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Flood Risk Assessment and Surface Water Drainage Strategy AEG10247_UB3_Heathrow_07

Site Address: Mecure Hotel Carpark
Shepiston Lane
Heathrow
London Borough of Hillingdon
UB3 1LY

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

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Document Issue Record

Project: Flood Risk Assessment and Surface Water Drainage Strategy

Prepared for: Manoj Khandekar

Reference: AEG10247_UB3_Heathrow_07

Site Location: Mecure Hotel Carpark, Shepiston Lane, Heathrow, London Borough of Hillingdon, UB3 1LY

Issue	Date	Author	Check	Auth.	Comments
1	27/03/2026	Jack Allen	AB	OH	First issue
1.01	02/04/2026	Jack Allen	-		Minor update

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Summary

Development Description	Existing	Proposed
Development Type	Two-storey car park.	The proposed development is for a hotel/serviced apartments accommodation providing 38 rooms.
EA Vulnerability Classification	Less Vulnerable	More Vulnerable
Ground Floor Level	LiDAR data shows the ground elevation of the site varies between approximately 24.85mAOD (metres Above Ordnance Datum) and 26.42mAOD.	No change (existing and proposed developments have lower ground floor car parking).
Level of Sleeping Accommodation	No sleeping accommodation	Ground floor
Impermeable Surface Area	Fully impermeable	No change
Surface Water Drainage	No CCTV survey has been provided at this stage, however, it is assumed that the site drains into public surface water sewers	Proposed to reuse the connection with the addition of a green/blue roof for attenuation – See Section 6
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 1	Low risk of fluvial flooding.
Flood Source	Pluvial	The development is located within the low risk extent for depths exceeding 0.2m.
SFRA Available	West London Strategic Flood Risk Assessment (West London Boroughs, 2018)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	Yes	The development is located within the low risk extent for depths exceeding 0.2m (pluvial flooding). Any pluvial flooding would enter the

Safe Access/Egress Route		lower ground floor car park and not the ground floor.
	Refer to Section 5 of this report	Prior evacuation required and safe refuge provided on site for extreme scenarios.
Flood Resilient Design	Not required	At a low risk of flooding from all analysed sources.
Site Drainage Plan	Yes	See Section 6
Flood Warning and Evacuation Plan	Yes	Recommended that occupier monitor Met Office Weather Warnings for extreme weather events. Prior evacuation required and safe refuge provided on site for extreme scenarios.
Offsite Impacts	Summary	Comment
Displacement of floodwater	No	Low risk of flooding from all analysed sources.
Increase in surface run-off generation	No	A SWDS provided in Section 6.
Impact on hydraulic performance of channels	No	No watercourses located within the site or in close proximity.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Manoj Khandekar to undertake a Flood Risk Assessment (FRA) and Surface Water Drainage Strategy (SWDS) to facilitate a planning application for the proposed development. This FRA and SWDS has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.2. This FRA and SWDS is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is Mecure Hotel Carpark, Shepiston Lane, Heathrow, London Borough of Hillingdon, UB3 1LY (Figure 1).

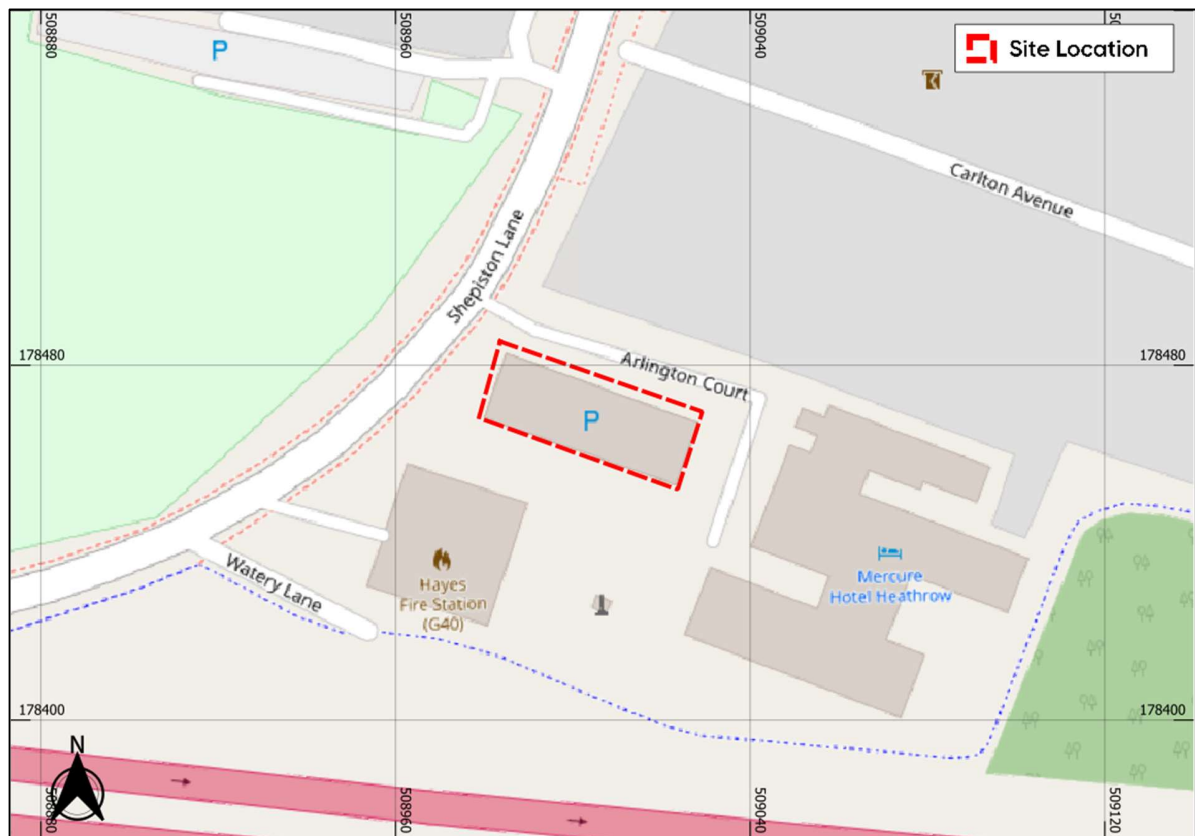


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.4. The site is currently a two-storey car park. The proposed development is for a hotel/serviced apartments accommodation providing 38 rooms. It is understood that the existing structure is to be replaced to support a 5/6-storey building. The lower level will provide car parking, with the ground floor and above for hotel/serviced apartment use. We understand that the proposed footprint will be larger than the existing at the front of the site. The proposed development plans will be included in this report as Appendix A.
- 1.5. In the absence of a topographical survey, Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model has been used to review the topography of the site (Figure 2). LiDAR data shows the ground elevation of the site varies between approximately 24.85mAOD (metres Above Ordnance Datum) and 26.42mAOD.

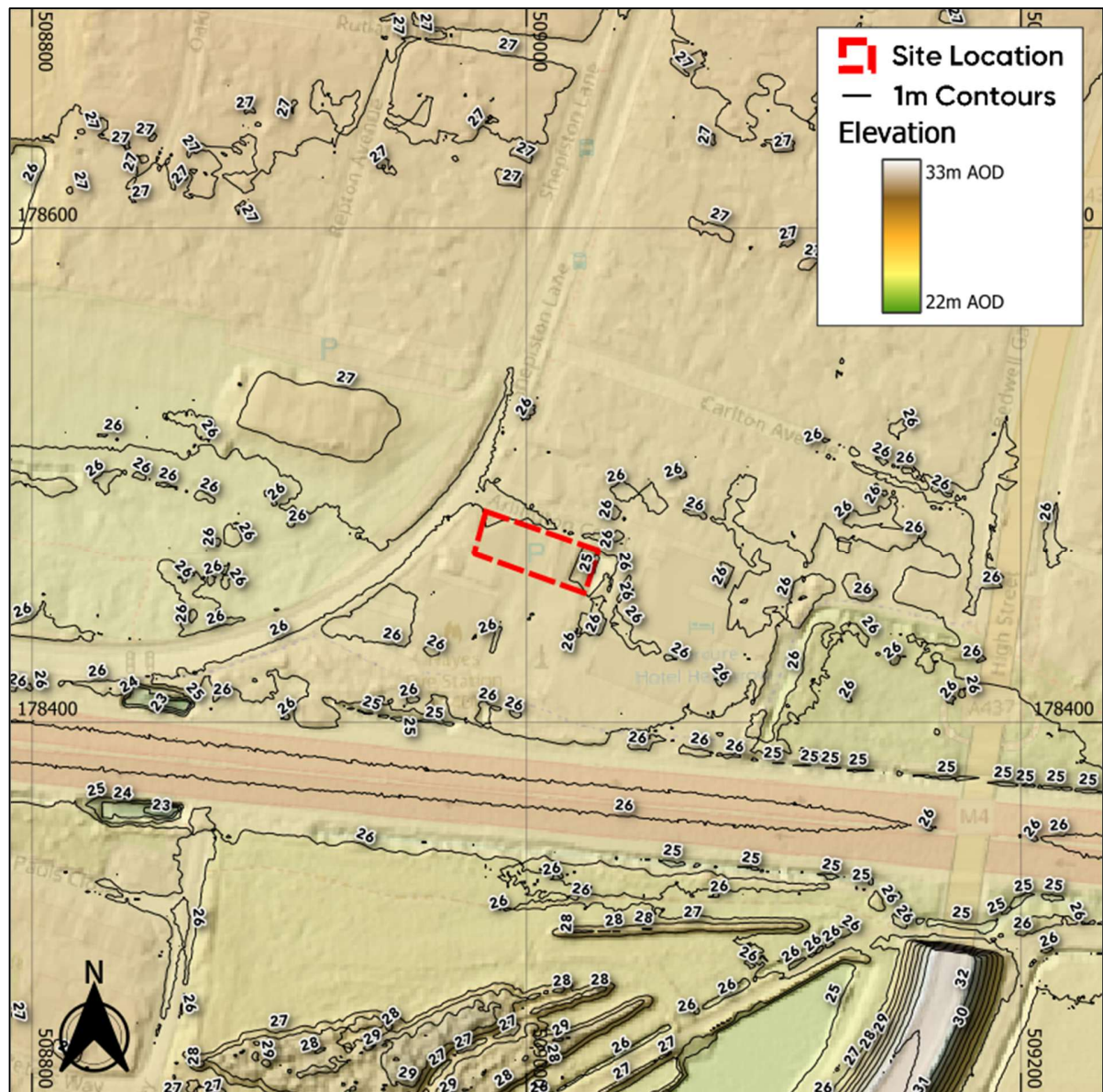


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.6. Hillingdon Council is the Local Planning Authority (LPA) for the site and also the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Hertfordshire and North London region.

Planning Policy and Guidance

1.7. UK government planning guidance states¹ that an FRA is required for developments which are:

- *in flood zone 2 or 3 including minor development and change of use*
- *more than 1 hectare (ha) in flood zone 1*
- *less than 1 ha in flood zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than rivers and the sea (for example surface water drains, reservoirs)*
- *in an area within flood zone 1 which has critical drainage problems as notified by the Environment Agency*

1.8. The proposed development is located in the EA's Flood Map for Planning climate change flood extent and the boundary of the site is located in the EA's high likelihood of surface water flooding extents.

1.9. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:

- Fluvial/tidal flood risk
- Surface water flood risk
- Risk of flooding from other sources

¹ <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment>

2. Planning Policy

- 2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.

National Planning Policy Framework (NPPF)

- 2.2. The National Planning Policy Framework² (NPPF) (MHCLG, 2024) which includes UK Government policy on development and flood risk states:

170. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

181. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*

² <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2024

- d) any residual risk can be safely managed; and
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

176. Applications for some minor development and changes of use should also not be subject to the sequential test, nor the exception test [set out below], but should still meet the requirements for site-specific flood risk assessments set out in footnote 63.

2.3. Footnote 63 of the NPPF states:

A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

2.4. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:

land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or

land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).

Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

- 2.5. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.
- 2.6. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account.

National Standards for SuDS

- 2.7. Updates to the national planning policy have defined a framework for Sustainable Drainage Systems (SuDS). The new 'National Standards for SuDS'³ was published on June 19th, 2025, and is used to inform this drainage strategy. There are seven key standards are as follows;
- **Standard 1 Runoff Destination:** The drainage hierarchy now prioritises water re-use followed by infiltration, before discharging to watercourses and sewers.
 - **Standard 2 Management of Everyday Rainfall (interception):** The design must ensure that the first 5mm of rainfall from any event is managed within the site and does not leave the boundary.
 - **Standard 3 Management of Extreme Rainfall and Flooding:** The SuDS must be designed to manage runoff from all extreme rainfall events, up to and including the 1 in 100-year return period (including an allowance for climate change).

³ <https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-SuDS>

- **Standard 4 Water Quality:** The system must be designed to prevent or mitigate the risk of surface water runoff pollution using SuDS management trains.
- **Standard 5 Amenity:** The SuDS should be designed to improve the aesthetic value of the development, demonstrating multifunctional solutions where feasible.
- **Standard 6 Biodiversity:** The system should be designed to promote biodiversity using above ground SuDS where feasible.
- **Standard 7 Maintenance:** A clear plan must be provided for the long-term operation and maintenance of the SuDS to ensure it remains effective for the lifetime of the development.

The London Plan

- 2.8. The London Plan prepared by the Greater London Authority in 2021 sets out the policies for development in the region.
- 2.9. Policy SI 12 Flood risk management outlines the requirements for new development within the region. It states:

A. Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.

B. Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C. Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

D. Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

E. Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

F. Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Unless exceptional circumstances are demonstrated for not doing so, development proposals should be set back from flood defences to allow for any foreseeable future maintenance and upgrades in a sustainable and cost-effective way.

G. Natural flood management methods should be employed in development proposals due to their multiple benefits including increasing flood storage and creating recreational areas and habitat.

- 2.10. Policy SI 13 Sustainable drainage outlines the requirements for new development within the region. It states:

A. Lead Local Flood Authorities should identify - through their Local Flood Risk Management Strategies and Surface Water Management Plans - areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.

B. Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:

- 1. rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)*
- 2. rainwater infiltration to ground at or close to source*
- 3. rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)*
- 4. rainwater discharge direct to a watercourse (unless not appropriate)*
- 5. controlled rainwater discharge to a surface water sewer or drain*
- 6. controlled rainwater discharge to a combined sewer.*

C. Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.

D. Drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

Local Plan

- 2.11. The Local Plan prepared by the Local Planning Authority, Hillingdon Council, sets out the policies for development in the local area.
- 2.12. Policy EM6 Flood Risk Management outlines the requirements for new development within the area. It states:

The Council will require new development to be directed away from Flood Zones 2 and 3 in accordance with the principles of the National Planning Policy Framework (NPPF).

The subsequent Hillingdon Local Plan: Part 2 -Site Specific Allocations LDD will be subjected to the Sequential Test in accordance with the NPPF.

Sites will only be allocated within Flood Zones 2 or 3 where there are overriding issues that outweigh flood risk. In these instances, policy criteria will be set requiring future applicants of these sites to demonstrate that flood risk can be suitably mitigated.

The Council will require all development across the borough to use sustainable urban drainage systems (SUDS) unless demonstrated that it is not viable.

The Council will encourage SUDS to be linked to water efficiency methods. The Council may require developer contributions to guarantee the long-term maintenance and performance of SUDS is to an appropriate standard.

- 2.13. Policy DMEI 10.1 Water Management, Efficiency, and Quality: SuDS outlines the requirements for new development within the area. It states:

A) Applications for all new build developments (not conversions, change of use, or refurbishment) are required to include a drainage assessment demonstrating that

appropriate sustainable drainage systems (SuDS) have been incorporated in accordance with the London Plan Hierarchy (Policy 5.13: Sustainable drainage).

B) All major new build developments, as well as minor developments in Critical Drainage Areas or an area identified at risk from surface water flooding must be designed to reduce surface water run-off rates to no higher than the pre-development greenfield run-off rate in a 1:100 year storm scenario, plus an appropriate allowance for climate change for the worst storm duration. The assessment is required regardless of the changes in impermeable areas and the fact that a site has an existing high run-off rate will not constitute justification.

C) Rain Gardens and non householder development should be designed to reduce surface water run-off rates to Greenfield run-off rates.

D) Schemes for the use of SuDS must be accompanied by adequate arrangements for the management and maintenance of the measures used, with appropriate contributions made to the Council where necessary.

E) Proposals that would fail to make adequate provision for the control and reduction of surface water run-off rates will be refused.

F) Developments should be drained by a SuDS system and must include appropriate methods to avoid pollution of the water environment. Preference should be given to utilising the drainage options in the SuDS hierarchy which remove the key pollutants that hinder improving water quality in Hillingdon. Major development should adopt a 'treatment train' approach where water flows through different SuDS to ensure resilience in the system.

Sequential and Exception Tests

- 2.14. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.

Sequential Test

- 2.15. The National Planning Policy Framework⁴ (NPPF) (DLUHC, 2024) which includes UK Government policy on development and flood risk states:

175. The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).

- 2.16. Paragraph 27 of the PPG states;

In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.

- 2.17. Based on the NaFRA2 data analysed in Section 4 of this report, the development is located within the low risk extent for depths exceeding 0.2m.
- 2.18. Section 6 outlines the surface water drainage strategy which will manage the surface water on site for all storms up to and including the 1 in 100 year (plus an allowance for climate change) event.
- 2.19. Given the site is not located within an overland flow pathway, the overall pluvial (surface water) risk is considered to be low.

⁴ <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2024

Exception Test

- 2.20. The Exception Test is applied to sites based on the Flood Zone and the nature of the development. As the proposed development consists of mixed use residential and commercial it would be classed as 'More Vulnerable' in line with government development use classes.
- 2.21. The Flood Risk Vulnerability Classification table⁵ provided below in Table 2 shows which vulnerabilities are appropriate in each Flood Zone.
- 2.22. The proposed development sits within Flood Zone 1 and the proposals are for a 'More Vulnerable' development. Table 2 shows Flood Zone 1 is an appropriate location for 'More Vulnerable' uses without the need for an Exception Test.

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

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	x	Exception Test required	✓	✓
Zone 3b	Exception Test required	x	x	x	✓

Summary

- 2.23. This flood risk assessment has been prepared with due consideration to the above local and national policy.

⁵ <https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2>

3. Consultation and Review

Consultation

- 3.1. Aegaea hold a copy of the EA River Crane 2024 hydraulic model. This data has been considered the most appropriate data to use and has been further detailed in Section 4 of this report.

Documents and Online Mapping

- 3.2. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.3. The following sources of information have been reviewed for this assessment:
- Flood Map for Planning on the Environment Agency website <https://flood-map-for-planning.service.gov.uk/>
 - Long Term Flood Risk Information on the Environment Agency website <https://www.gov.uk/check-long-term-flood-risk>
 - National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2024)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Ministry of Housing, Communities and Local Government, 2022)
 - Geoindex Onshore (British Geological Survey, 2024)
 - The London Plan (Greater London Authority, 2021)⁶
 - Local Plan: Part 1 - Strategic Policies (Hillingdon Council, 2012)⁷
 - Preliminary Flood Risk Assessment (Hillingdon Council, 2011)⁸

⁶ <https://www.london.gov.uk/programmes-strategies/planning/london-plan/london-plan-2021>

⁷ <https://www.hillingdon.gov.uk/local-plan-and-review>

⁸ <https://modgov.hillingdon.gov.uk/documents/s8734/Appendix%20-%20Flood%20Appraisal.pdf>

- West London Strategic Flood Risk Assessment (West London Boroughs, 2018)⁹
- Local Flood Risk Management Strategy 2015 (Hillingdon Council, 2016)¹⁰

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA, published in 2011, is a high-level appraisal of flood risk across Lead Local Flood Authority Hillingdon Council. The flood risk from all sources, including fluvial, surface water, groundwater, and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy is produced.
- 3.5. The PFRA summarises historical flood incidents in Hillingdon Council. The site is not recorded as having been affected by any flood event.

Strategic Flood Risk Assessment (SFRA)

- 3.6. The SFRA, published in 2018, provides the evidence base for the Local Planning Authority Hillingdon Council Local Plan and guidance for consideration when determining planning applications. The SFRA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.
- 3.7. The SFRA mapping provided by Hillingdon Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents.

Local Flood Risk Management Strategy (LFRMS)

- 3.8. The Local Flood Risk Management Strategy sets out roles and responsibilities for flood risk management, assesses the risk of flooding in the area, where funding can be found to manage flood risk, and the policies, objectives, and actions of the Lead Local Flood Authority.
- 3.9. The Hillingdon Council LFRMS is used within this report to identify any flood management infrastructure and historical incidences of flooding.

⁹ <https://westlondonsfra.london/>

¹⁰ <https://modgov.hillingdon.gov.uk/documents/s61462/Appendix+A++Hillingdon+Local+Flood+Risk+Management+Strategy.pdf>

4. Sources of Flood Risk

Fluvial

- 4.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.

Main Rivers and Ordinary Watercourses

- 4.2. The nearest EA Main River to the site is Frogs Ditch located approximately 105m to the south of the site and approximately 150m west of the site. It is observed that the Frogs Ditch travels south of the site under the M4 via what appears to be culverts.
- 4.3. The River Crane (also classified as an EA Main River) is located approximately 1.3km to the east of the site.
- 4.4. There are no other mapped watercourses in 1.0km of the site based on OS mapping.

Environment Agency Flood Map for Planning

- 4.5. According to the EA's Flood Map for Planning the site is located in Flood Zone 1 (defined as and having less than 1 in 1,000 annual probability of river or sea flooding). However, the northwest corner of the site is located within the EA's climate change Flood Zone outline (Figure 3). This includes the Flood Zones plus climate change data which shows how the combined extent of Flood Zones 2 and 3 could increase with climate change over the next century, ignoring the benefits of any existing flood defences.

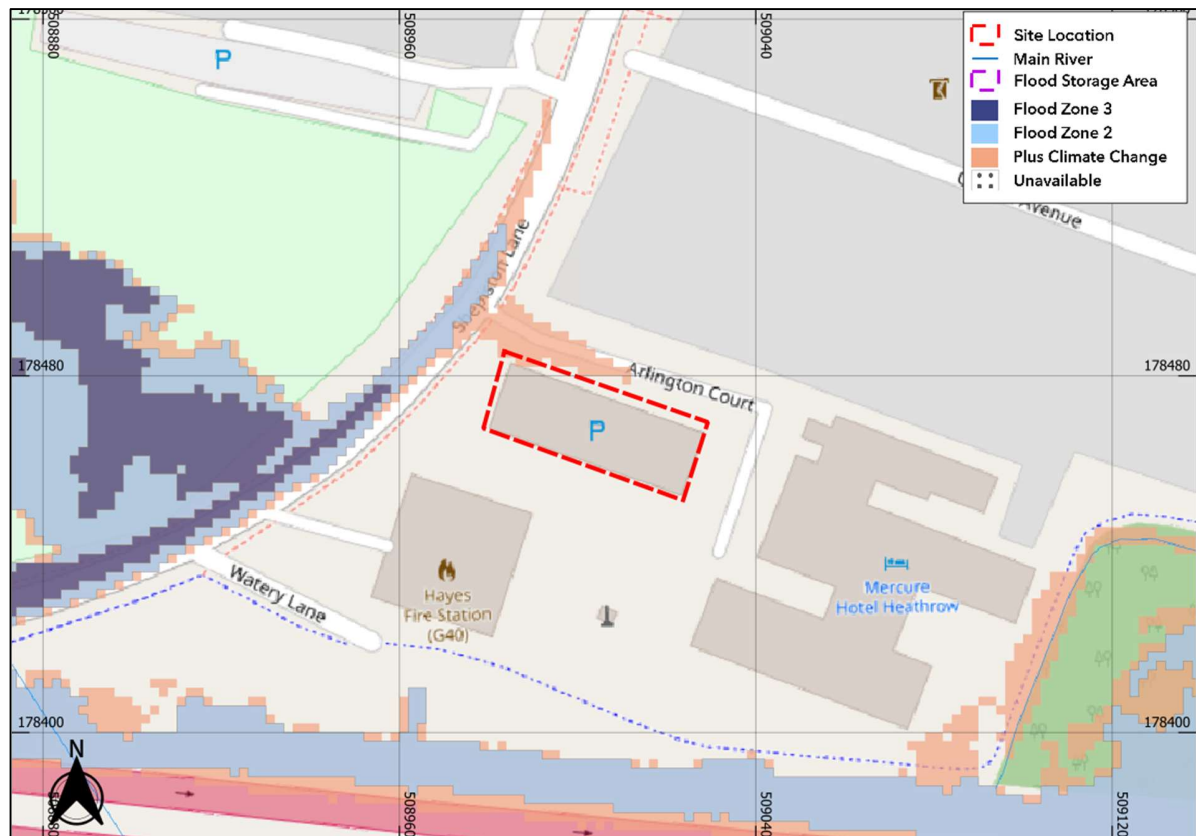


Figure 3: EA Flood Map for Planning (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Historical Fluvial Flooding

- 4.6. Review of the EA Historical Flooding Outline dataset shows that the site nor its vicinity has experienced flooding previously (Figure 4).

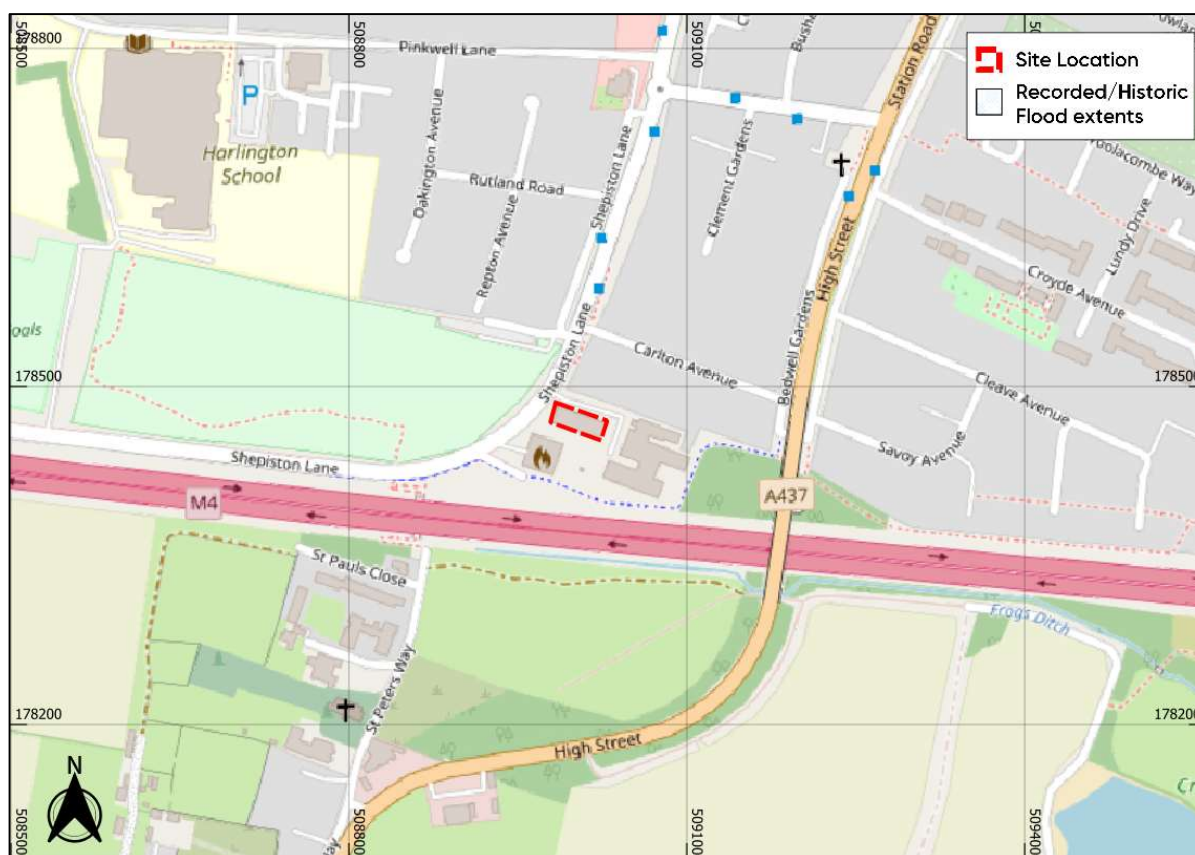


Figure 4: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Environment Agency Flood Defences

- 4.7. It is important to note that the EA's Flood Map for Planning does not take into account flood defences.
- 4.8. As such the EA's flood defence register¹¹ was assessed to understand if the site is protected by from flood defences.
- 4.9. The EA's flood defence register shows that to the south of the site, there is 'Natural High Ground' on the northern bank of the Frog's Ditch (EA asset reference: 164683). Additionally, the

¹¹ <https://environment.data.gov.uk/asset-management/index.html>

culverted section of the ditch will not be considered in the EA's Flood Map for Planning (EA asset reference: 164679).

