14 Blackburn Road

Flood Risk Assessment and Surface and Foul Water Drainage Strategy.

2110-EXP-C-RP-0001

April 2025

For Planning

expedition

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Contents

Executive Summary

This Food Risk Assessment (FRA) and Drainage strategy has been prepared to support the Detailed Planning Application for 14 Blackburn Road in West Hampstead, Camden (the Site). It considers flood risk posed to the Site by fluvial and tidal, surface water and sewer, groundwater, and infrastructure sources. Based on the review carried out, the Site has a low risk from all forms of flooding. Since the Site is in Flood Zone 1 and the Proposed Development has a vulnerability classification of "more vulnerable" according to Annex 3 of the NPPF's vulnerability classification guidance an Exception Test is not required.

Although the Site itself is not at risk of surface water or sewer flooding, the Camden Strategic Flood Risk Assessment (SFRA) identifies that the Site is within a Critical Drainage Area and therefore is within a catchment area which contributes to a flooding hotspot. The surface water drainage system has been designed to manage and convey all storm water falling on the Site up to and including the 1:100 year storm event including a 40% allowance for climate change. Surface water will be discharged into the Thames Water sewer network at greenfield runoff rate to mimic the natural drainage behaviour of the Site. Excess surface water volumes resulting from the reduced greenfield runoff rate are to be stored in cellular storage tanks either on roofs or below ground, as well as a small amount in rain gardens. This will achieve a significant improvement (96%) from the current baseline and will contribute to reducing local flood risk.

The Proposed Development will result an increase of foul water flows from the Site. These will be offset by a reduction in the surface water flows. It is proposed that foul water will be discharge via gravity to the existing connection into the Thames Water network. A pre-planning enquiry has been submitted to Thames Water to confirm the capacity within the sewer network.

1 Introduction

This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared to support the Detailed Planning Application for 14 Blackburn Road in West Hampstead, Camden.

This FRA includes a Sustainable Drainage Strategy (Section 7) which has been developed in line with best practice, local policy requirements and requirements from Camden Council, the Lead Local Flood Authority (LLFA).

The structure of this FRA follows the checklist included in the National Planning Policy Guidance (NPPG) on Flood Risk and Coastal Change [1].

2 Development Site and Location

2.1 Where is the development site located?

The 0.24ha Site is located at 14 Blackburn Road, NW6 1RZ and centred on OS grid reference 525617, 184681, as shown in Figure 1.

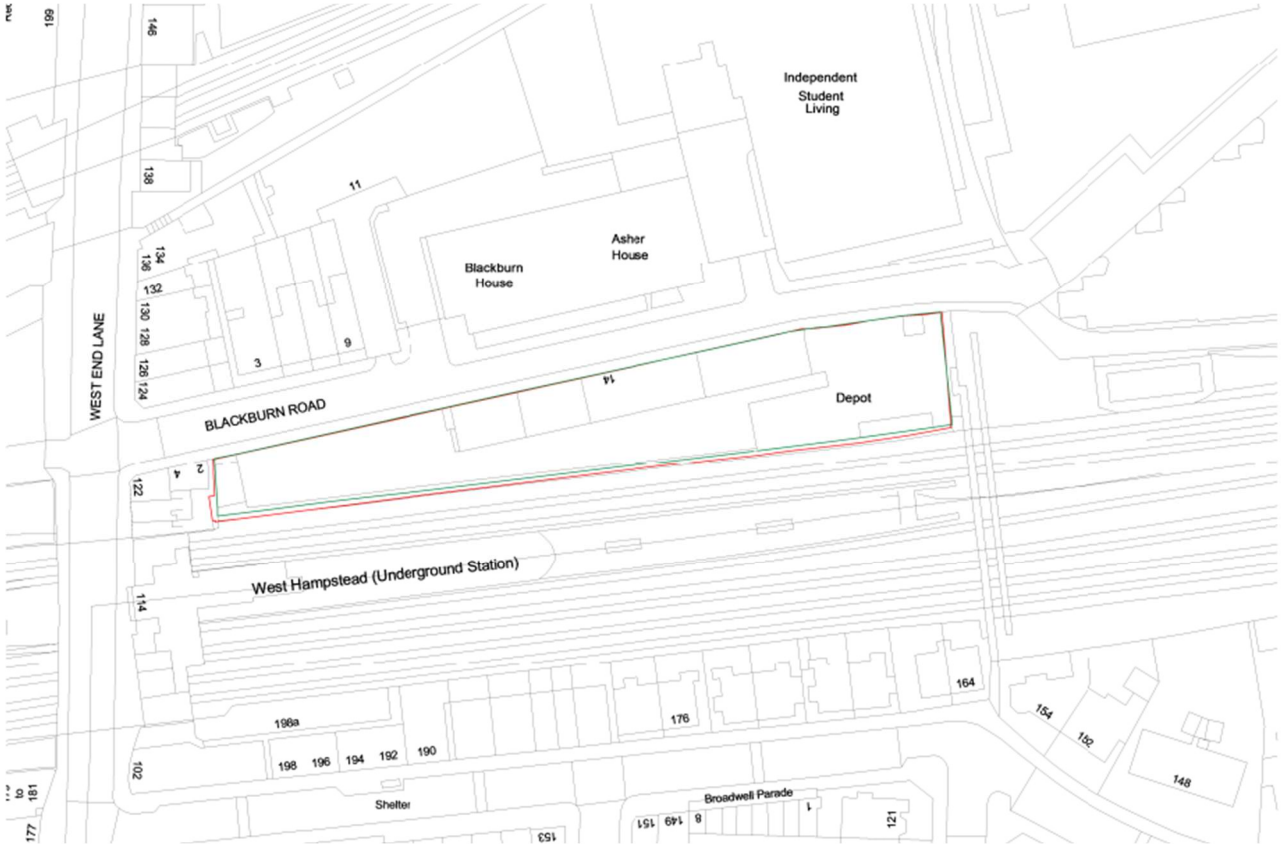

Figure 1: Site Location

The Site is located in West Hampstead within the London Borough of Camden (LBC), to the northeast of West Hampstead station and is occupied by a builders' merchants (Builder Depot Limited 'BDL'). The Site is located to the rear of properties fronting onto West End Lane in the heart of West Hampstead and extends east/west along Blackburn Road. The Site abuts the railway to the south and is to the west of the allocated redevelopment site of the O2 Centre and car park.

The Site falls within a wider consented masterplan (The O2 Centre – 2022/0528/P) to provide a mixed-use development which extends to the Finchley Road tube station to the East. 14 Blackburn Road is within Outline Phase 2B of the O2 masterplan, also referred to as plot S8. A Section 73 application has

subsequently been submitted for the scheme in February 2025 (ref. 2025/0484/P), although the Phase 2B plot boundary remains unchanged.

