Pell Frischmann

Tottenham Hale

Sustainable Drainage Report

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1 Introduction

1.1 Report Context

1.1.1 Pell Frischmann has been commissioned by Fastned to develop a drainage strategy to support a full planning application for a site to the east of Watermead Way, Tottenham Hale, London Borough of Haringey.

1.1.2 This Sustainable Drainage Report (SDR) will set out the principles of the proposed drainage strategy and demonstrate how the local and national guidance has been considered. This will include justification of; specific surface water discharge rates, the volume of attenuation required and sustainable drainage systems to be included.

1.2 Sources of Information

1.2.1 A review of the relevant information from a range of sources has been undertaken and includes the following:

- National Planning Policy Framework (NPPF), December 2024
- Non-statutory technical standards for sustainable drainage systems, March 2015
- Water UK, Sewerage Sector Guidance, October 2019
- CIRIA, C753 The SuDS Manual Version 6, 2015
- HM Government, The Building Regulations 2010, Drainage and Water Disposal (Part H), 2015
- Haringey Council Drainage Sustainable Evaluation Guide
- Haringey Council SuDS Proforma

1.2.2 The NPPF specifies that surface water arising from a developed site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development. Opportunities to reduce the flood risk to the site itself and elsewhere, taking climate change into account, should be investigated. The drainage proposals within this strategy have been prepared to meet planning policy requirements.

1.2.3 In their role as Lead Local Flood Authority, Haringey Council have prepared a ‘SuDS Design Requirements for LLFA Technical Assessment’. This Sustainable Drainage Report has aligned with these requirements to prepare the necessary information.

1.3 Site Location

1.3.1 The site is located to east of Watermead Way and Cygnet Way and adjacent to Tottenham Hale railway station. A site location plan is included as **Figure 1.1**. In total the site covers an approximate area of 0.1207ha.

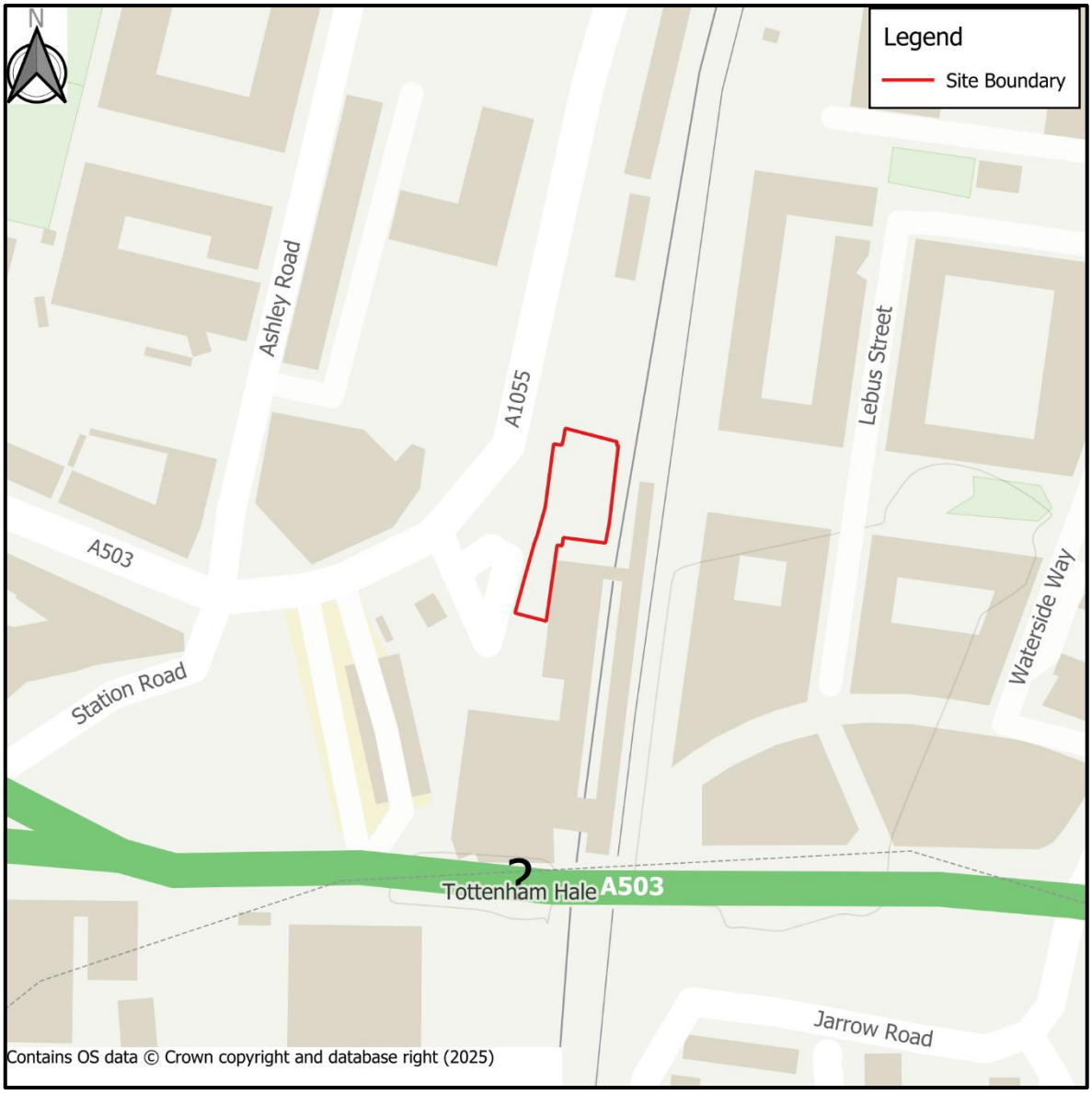


Figure 1.1 Site Location Plan

1.3.2 The northern boundary comprises of Tottenham Hale railway network depot. The eastern boundary is bound by Tottenham Hale railway station and tracks, beyond which is student accommodation and commercial buildings. The southern boundary comprises further elements of Tottenham Hale railway station and Tottenham Hale underground station. Beyond this is Ferry Lane. The western boundary is bound by Watermead Way Road and beyond this are offices and a car park.

1.3.3 In its current form the site comprises wholly of hardstanding, therefore it is assumed the site follows an engineered regime of surface water runoff.

1.4 Topography

1.4.1 The site is generally level, with elevations across the site at approximately 8.5mAOD.

1.4.2 LiDAR data, provided by DEFRA, covering the area around the site can be seen in **Figure 1.2.** This shows levels to the east of the site fall and elevations to the south and south west of the site rise. Levels beyond the north and north west of the site boundary lie at similar levels as the application site.