River Crane Model (2024)

- 4.10. Aegaea have been provided modelled flood level data from the River Crane Modelling Study (2024). The data includes both 1D in-channel flood levels and 2D grids.
- 4.11. The model was simulated for the following events: 1 in 2 (50%), 1 in 20 year, (5%), 1 in 30 year (3.3%) 1 in 50 (2%), 1 in 75 (1.3%), 1 in 100 (1%), 1 in 100 (1%) plus climate change (+10%, +17%, +27% and +54%), 1 in 200 (0.5%) and 1 in 1000 (0.1%) Annual Exceedance Probability scenarios. The 2D model grids have been deemed to be the most accurate representation of flood levels on site and are the focus of the analysis within the report.
- 4.12. As discussed previously, the site is benefitting from flood defences. Therefore, the defended scenario has been analysed in this section of the report.

Present Day Scenarios

- 4.13. Analysis of this data shows that during the 1in30-year (3.3% AEP), 1in50-year (2% AEP) and 1in100-year (1% AEP) and 1in1000-year (0.1% AEP) shows that the site is not affected during all modelled present day flood extents (Figure 5).

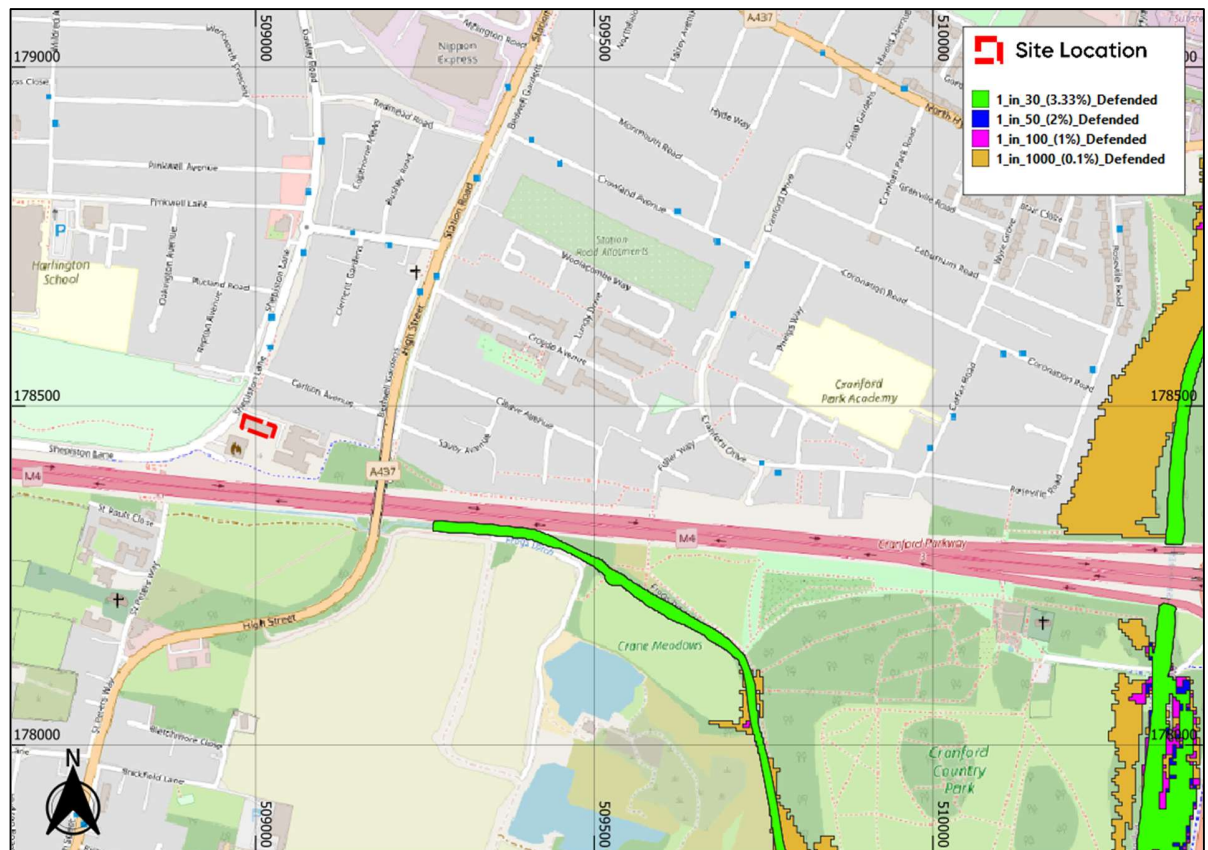


Figure 5: Present Day Flood Extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Climate Change Scenarios

- 4.14. The site is located within the 'London' Management Catchment. Guidance suggests that 'More Vulnerable' developments in Flood Zone 2 or 3 should utilise the 'central' climate change allowance. The increase in peak river flow for the 2080's epoch for the 'central' allowance is +17%.
- 4.15. Analysis of the data (Figure 6) shows that the site is also not affected during the modelled 1 in 100 year (plus 17% climate change) flood extent.

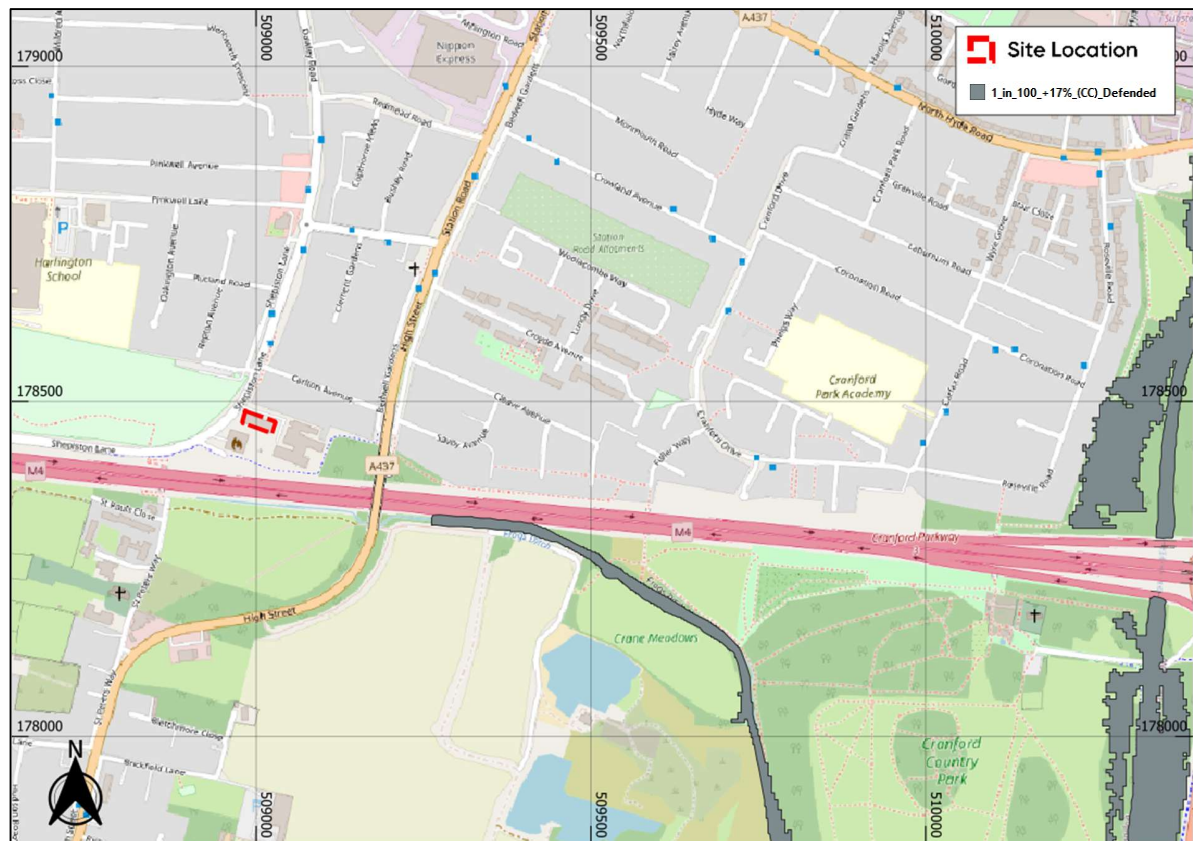


Figure 6: 1 in 100 Year (plus 17% climate change) Flood Extents (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

4.16. In summary, the site is considered to be at a low risk of fluvial flooding.

Tidal

- 4.17. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high.
- 4.18. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change. There is no record of historical tidal or sea flooding on-site.
- 4.19. The risk of flooding from tidal sources is low.

Canals

- 4.20. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system.
- 4.21. According to the UK CRT Network mapping¹², there are no identified CRT maintained canals within a 1.0km radius of the site.
- 4.22. The risk of flooding to this site from canals is considered to be low.

Pluvial

- 4.23. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.

West London SFRA Surface Water Policy Map

- 4.24. The West London SFRA (2018) states that land within EA modelled surface water flood risk extents predicted for up to and including 1 in 100 year return period events will be treated as being Flood Zone 3a (surface water). Parts of the site are shown to be affected by the Flood Zone 3a surface water designation (Figure 7).
- 4.25. Therefore, the risk of flooding from surface water has been assessed further in detail below, using the latest EA NaFRA2 RoFSW dataset.

¹² <https://canalrivertrust.org.uk/canals-and-rivers>

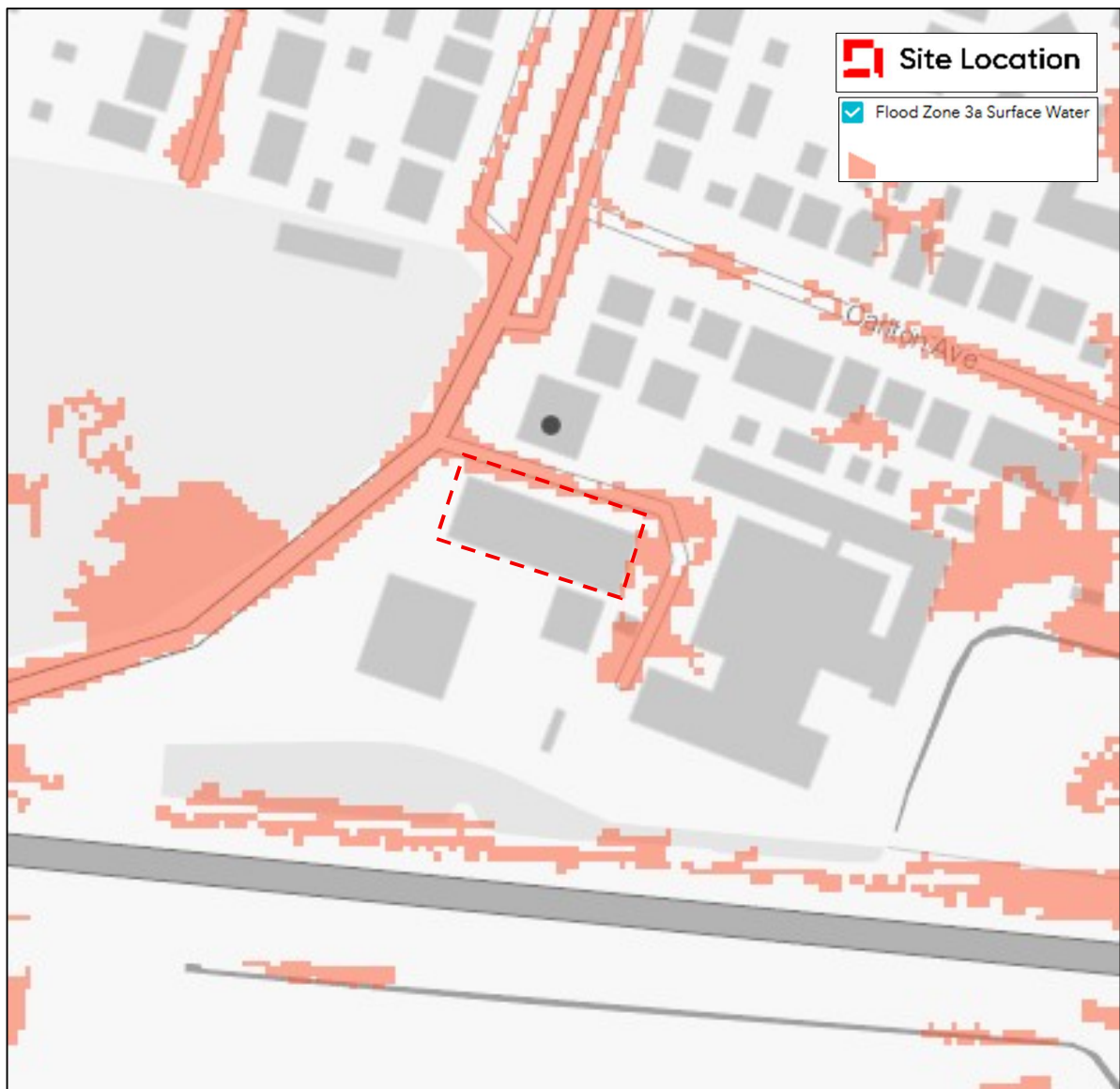


Figure 7: Flood Zone 3a Surface Water (West London SFRA 2018)

RoFSW Data Analysis

- 4.26. The National Flood Risk Assessment (NaFRA2), published in January 2025, has updated the Risks of Flooding from Surface Water (RoFSW) products which shows the chance of flooding from surface water to areas of land.
- 4.27. The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. It includes information about flooding extents and

depths including the potential impact of climate change on flood risk, based on the latest UK Climate Projections (UKCP18).

4.28. Risk is displayed as one of three likelihood categories:

- High – greater than or equal to 1 in 30 (3.3%) chance of flooding in any year.
- Medium – less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year.
- Low – less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year.

4.29. The RoFSW depth mapping shows the annual chance of flooding (based on the three risk categories listed above) **beyond a specific depth**, for depths at the following intervals from 20cm to 120cm (0.2m, 0.3m, 0.6m, 0.9m and 1.2m).