A topographical survey of the Site was undertaken in December 2022 by Maltby Surveys Ltd and is included in Appendix A. The pavement just outside the northern boundary of the Site is relatively steep, with levels sloping from 55.13m AOD in the west to 50.57m AOD in the east. Within the Site boundary, levels are much flatter as the adjacent Blackburn Road is retained from the Site by an existing wall, with retained height up to 4m in the west. Levels within the Site vary from approximately 51.5m AOD in the southwest to 50.6m AOD in the northeast.

2.2 What is the current use of the Site?

The Site is currently occupied by Builder Depot, a timber and builders' merchants, and mostly comprises of single and double height warehouses and sheds, with a showroom building in the middle of the existing site, and a small external yard area to the east. The entire site is hard standing or roof and 100% impermeable.

In accordance with NPPF Annex 3, the current use of the Site is classed as 'less vulnerable'.

2.3 Which Flood Zone is the Site within?

The EA flood map for planning as shown in Figure 2, identifies the Site to be within Flood Zone 1 and is at low risk of flooding (less than a 1 in 1000 (0.1%) annual probability of river or sea flooding).

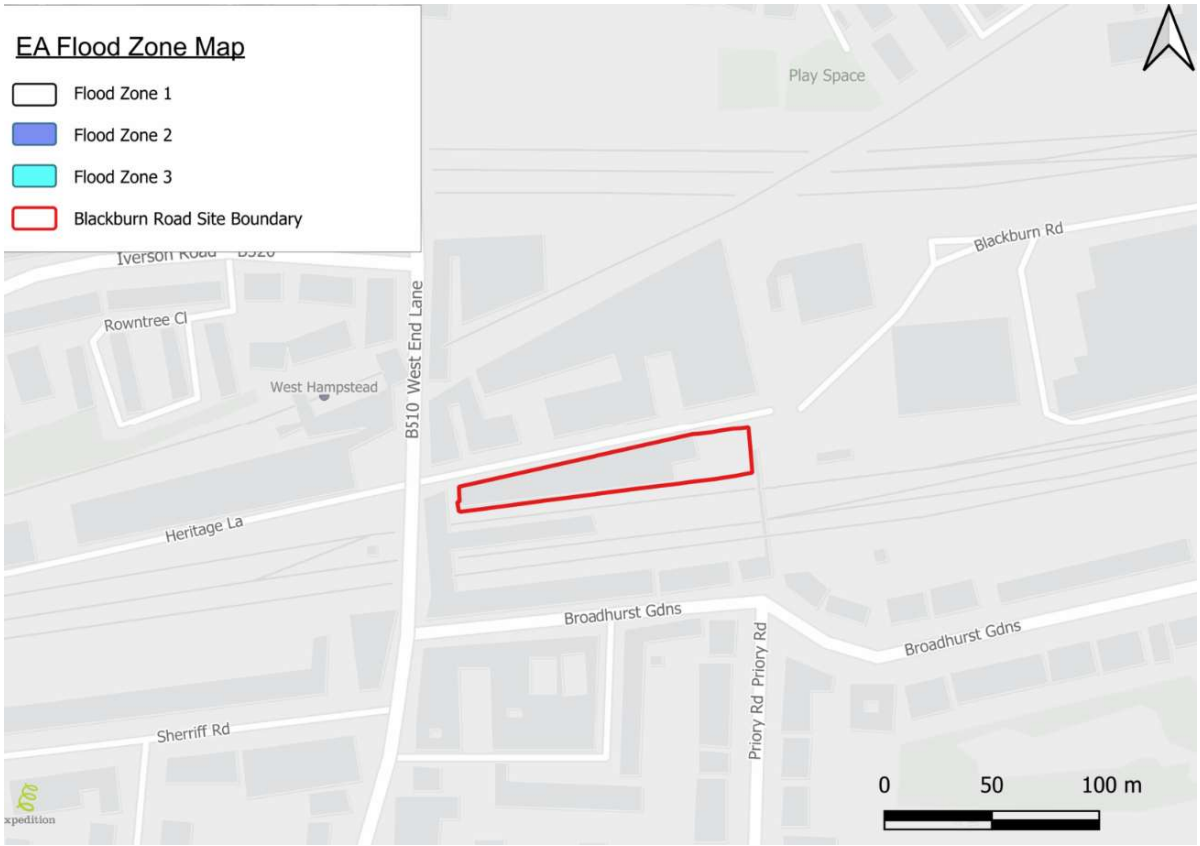

Figure 2: EA Flood map for planning

3 Development Proposals

3.1 What are the development proposal(s) for this site? Will this involve a change of use of the Site and, if so, what will that change be?

The scope of the proposals includes the demolition and redevelopment of the Site for a mixed-use development comprising purpose-built student accommodation (Sui Generis), affordable housing (Use Class C3), lower ground and ground floor commercial/business space comprising of showrooms, retail and ancillary offices (Use Class E/Sui Generis) and a café/PBSA amenity space (Use Class E/Sui Generis) and associated works including service yard, cycle parking, hard and soft landscaping, amenity spaces and plant (the Proposed Development).

The proposed ground floor layout is shown in Figure 3. The Proposed Development layouts are included in Appendix B.