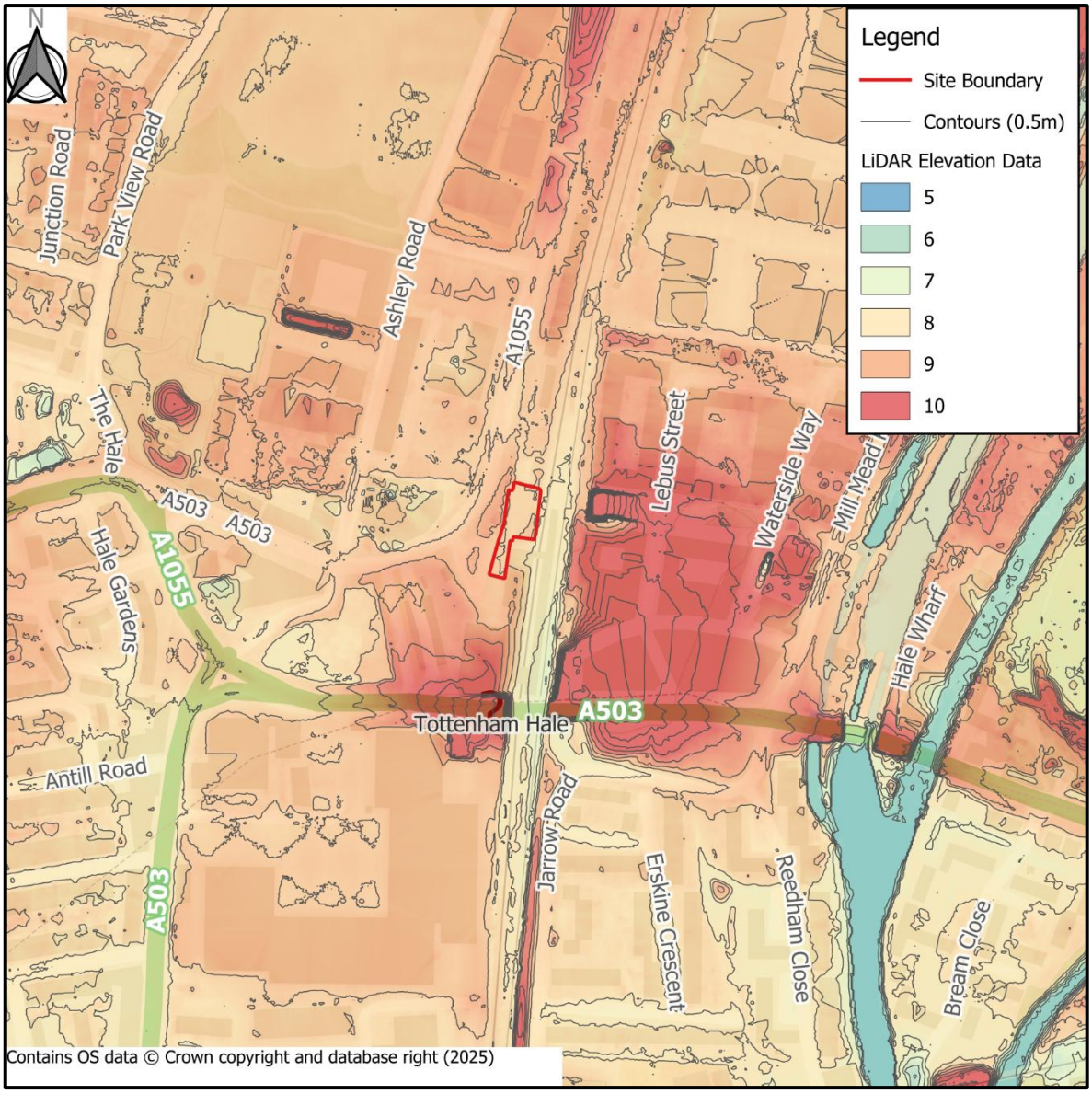


Figure 1.2 LiDAR Elevation Data

1.5 Proposed Development

1.5.1 The development comprises of a charging station, with 8 charging points, along with an unmanned amenity unity with a restroom, electrical sub-station, as well as associated landscaping, SuDS features and access to Cygnet Way. An initial layout plan of phase one can be seen for reference in **Appendix A**.

2 Existing Conditions

2.1 Existing site

2.1.1 In its current form the site comprises of a car park and a storage area.

2.1.2 A review of the OS OpenRivers dataset shows there are no watercourses within the site boundary. The closest watercourse, Pymmes Brook, is located approximately 270m to the east of the site boundary. Adjacent the Pymmes Brook is the River Lee Navigation and River Lea, all three watercourses converge to the south east of the site and continue as the River Lea. Approximately 1km to the east of the site boundary the Lockwood, Low Maynard and Walthamstow Reservoirs can be found.

2.1.3 The local watercourses and reservoirs/large waterbodies are shown for context in **Figure 2.1**.

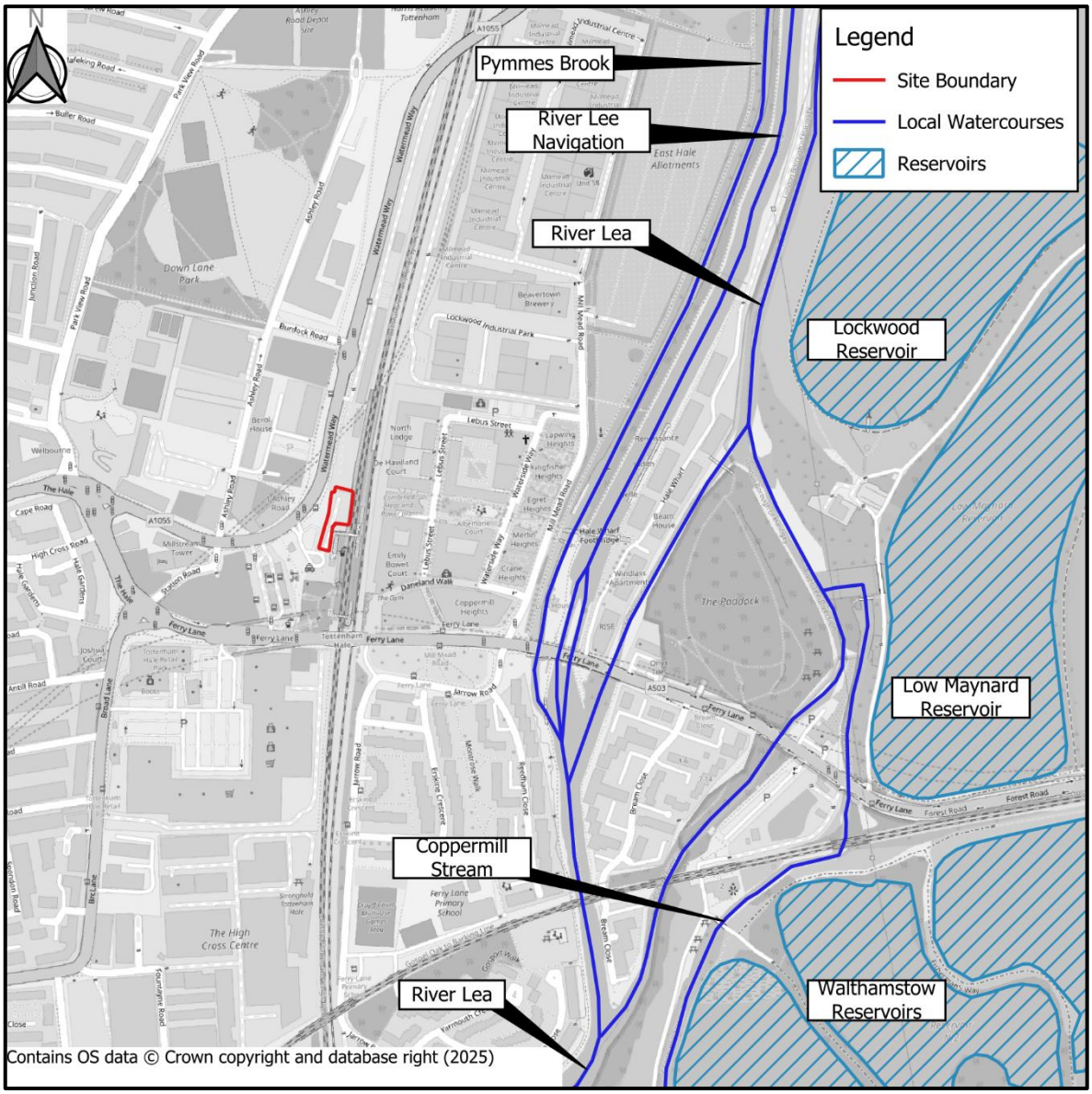


Figure 2.1 Local Watercourses

2.2 Site Geology

2.2.1 British Geological Survey (BGS) mapping suggests the site has both bedrock geology and superficial deposits mapped.

2.2.2 The site is wholly underlain by a superficial geology comprising 'Enfield Silt Member – Clay and Silt' and by a bedrock geology comprising 'London Clay Formation – Clay, Silt and Sand'.

2.2.3 BGS have produced mapping that shows locations and information of boreholes. The mapping shows that there are no records of any boreholes within the site boundary, with the nearest borehole located approximately 100m to the east of the site boundary, with borehole reference TQ38NW68. The borehole was drilled to a depth of 9.14m and the records show a similar geology implied by BGS geology mapping. All boreholes in this location reported a high Standing Water Level (S.W.L) with the highest reported as 2.5m BGL (Below Ground Level).

2.2.4 It is considered that due to the underlying geology being predominantly formed of clay and the current use of the site, infiltration as a means of surface water disposal will likely not be feasible. Full soakaway testing to BRE365 may be required to support further, more detailed drainage designs to satisfy the drainage hierarchy requirements set out in Building Regulations Approved Document H.

2.3 Existing Runoff Rate

2.3.1 The overall application site boundary comprises approximately 0.12 ha to be entirely developed. This has been taken from the most recent development proposals, available as part of the submission documents accompanying this application.

2.3.2 An assumed impermeability of 100% has been used for the parcel to derive a total contributing impermeable area of 0.12ha. The developable area has been used to calculate the equivalent greenfield runoff rate.

2.3.3 An assessment of the equivalent greenfield surface water runoff rate from the proposed development areas has been undertaken using MicroDrainage software and is summarised within **Table 2.1**. The equivalent greenfield QBAR runoff rate equates to a pro-rated rate of 1.5l/s/ha. Full outputs from MicroDrainage are included for reference as **Appendix B**.

2.3.4 The runoff rates have been estimated using the ICP SuDS method, with appropriate pro-rated adjustments for a site less than 50ha, as recommended in Interim Code of Practice for Sustainable Drainage. This was undertaken within MicroDrainage, which make the necessary adjustments for small sites automatically.