4.30. As well as present day risk of flooding from surface water, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5. A near-term epoch (2040 – 2060 “2050s” epoch) and central allowances are being used initially, to support short and medium-term decisions informed by the highest flood likelihood projections.

4.31. Given the site and proposed development are at high likelihood of experiencing surface water flooding, the climate change scenario has been assessed below as it is considered a ‘worst-case’ scenario.

Climate Change Scenario

4.32. Examination of the EA's ‘Flood Risk from Surface Water – Climate Change’ mapping indicates that the majority of the site is situated within the medium likelihood extent with high likelihood extents affecting the northern and eastern boundary (Figure 8).

4.33. It is important to note that based on analysis of LiDAR elevations the high risk on the northern and eastern boundary is likely associated with a topographical depression on Arlington Court and not part of a wider overland flow path.

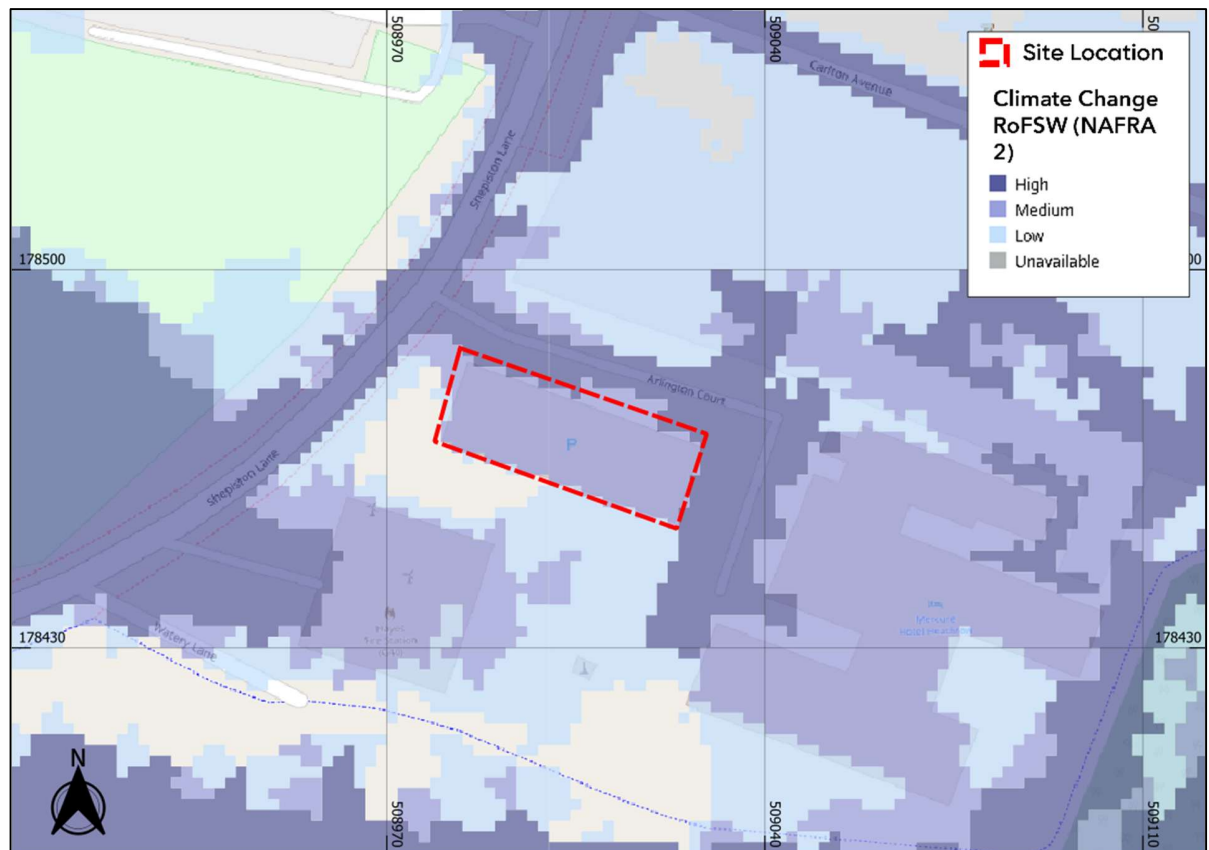


Figure 8: EA Climate Change Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.34. Analysis of the likelihood of flood depths exceeding 0.2m mapping shows that the majority of the site is situated within the low likelihood extent with high likelihood extents affecting the northern and eastern boundary (Figure 9).

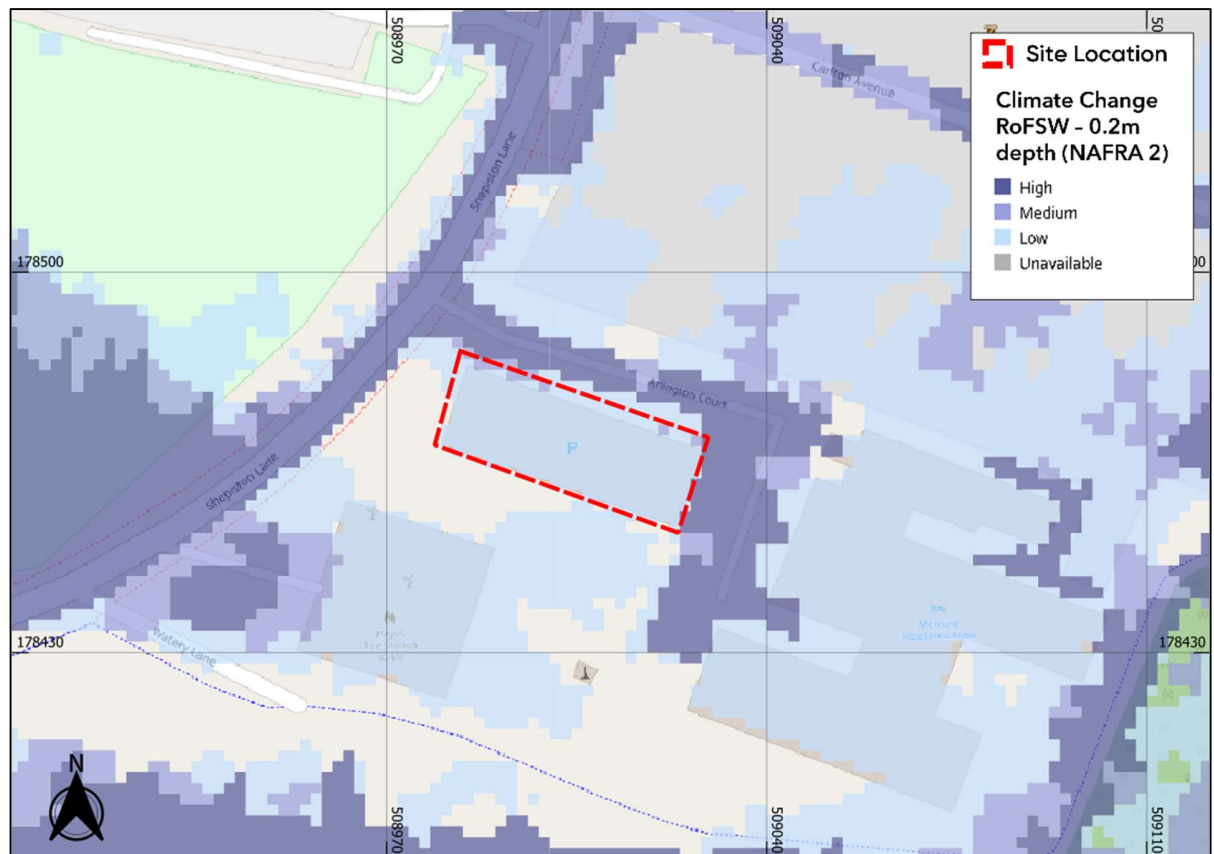
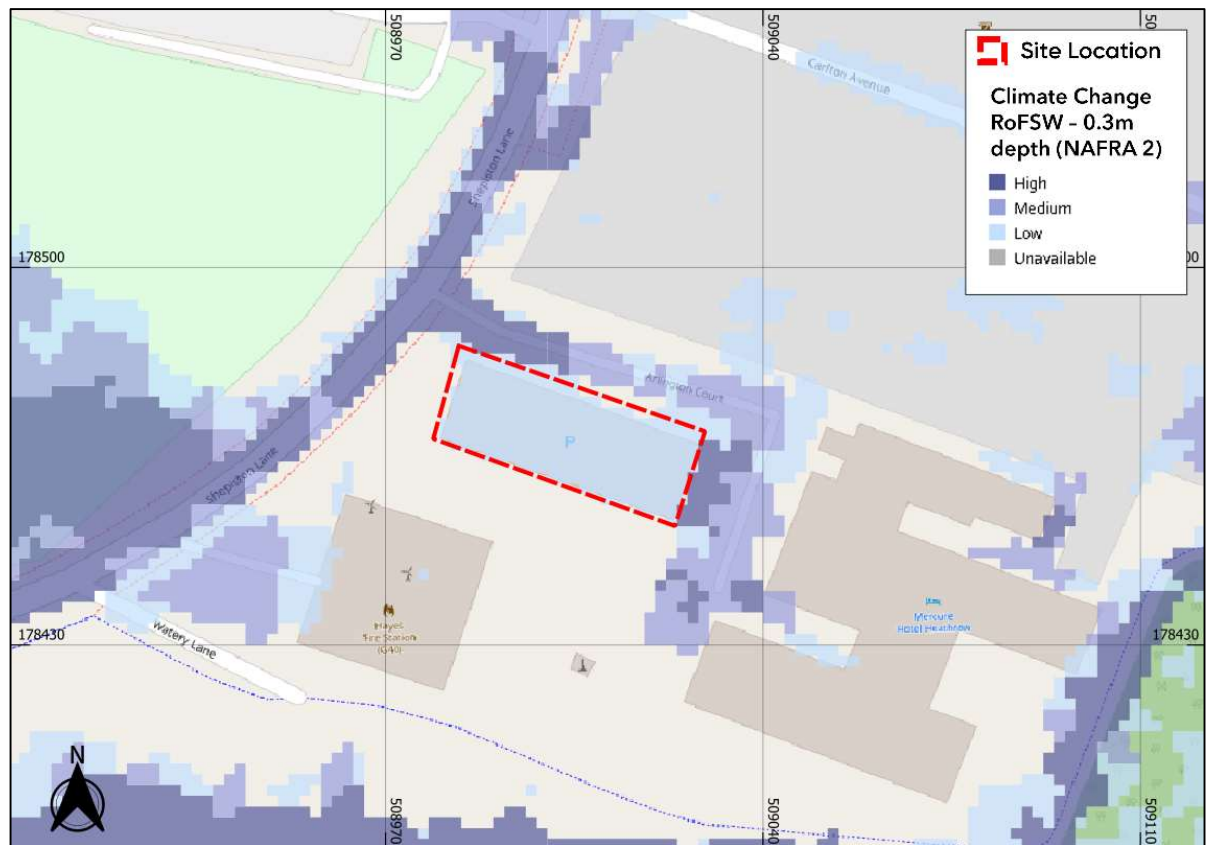


Figure 9: EA RoFSW Mapping of Likelihood of Flood Depths >0.2m (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.35. Analysis of the likelihood of flood depths exceeding 0.3m mapping shows that the majority of the site is situated within the low likelihood extent with high/medium/low likelihood extents affecting the northern and eastern boundary (Figure 10).



4.36. Analysis of the likelihood of flood depths exceeding 0.6m mapping shows that the majority of the site is situated outside of all modelled extents with high/low likelihood extents affecting the eastern boundary (Figure 11).

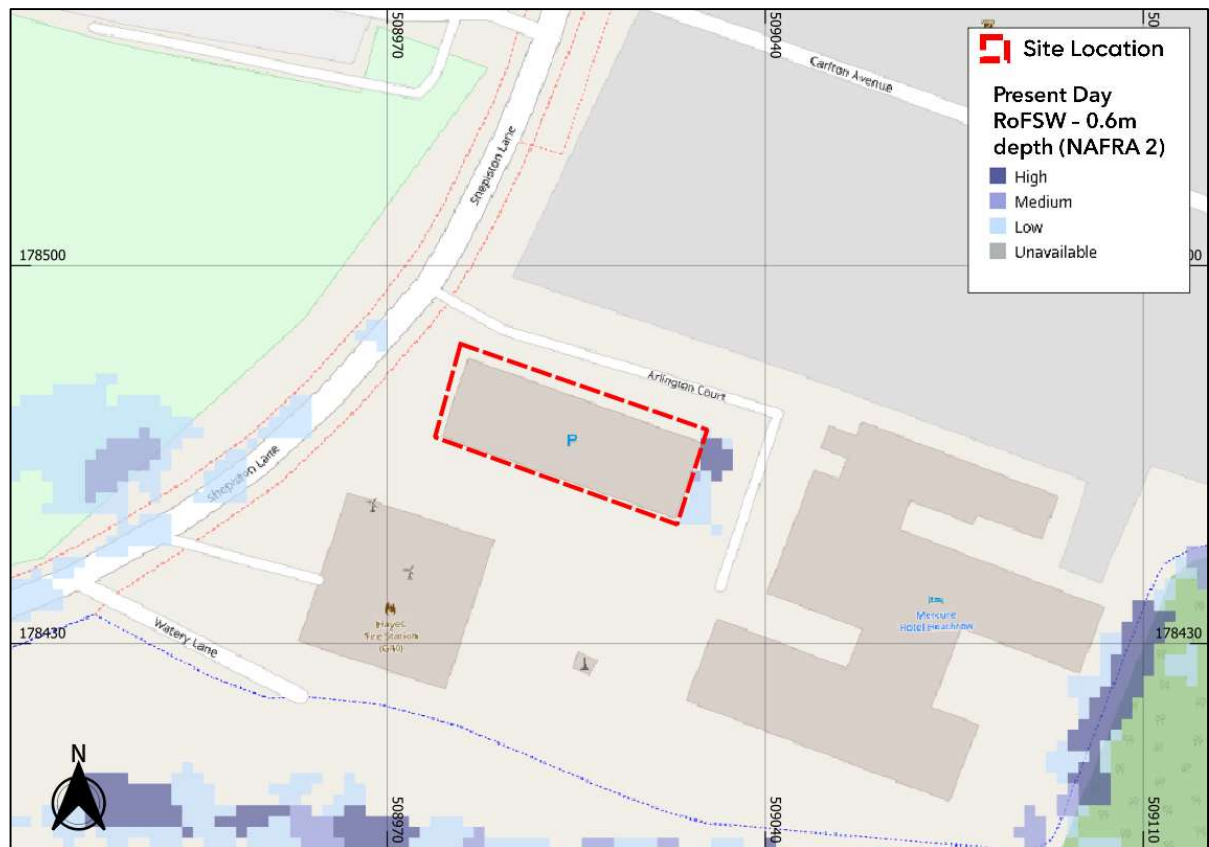


Figure 11: EA RoFSW Mapping of Likelihood of Flood Depths >0.6m (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Pluvial Flood Risk Summary

- 4.37. Based on the NaFRA2 data analysed above, the site is mostly within the medium likelihood of experiencing surface water flooding with areas to the north and east within the high likelihood of experiencing surface water flooding due to identified ground depressions on Arlington Court and not part of a wider overland flow path.
- 4.38. It is important to note that highway drainage is not accounted for in the NaFRA2 modelling. As such, the high risk extents along Arlington Court is likely an over-estimation of risk, especially when it is considered that there are surface water sewer assets beneath Arlington Court (discussed further in the drainage strategy, Section 6).
- 4.39. Additionally, the development is located within the low risk extent for depths exceeding 0.2m.