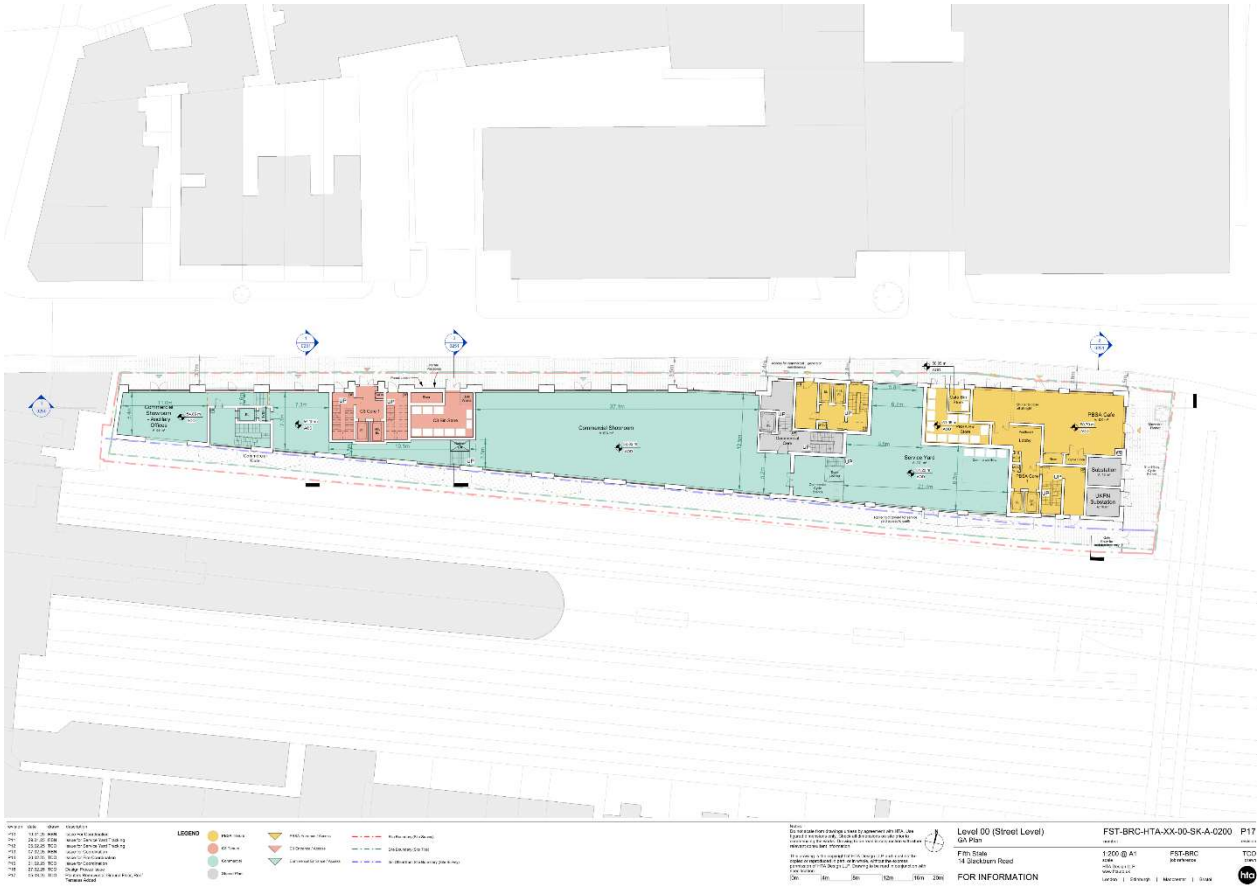

Figure 3: Proposed Ground Floor GA, HTA

3.2 In terms of vulnerability to flooding, what is the vulnerability classification of the Proposed Development?

As the development proposals involve residential dwellings including student accommodation, the Proposed Development has a vulnerability classification of “more vulnerable” according to Annex 3 of the NPPF’s vulnerability classification guidance.

The street level commercial showrooms and café have a vulnerability classification of ‘less vulnerable’.

3.3 What is the expected or estimated lifetime of the Proposed Development likely to be?

Residential developments usually are considered to have a design life of 100 years, therefore the building is considered to have an expected design life of 100 years.

4 Sequential Test

4.1 What other locations with a lower risk of flooding have you considered for the Proposed Development?

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be permitted if there are reasonably available sites appropriate for development in areas at a lower risk of flooding. The Proposed Development is located in Flood Zone 1, therefore it is not required to undergo a sequential test.

5 Climate Change

5.1 How is flood risk at the Site likely to be affected by climate change?

Climate change is predicted to increase rainfall intensities, which will in turn increase the risk of surface water and fluvial flooding.

In developing the surface water drainage strategy, the following climate change allowances have been considered, in line with NPPG [1] and latest DEFRA mapping of climate change allowances for the London Management Catchment [2].

- +35% increase in rainfall intensities on the 1:30 year rainfall event (Upper End allowance to 2070s horizon);
- +40% increase in rainfall intensities on the 1:100 year rainfall event (Upper End allowance to 2070s horizon).

6 Site Specific Flood Risk

6.1 What is/are the main source(s) of flood risk on the Site?

A review of the main potential sources of flooding that could affect the development has been carried out, considering the key sources of flooding defined in the National Planning Policy Framework (NPPF) [3].

6.1.1 Fluvial and tidal flood risk

As discussed in Section 2.3, the Site is in Flood Zone 1, therefore there is a low risk of fluvial and tidal flooding (less than a 1 in 1000 (0.1%) annual probability)

6.1.2 Pluvial and Sewer Flooding

In urban areas, where impermeable surfaces typically drain to sewers, pluvial flooding tends to occur as a result of sewer surcharging. Pluvial and sewer flood risks have therefore been considered together.

The EA surface water flood map (Figure 4) shows that there is a very low risk of flooding within the Site boundary. It shows a low risk of surface water flooding just to the northeast of the Site, on Blackburn Road itself. This is also shown in the SFRA surface water flood map (Appendix C).

The proposed drainage strategy will mean that all surface water flows for events up to the 1:100 + 40% climate change event will be contained on site and pluvial flood water will not be displaced off site.