Table 2.1 Greenfield Runoff Rates

Area	Runoff Rate			
	1-year (l/s)	QBAR (l/s)	30-year (l/s)	100-year (l/s)
Site Area 0.12ha	0.2	0.2	0.4	0.6
1ha	1.3	1.5	3.4	4.9

2.3.5 It is proposed that any system used to restrict discharge to such a rate is likely to be unreliable across its design life due to blockage risk. The rate of discharge has therefore been set to 2l/s as a practicable minimum.

2.3.6 This principle has been accepted by Thames Water in the Pre-Planning Enquiry, which has been included as **Appendix C**.

2.3.7 The site is previously developed, and subject to an existing engineered regime of surface water drainage and disposal. There is no topographical survey for the site, however, LiDAR data shows the site to be relatively flat, with surface water direct to the north. As such, the existing brownfield runoff rate as calculated by the Modified rational method would be approximately 16.68l/s. A detailed drainage survey has not been made available to confirm exact points of connection, but as the proposed strategy would

seek to reduce the runoff rate in any case, a substantial betterment will be provided above the current situation.

2.4 Existing Runoff Volume

2.4.1 An assessment of the existing surface water runoff volume from the entire area proposed for development has been made for a 1 in 100-year, 6-hour storm.

2.4.2 As the area of site to be redeveloped is mostly undeveloped (with a few small areas which have been developed), the runoff volume has been calculated for the area to be constructed on under current proposals using the Source Control module within Micro Drainage to be 7.8m^3, results are included within **Appendix D.**

3 Surface Water Strategy

3.1 Drainage Hierarchy

3.1.1 Prevailing local and national guidance suggests that surface water runoff from a development should be disposed of as high up the following hierarchy as reasonably practicable, this is shown in the 'London Borough of Haringey Surface Water Management Plan, Section 5 SuDS Assessment and Selection':

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

3.1.2 The aim of this approach is to manage surface water runoff close to where it falls and mimic natural drainage as closely as possible.

3.1.3 Water reuse is to be considered in the form of rainwater harvesting. Surface runoff collected by the above ground drainage system would be used for greywater systems, and irrigation purposes. These measures should be explored further at detailed design, although the proposed use may only have limited demand for greywater reuse.

3.1.4 BGS shows the site to be wholly underlain by a superficial geology comprising Enfield Silt Member – Clay and Silt.

3.1.5 This suggests there is a high potential for water to move within the superficial strata, as well as a low possibility to utilise infiltration as a means of surface water disposal.

3.1.6 The Site is underlain by a bedrock geology comprising London Clay Formation. This is formed of Clay and Silt, which suggests that there are large quantities of water stored within the strata. This also suggests a low infiltration possibility into the bedrock strata.

3.1.7 Given the evidence above and that the risk associated with locating infiltration features adjacent to foundations/structures, it is considered infiltration is not a feasible method to dispose of surface water runoff.

3.1.8 The nearest watercourse to Site is the River Lea approximately 300m to the East and so would not offer a suitable discharge location.

3.1.9 There are no other known culverts or historic waterways in the vicinity of the Proposed Development.

3.1.10 Given the location within central London a connection to the River Lea is not considered to be feasible due to a substantial number of constraints.

3.1.11 It is therefore, proposed to drain the site into the existing surface water network located to the west of the site along Watermead Way, making use of attenuation to store water on site prior to a gradual release.

3.1.12 It is considered that the drainage hierarchy assessment is satisfied by the above.

3.1.13 The locations and routes of outfall are shown on the drainage strategy drawing presented in **Appendix E**.

3.2 Surface Water Attenuation

3.2.1 The overall Site application area is 0.12ha, and based on the latest available masterplan an assumed developable area of 100% has been applied.

3.2.2 The total impermeable area contributing to the drainage system has been calculated as 0.12ha. Corresponding parameters are included for reference on the drainage strategy drawing reference 110114-PEF-ZZ-XX-DR-CD-0500 included as **Appendix E**.

3.2.3 As a runoff rate restriction is required, it is necessary to provide surface water attenuation to balance the excess volume in a safe manner. Sufficient storage is provided for events up to the 1 in 100-year storm with a 40% allowance for climate change. In line with the London Management Catchment.

3.2.4 In order to balance the excess surface water runoff generated by the Proposed Development, storage will be provided via below ground attenuation tanks. The summary of impermeable area for the catchment, along with the proposed discharge rate and approximate attenuation volume is provided in **Table 3-1**.

Table 3-1 Impermeable Area, Discharge Rates, and Volume of Attenuation

Total Area (ha)	Resultant Impermeable Area (ha)	Restricted Discharge Rate (l/s)	Peak Volume of Attenuation (m^3) under Critical 100-year Event
0.12	0.12	2.0	108

3.2.5 The total attenuation volume for the Site is provided by two below ground attenuation tanks.

3.2.6 The main storage tank is located within the centre of the site, with the second located underneath the open green space. Permeable paving has been proposed in all footways/paved areas.

3.2.7 MicroDrainage outputs have been included in **Appendix F** for reference.

3.2.8 The indicative surface water layout for the development shows the locations of the attenuation tanks and SuDS features. This has been included for reference as **Appendix E**.

3.3 Runoff Volume Control

3.3.1 The DEFRA Non-Statutory Technical Standards for Sustainable Drainage Systems S4-S6 states that where reasonably practical, the runoff volume from a development for the 1 in 100-year 6-hour rainfall event should not exceed the runoff volume prior to development or redevelopment. Additionally, if practicable on previous developed sites, the runoff volume should not exceed the equivalent greenfield runoff volume.

3.3.2 As the proposed strategy seeks to restrict runoff to as close to greenfield QBAR rate for all return periods, the runoff volume criteria of the non-statutory technical standards for sustainable drainage systems are met, and the provision of long-term storage is not required.

3.4 SuDS Features

3.4.1 The proposed strategy is based on sustainable drainage principles, employing SuDS features to manage the surface water runoff across the Site. Principally, all surface water will ultimately be stored in below ground attenuation tanks, before discharging into the existing combine network via a new connection, located along Great Suffolk Street.

3.4.2 A wide variety of other SuDS features can also be implemented across the development as the design progresses and this could include, but is not limited to;

- Rainwater harvesting systems
- Green roof on the amenity building
- Filter strips alongside pedestrian walkways
- Bioretention areas (rain gardens, planters) situated around the internal circulation road
- Permeable paving to EV charging bays

3.4.3 It is recommended that the final layout uses the proposed road infrastructure to provide drainage exceedance (overland flood flow) routes away from development for event in excess of the capacity of the drainage system.

3.5 Water Quality

3.5.1 The Simple Index Approach for assessing pollution prevention outlined in the SuDS Manual has been used to quantify the water quality impacts of the proposed SuDS solution to determine their effectiveness.

3.5.2 The proposed use of the development would be considered a low pollution hazard level, so pollution values have been copies from the SuDS Manual and compared to the mitigation index values as per **Table 3.2**. For this assessment, the higher pollution hazard indices for the use have been listed as a conservative approach, the pollution hazard level for the amenity building would be lower. A summary of the Simple Index Approach is included for reference **Appendix G**.

Table 3.2 SuDS Mitigation Indices (from CIRIA SuDS Manual)

SuDS Component	Mitigation Indices		
	Total Suspended Solids	***Metals***	***Hydrocarbons***
Land Use Pollution Index	-	-	-
Commercial yard and delivery areas, non-residential car parking with frequent change	0.5	0.4	0.4
SuDS FEATURE	-	-	-
Permeable Pavement	0.7	0.6	0.7
Filter Drains	0.4	0.4	0.4
Attenuation Storage Tank	TBC	TBC	TBC
SuDS Mitigation Index	**0.7+(0.4/2) 0.9**	**0.6+(0.4/2) 0.8**	**0.7+(0.4/2) 0.9**
Mitigation Requirement Met?	**Yes**	**Yes**	**Yes**

3.5.3 Additional SuDS features such as filter strips, filter drains etc, can be also be included and implemented at detailed design stage.

3.5.4 Therefore, the attenuation tanks alongside a green roof on the amenity building and permeable paving and/or filter strips and bioretention areas around the site are considered suitable SuDS features to manage the surface water pollution potential expected from the proposed development to ensure suitable water quality standards in the downstream receiving watercourses.

3.6 Maintenance and Adoption

3.6.1 For the proposed surface water drainage system to function correctly, it will need to be appropriately maintained. It is proposed that the operator will take full responsibility for the maintenance of the proposed SuDS features and network.