- 4.40. Section 6 outlines the surface water drainage strategy which will manage the surface water on site for all storms up to and including the 1 in 100 year (plus an allowance for climate change) event.
- 4.41. Given the site is not located within an overland flow pathway, the overall pluvial (surface water) risk is considered to be low.

Reservoirs

- 4.42. Large waterbodies or reservoirs that have walls built above the surrounding ground level pose a risk of flooding. Walls could fail due to old age, accident, or because excess flood water has been added to the reservoir. Although a breach is unlikely the consequences would be significant, leading to rapid inundation of the downstream floodplain.
- 4.43. According to the EA's Flood Risk from Reservoirs mapping (Figure 12) the site is outside flood extents in the event of reservoir flooding.

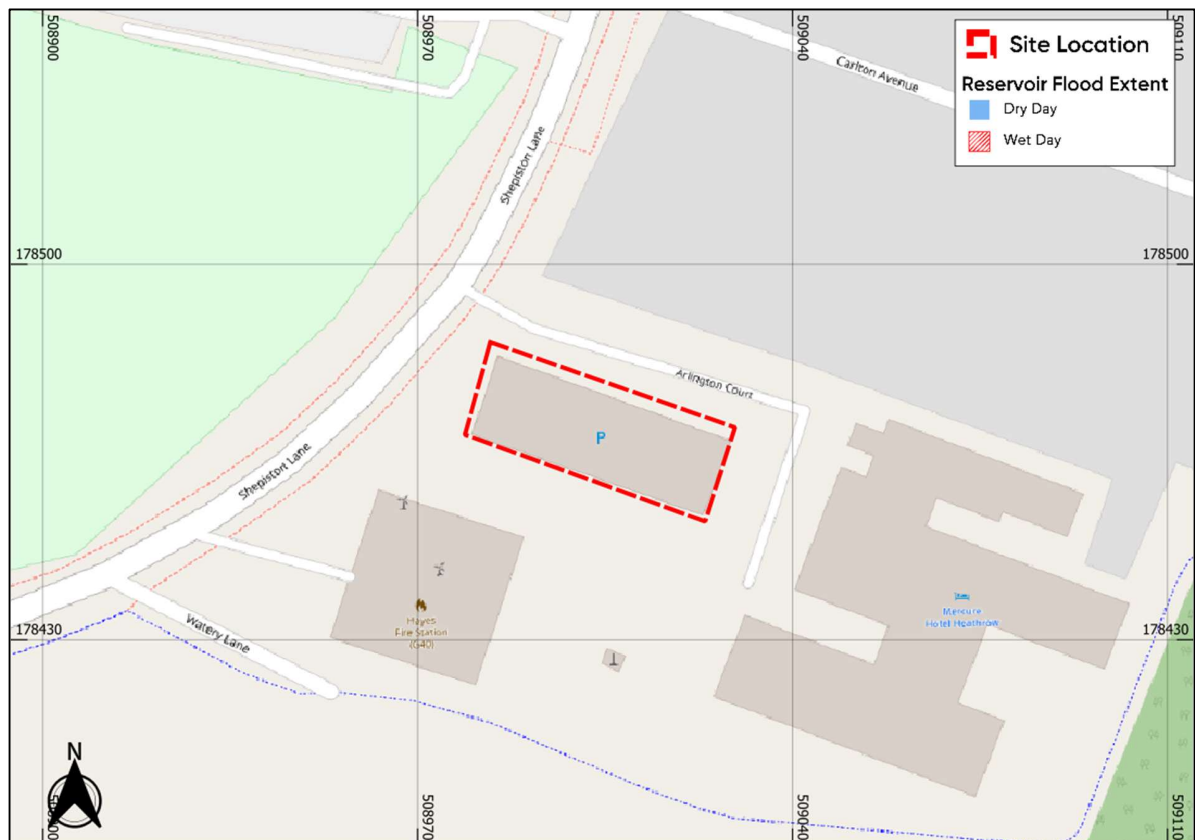


Figure 12: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). ©<https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

4.44. The site has not been flagged as being at risk of flooding following a reservoir failure.

Groundwater

4.45. Groundwater flooding occurs in areas where underlying geology is permeable and water can rise within the strata sufficiently to breach the surface.

4.46. The British Geological Survey's (BGS) mapping shows superficial deposits of Langley Silt Member comprising Clay and Silt underlying the site. The bedrock underlying the site is London Clay formation comprising Clay silt and sand.

4.47. Historical BGS boreholes within the vicinity of the site (located approximately 130m south of the site) recorded groundwater at 3.5m below the ground level (BGS reference: TQ07NE232).

4.48. The SFRA presents the EA's Areas Susceptible to Groundwater Flooding mapping (Figure 13), which assesses the risk of groundwater flooding. This mapping consists of 1km grid squares and shows the proportion of each which is at risk of groundwater flooding. The site is located in an area with a $\geq 25\%$ $< 50\%$ susceptibility to groundwater flooding.

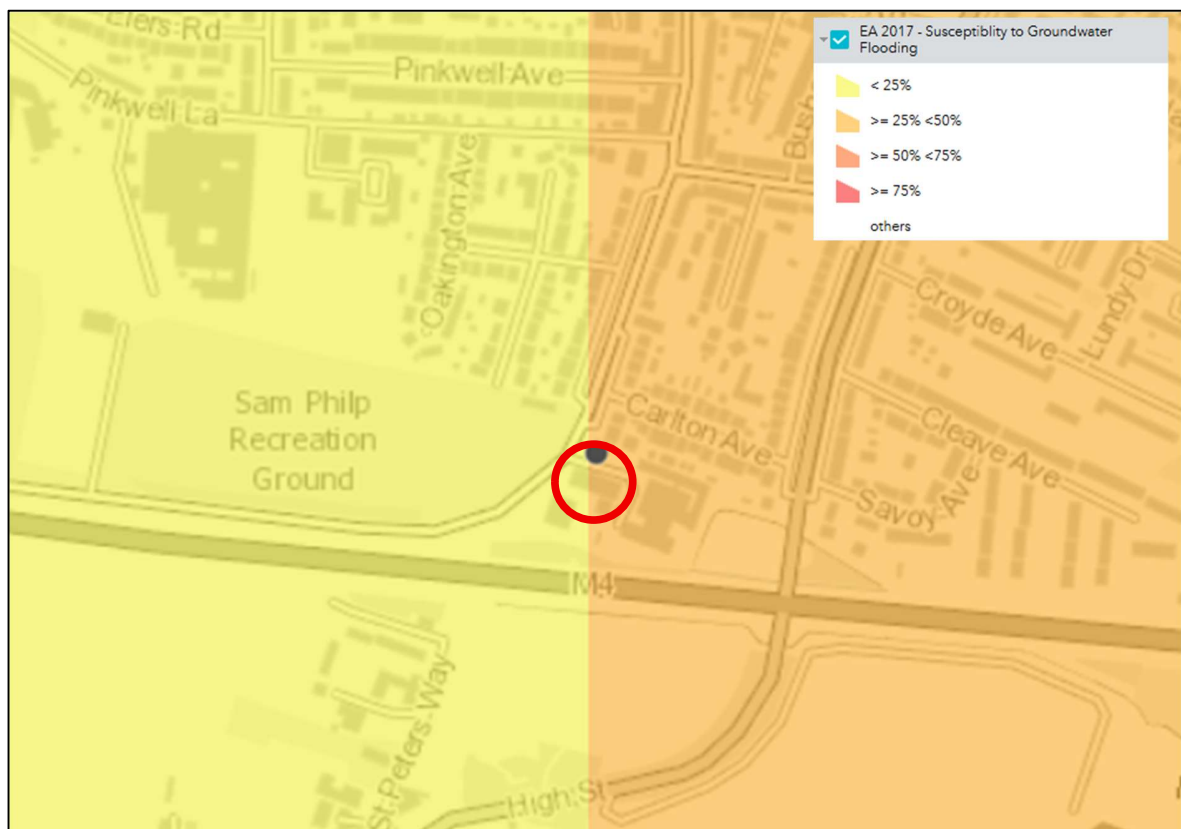


Figure 13: Susceptibility to Groundwater flooding (West London SFRA 2018) – site indicated by red circle

4.49. SFRA mapping also includes areas with 'increased potential for elevated groundwater' which is included below as Figure 14 and shows that the site is not located in an area with increased potential for elevated groundwater.

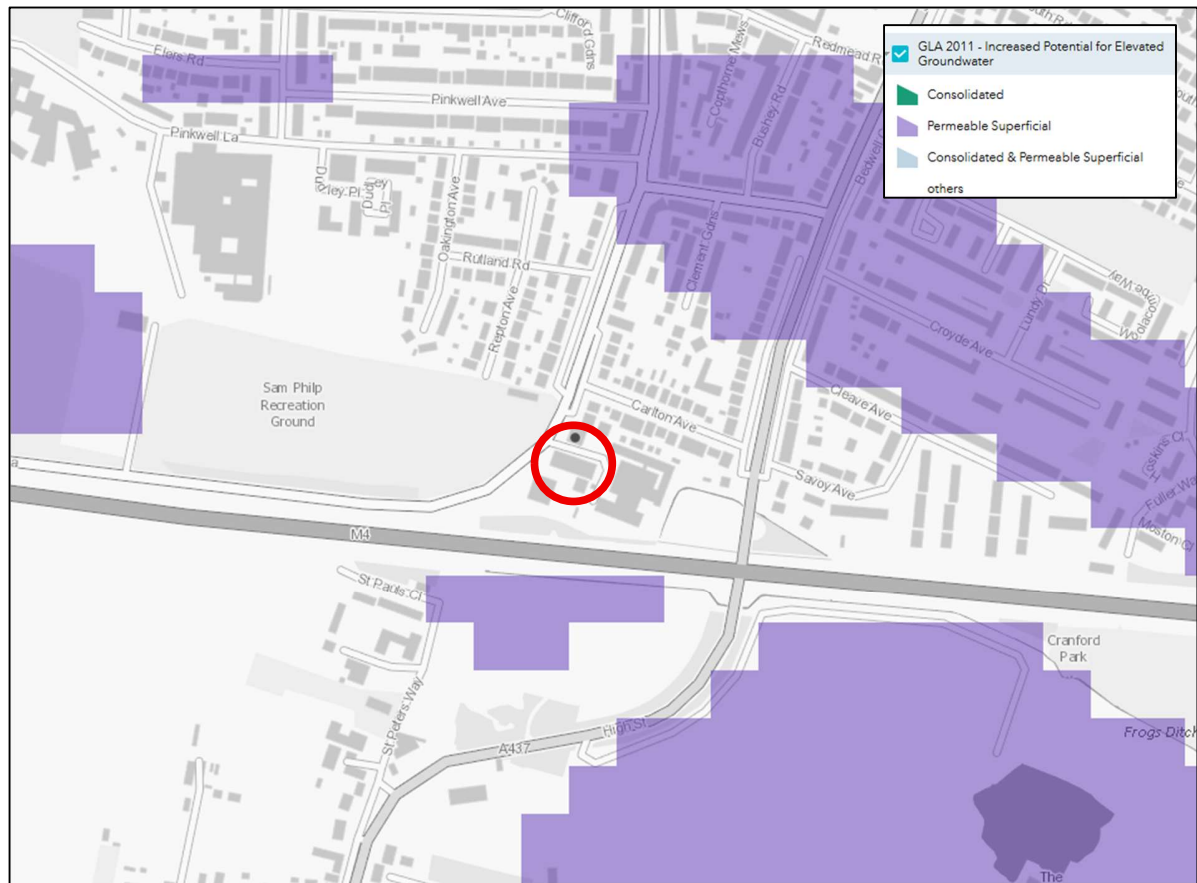


Figure 14: Increased Potential for Elevated Groundwater (West London SFRA 2018) – site indicated by red circle

- 4.50. The development proposals include a lower ground floor level, however, this is proposed to be 30 car parking spaces. As such, only less vulnerable development is located at the lower ground floor level. In the event of groundwater flooding the lower ground floor car parking will act as a flood storage area preventing flooding on more vulnerable development on the ground floor.
- 4.51. As such, the risk from groundwater to the more vulnerable development on the ground floor upwards is considered to be low.

Sewers

- 4.52. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.53. The SFRA provides mapping of historical sewer flood incident records kept by the local authority. The site is located in a 4 digit postcode area where Thames Water have recorded no sewer flooding incidents (Figure 15).
- 4.54. The site is not located in a Critical Drainage Area (CDA) as per the West London SFRA.