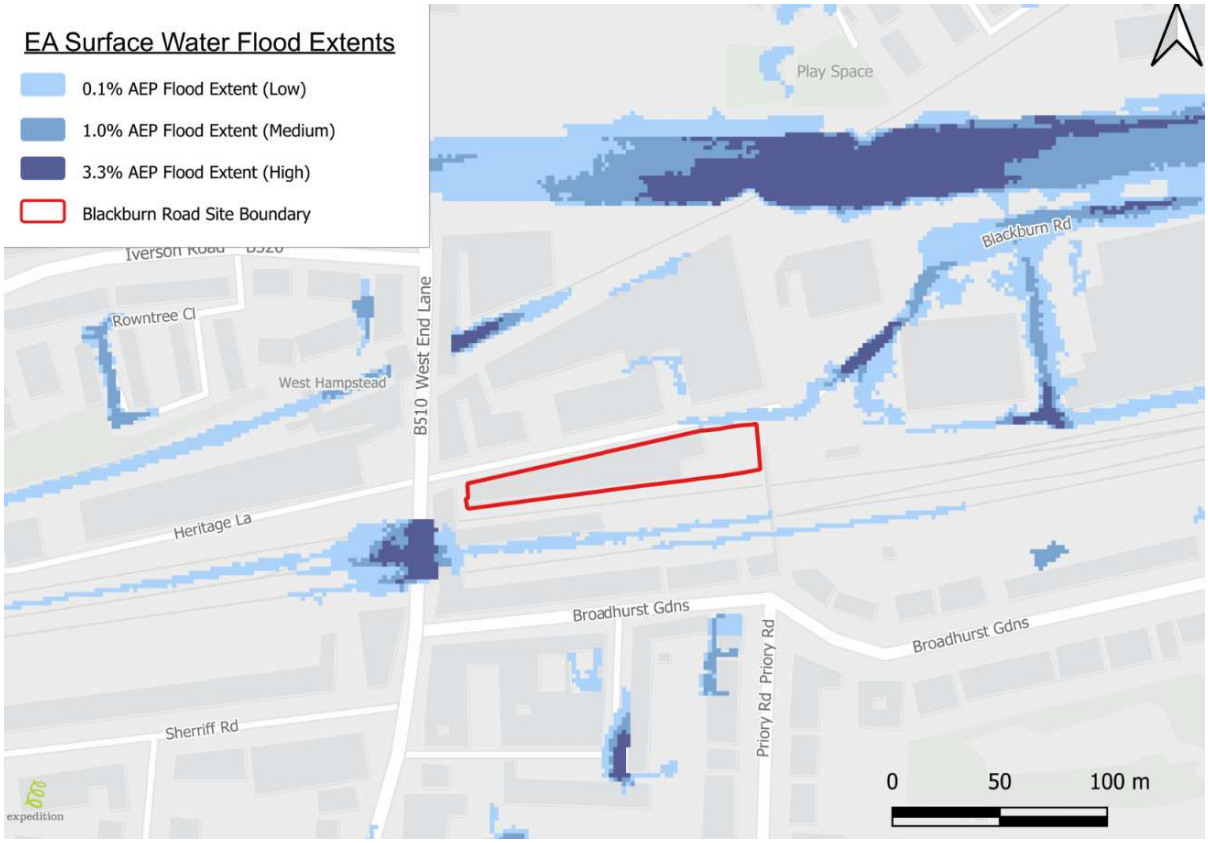

Figure 4: EA Surface Water Flood Map

The SFRA flood maps (Appendix C) identifies that within the postcode area of the Site (NW6 1), in the past 10 years there has been one record of internal sewer flooding and no records of external sewer flooding.

Although there is not an identified risk of surface water or sewer flooding, the SFRA identifies that the Site is within a Critical Drainage Area and therefore is within a catchment area which contributes to a flooding hotspot.

6.1.3 Groundwater

A Ground Investigation (GI) was carried out by Site Analytical Services in 2008. The GI found that the Site comprised of made ground underlain by London Clay, which is consistent with the British Geological Survey (BGS) mapping, which also defines the underlying bedrock as rocks with essentially no groundwater. The GI found groundwater in 2 of the 7 boreholes and trial pits, both towards the eastern end of the Site, at a minimum depth of 1.20m.

The LBC SFRA (Appendix C) shows that the Site is not within an area with increased susceptibility to elevated groundwater.

The LBC Flood Risk Management Strategy [4] (Figure 5) identified that the Site is not vulnerable to groundwater flooding. Therefore, the risk of groundwater flooding within the Proposed Development areas is deemed to be low.

Site Investigations will be undertaken once planning permission has been granted to validate groundwater levels to inform the basement design.

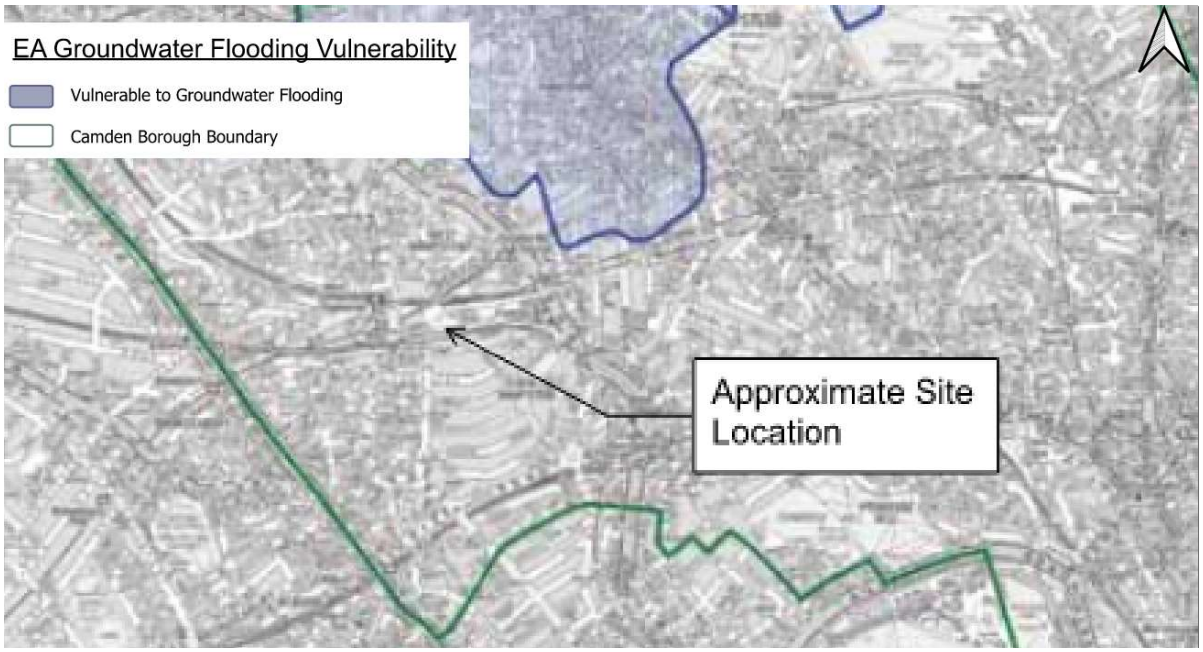

Figure 5: Groundwater Flooding Map, LBC Flood Risk Management Strategy

6.1.4 Water Infrastructure

The nearest artificial body of water to the Site is Hampstead No. 1 Pond, located approximately 2km to the northeast. The EA Reservoir Flood Extents mapping data, shown below in Figure 6, which displays the extent of flooding if reservoirs were to fail, indicates that the Site is unlikely to be flooded in the event of reservoir failure.

Reservoirs in the UK have an extremely good safety record, with all reservoirs falling under the Reservoirs Act 1975, having regular inspections and supervised by reservoir panel engineers. Therefore, the risk of flooding from reservoir failure is considered to be very low,