3.6.2 The maintenance schedule for the network must be comprehensive and detail the specific maintenance requirements for each element of the drainage system. The CIRIA SuDS Manual has extensive information relating to the maintenance of SuDS which should be consulted when specifying the requirements.

3.6.3 The maintenance schedule for the network must be comprehensive and detail the specific maintenance requirements for each element of the drainage system. The CIRIA SuDS Manual has extensive information relating to the maintenance of SuDS which should be consulted when specifying the requirements.

3.6.4 For pipes, manholes and gullies, both general best practice and specific manufacturer maintenance protocols should be followed. Example maintenance activities and frequencies for the proposed attenuation storage tanks and permeable paving are given in **Table 3.3** and **Table 3.4** respectively.

Table 3.3 Operation and Maintenance Requirements for Attenuation Storage Tanks

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance).	Monthly
	For systems when rainfall infiltrates into the tank from above, check surface of filters for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structure and/or internal forebays.	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Table 3.4 Operation and Maintenance Requirements for Permeable Paving

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto permeable surface from adjacent impermeable areas as this is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Action	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the	As required

	structural performance or hazard to users, and replace lost jointing material	
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chamber	Annually

4 Foul Water Drainage

4.1.1 The site is mostly developed as is currently used for storage, as such the site has no requirements for foul water drainage, and sewer records attained from Thames Water (Included in **Appendix H**), show no presence of public foul water sewers within the site boundary. However, they site may be served by a small network of existing private sewers.

4.1.2 It is proposed to utilise gravity foul sewers to drain foul water to the low point within the site prior to discharge into the public foul water infrastructure. At this stage, an indicative connection to manhole ref MH461F has been proposed as the closest manhole to the site.

4.1.3 However, Thames Water records provide no information on the invert level of this manhole, nor ones immediately up and downstream. Therefore, a full survey of the foul network north of the site should be carried out at the earliest opportunity to confirm a gravity connection from the site can be made.

4.1.4 A Pre-planning enquiry has been submitted to Thames Water to determine the capacity of the foul water sewer which runs to the north of the site boundary, based on the information provided for the amenity building (2x toilets plus lobby area).

4.1.5 Thames Water has confirmed that there is currently capacity within the foul network to take the proposed foul flows from the site. The Pre-planning Enquiry response from Thames Water has been included in **Appendix C** for reference.

5 Summary

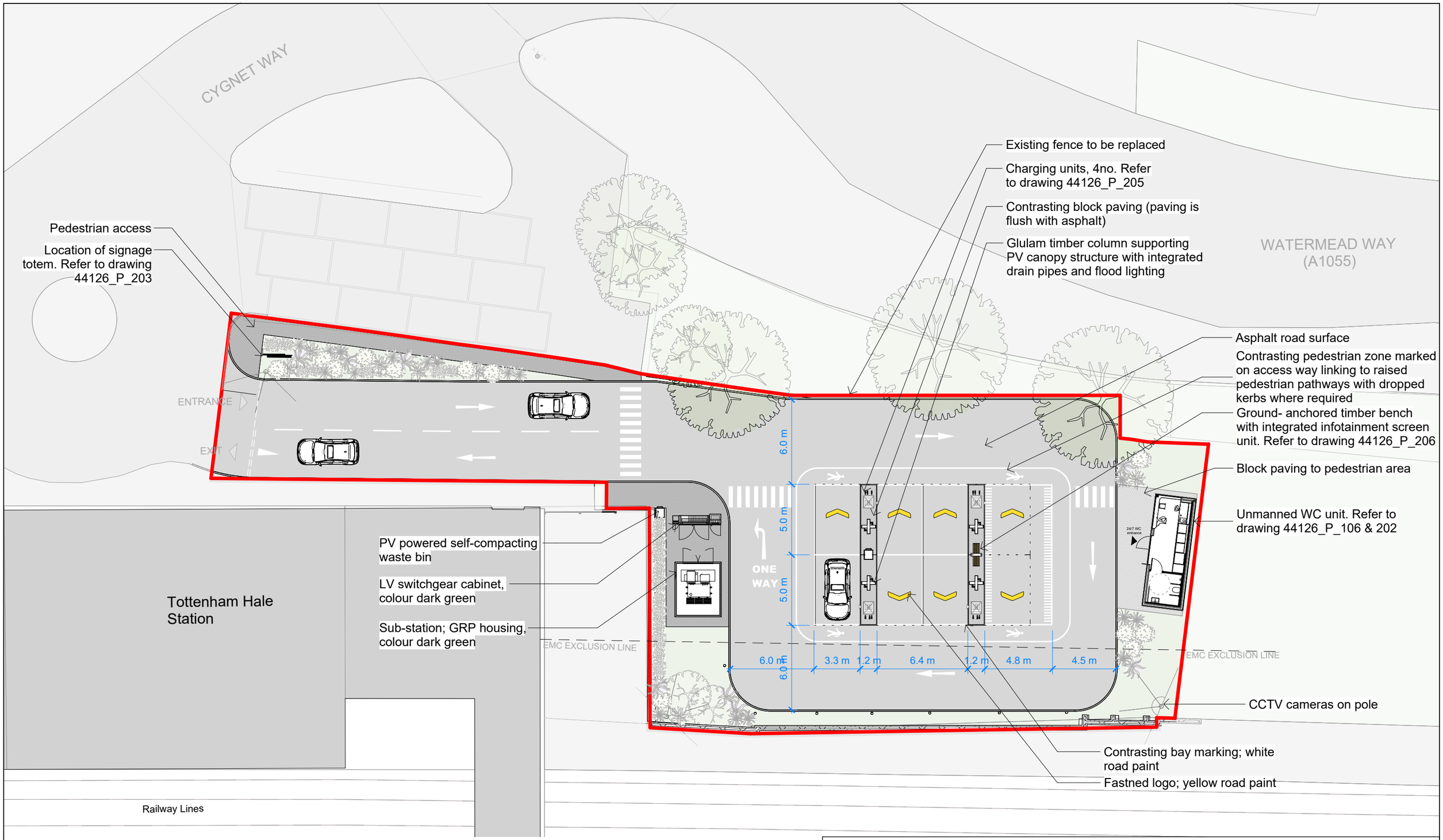
5.1.1 This report and supporting appendices demonstrate that an appropriate surface water drainage strategy has been developed for the site based on sustainable drainage principles in line with the relevant local and national policy and standards.

5.1.2 This Sustainable Drainage Report is intended to support a full planning application and as such the level of detail included is commensurate with the nature of the proposals. **Table 5.1** provides a summary of key information included within this report. The London Borough of Haringey Proforma has been completed and included as **Appendix I**.

Table 5.1 Summary of Key Information

Topic	Existing Site		Proposed Development
Site Area (hectares)	0.12		0.12
Impermeable Area (hectares)	0.12		0.12
Number of Sub-Catchments	1		1
Outfall Location(s)	Thames Water Sewer Network (assumed)		Thames Surface Water Network
Peak Runoff Rate (l/s)	Greenfield Equivalent Rates		2.0 (l/s)
	1 in 1-year	0.2	
	QBAR	0.15	
	1 in 30-year	0.4	
	1 in 100-year	0.6	
	1 in 100-year + CC	-	
Proposed Storage Volume (m^3)	-		108
SuDS Features	-		Filter drains Permeable Paving Attenuation tank
Maintenance Responsibilities	Landowner		Private - Site Operator or appointed Management Company

Appendix A Development Masterplan



1 Proposed Ground Floor Level Plan

1 : 250

Key:

Application Boundary (1207 m2)

5m 25m

N

Fastned

Places for London
The TfL Property Company

Project:	44.126 Tottenham Hale		
Drawing Title:	Proposed Ground Level Plan		
Status:	PLANNING		
Scale: 1:250	Format: A3	Drawing No: 44126_P_103	
Author: MR	Date: July 25	Revision: A	

