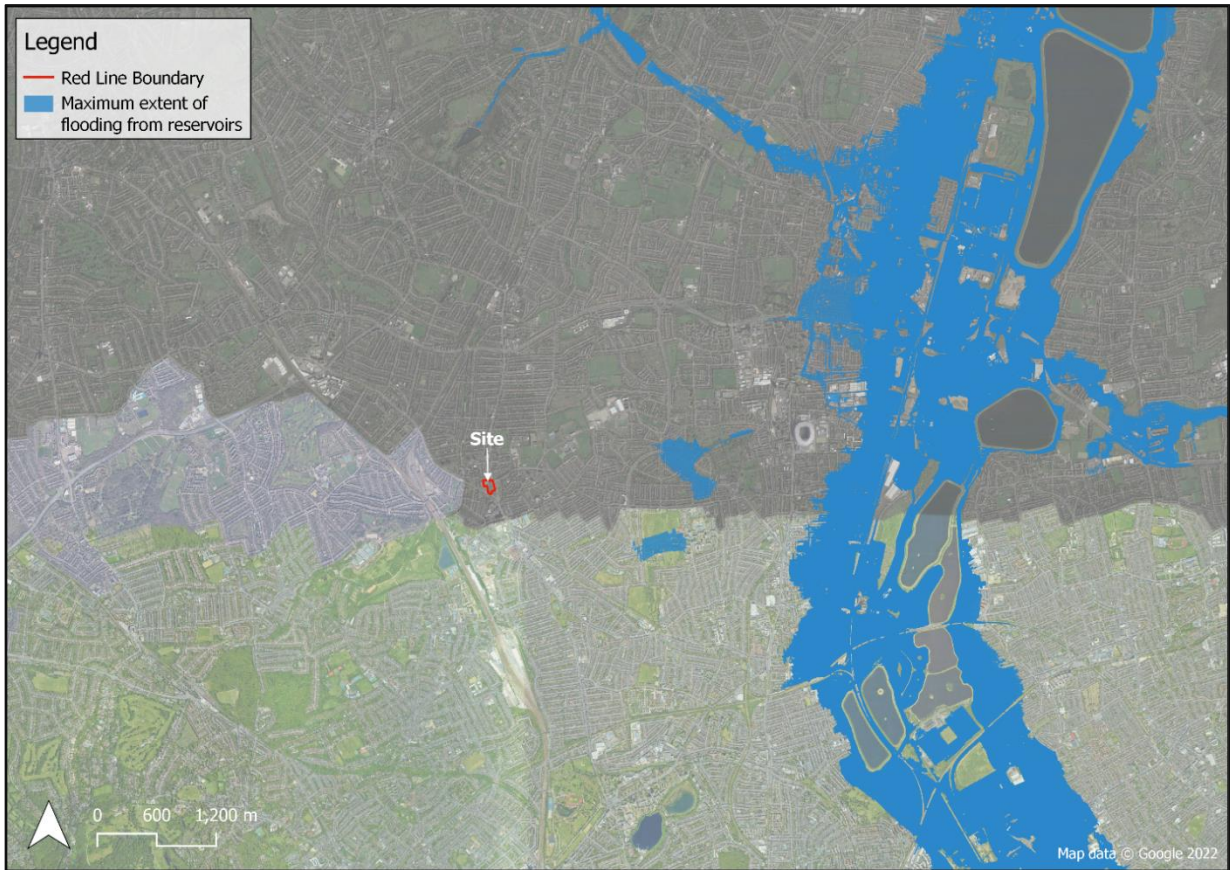


Figure 4-4 - Environment Agency Reservoir Flood Extents overlaid with the site boundary (February 2022) © Environment Agency copyright and/or database right 2021. All rights reserved.

4.2.5 Flooding from Failure of Infrastructure Development

The SFRA indicates that the postcode that the site is located within (N22 8) has properties at risk of flooding from sewers. The foul water is due to increase as the office extension will increase the capacity of workers, therefore the drainage strategy must therefore determine that the discharge points have sufficient capacity for the increase in peak foul water load.

The foul water drainage system will be predominantly discharged to the existing public sewer network, with the office extension requiring a sump pump in the office extension basement. The total peak foul water for the proposed

development has been calculated as 6.69l/s; an increase of 3.7/s compared to the existing Civic Centre building rate of 2.99l/s.

The existing and proposed peak foul water and surface water discharges for a 100-year rainfall event with 40% climate change allowance can be seen below in Table 4-2.

Table 4-2 - Combined surface water and foul water discharge rates

Condition	Surface water discharge rate (l/s)	Foul water discharge rate (l/s)	Combined discharge rate (l/s)
Existing	144.1	2.99	147.09
Proposed Development	5.9	6.69	12.59

The proposed combined peak discharge rate of foul water and surface water therefore provides a significant reduction of approximately 130/s to the discharge to the combined sewer network. Therefore, it is considered that the risk of the development to the combined sewer flooding is low and will provide betterment to the combined sewer network.

Formal confirmation with Thames Water is still to be achieved and is not expected to represent a challenge given the reduction in the discharge rate to the sewer network.

5 Summary and Conclusion

This FRA has been carried out to assess the potential flood risk from the proposed development consisting of the renovation of the Haringey Civic Centre and construction of an office extension.

The Haringey Civic Centre development site is entirely situated within Flood Zone 1 according to the EA national flood map, classifying the site as having low risk of fluvial and tidal flooding (<0.1% chance in any given year). The nearest watercourse to the development site is approximately 1.4km north, therefore the risk of tidal and fluvial flood risk is considered to be low and not require additional measures to reduce the risk.

In accordance with the NPPF and the London Plan, the development in Flood Zone 1 is appropriate for as the office space is classed as *Less Vulnerable*.

The surface water drainage strategy includes storing run-off from the proposed development within the public realm for the existing buildings and green roofs and harvest tanks for the proposed office extension, with a total attenuated volume of 472m³. The rate of surface water discharge to the combined public sewers will therefore reduce the existing rate of 147.09/s to 12.59l/s for the 1 in 100-year rainfall event with 40% allowance for climate change. This is equivalent to the greenfield runoff rate for the site. With the surface water drainage strategy in place, the risk of surface water flooding is considered to be low.

Foul water from the proposed development will be discharged to the combined sewer at a rate of 6.69l/s, which is an increase from the existing rate of 2.99l/s.

The combined discharge of foul and surface water from the proposed development is 12.59l/s, a reduction of over 130l/s from the existing combined rate. The risk of surface water flooding and flooding from combined sewers is therefore considered to be low.

The risk of flooding from groundwater and artificial sources is also considered to be low.

It is concluded that the risk of flooding from all sources for the entire design life of the proposal is considered to be low and that the proposed development will not increase the risk of flooding elsewhere. Moreover, it is considered that the attenuation to restrict surface water discharge to match the greenfield run-off rates will offer a degree of betterment to the existing condition of the site.

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