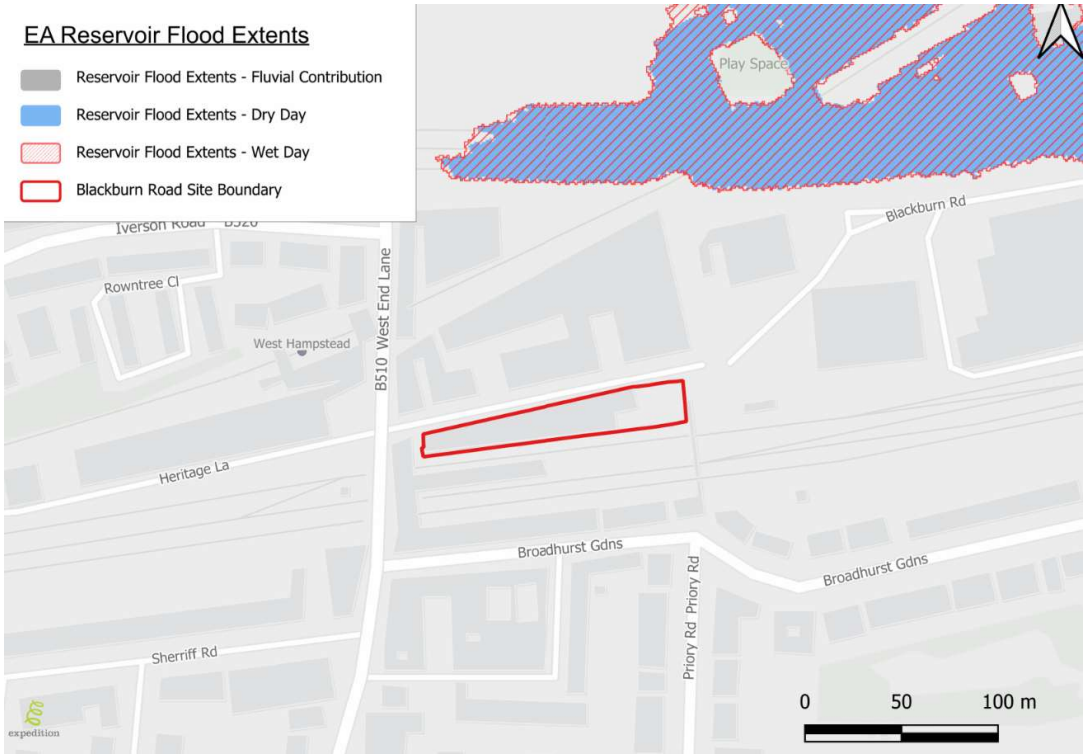

Figure 6: Reservoir Flooding Map, SFRA Mapping

6.1.5 Conclusions

In conclusion, there is no significant risk of flooding to the Site from fluvial waters, tidal waters, surface water and sewers, groundwater and water infrastructure. Although the Site itself is not at risk of surface water or sewer flooding, the SFRA identifies that the Site is within a Critical Drainage Area and therefore is within a catchment area which contributes to a flooding hotspot. The proposed surface water drainage strategy described in Section7 will result in containment on site of surface water drainage flows from all managed areas in ownership for all events up to the 1:100 year + 40% for climate change. This will achieve a significant improvement (96%) from the current baseline and will contribute to reducing local flood risk. What is the probability of the Site flooding?

As discussed in Section 2.3 and Section 6.1.1. the Site is situated in Flood Zone 1 and is therefore at low risk of flooding (less than a 1 in 1000 (0.1%) annual probability of river or sea flooding). The Site also has a low risk of flooding from groundwater, surface water, sewers and reservoirs.

6.2 Are you aware of any other sources of flooding that may affect the Site?

No other sources of flooding have been identified.

6.3 What is the expected depth and level for the design flood?

No significant risks of flooding have been identified at the Site.

6.4 Are properties expected to flood internally in the design flood and to what depth? Internal flood depths?

See Section 6.4.

6.5 How will the development be made safe from flooding and the impacts of climate change, for its lifetime?

No significant risks of flooding have been identified for the Site. The design of the surface water drainage system has considered the latest predictions on the effects of climate change on design rainfall intensities, in line with NPG.

No residential accommodation will be located on the ground floor. The ground floor is proposed for commercial which is classified as ‘less vulnerable’. All sleeping accommodation will be on the first floor or above.

6.6 How will you ensure that the development and any measures to protect the Site from flooding will not cause any increase in flood risk off-site and elsewhere? Have you considered the impacts from climate change, over the expected lifetime of the development?

As discussed in Section 6.1. No significant risks of flooding have been identified. No measures are therefore required to protect the Site from flooding and therefore there is not anticipated to be any increase in flood risk off-site as a result of the development proposals. No residential accommodation, either housing or student, is proposed on ground floor levels.

As the Site is located within a critical drainage area, it is important to reduce runoff rates post-development to reduce flood risk to the wider area. In line with LBC Local Plan Policy CC3, the surface water drainage system will be designed to attenuate flows from within the ownership boundary to greenfield runoff rates for the 1 in 2 year event, the 1 in 30 year event with 35% allowance for climate change, and for the 1 in 100 year + 40% climate change event. This is discussed further in Section 7.

6.7 Are there any opportunities offered by the development to reduce the causes and impacts of flooding?

As discussed in Section 7, surface water peak discharge will be restricted and will therefore provide a significant improvement on existing runoff rates. This will contribute to reducing surface water and sewer flooding on the drainage catchment.

The Proposed Development includes proposals to contain on site all surface water drainage flows from all managed areas in ownership for all events up to the 1:100 year + 40% for climate change. This will achieve an improvement from the current baseline when surface water drainage flows would be overspilling beyond the Site boundary in such events. This will also contribute to reducing local flood risk.

7 Surface Water Management

7.1 What are the existing surface water drainage arrangements for the Site?

Our understanding of the existing surface water drainage arrangements for the Site is based on a review of the following information:

- Thames Water asset records (Figure 7 and Appendix D)
- Subsight below ground services survey dated December 2022 (Appendix E)

As shown in the Thames Water Asset Records in Figure 7, a 1160 x 760mm combined sewer runs west to east in Blackburn Road, and connects to Thames Water MH 6702, from which a 1200 x 760mm combined sewer runs north to south. This then subsequently connects into Thames Water MH 6602, to the south of the Site, on the other side of the railway on the junction of Priory Road and Broadhurst Gardens.

A section of the 1200 x 760mm Thames Water Public Sewer between MH 6702 and MH 6602 runs just outside the eastern boundary of the Site. The easement for this sewer is anticipated to extend into the Site and therefore relevant approvals will be required for any proposals within this easement.

The Subsight below ground services survey shows the surface water drainage leaves the Site via an existing manhole in Blackburn Road, whose subsequent connection is currently unknown. It is assumed that this connects into the TW 1160 x 760mm combined sewer in Blackburn Road.

The existing foul water connection off site at present is unknown, but based on the available information in the Subsight survey which shows a foul drainage run in the middle of the Site running east, it is assumed that the foul drainage from the Site connects into the 1200 x 600mm Thames Water sewer which runs north to south just to the east of the eastern site boundary.