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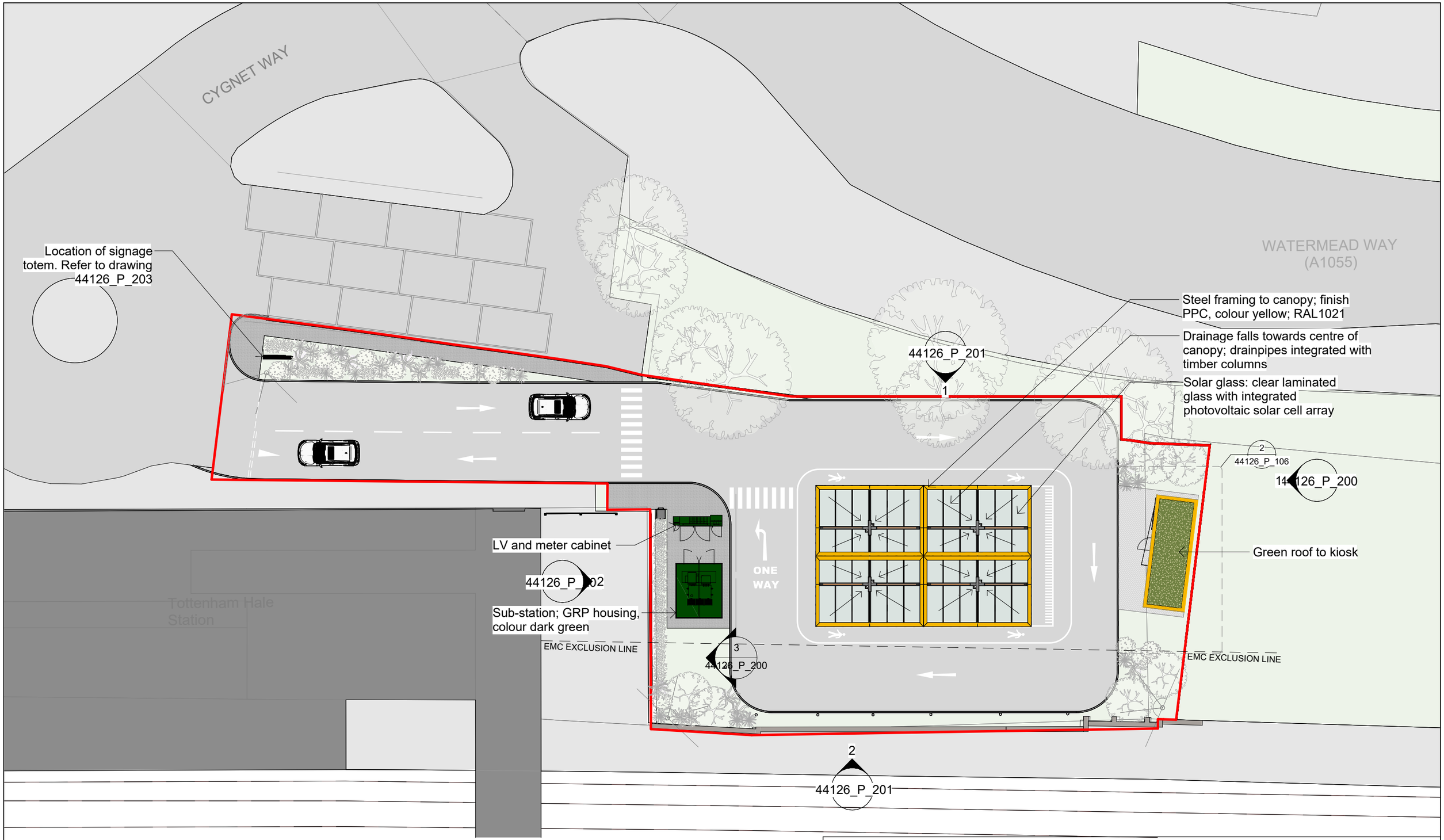

1 Proposed Canopy Level Plan

1 : 250

Key:

Application Boundary (1207 m2)

5m 25m

N

Fastned

Places for London
The TfL Property Company

Project:	44.126 Tottenham Hale		
Drawing Title:	Proposed Canopy Level Plan		
Status:	PLANNING		
Scale: 1:250	Format: A3	Drawing No: 44126_P_105	
Author: MR	Date: July 25	Revision: A	

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London
EC2A 3DR

Appendix B Existing Greenfield Runoff Rate

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.300
Area (ha)	0.120	Urban	0.000
SAAR (mm)	600	Region Number	Region 6

Results l/s

QBAR Rural	0.2
QBAR Urban	0.2
Q1 year	0.2
Q1 year	0.2
Q30 years	0.4
Q100 years	0.6

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Appendix C Thames Water Pre-Planning Enquiry Response

Mr Santino Paoli
4th Floor The Poynt
Wollaton Street
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Nottinghamshire
NG1 5FW

Wastewater pre-planning
Our ref DS6136117/DTS78818

31 March 2025

Pre-planning enquiry: Confirmation of sufficient capacity

Site: Tottenham Hale, Cygnet Way, London, N17 9NA

Dear Mr Paoli,

Thank you for providing information on your development to demolish a 1200sqm car park and construct 8 charging stations along with an unmanned amenity unit, which contains two restrooms area of site to be constructed is 1200sqm.

Foul Water to discharge via gravity flow into manhole TQ3489**461F** into a 450mm Foul Water sewer.

Surface Water to discharge via gravity flow in manhole TQ3489**4604** into a 225mm Surface Water sewer.

Surface Water restricted to a maximum discharge rate of 2l/s.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your

surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

When developing a site, policy SI 13 of the London Plan states "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:".

The disposal hierarchy being:

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.

Where connection to the public sewerage network is required to manage surface water flows we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted to a total of 2.0 l/s then Thames Water would not have any objections to the proposal.

Please see our FAQ's leaflet for additional information.

Capacity at STW?

The receiving network is served by Deephams STW and there isn't a known performance issue which may cause the EA to object to the development.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you've any further questions, please contact us.

Yours sincerely,



Sarah-Jane Lacey
Adoption Engineer
Developer Services

Appendix D Existing Greenfield Runoff Volume

Greenfield Runoff Volume

FEH Data

Return Period (years)	100
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 534496 189612 TQ 34496 89612
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	0.120
SAAR (mm)	600
CWI	87.000
SPR Host	0.000
URBEXT (USER)	0.2500

Results

Percentage Runoff (%)	7.95
Greenfield Runoff Volume (m^3)	7.849

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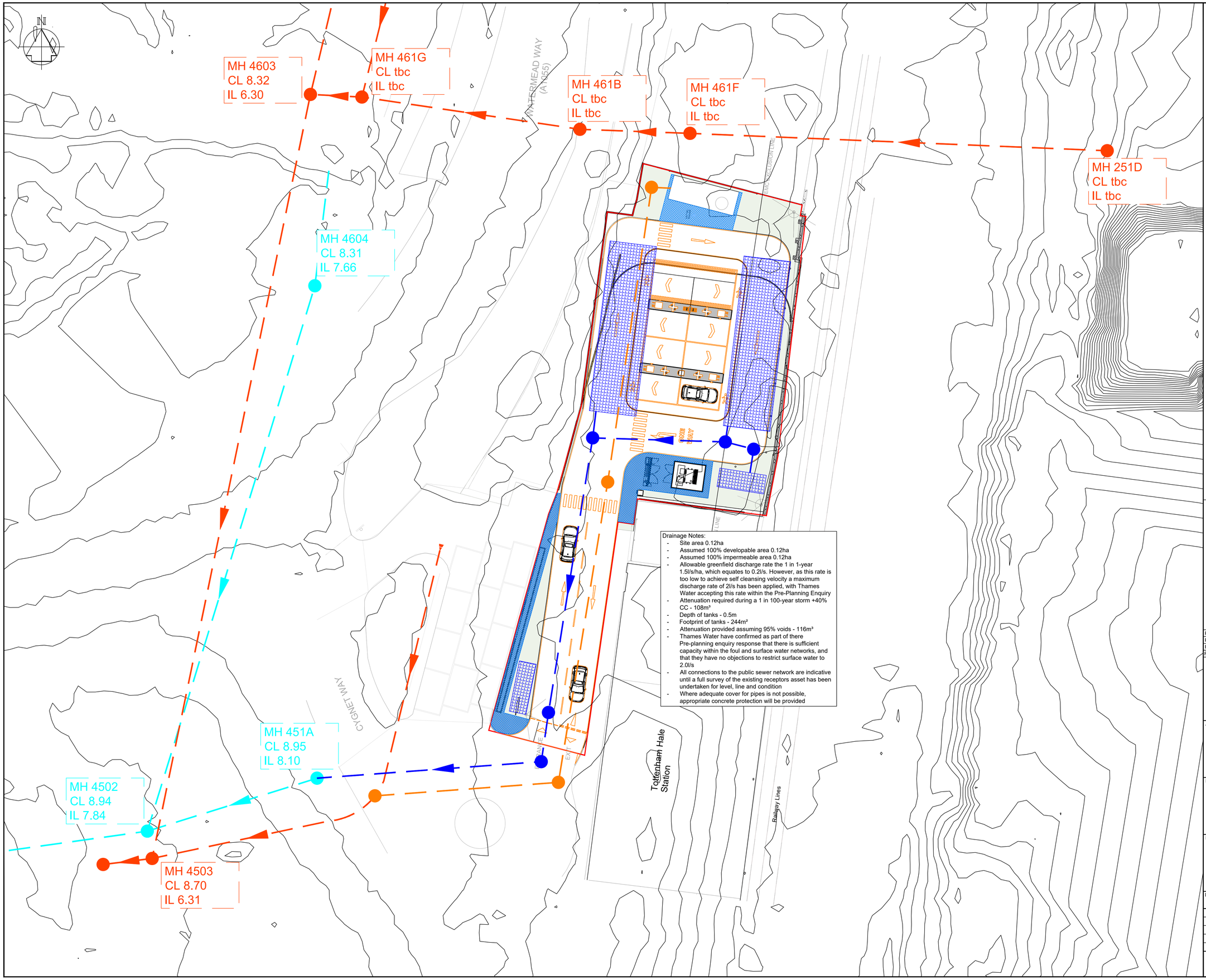
Appendix E Conceptual Drainage Strategy