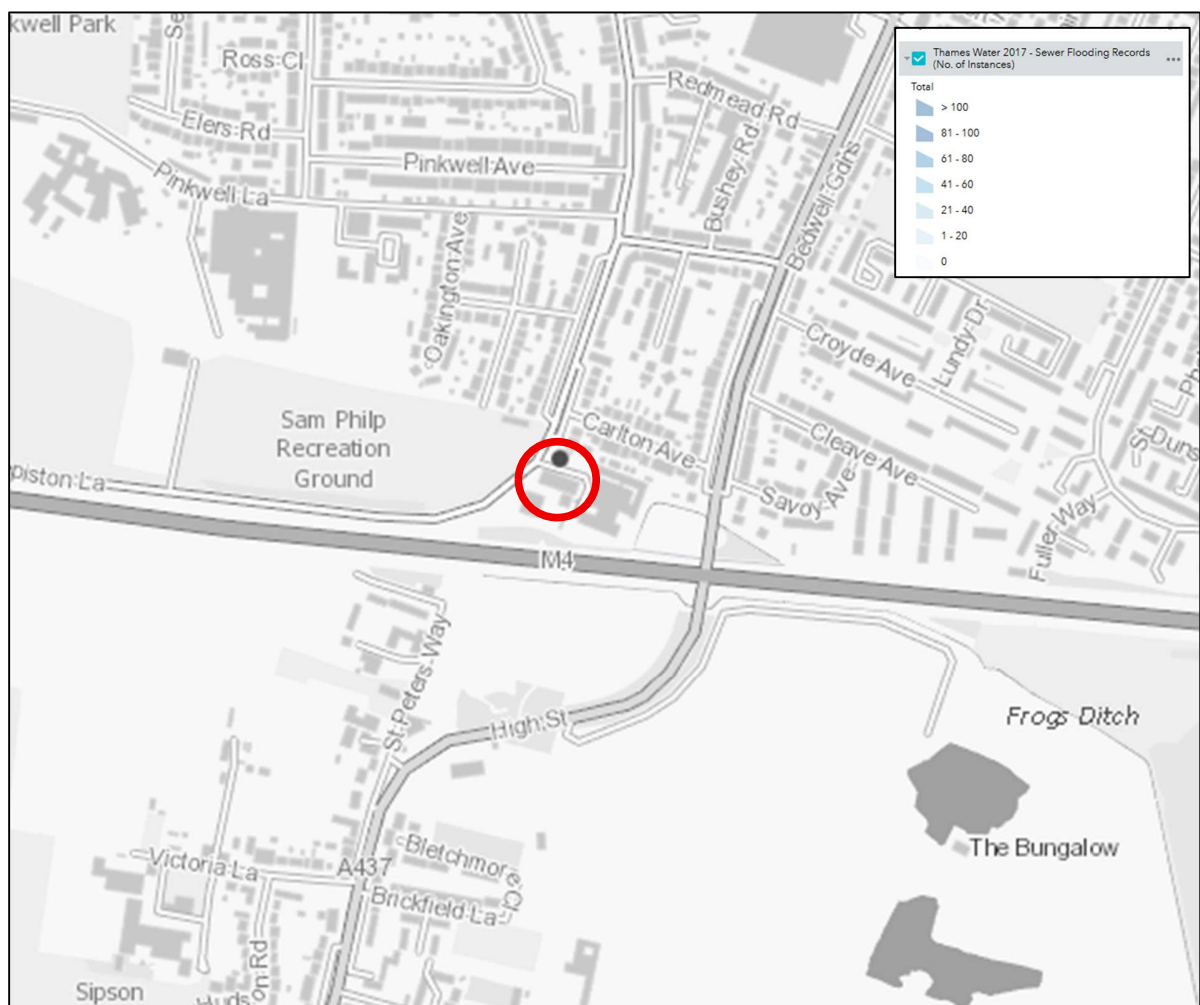


Figure 15: Thames Water Sewer Flood Incidents (West London SFRA 2018) – site indicated by red circle

- 4.55. The development is therefore considered to be at low risk of flooding from sewers.

5. Flood Risk Mitigation

Fluvial, Tidal, Canals, Pluvial, Reservoirs, Groundwater and Sewers

- 5.1. Based on the analysis in this report the proposed development is considered to be at a low risk of flooding from all analysed sources.

Increase to Flood Risk Elsewhere

- 5.2. Considering the site is considered to be at a low risk of flooding from all analysed sources there will be no floodwater displacement as a result of the development.
- 5.3. Additionally, Section 6 outlines the surface water drainage strategy which will manage the surface water on site for all storms up to and including the 1 in 100 year (plus an allowance for climate change) event.

Access/ Egress and Flood Warnings

- 5.4. The site is not in an area where the EA provide specific flood alerts and warnings.

Met Office Weather Warning

- 5.5. Given the pluvial flood risk to the site, site managers and occupants should monitor Met Office Weather Warnings to be prepared for extreme weather events. Met Office is the national meteorological service for the UK; they issue weather warnings up to 5 days in advance, through the National Severe Weather Warning Service, when severe weather has the potential to bring impacts to the UK. It is also possible to stay up to date with weather warnings through the Met Office app (available on both Android and Apple), social media e.g. X (formerly Twitter), Facebook or email alerts.

Safe Refuge

- 5.6. During situations where prior evacuation is not available safe refuge can be taken on the ground floor upwards. The proposed development includes a lower ground floor car parking area that acts as a flood storage area during extreme events, reducing the risk of flooding to the ground floor upwards. Surface water pumps should be utilised at the lower ground floor to manage floodwater volume and further reduce the risk of flooding to the ground floor.

- 5.7. As such, more vulnerable accommodation on the ground floor and upwards is considered to be at a diminished risk of flooding. On-site facilities will allow occupants to shelter in place securely until floodwaters recede and safe, dry egress is restored.
- 5.8. However, it is extremely important to note that prior evacuation should be sought before flooding occurs. Do not wait for flooding to occur to react. It should be reiterated that prior evacuation is the preferred option and safe refuge on site should only be sought in the very worst-case scenario where flooding occurred, and the refuge on site is to mitigate the risk to life.

6. Surface Water Drainage Strategy

Surface Water Drainage Hierarchy

- 6.1. In accordance with the SuDS management train approach, the use of various SuDS measures to reduce and control surface water flows have been considered in detail for the development in Table 3 overleaf.
- 6.2. The management of surface water has been considered in respect to the SuDS hierarchy below, as detailed in the Statutory Guidance National standards for sustainable drainage systems (SuDS) (2025).

Table 3: SuDS Drainage Hierarchy

SuDS Drainage Hierarchy				
			Suitability	Comment
	1.	Collection for non-potable use	x	A green/blue roof is proposed - therefore, rainwater harvesting is not appropriate.
	2.	Infiltration	x	In accordance with Building Regulations - infiltration SuDS (such as soakaways) must be located a minimum of 5.0m from any existing or proposed building, and 2.5m from any site boundary. Upon review of the developments plans there is no space on site to accommodate infiltration SuDS. As such, infiltration is not considered a feasible method of surface water discharge for the proposed development.
	3.	Discharge to surface waters	x	The nearest watercourse to the site is Frogs Ditch located approximately 105m to the south of the site and approximately 150m west of the site. It is observed that the Frogs Ditch travels south of the site under the M4 via what appears to be culverts. Due to third party land crossing requirements, it is not proposed to discharge surface water from the site into a watercourse.
	4.	Discharge to surface water sewer, highway drain or similar	✓	Thames Water Asset Plans show that there are public surface water sewers beneath Arlington Court. It is proposed that surface water from the site is discharged into this sewer in line with the drainage hierarchy. Wherever feasible, existing surface water sewer connections should be utilised. A CCTV survey is required to verify the condition of the existing network to ensure suitability for reuse. Should a new connection be necessary, it will be subject to formal application and approval from Thames Water via a Section 106 application.
	5.	Discharge to combined sewer	x	Surface water sewers are the preferred discharge location in the drainage hierarchy.

- 6.3. On review of the SuDS drainage hierarchy, available SuDS options, taking into account the site's constraints and with reference to both national and local policy, it is proposed that the surface water runoff from the proposed development will be managed via green/ blue roofs where feasible.

- 6.4. The proposed Surface Water Drainage Layout is included as Appendix B.

Infiltration Potential

- 6.5. In accordance with Building Regulations – infiltration SuDS (such as soakaways) must be located a minimum of 5.0m from any existing or proposed building, and 2.5m from any site boundary.
- 6.6. As such, infiltration is not considered a feasible method of surface water discharge for the proposed development.

Nearby Watercourses

- 6.7. The nearest watercourse to the site is Frogs Ditch located approximately 105m to the south of the site and approximately 150m west of the site. It is observed that the Frogs Ditch travels south of the site under the M4 via what appears to be culverts.
- 6.8. Due to third party land crossing requirements, it is not proposed to discharge surface water from the site into a watercourse.

Public Sewers

- 6.9. Thames Water Asset Plans have been included in this report as Appendix C and reproduced as Figure 16 below.

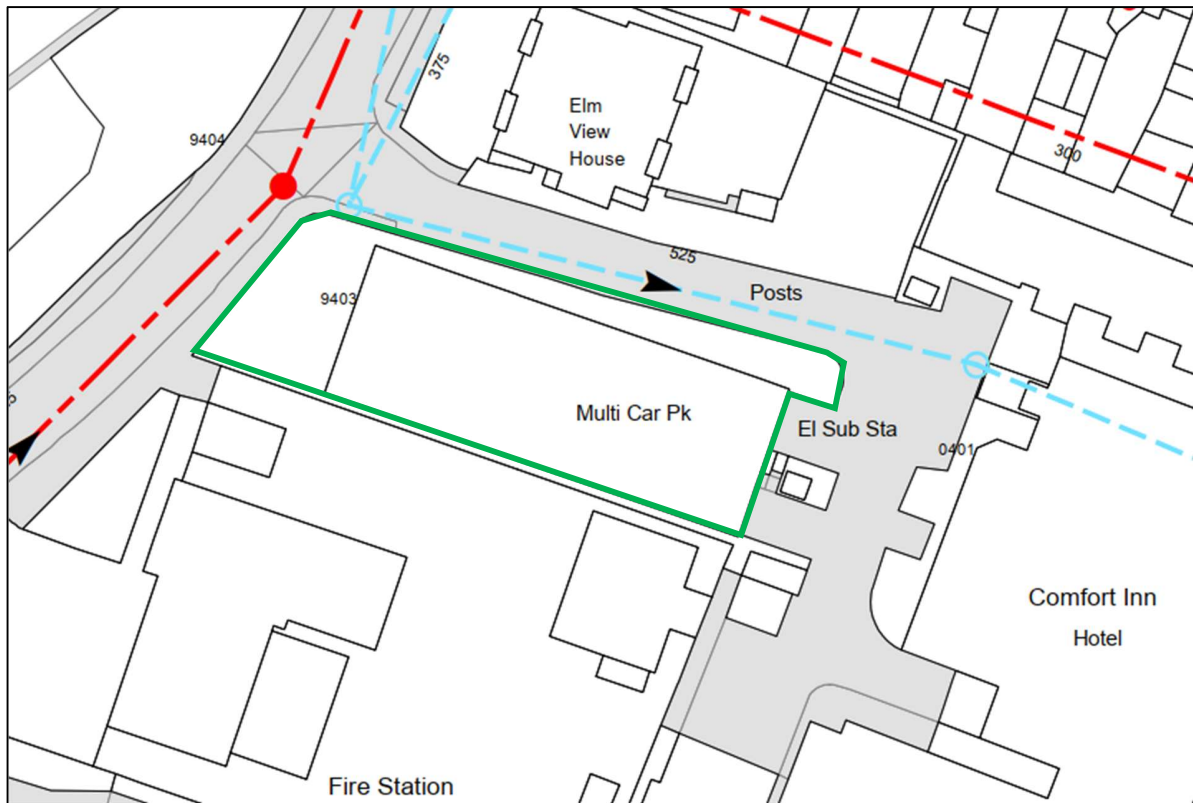


Figure 16: Thames Water Asset Plans (Source: Thames Water) (Site in Green)

- 6.10. Thames Water Asset Plans show that there are public surface water sewers beneath Arlington Court. It is proposed that surface water from the site is discharged into this sewer in line with the drainage hierarchy.
- 6.11. Wherever feasible, existing surface water sewer connections should be utilised. A CCTV survey is required to verify the condition of the existing network to ensure suitability for reuse. Should a new connection be necessary, it will be subject to formal application and approval from Thames Water via a Section 106 application.

Existing and Proposed Discharge Rates

- 6.12. As the site is brownfield, it is assumed that the existing building was positively drained. As such, the existing runoff rates have been compared to the proposed runoff rates to ensure that a significant betterment is being proposed.
- 6.13. The proposed development footprint is approximately 1,016m² in total.
- 6.14. Table 4 shows the calculated present day maximum outflows; a copy of the calculations can be found in Appendix D of this report.

Table 4: Existing (Unrestricted) and Proposed Runoff Rates

Catchment	Area	1 in 100 (+40% Climate Change)
Existing	1016m ²	78.3 L/s
Proposed	1016m ²	1.15 L/s
% Betterment	-	99 %

- 6.15. Therefore, by limiting runoff rates to a maximum of 1.15 L/s (minimum practicable rate given development footprint), this could provide a betterment of approximately 99% in the design flood event (1 in 100 year +40% CC allowance event). By limiting flow to as low as practicable, betterment will still be provided compared to if no SuDS were provided as the existing premises informally discharges runoff at unrestricted rates.

InfoDrainage Modelling and Results

- 6.16. The Environment Agency Peak Rainfall Climate Change Allowance guidance (updated in May 2022) was reviewed and subsequently the DEFRA Peak Rainfall Allowances Map was assessed to determine appropriate climate change allowances to inform the surface water drainage strategy. In line with this guidance, the upper end allowances for the London Management Catchment have been used for both the 1% and 3.3% annual exceedance probability events. An allowance of 35% has been used for the 3.3% AEP event and an allowance of 40% has been used for the 1% AEP event.
- 6.17. A green/blue roof manufacturer (ABG) have been consulted to provide a detailed specification on the proposed green/blue roofs. It is important to note that the whole footprint of the development has been used for these calculations. The exact dimensions and specification of green/blue roof systems are to be confirmed by the architect and the manufacturer.
- 6.18. The manufacturers modelling and design specification has been summarised below;
- Green/blue Roof: Catchment area of 1,016m², Blue roof depth of 108mm, total attenuation of 98.5m³. The maximum permissible discharge rate is 1.15l/s.
- 6.19. The manufacturers calculations and construction details are included in this report as Appendix E of this report.

6.20. Standard 2 of the latest (2025) National standards for sustainable drainage systems (SuDS)¹³ states:

2.1 Apply a 'SuDS approach' so that at least the first 5mm of rainfall for the majority of rainfall events does not result in runoff from the site to surface waters or piped drainage systems.

2.2 Evidence shall be provided that the approach to managing runoff from 'everyday' rainfall has been developed alongside and in support of the management of runoff quality (standard 4) and the delivery of amenity and biodiversity benefits (standards 5 and 6).