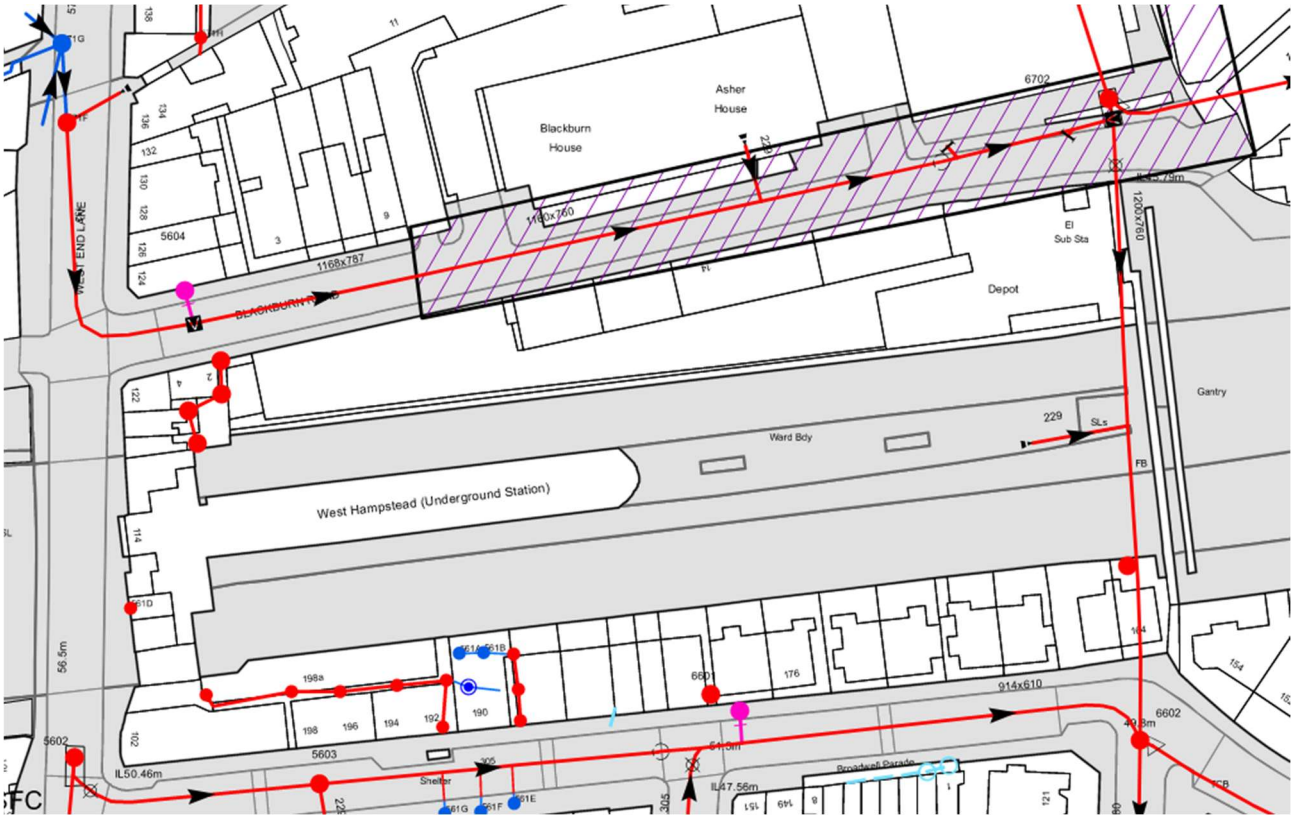

Figure 7: Existing Thames Water Sewer Map

7.2 If known, what (approximately) are the existing rates and volumes of surface water run-off generated by the Site?

It is considered that the surfaces of the existing site are comprised of 100% hard standing. The contributing area (A) is taken as 2437m^2.

The existing peak discharge rates have been calculated using the Rational Method as follows

Q=C*i*A

Q = Maximum flow rate

C = Runoff coefficient

i = rainfall intensity (l/s/m^2)

A = catchment area

A runoff coefficient (C) of 0.85 has been adopted for the whole area as it is currently all considered impermeable. The rainfall depths for each rainfall event have been taken from the FEH data for the 15-minute storm, summarised in Table 1 below. The 15-minute storm duration is considered to be the critical duration as there is no existing on-site attenuation.

Table 1: Calculated existing discharge rates per return period

Return Period	Rainfall depths for the 15-minute storm (mm)	Peak Flow Rate (Q) (l/s)
1 in 2	7.7	17.5
1 in 30	21.8	49.4
1 in 100	31.7	71.9
1 in 100 + 40% CC	44.4	100.7

7.3 What are the proposals for managing and discharging surface water from the Site, including any measures for restricting discharge rates?

The surface water drainage strategy, shown in Appendix F, has been developed in line with the following key principles and policies:

- Hierarchy of disposal routes as set out in Policy SI 13 of the London Plan 2021;
- Design in accordance with the requirements of the National Planning Policy Framework (NPPF) and BS EN 752 to protect the Site from flooding and avoid increase in off-site flood risk;
- Camden Local Plan 2017 Policy CC3 Water and Flooding;
- Control of surface water runoff at source in line with the SuDS Manual (CIRIA C753);
- Control of pollution to the water environment in line with the requirements of the SuDS Manual (CIRIA C753); and
- Contribution to enhancing biodiversity and amenity in accordance with the SuDS Manual (CIRIA C753).

The hierarchy for surface water disposal promoted by London Plan Policy SI 13 and Camden Local Plan is, in order:

- Store rainwater for later use
- Use infiltration techniques, such as porous surfaces in non-clay areas
- Attenuate rainwater in green infrastructure features for gradual release
- Attenuate rainwater by storing in tanks or sealed water features for gradual release
- Discharge rainwater direct to a watercourse
- Discharge rainwater to a surface water sewer / drain
- Discharge rainwater to the combined sewer

Store rainwater for later use

It is proposed to store rainwater within the Site for non-potable use, with use of a smart rainwater harvesting system. Details of the rainwater harvesting system will be developed by the MEP engineer once planning has been granted. This novel technology is based on real-time management of the drainage attenuation capacity, using climate forecasting data to control retention of water during dry periods or release retained water in anticipation of a storm. This reduces the need for a dedicated rainwater harvesting tank and allows harvesting rainwater in a material, carbon and cost-efficient way, as outlined in Figure 8. This is proposed to be used in the attenuation tanks at ground level, to irrigate some planted areas.

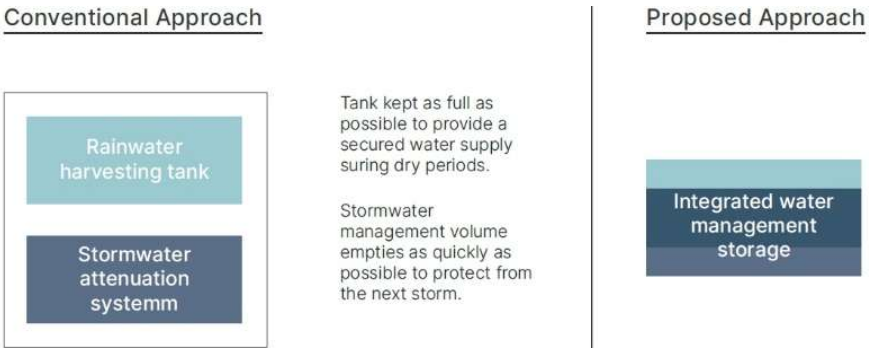

Figure 8: Smart rainwater harvesting system

Rainwater Infiltration

Due to the high presence of impervious clay across the Site and the constrained nature of the Site, concentrated infiltration is not considered feasible.