Drainage Notes:

- Site area 0.12ha
- Assumed 100% developable area 0.12ha
- Assumed 100% impermeable area 0.12ha
- Allowable greenfield discharge rate the 1 in 1-year 1.5l/s/ha, which equates to 0.2l/s. However, as this rate is too low to achieve self cleansing velocity a maximum discharge rate of 2l/s has been applied, with Thames Water accepting this rate within the Pre-Planning Enquiry
- Attenuation required during a 1 in 100-year storm +40% CC - 108m³
- Depth of tanks - 0.5m
- Footprint of tanks - 244m²
- Attenuation provided assuming 95% voids - 116m³
- Thames Water have confirmed as part of there Pre-planning enquiry response that there is sufficient capacity within the foul and surface water networks, and that they have no objections to restrict surface water to 2.0l/s
- All connections to the public sewer network are indicative until a full survey of the existing receptors asset has been undertaken for level, line and condition
- Where adequate cover for pipes is not possible, appropriate concrete protection will be provided

GENERAL NOTES

G1. DO NOT SCALE THIS DRAWING.

G2. ANY DIMENSIONAL DISCREPANCIES SHOULD BE NOTIFIED TO THE ENGINEER IMMEDIATELY.

G3. ALL DIMENSIONS ARE IN MILLIMETRES - (mm)
ALL LEVELS ARE IN METRES - (m) AND ARE ABOVE ORDNANCE DATUM AT NEWLYN, CORNWALL UNLESS NOTED OTHERWISE.

G4. NORTH SHOWN INDICATIVE ONLY

G5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT; SPECIFICATIONS; DRAWINGS; DETAILS AND OTHER DESIGN INFORMATION.

G6. ALL DRAWINGS AND WRITTEN MATERIAL CONTAINED WITHIN, CONSTITUTE ORIGINAL AND UNPUBLISHED WORK OF THE ENGINEER AND MAY NOT BE DUPLICATED, USED, REPRODUCED OR DISCLOSED WITHOUT WRITTEN CONSENT OR EXPRESS PERMISSION FROM THE ENGINEER.

G7. ALL INFORMATION CONTAINED IN THIS DOCUMENT IS COPYRIGHT ©

G8. WHERE THE CONTRACTOR UNDERTAKES OR ENGAGES A THIRD PARTY TO UNDERTAKE TEMPORARY WORKS DESIGN, OR VARIES THE PELL FRISCHMANN DESIGN IN ANY WAY, THEN THE CONTRACTOR WILL TAKE FULL RESPONSIBILITY AND LIABILITY FOR ALL DESIGN ASPECTS, INCLUDING A DESIGN RISK ASSESSMENT. THE CONTRACTOR SHALL INFORM PELL FRISCHMANN OF ANY PROPOSED VARIANCES TO THE DESIGN.

KEY:

SITE BOUNDARY

PERMEABLE PAVING

ATTENUATION TANKS

THAMES WATER SURFACE WATER NETWORK

THAMES WATER FOUL WATER NETWORK

PROPOSED SURFACE WATER CONNECTION

PROPOSED FOUL WATER CONNECTION

REV	DESCRIPTION	DRN	CHK	APP	DATE
P03	UPDATED TO LATEST MASTERPLAN	SP	HM	DAR	17.08.26
P02	UPDATED TO LATEST MASTERPLAN	SP	HM	DAR	15.07.25
P01	FIRST ISSUE	SP	HM	DAR	27.05.25

Pell Frischmann
4th FLOOR, THE POYNT, WOLLATON STREET, NOTTINGHAM NG1 5FW
Telephone +44 (0)115 784 8960
Email: pfnottingham@pellfrischmann.com
www.pellfrischmann.com

Architect/Client/Contractor

FASTNED

Project

TOTTENHAM HALE

Drawing Title

CONCEPTUAL
DRAINAGE STRATEGY

Drawing Status

FOR INFORMATION

	Name	Date	Status Code
Drawn	S. PAOLI	27.05.25	S2
Designed	S. PAOLI	27.05.25	Scale 1:200
Eng Chk	H. MCCOLL	27.05.25	Revision P03
Approved	D. ALLUM-ROONEY	27.05.25	

Drawing No.

110114 - PEF - ZZ - XX - DR - CD - 0500

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Appendix F Attenuation Storage Tank MicroDrainage Outputs

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	0.198	0.198	2.0	48.3	O K
30 min Summer	0.252	0.252	2.0	61.5	Flood Risk
60 min Summer	0.301	0.301	2.0	73.5	Flood Risk
120 min Summer	0.375	0.375	2.0	91.6	Flood Risk
180 min Summer	0.412	0.412	2.0	100.6	Flood Risk
240 min Summer	0.431	0.431	2.0	105.2	Flood Risk
360 min Summer	0.440	0.440	2.0	107.5	Flood Risk
480 min Summer	0.433	0.433	2.0	105.6	Flood Risk
600 min Summer	0.421	0.421	2.0	102.8	Flood Risk
720 min Summer	0.408	0.408	2.0	99.6	Flood Risk
960 min Summer	0.381	0.381	2.0	93.0	Flood Risk
1440 min Summer	0.323	0.323	2.0	78.9	Flood Risk
2160 min Summer	0.250	0.250	2.0	60.9	Flood Risk
2880 min Summer	0.194	0.194	2.0	47.3	O K
4320 min Summer	0.123	0.123	2.0	30.1	O K
5760 min Summer	0.091	0.091	1.9	22.2	O K
7200 min Summer	0.078	0.078	1.6	19.0	O K
8640 min Summer	0.069	0.069	1.5	17.0	O K
10080 min Summer	0.064	0.064	1.3	15.5	O K
15 min Winter	0.198	0.198	2.0	48.3	O K
30 min Winter	0.252	0.252	2.0	61.5	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	167.381	0.0	48.5	26
30 min Summer	107.492	0.0	62.6	40
60 min Summer	65.677	0.0	78.0	68
120 min Summer	42.269	0.0	100.5	128
180 min Summer	32.104	0.0	114.6	186
240 min Summer	26.130	0.0	124.3	244
360 min Summer	19.187	0.0	137.0	362
480 min Summer	15.215	0.0	144.8	438
600 min Summer	12.629	0.0	150.2	496
720 min Summer	10.806	0.0	154.3	558
960 min Summer	8.399	0.0	159.8	684
1440 min Summer	5.830	0.0	166.2	948
2160 min Summer	4.023	0.0	173.2	1324
2880 min Summer	3.093	0.0	177.5	1680
4320 min Summer	2.147	0.0	184.4	2344
5760 min Summer	1.667	0.0	191.8	3000
7200 min Summer	1.382	0.0	198.6	3744
8640 min Summer	1.192	0.0	205.4	4416
10080 min Summer	1.057	0.0	212.0	5144
15 min Winter	167.381	0.0	48.5	26
30 min Winter	107.492	0.0	62.6	40