6.21. Table 5 demonstrates that the green/blue roof has a design standard of protection of the 'first flush' (i.e. first 5mm of rainfall). Therefore, the proposed SuDS features are sized to provide adequate source control for the drained areas.

Table 5: Standard of protection first 5mm, 20mm, and 50mm of rainfall

Total Roof Catchment: 1,016m ²				
Design Standard	Design Rainfall (mm)	Volume Rainfall (m ³)	Storage Capacity (m ³)	Result
First Flush	5	5.08	98.5	✓
5 year	20	20.32	98.5	✓
100 year	50	50.8	98.5	✓

Maintenance

6.22. Table 6 presents the details regarding the maintenance requirements for the proposed SuDS included as part of the development taken from the CIRIA C753 'The SuDS Manual'. Each manufacturer will have bespoke requirements, however, the below should be used as a guide. The roof maintenance is the responsibility of the site owner.

¹³ <https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-SuDS>

Table 6: Maintenance Requirements for Green Roofs

Maintenance Schedule	Required Action	Typical Frequency
Regular Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify and sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure restricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually as required
	During establishment (i.e., year one), replace dead plants as required	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required (where >5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial Actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
	if drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

Designing for Exceedance

- 6.23. Exceedance events are those greater than the design rainfall event, i.e. greater than the 100-year rainfall event plus 40% increase for climate change.
- 6.24. Periods of exceedance occur when the rate of surface water runoff exceeds the drainage system capacity. Conveyance beneath ground cannot, generally, be economically or sustainably constructed to the scale required for the most extreme rainfall events. This may result, on occasion, in the surface water runoff exceeding the capacity of the drainage network, with excess water (exceedance flow) being conveyed above ground.
- 6.25. For situations where extreme rainfall intensity exceeds inlet capacities, or for extreme storm events exceeding the design flood event considered for drainage design, the surface water exceedance discharge into the surface water sewer via the overflow device included in the green/blue roof systems.

Water Quality

- 6.26. In order to protect the downstream receiving water body, a key element of SuDS is that they have the potential to improve the quality of surface water discharged from a site. In order to assess this, the “Pollution hazard indices for different land use classifications”, provided in table 26.2 of the CIRIA SuDS Manual (C753) has been reviewed. The indices use four different indicators for assessing pollution potential based on the hazard level, total suspended solids (TSS), Metals, and Hydrocarbons.
- 6.27. The Pollution Hazard Indices are summarised in Table 7 below (with reference to table 26.2 in the CIRIA SuDS manual). The pollution hazard indices for “residential roofs” have been used.

Table 7: Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Roof Area (Indices taken from 'residential roofs')	Very Low	0.2	0.2	0.05

- 6.28. Table 8 shows a green roof will offer sufficient treatment for the residential roof.

Table 8: Pollution Mitigation Indices

SuDS Feature		Total Suspended Solids (TSS)	Metals	Hydrocarbons
Green Roof (Indices taken from bioretention systems)		0.8	0.8	0.8

6.29. As such, the proposed drainage strategy should offer sufficient treatment of runoff from the proposed roof areas.

7. Conclusions

- 7.1. This FRA and SWDS has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at Mecure Hotel Carpark, Shepiston Lane, Heathrow, London Borough of Hillingdon, UB3 1LY. It has been written to support a planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 7.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Pluvial Fluvial Tidal Reservoirs Groundwater Sewers Canals	The site is considered to be at low risk from all analysed sources.

- 7.3. The FRA and SWDS supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.
- 7.4. On review of the SuDS drainage hierarchy, available SuDS options, taking into account the site’s constraints and with reference to both national and local policy, it is proposed that the surface water runoff from the proposed development will be managed via green/ blue roofs where feasible.
- 7.5. This Flood Risk Assessment and Surface Water Drainage Strategy should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals

Appendix B - Surface Water Drainage Layout

DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY. THE CONTRACTOR MUST CHECK & VERIFY ALL DIMENSIONS ON SITE. ANY DISCREPANCIES MUST BE REPORTED IMMEDIATELY TO THE ENGINEER FOR CLARIFICATION BEFORE PROCEEDING. THIS DRAWING IS COPYRIGHT AND OWNED BY AEGAEA.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION REFER TO THE RELEVANT CONSTRUCTION (DESIGN AND MANAGEMENT) DOCUMENTATION WHERE APPLICABLE. IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT.



DRAFT

LEGEND

- RAINWATER PIPE
- INSPECTION CHAMBER
- PROPOSED SURFACE WATER DRAIN
- THAMES WATER SURFACE WATER SEWER

GREEN/BLUE ROOF
PLAN AREA: 1,016m²
IT IS IMPORTANT TO NOTE THAT THE WHOLE FOOTPRINT OF THE DEVELOPMENT HAS BEEN USED FOR THESE CALCULATIONS. THE EXACT DIMENSIONS AND SPECIFICATION OF GREEN/BLUE ROOF SYSTEMS ARE TO BE CONFIRMED BY THE ARCHITECT AND MANUFACTURER AT THE DETAILED DESIGN STAGE.
BLUE ROOF DEPTH: 108mm
TOTAL ATTENUATION PROVIDED: 98.5m³
TOTAL DISCHARGE RATE DURING THE DESIGN STORM EVENT: 1.15l/s

THE GREEN/ BLUE ROOFS WILL INCLUDE INTEGRAL FLOW CONTROLS. THE EXACT LOCATION AND NUMBER OF FLOW CONTROLS IS TO BE CONFIRMED BY THE MANUFACTURER AT THE DETAILS DESIGN STAGE. HOWEVER, AT THIS STAGE THE TOTAL FLOW RATE FROM THE DEVELOPMENT IS ESTIMATED TO BE 1.15l/s.

CCTV SURVEY REQUIRED TO IDENTIFY DRAINS ON SITE THAT COULD BE REUSED.
IF NO CONNECTION TO THE THAMES WATER SURFACE WATER SEWER IS FOUND THEN APPROVAL IS REQUIRED FROM THAMES WATER VIA A FORMAL 106 APPLICATION.

PROPOSED CONNECTION TO SURFACE WATER SEWER
RUNOFF FROM THE DEVELOPMENT NO GREATER THAN 1.15l/s.

Location of A/C units, other outdoor plant equipment

PV panels

Location for A/C units, other outdoor plant equipment

PV panels

Roof hatch

Lift overrun

Roof hatch

Lift overrun

WATER BUTTS COULD ALSO BE INCLUDED TO PROVIDE WATER FOR NON-POTABLE USES IN THE LANDSCAPED AREA OF THE DEVELOPMENT.



2 m 0 2 4 6 8 m

1.0	27/03/2026	SURFACE WATER DRAINAGE LAYOUT	JA
Rev	Date	Description	By

Client	MANOJ KHANDEKAR
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Project	SURFACE WATER DRAINAGE LAYOUT
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Title	MECURE HOTEL CARPARK, SHEPSTON LANE, HEATHROW, LONDON BOROUGH OF HILLINGDON, UB3 1LY
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Project No.		Drawing No.		Revision
AEG10247		DR01		1.0
Drawn	Checked	Approved	Date	Scale @ A1
JA		OH	27/03/2026	SEE SCALE

Drawing Status	FOR PLANNING ONLY
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Appendix C – Asset Plans

Aegaea
SEVENTH FLOOR, 15-18 WEST STRE
BRIGHTON
BN1 2RL

Search address supplied 16 Elm View House
Shepiston Lane
Hayes
UB3 1LY

Your reference 10247

Our reference ALS/ALS Standard/2026_5292002

Search date 23 February 2026

Keeping you up-to-date

Notification of price changes

We're changing our report prices from 4th June 2025. The price will increase by 3.5% based on Retail Price Index (RPI).

Find our new prices on our website thameswater.co.uk/property-searches

Any Questions? We're happy to talk through the changes with you – give our Property Searches team a call on 0800 009 4540 .



Thames Water Utilities Ltd
Property Searches,
Clearwater Court, Vastern Road, Reading RG1 8DB



property.searches@thameswater.co.uk
thameswater.co.uk/propertysearches



0800 009 4540

Search address supplied: 16 Elm View House, Shepiston Lane, Hayes, UB3 1LY

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position and size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the contact details below:

Thames Water Utilities Ltd
Property Searches
Clearwater Court
Vastern Road
Reading
RG1 8DB

Email: property.searches@thameswater.co.uk

Web: thameswater.co.uk/propertysearches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority. Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners. The public sewer map relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus. The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way



Hatfield
AL10 9EZ
Tel: 0845 7823333

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. You can do this by emailing customer.feedback@thameswater.co.uk with the email subject header 'Enquiry – TWOSA', along with details of the request.

If you have any questions regarding sewer connections, budget estimates, diversions or building over issues please direct them to our service desk which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
151C	n/a	n/a
1401	25.96	24.86
1402	25.99	24.62
0506	26.21	24.89
1502	26.21	25.49
0505	26.21	25.49
9501	26.72	23.57
9502	n/a	n/a
9404	25.93	24.33
9403	26.02	24.89
9503	26.04	25.09
9505	26.15	25.05
9504	25.99	23.63
0503	25.95	24.12
0502	25.99	24.2
0501	26.15	25.16
051E	n/a	n/a
0401	25.81	24.88
051C	n/a	n/a
051B	n/a	n/a
051A	n/a	n/a
0507	n/a	n/a
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.		



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

	Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
	Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
	Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
	Storm Sewer
	Sludge Sewer
	Foul Trunk Sewer
	Surface Trunk Sewer
	Combined Trunk Sewer
	Foul Rising Main
	Surface Water Rising Main
	Combined Rising Main
	Vacuum
	Thames Water Proposed
	Vent Pipe
	Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

	Sewer		Culverted Watercourse
	Proposed		Decommissioned Sewer
	Content of this drainage network is currently unknown		Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

	Air Valve		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

	Ancillary		Drop Pipe
	Control Valve		Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

	Inlet		Outfall
	Undefined End		

Other Symbols

Symbols used on maps which do not fall under other general categories.

	Change of Characteristic Indicator		Public / Private Pumping Station
	Invert Level		Summit

Areas

Lines denoting areas of underground surveys, etc.

	Agreement
	Chamber
	Operational Site

Ducts or Crossings

	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

5) 'na' or '0' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Appendix D – Brownfield Calculations

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Inflows Storm Phase: Phase	Company Address: Aegaea		



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Brownfield

Type : Catchment Area

Area (ha)	0.102
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Dynamic Sizing	
Runoff Method	Time of Concentration
Summer Volumetric Runoff	1.000
Winter Volumetric Runoff	1.000
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)		Date: 27/03/2026		 water, civils and environment
		Designed by: JA	Checked by: AB	
Report Details: Type: Inflow Summary Storm Phase: Phase		Company Address: Aegaea		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Brownfield			Time of Concentration	0.102	100	0	100	0.102
TOTAL		0.0		0.102				0.102

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)		Date: 27/03/2026			
		Designed by: JA	Checked by: AB		Approved By: OH
Report Details: Type: Network Design Criteria Storm Phase: Phase		Company Address: Aegaea			

Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Pipe Size Library

Default

Add. Increment (mm)	75
Max. Diameter (mm)	0

Diameter (mm)	Min. Slope (1:X)	Max. Slope (1:X)
100	0.00	0.00
150	0.00	0.00

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Network Design Criteria Storm Phase: Phase	Company Address: Aegaea		



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Manhole Options

Apply Offset	☐
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Manhole Size Library

Default

Diameter / Width

Connection (mm)	Diameter / Length (m)	Width (m)
0	1.200	0.000
375	1.350	0.000
500	1.500	0.000
750	1.800	0.000

Additional Sizing

Connection (mm)	900
Diameter / Length (m)	0.900
Width (m)	0.000

Depth

Depth (m)	Diameter / Length (m)	Width (m)
0.000	1.050	0.000
1.500	1.200	0.000

Access

Depth (m)	Ladder Protrusion (mm)
0.000	130
3.000	230

Benching Requirements

Landing Width (mm)	500
Benching Width (mm)	225

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Title: Rainfall Analysis Criteria	Company Address: Aegaea		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall	
FSR	Type: FSR
Region	England And Wales
M5-60 (mm)	20.0
Ratio R	0.402
Summer	☒
Winter	☒

Return Period	
Return Period (years)	Increase Rainfall (%)
2.0	0.000
30.0	0.000
100.0	0.000
30.0	35.000
100.0	40.000

Storm Durations	
Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Aegaea		



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FSR: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Brownfield	FSR: 2 years: +0 %: 15 mins: Summer	0.10	22.7	10.230

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Aegaea		



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FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Brownfield	FSR: 30 years: +0 %: 15 mins: Summer	0.10	43.1	19.422

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Aegaea		



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FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Brownfield	FSR: 100 years: +0 %: 15 mins: Summer	0.10	55.9	25.206

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Aegaea		



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FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Brownfield	FSR: 30 years: +35 %: 15 mins: Summer	0.10	58.2	26.217

Project: Brownfield Calculations Mecure Hotel Carpark(UB3 1LY)	Date: 27/03/2026		
	Designed by: JA	Checked by: AB	Approved By: OH
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Aegaea		



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FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Brownfield	FSR: 100 years: +40 %: 15 mins: Summer	0.10	78.3	35.289

Appendix E – Manufacturer Calculations and Specifications

BLUE ROOF ATTENUATION AND OUTFLOW SUMMARY

PRIVATE & CONFIDENTIAL - NOT FOR DISTRIBUTION

Project Name:	Mecure Hotel, Heathrow, UB3 - Blue Roof		
Prepared for:	Aegaea		
Date:	25/03/2026		
ABG Project ID:	ABG/O/26/003134	Calculator version:	1.38
Prepared by:	Matt Chadwick, matt.chadwick@abgltd.com		
Notes/description:	Mix of green roof, soft and hard landscaping - TBC. Potential for free-standing/ballasted, PV panels, lighter-weight plant units or planters to be installed on top of the 'blue roof' system (recommended). Appropriate support for larger plant units TBC with ABG, and structural and M&E engineers. Maintenance or pedestrian/amenity access only - TBC. Warm/inverted roof construction, with zero falls - TBC.		