However, diffuse infiltration is proposed within the landscaped areas through use of permeable pavements including permeable concrete paving and permeable gravel paving.

Attenuate rainwater in green infrastructure features for gradual release

The Site is heavily constrained due to its location, extent of proposed basement, proximity to the railway line and roads and presence of the TW sewer and its easement on the eastern boundary of the Site. The use of green roofs and raingardens has been maximised to attenuate water as well as enhance biodiversity and provide ecological and amenity benefits.

At roof level, in addition to green roofs, permeable paving is proposed where possible to direct rainfall to permavoid attenuation provided on roofs. Flows will be restricted with the use of 2no. orifices at each level for resilience.

At ground level, raingardens are proposed to attenuate runoff from roof level, restricting rates through use of orifice plates. Further attenuation is provided in below ground tanks also restricted through use of orifices.

Discharge rainwater direct to a watercourse

There are no watercourses in proximity to the Site. Discharge to a watercourse is therefore not feasible.

Controlled rainwater discharge to a surface water sewer or drain

Surface water drainage flows from the Proposed Development will discharge to the existing surface water sewer in Blackburn Road. Surface water drainage flows from the Site will be attenuated via permavoid cellular units, raingardens and 4no. below ground tank as described above, each with associated restrictions to discharge via orifices.

Controlled rainwater discharge to a combined sewer.

It is proposed to connect into the existing surface water sewer in Blackburn Road, which is understood to connect to the Thames Water combined sewer.

Proposed Surface Water Drainage Strategy

The proposed drainage strategy drawing is included in Appendix F.

Camden LLFA requires that all new developments aim to achieve greenfield runoff rates, in line with Policy 5.13 of London Plan and Camden Local Plan Policy CC3. Greenfield rates for the application boundary and the ownership boundary are shown in Table 2 and the SuDS Proforma in Appendix G and the calculations are included in Appendix H.

Table 2: IH124 Greenfield runoff rates for the Site

Annual Event	Greenfield Rates (l/s)
Qbar	1.06
1 in 1	0.90
1 in 30	2.44
1 in 100	3.38

The public paved areas along Blackburn Road that are managed by Camden and outside the ownership boundary will continue to drain unattenuated to the Public Highway as per the existing condition. Paved

areas within the Site ownership will be collected by the private drainage system for the Site via a slot drain along the boundary threshold.

To achieve greenfield runoff rates, the total surface water discharge from the Site will be limited to 3.3 l/s for the 1 in 100 year + 40% climate change event. The existing discharge rate for the 1 in 100 year storm event has been calculated as 71.9l/s based on the Site area of 2437m^3. The proposed restriction to greenfield rates provides an approximate 95.5% betterment on the existing discharge rate (see Table 3 below).

Table 3: Surface water discharge reduction from existing

Existing 1 in 100 year discharge rate (l/s)*	71.9
Proposed 1 in 100 year + 40% CC discharge rate (l/s)*	3.3
Reduction (%)	95.4

*Rates calculated based on site area of 2437m^2

To achieve the restriction to greenfield run off rates a number of SuDs measures are proposed. As described above, permeable paving is proposed at ground level where possible to allow diffuse infiltration to the ground below, subject to infiltration testing.

Green roofs are proposed where possible in addition to permavoid storage on roof level. Flows from each roof level are restricted by 2no. 25mm orifices before discharge to ground level.

At ground level, 2 no. raingardens receive flows from adjacent roofs to restrict further through use of orifices. Flows are also restricted through use of below ground cellular storage, restricted by orifices.

Flows from each SuDS feature will be restricted locally through the use of orifices, with a hydrobrake provided in the final manhole prior to discharge into the Thames Water network to restrict flows from the Site to 3.3l/s.

The proposed drainage strategy has been modelled using InfoDrainage, with calculations provided in Appendix I. The total storage volume required is 134m^3. A summary of how the storage provision will be provided with attenuation volumes for each type of SuDs feature is summarised in Table 4 below.

Table 4: Proposed Surface Water Attenuation Provision

Ref	Location	Attenuation type	Area (m^2)	Volume (m^3)	Restriction type
1	GF	Raingarden	9.8	4.4	1no. 50mm orifice
2	GF	Raingarden	14.5	6.5	1no. 50mm orifice
3	GF	Cellular Storage	51.8	47.4	1no. 45mm orifice
4	GF	Cellular Storage	51.8	47.4	1no. 70mm orifice
5	GF	Cellular Storage	14.4	13.2	1no. 60mm orifice
6	PBSA L01	Permavoid	110.5	15.2	2no. 25mm orifice
		Totals	**252.8**	**134.1**	

Exceedance Routes

All surface water from managed areas within the ownership boundary will be contained within the on-site attenuation storage for all events up to and including the 1 in 100 year + 40% event. During storms in excess of the 1 in 100 year + 40% event or in the event of localised blockage of the pipe network water will overflow the piped network and form shallow sheet overland flows towards the highway, as shown below in Figure 9. All footpaths are proposed to fall away from building entranceways to minimise the risk of flooding internal areas.