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	0.301	0.301	2.0	73.6	Flood Risk
120 min Winter	0.375	0.375	2.0	91.6	Flood Risk
180 min Winter	0.412	0.412	2.0	100.6	Flood Risk
240 min Winter	0.432	0.432	2.0	105.3	Flood Risk
360 min Winter	0.442	0.442	2.0	107.8	Flood Risk
480 min Winter	0.434	0.434	2.0	106.0	Flood Risk
600 min Winter	0.419	0.419	2.0	102.2	Flood Risk
720 min Winter	0.404	0.404	2.0	98.5	Flood Risk
960 min Winter	0.370	0.370	2.0	90.2	Flood Risk
1440 min Winter	0.292	0.292	2.0	71.3	Flood Risk
2160 min Winter	0.197	0.197	2.0	48.1	O K
2880 min Winter	0.132	0.132	2.0	32.2	O K
4320 min Winter	0.081	0.081	1.7	19.9	O K
5760 min Winter	0.066	0.066	1.4	16.0	O K
7200 min Winter	0.057	0.057	1.1	14.0	O K
8640 min Winter	0.052	0.052	1.0	12.7	O K
10080 min Winter	0.048	0.048	0.9	11.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	65.677	0.0	78.0	68
120 min Winter	42.269	0.0	100.5	126
180 min Winter	32.104	0.0	114.6	182
240 min Winter	26.130	0.0	124.3	240
360 min Winter	19.187	0.0	137.0	352
480 min Winter	15.215	0.0	144.8	458
600 min Winter	12.629	0.0	150.3	548
720 min Winter	10.806	0.0	154.3	572
960 min Winter	8.399	0.0	159.8	726
1440 min Winter	5.830	0.0	166.3	1006
2160 min Winter	4.023	0.0	173.2	1384
2880 min Winter	3.093	0.0	177.5	1704
4320 min Winter	2.147	0.0	184.4	2332
5760 min Winter	1.667	0.0	191.8	3000
7200 min Winter	1.382	0.0	198.6	3744
8640 min Winter	1.192	0.0	205.4	4424
10080 min Winter	1.057	0.0	212.1	5152

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 534496 189612 TQ 34496 89612
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.120

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.040	4	8	0.040	8	12	0.040

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Model Details

Storage is Online Cover Level (m) 0.500

Tank or Pond Structure

Invert Level (m) 0.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	244.0	0.500	244.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0074-2000-0500-2000
Design Head (m)	0.500
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	74
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.500	2.0
Flush-Flo™	0.149	2.0
Kick-Flo®	0.342	1.7
Mean Flow over Head Range	-	1.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.9	1.200	3.0	3.000	4.6	7.000	6.8
0.200	2.0	1.400	3.2	3.500	4.9	7.500	7.1
0.300	1.8	1.600	3.4	4.000	5.2	8.000	7.3
0.400	1.8	1.800	3.6	4.500	5.5	8.500	7.5
0.500	2.0	2.000	3.8	5.000	5.8	9.000	7.8
0.600	2.2	2.200	3.9	5.500	6.1	9.500	8.0
0.800	2.5	2.400	4.1	6.000	6.3		
1.000	2.7	2.600	4.3	6.500	6.6		

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Appendix G Water Quality Assessment – Simple Index Approach

SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type	Low traffic roads (e.g. residential roads and general access roads, < 300 traffic movements/day)				
Pollution Hazard Level	Low				
Pollution Hazard Indices					
TSS	0.5				
Metals	0.4				
Hydrocarbons	0.4				
SuDS components proposed					
Component 1	Detention basin	SuDS components can only be assumed to deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters of the SuDS Manual. See also checklists in Appendix B			
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices					
TSS	0.5				
Metals	0.5				
Hydrocarbons	0.6				
Groundwater protection type	None				
Groundwater protection Pollution Mitigation Indices					
TSS	0				
Metals	0				
Hydrocarbons	0				
Combined Pollution Mitigation Indices					
TSS	0.5	Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England			
Metals	0.5				
Hydrocarbons	0.6				
Acceptability of Pollution Mitigation					
TSS	Sufficient				
Metals	Sufficient				
Hydrocarbons	Sufficient				

Appendix H Thames Water Sewer Records

Asset Location Search

Property Searches

Pell Frischmann
Floor 4, The Poynt,,
NOTTINGHAM
NG1 5FW

Search address supplied

Flat 1
Emily Bowes Court
Lebus Street
London
N17 9FD

Your reference Tottenham Hale

Our reference ALS/ALS Standard/2025_5127602

Search date 27 February 2025

Keeping you up-to-date

We have a new website and email address

Website URL: thameswater.co.uk/propertysearches

Email address: property.searches@thameswater.co.uk

Please do get in contact with us if you have any questions.

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

Asset Location Search

Property Searches

Search address supplied: Flat 1, Emily Bowes Court, Lebus Street, London, N17 9FD

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

Asset Location Search

Thames Water Property Searches

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.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer

Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

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

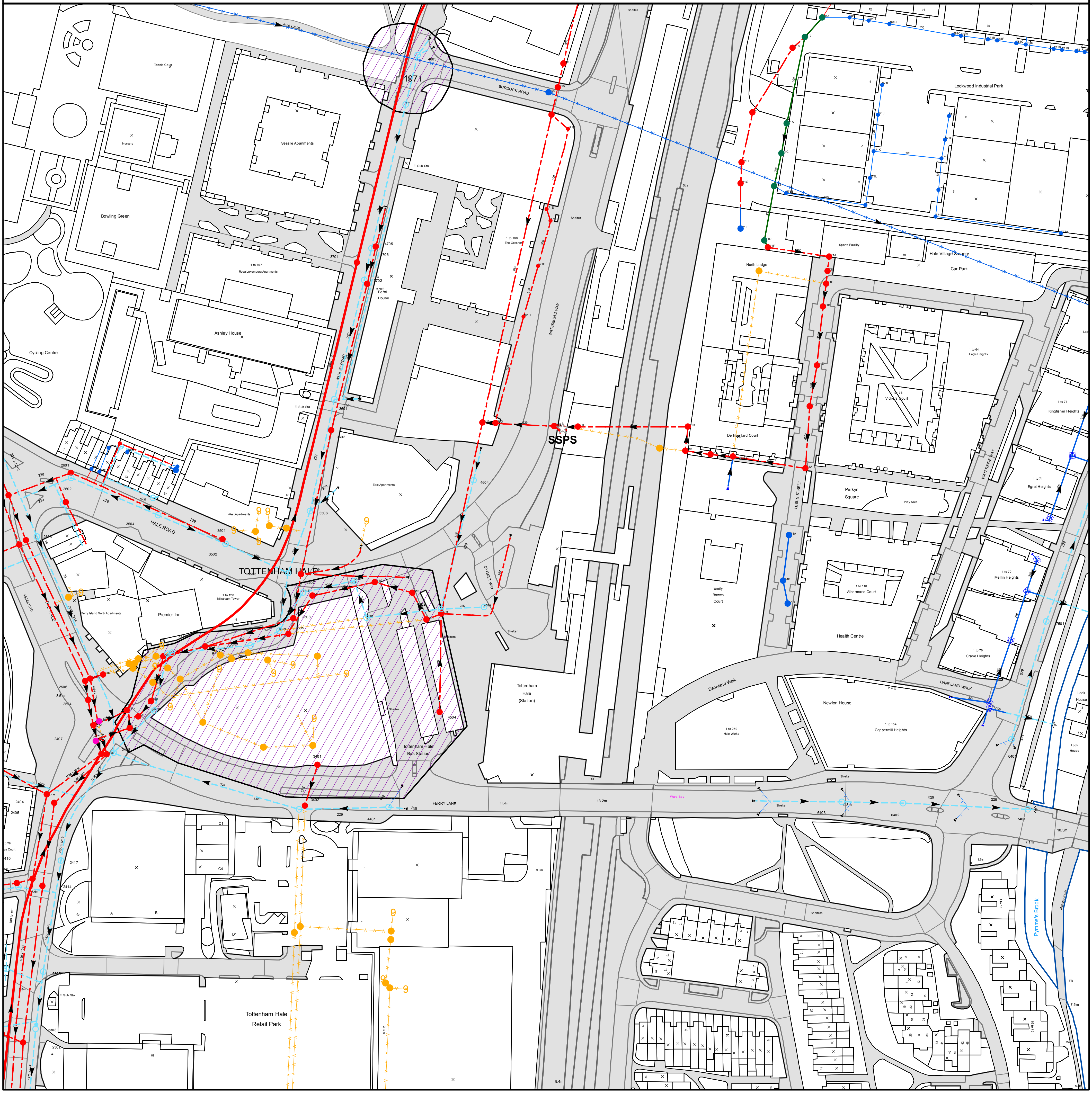
Should you require any advice concerning clean water connections, please contact:

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

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

Based on the Ordnance Survey Map with the
sanction of the Controller of H.M Stationary
Office License Number 10019345

ALS/ALS Standard/2025_5127602



0 10 20 40 60 80
Meters

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 before any works are undertaken. Crown copyright Reserved

Scale:	1:1789
Width:	500m
Printed By:	ASuji
Print Date:	27/02/2025
Map Centre:	534481,189582
Grid Reference:	TQ3489NW

Comments:

ALS/ALS Standard/2025_5127602

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
2414	7.73	5.23
23YZ		
2417	8	6.25
2303	7.8	6.19
2413	7.64	6.06
2410	7.69	5.1
2406	8.06	5.23
2302	7.7	5.25
251A		
3403	8.65	7.04
3505	8.28	5.92
4803	8.67	8.01
26YS		
3401		
4401	9.17	7.66
3701	8.67	-0.23
3502	8.22	7.36
4504		
6402	8.52	
3602	8.5	6.91
7401	8.63	5.63
2603	8.27	5.44
2504	8.16	5.42
4604	8.31	7.66
2602	8.34	7.02
2506	8.24	5.23
4502	8.94	7.84
6401	9.02	7.42
3513	8.23	7.08
4705	8.61	7.24
3504	8.31	7.46
3507	8.22	6.46
3601	8.64	7.55
571D		
571A		
571J		
671F		
671J		
671L		
661B		
661D		
781G		
671D		
5601		
571B		
561B		
561D		
671A		
671C		
671G		
481C		
36ZR		
2507	8.23	5.38
781F		
571H		
571F		
261B		
781C		
681C		
681F		
681G		
781D		
471A		
471C		
451A	108.95	108.096
551B		
261D		
351P		
251E		
351S		
451F		
351U		
251D	8.35	5.48
471F		
461H		
451H		

REFERENCE	COVER LEVEL	INVERT LEVEL
2305	7.73	6.23
2415	7.59	6.4
2513	8.14	0.1
2523	7.73	4.91
2405	7.82	5.22
2404	7.76	5.12
2408	8.08	6.29
2407	8.03	5.12
241D		
3503	8.19	7.2
7501	8.51	
26XS		
26YQ		
3509	8.21	6.98
2503	8.22	5.32
2505	8.2	6.47
4501	8.48	7.45
4503	8.7	6.31
3506	8.4	7.45
6403	9.41	
3402	8.73	7.06
3501	8.23	6.98
3702	8.77	7.82
2601	8.32	6.38
36ZP		
3703	8.69	7.17
36YX		
3508	8.22	6.34
4706	8.6	7.95
3512	7.97	6.98
2524		
3510	8.04	5.72
461B		
681J		
571C		
581B		
671I		
671K		
671M		
661C		
781E		
771A		
671E		
781B		
561A		
661A		
571E		
671B		
4702		
671H		
261A		
26XP		
241C	8.33	3.42
461F		
571I		
571G		
681A		
681B		
681D		
681I		
681H		
4603	8.32	6.3
471B		
261C		
551A		
551C		
471D		
251F		
351Q		
351T		
451G		
351R		
461G		
471G		
471E		

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 before any works are undertaken. Crown copyright Reserved

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

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.

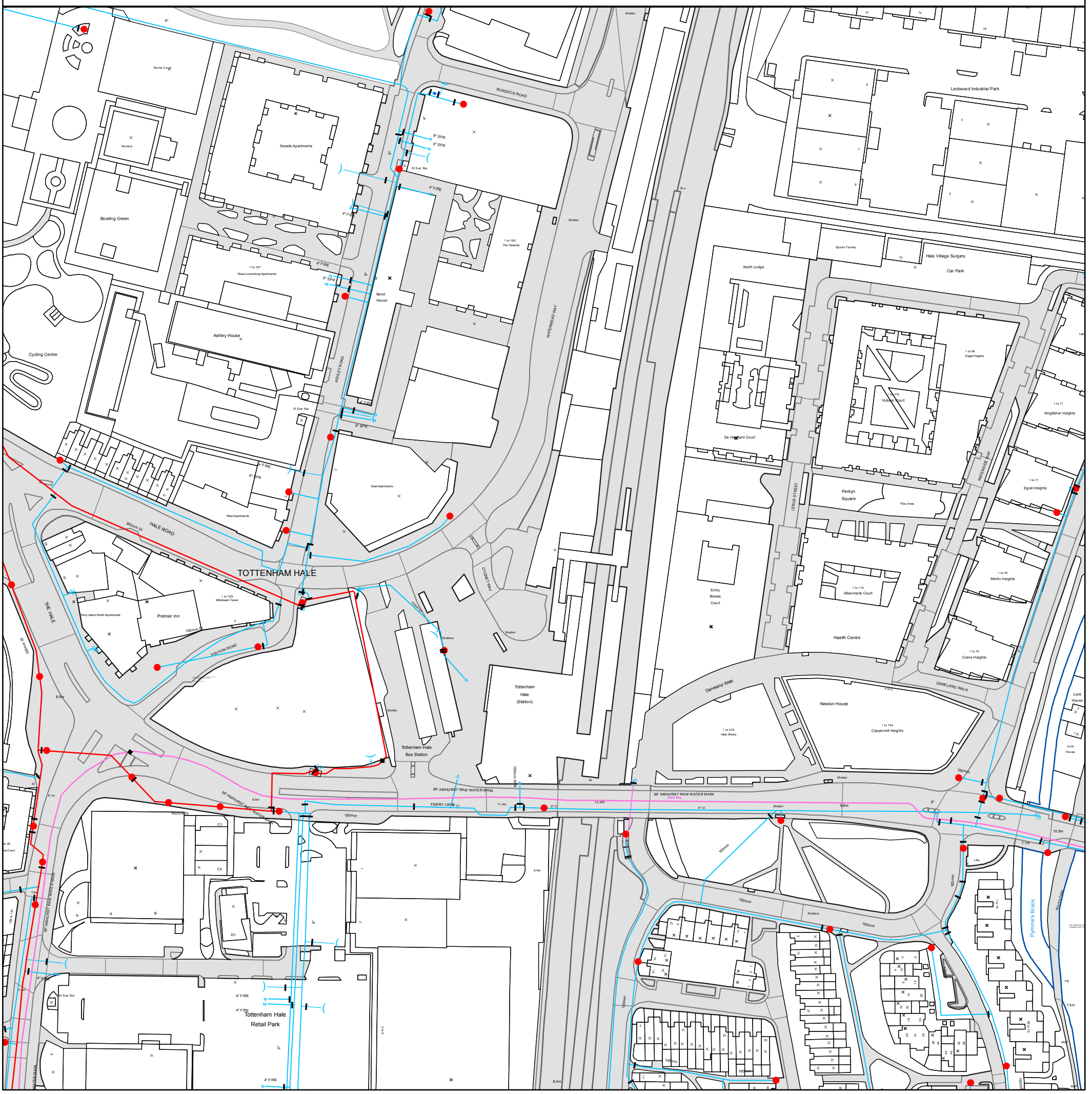
- Conduit Bridge
- Subway
- Tunnel

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.
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.

Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2025_5127602



0 10 20 40 60 80 Meters

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 before any works are undertaken. Crown copyright Reserved

Scale:	1:1789
Width:	500m
Printed By:	ASuji
Print Date:	27/02/2025
Map Centre:	534481,189582
Grid Reference:	TQ3489NW

Comments:

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger
- **Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Appendix I London Borough of Haringey Proforma Assessment

Haringey LONDON

GREATER**LONDON**AUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	Tottenham Hale
Address & post code	Watermead Way, Tottenham Hale, London Borough of Haringey, London, N179RF
OS Grid ref. (Easting, Northing)	E 534497
	N 189610
LPA reference (if applicable)	
Brief description of proposed work	The proposed development comprises of a charging station with a maximum capacity of 8 vehicles, along with and unmanned amenity unit with two restrooms, as well as associated landscaping, SuDS features and highway
Total site Area	1200 m^2
Total existing impervious area	1200 m^2
Total proposed impervious area	1200 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Unknown/not mentioned
Existing drainage connection type and location	Unknown
Designer Name	Santino Paoli
Designer Position	Graduate Engineer
Designer Company	Pell Frischmann

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Enfield Silt Member - Clay and Silt
Bedrock geology classification	London Clay Formation - Clay, Silt and Sand
Site infiltration rate	0 m/s
Depth to groundwater level	m below ground level
Is infiltration feasible?	No

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	N
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	Y	Y
7 discharge rainwater to the combined sewer.	N	N

2c. Proposed Discharge Details

Proposed discharge location	M4604 underneath Watermead Way
Has the owner/regulator of the discharge location been consulted?	Yes

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	0.2			
1 in 1	0.2			
1 in 30	0.4			
1 in 100	0.6			
1 in 100 + CC			200	2
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Flow Control Chamber		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	0	0	0
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	0.12		200
Total	**0.12**	**0**	**200**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 2.2 Site Geology
Drainage hierarchy (2b)	Section 3.1 Drainage Hierarchy
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Appendix C & H
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Appendix B, D, & F
Proposed SuDS measures & specifications (3b)	Appendix E & G
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Appendix A
Detailed drainage design drawings, including exceedance flow routes	Appendix E
Detailed landscaping plans	Appendix A
Maintenance strategy	Section3.6Maintenance & Adoption
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Section3.5WaterQualityAppendix G
b) biodiversity?	
c) amenity?	