Document/Drawing references:

Input Parameters - Rainfall Information (FEH22)

Return period:	100 years	As supplied by Client
Allowance for Climate Change:	45 %	As supplied by Client
OS grid reference selected for FEH data:	TQ 09658 75406	

Input Parameters - Roof Information

Total catchment area:	1016 m ²	As supplied by Client
Attenuation area:	1016 m ²	As supplied by Client
Maximum allowable runoff:	1.15 l/s	As supplied by Client

Output - Rainfall Calculation

Duration	Time to Empty	Restricted Outflow (l/s)
15 mins	19 hours and 10 minutes	0.75
30 mins	23 hours and 10 minutes	0.86
1 hour	26 hours and 40 minutes	0.96
2 hours	30 hours and 20 minutes	1.06
4 hours	33 hours and 10 minutes	1.13
6 hours	33 hours and 50 minutes	1.15
10 hours	33 hours and 30 minutes	1.14
24 hours	28 hours and 40 minutes	1.01
48 hours	18 hours and 40 minutes	0.74

Total attenuation required: 98.5 m³
Half empty time: 13 hours and 30 minutes.

Output - Recommended Blue Roof System

System Name:	ABG bluerroof VF HD 108mm
Description:	Blue roof depth of 108mm. No. of control positions TBC by design team, and also cross-referenced with the structural engineer's long-term deflection analysis. Additional 'tell-tale' parapet overflow outlets, may also be added by the architect. An additional ABG reservoir board may be required below soft landscaping.

Total attenuation capacity:	98.6 m ³
Number of Blue Roof outlets:	3

- Notes:
1. This document contains an estimate which has been prepared by ABG Ltd and is illustrative only and not a detailed design.
 2. Further details on the theories used in this estimate are available upon request from ABG. The values given for the performance of the system relate to testing, modelling and analysis of our systems obtained from laboratories and testing institutes. In line with our policy of continuous improvement the right is reserved to make changes to our systems without notice at any time.
 3. The estimate given in this report is based on the stated parameters as per the brief. If these parameters are not correct or have changed, ABG should be contacted to provide a revised estimate.
 4. This estimate is specific to the characteristics of ABG products/systems and is not applicable to other competitor products. The substitution of the whole or any component of this design for a material supplied from another source renders this estimate invalid.
 5. Final determination of the suitability of any information is the sole responsibility of the user. ABG will be pleased to discuss the use of this or any other product but responsibility for selection of a material and its application in any specific project remains with the user.

Blue Roof Estimate

1. DEFINITIONS

‘Consultant’ means ABG Geosynthetics Ltd and its legal successors. ‘Client’ means the person, firm, company or organisation for whom the Consultant is performing the Services. ‘Agreement’ means the contract referred to in Clause 2. ‘Services’ means the services to be performed by the Consultant in accordance with the proposal from the Consultant. ‘Project’ means the project or works for which the Client has commissioned the Services.

2. GENERAL

Unless and until a formal agreement is entered into, the Client’s acceptance of the proposal for Services from the Consultant or a request for some or all the Services to be performed by the Consultant, shall constitute a binding contract between the Client and the Consultant which contract will be subject to any terms and conditions contained or referred to in the aforementioned proposal and these terms and conditions. In the event of any conflict, the terms and conditions in the proposal shall prevail over these terms and conditions. The Agreement so formed shall supersede all previous understandings, commitments or agreements whether written or oral between the Client and the Consultant relating to the subject matter hereof. No person or entity shall have any rights in relation to this Agreement, whether as third parties or otherwise, save the parties to this Agreement. Should any term or condition of this Agreement be held to be unenforceable or invalid by the courts of any jurisdiction to which it is subject then such term or condition shall be disregarded and the remaining terms and conditions shall remain in full force and effect.

3. PERFORMANCE OF SERVICES AND SCOPE

The Consultant shall perform the Services using the degree of skill care and diligence to be expected from a consultant experienced in the provision of services of similar scope size and complexity. The Consultant shall use reasonable endeavours to complete the Services within the time or programme agreed but shall not be responsible for any delay beyond the reasonable control of the Consultant. The fee contained in the proposal is for the scope of services as defined therein. If not already contained in the proposal the Consultant and the Client shall agree as an initial activity an integrated project services programme to include the activities of all the parties to the Project relevant to the Services to be supplied by the Consultant. The aforesaid programme shall show the key dates for final information and the delivery of such to the Consultant so as to enable the Consultant to carry out the services in an efficient once through manner to achieve the programme delivery dates for the Services.

The Consultant provides various services including Design and Product use advice which is distinct from a Design Service. The Design Service may or may not attract a fee.

Where the Consultant’s services are of an advisory nature and dependent upon the degree of information and release thereof by the Client then the Client agrees that any reliance placed on the services by the Client shall take due account of such constraints.

4. CONFIDENTIALITY AND INTELLECTUAL PROPERTY RIGHTS

i. The Consultant and the Client shall keep confidential all information pertaining to the Services.
ii. Copyright for all reports, documents and the like produced by the Consultant in the performance of the Services shall remain vested with the Consultant but the Consultant shall grant an irrevocable royalty free license to the Client to use such reports, documents and the like for any purpose in connection with the Project.

5. LIABILITY

i. The Consultant shall be liable to pay compensation to the Client arising out of or in connection with this Agreement only if a breach of the duty of care in Clause 3 is established against the Consultant.
ii. Notwithstanding any other term to the contrary in this Agreement or any related document and whether the cause of action for any claim arises under or in connection with the Agreement in contract or in tort, in negligence or for breach of statutory duty or otherwise the Consultant shall have no liability to the Client in respect of any claim for loss or damage arising from acts of war or terrorism or arising from flooding, burst water mains or failed drainage or arising from any incidence of toxic mould or asbestos but otherwise in relation to any cause of action as aforesaid the total liability of the Consultant in the aggregate for all claims shall be limited to a sum equivalent to ten (10) times the fee payable under this Agreement or £50,000, whichever is the lesser, or such other sum as may be expressly stated in the Consultant’s proposal, and further but without prejudice to the aforesaid limit of liability any such liability of the Consultant shall be limited to such sum or sums as it would be just and equitable for the Consultant to pay having regard to the Consultant’s responsibility for the same and on the basis that all other parties appointed or to be appointed by the Client to perform related services in connection with the Project shall be deemed to have provided undertakings on terms no less onerous than this Agreement and shall be deemed to have paid to the Client such contribution as it would be just and equitable for them to pay having regard to their responsibility for any loss or damage and providing that it shall be deemed that such other parties have not limited or excluded their liability to the Client for such loss or damage in any way which may be prejudicial to the Consultant’s liability under this clause. Nothing in this clause shall operate to exclude or limit the Consultant’s liability for death or personal injury.
iii. The Client shall indemnify and keep indemnified the Consultant from and against all claims, demands, proceedings, damages, costs and expenses arising out of or in connection with this Agreement or the Project arising from acts of terrorism or arising otherwise in excess of the liability of the Consultant under this Agreement or which may be made in respect of events occurring after the expiry of the period of liability stated in this Agreement.
iv. No action or proceedings under or in connection with this Agreement shall be commenced against the Consultant after the expiry of one year from completion of the Services.
v. ABG Geosynthetics Ltd is not responsible for consequential, indirect or incidental losses.

6. INSURANCE

The Consultant shall arrange Professional Indemnity Insurance cover for the amount stated in Clause 5(ii). The Consultant will use all reasonable endeavours to maintain Professional Indemnity Insurance cover for the period stated in 5(iv) above, providing such insurance remains available to the Consultant at commercially reasonable rates.

7. CLIENT’S OBLIGATIONS

The Client shall supply, without charge and in such time so as not to delay or disrupt the performance of the Consultant in carrying out the Services, all necessary and relevant information, in his possession or available to him from his other agents or consultants and all necessary approvals or consents. Any deviation on any information from the proposal shall be confirmed in writing and any attendant consequential fees will be forwarded for approval by the Client before any changes are made. The Consultant shall not be liable for any consequential delays on site. Every reasonable effort will be made to mitigate against delays, however no liability for losses and costs will be accepted. The approval or consent by the Client to the Services shall not relieve the Consultant from any liability under this Agreement. All work undertaken by the Consultant must be ratified and signed off by the Client.

8. PAYMENT

i. The Client shall pay the Consultant for the Services in accordance with the proposal and this Agreement. If the Consultant performs any additional services or if the Services are delayed or disrupted for reasons beyond the reasonable control of the Consultant then the Consultant shall be entitled to such additional fees as are fair and reasonable in the circumstances. The Consultant may render an invoice at monthly intervals for services properly performed. The agreed invoice, or in the event of a dispute the undisputed element, shall be paid within 28 days of receipt of the invoice by the Client. Any invoice paid after this period will attract interest at 3% above the base rate of the central bank of the country of the currency of payment along with any collection costs which may occur.
ii. The Client shall not withhold any payment of any sum or part of a sum due to the Consultant under this Agreement by reason of claims or alleged claims against the Consultant unless the amount to be withheld has been agreed between the Client and the Consultant as due to the Client or such sum arises from an award in adjudication, arbitration or litigation in favour of the Client and arises under or in connection with the Agreement. Save as aforesaid all rights of set off at common law, in equity or otherwise which the Client may otherwise be entitled to exercise are hereby expressly excluded.

9. TERMINATION

If a party is in breach of a material term of this Agreement and despite written notice from the other party fails to remedy such breach within 30 days or such other period as may be agreed between the parties, then the other party shall be entitled to terminate this Agreement forthwith. The Consultant may seek to recoup costs incurred for works completed prior to termination.

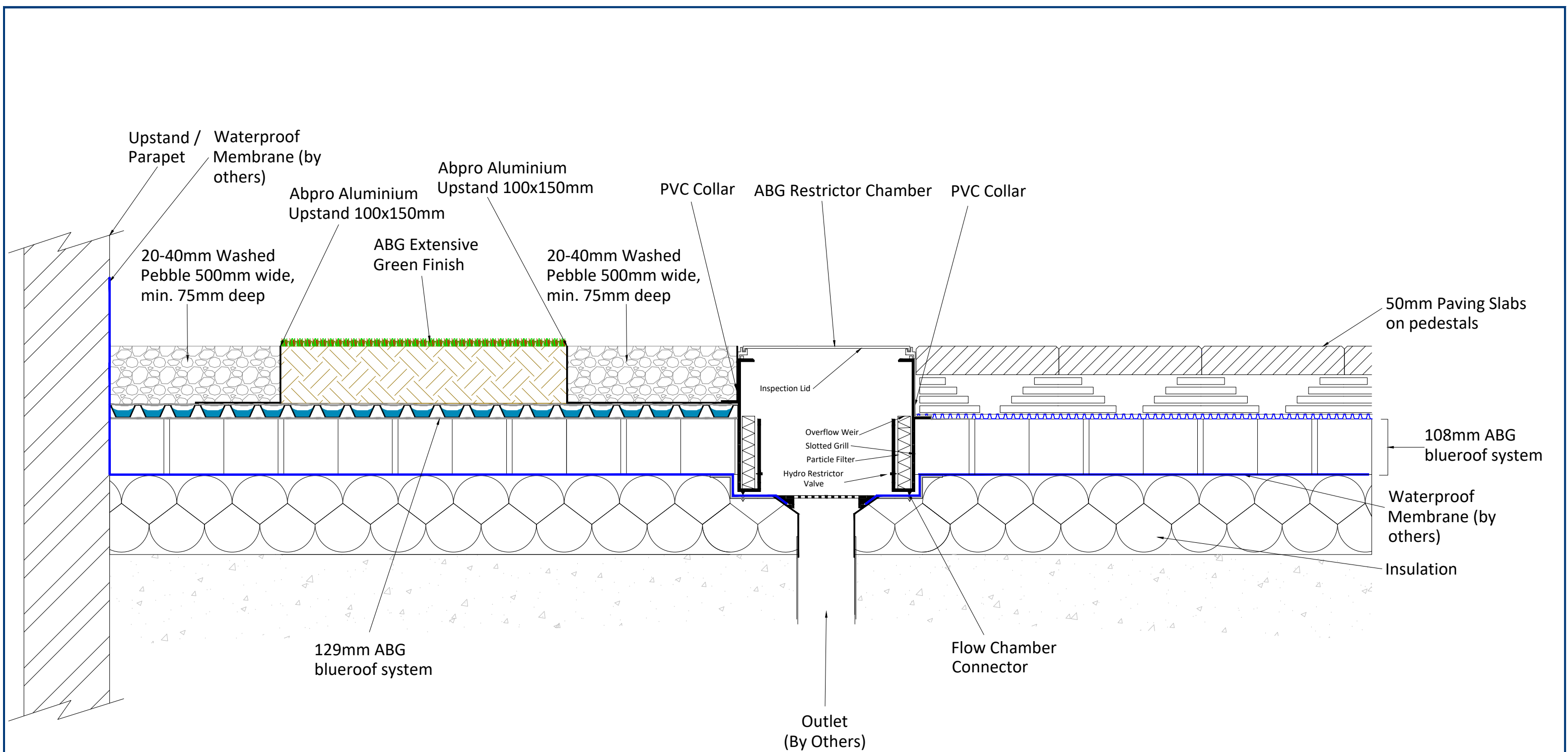
10. DISPUTE RESOLUTION

Any dispute between the parties that cannot be settled by mutual agreement shall be referred for final settlement to the arbitration of a person agreed between the parties or failing such agreement appointed upon the application of either party by the President of the Chartered Institute of Arbitrators and the said arbitration shall be carried out in accordance with the Construction Industry Model Arbitration Rules 1998 or such other version current at the time of the referral under this clause. Where the Agreement is subject to a governing law other than that of England and Wales then any dispute between the parties that cannot be settled by mutual agreement shall be finally settled by arbitration in accordance with the UNCITRAL Arbitration Rules by one arbitrator appointed in compliance with the said Rules. In either case such rules as appropriate are deemed to be incorporated into this Agreement by reference.

11. COMPLIANCE WITH LAWS

This Agreement shall be governed by and construed in accordance with the law of England and Wales unless stated otherwise in the proposal for services from the Consultant.

Changes to the above terms and conditions will only be considered if agreed in writing as part of the appointment process prior to ABG Geosynthetics commencing work.



Rev:		Comments:	By:	Date:
Project: Blue Roof - Warm				
Title: Restrictor Chamber & Hard / Soft Landscaping Detail				
Drawn by: RH		Date: 13/01/20		
Scale: NTS		Drawing Ref: BRST04	Rev: 1.03	
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Retaining Walls Erosion Control Landfill Tunnels Green Roofs Landscaping Highways				