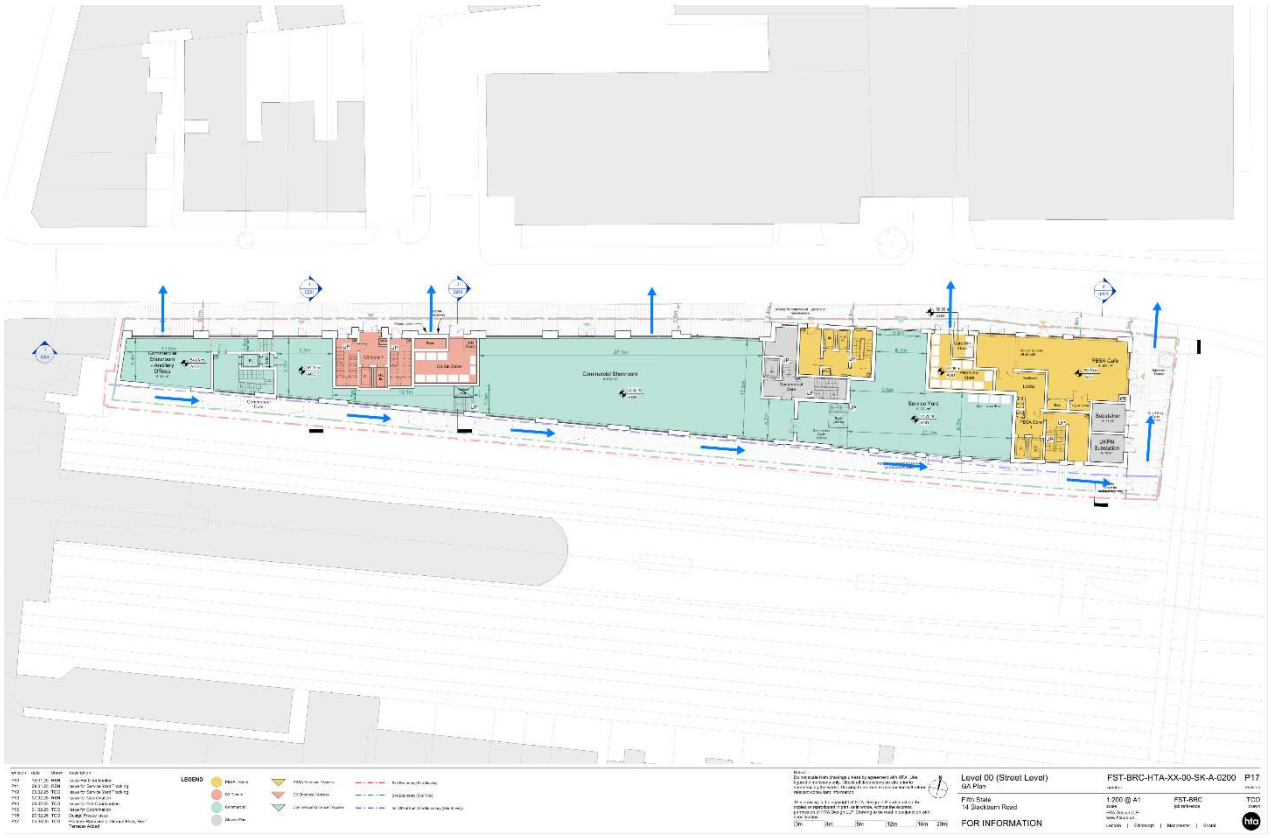

Figure 9: Exceedance Routes

7.4 How will you prevent run-off from the completed development causing an impact elsewhere?

The peak discharge from the ownership boundary/control will be limited to greenfield rate of 3.3 l/s for the 1 in 100 year + 40% rainfall event. As outlined in the Drainage Strategy in Appendix F, water from the Site will be directed through drainage routes including downpipes, gullies, and below ground pipework to on-site attenuation to contain the Site runoff without flooding any buildings on site for all events up to the 1:100 year + 40% climate change event.

The reduction as a result of the Proposed Development and surface water strategy provides an approximate 95% improvement from the existing runoff rates from the current site which at present discharges unattenuated to the existing sewer network.

7.5 Where applicable, what are the plans for the ongoing operation and/or maintenance of the surface water drainage systems?

Maintenance requirements of the in-ground surface water and foul drainage systems, including the green roofs will be carried out by the Developer's appointed Building Management Team.

A maintenance schedule for the surface water drainage system has been developed to ensure that the performance of the drainage systems is achieved over its entire design life. This has been based on the recommendations set out in the CIRIA C753 SUDS Manual Guidance and manufacturers recommendations. It covers all elements of the system including: drainage pipework, green roofs, permavoid, below ground tanks, rain gardens, orifices and porous pavements. The maintenance schedule is included in Appendix J.

Further details will be developed as part of the building management plan and included within the Operation and Maintenance Manual at completion of the development.

7.6 Foul Drainage Strategy

The Proposed Development will result in an increase of foul water flows from the Site. These will be offset by the reduction in surface water flows from the Site.

It is proposed that foul water from the Proposed Development will be discharged via gravity to the existing connection into the Thames Water sewer network. A CCTV survey will be required post planning to determine the connection point. Refer to the Drainage Strategy plan in Appendix I for preliminary layout including location of connection to the Thames Water sewer.

No toilet facilities are proposed at basement level. Plant rooms are proposed and any gullys required within these will need to be pumped. The size and location of the pumps will be developed once Planning has been granted

A pre-planning enquiry has been submitted to Thames Water to confirm the capacity within the sewer network.

8 Occupants and Users of the Development

8.1 Will the development proposals increase the overall number of occupants and/or people using the building or land, compared with current use?

The Site is currently used as a builders' merchant with low employment. Therefore, as a result of the residential and commercial redevelopment of the Site, the overall number of occupants will significantly increase.

8.2 Will the proposals change the nature or times of occupation or use, such that it may affect the degree of flood risk to these people?

The nature and time of occupation of the Site will significantly change. However, as discussed in the previous sections, no significant risks of flooding have been identified, and all residential accommodation will be located on the first floor and as a result the change of occupancy pattern will not increase the risk to occupants.

The drainage strategy proposed will also mitigate any residual risk associated with blockage of sewers and localised flooding during extreme events.

8.3 Where appropriate, are you able to demonstrate how the occupants and users that may be more vulnerable to the impact of flooding will be located primarily in the parts of the building and site that are at lowest risk of flooding?

All residential development will be located above ground floor. In the very unlikely event of flooding, safe refuge will be available to all occupants in the upper floors of the buildings.

9 Exception Test

As noted in Section 3.2, the Proposed Development has a vulnerability classification of "more vulnerable" according to Annex 3 of the NPPF's vulnerability classification guidance, and as noted in Section 2.3 the Site is in Flood Zone 1. For sites classed as "more vulnerable" and located in Flood Zone 1, the Exception Test is not required.

10 Residual Risk

10.1 What flood related risks will remain after the flood risk management and mitigation measures have been implemented?

There is a residual risk of surface water flooding associated with blockage or failure of the surface water drainage system, or events in exceedance of the design criteria. This residual flood risk will be mitigated by ensuring that external areas fall away from buildings and that the drainage system is regularly and appropriately maintained in line with the maintenance plan provided in Appendix J, to minimise the risk of blockages.

10.2 How, and by whom, will these risks be managed over the lifetime of the development?

Provision will be made in the building management plans and Health and Safety file to ensure that safe refuge to the upper levels of buildings is maintained for all occupants and that the building drainage systems are regularly and appropriately maintained.

The residual risk of failure of the surface water drainage system will be managed by implementing the maintenance schedule defined in Appendix J. This will be captured in the building and facilities Operation and Maintenance Manual.

11 FRA Credentials

11.1 Who has undertaken the flood risk assessment?

This Flood Risk Assessment has been produced by James Wiseman, a Civil Engineer at Expedition Engineering. It has been reviewed by Lana Harding, a Civil Engineer at Expedition Engineering and Fiona Wyatt, an Associate Director at Expedition Engineering and Chartered Civil Engineer with the Institution of Civil Engineers.

11.2 When was the flood risk assessment completed?

This assessment was completed in April 2025.

12 References

[1] Ministy of Housing, Communities & Local Government, “National Planning Policy Guidance, Flood risk and coastal change,” 2014.

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[3] Ministry of Housing, Communities & Local Government, “National Planning Policy Framework,” 2019.

[4] Camden Council, “The London Borough of Camden flood risk management strategy,” 2013.

[5] Conway, AECOM, “London Borough of Southwark Strategic Flood Risk Assessment,” January 2017.