

505-511 Archway Road

London N6 4HX

Flood Risk Assessment & Drainage Strategy Report

Prepared for
London Borough of Haringey

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1 Executive Summary

London Borough of Haringey propose to develop an area of land at the junction of 505-511 Archway Road and Baker's Lane in London within the London Borough of Haringey.

This Flood Risk Assessment and Drainage Strategy details the assessment carried out on the current flood risk to the development and sets out a preliminary sustainable drainage strategy in accordance with the provisions of the current National Planning Policy Framework (NPPF) updated July 2021, the London Plan 2021 and references other regional and local policies including Haringey's Local and Surface Water Management Plans.

The assessment concludes that:

- The site is wholly located in Flood Zone 1, the lowest probability of flooding from tidal and fluvial sources.
- Risk of flooding from ground water, sewers and artificial sources has been found to be low.
- A new sustainable drainage system (SuDS) will be implemented as part of the Development. This will restrict surface water run off to a total of 2.0l/s for all storm upto 1 in 100 year return period plus a 40% allowance for climate change, in accordance with current national and local policies.
- The development will include permeable paving and on-site attenuation which will be provided in underground geocellular storage tanks. These will be underneath the proposed landscape and footpaths within the development.
- Discharge from these SuDS features at the restricted rate quoted will be to adjacent public surface water sewers.
- Foul drainage from the development will discharge to adjacent public foul/combined sewers in accordance with Section 106 of the Water Industry Act 1991.

The information provided within the report satisfies the requirements of the NPPF, London Plan and local policies and the assessment concludes that there is no restriction on the types of development which can be constructed on the site. Additionally, the report demonstrates that the surface water run-off from the development can be managed sustainably to ensure that flood risk is not increased elsewhere.

2 Introduction

2.1 Background

CRE8 Structures have been appointed by Haringey Council to prepare a Flood Risk Assessment (FRA) and Drainage Strategy in respect of development proposals for a site at 505-511 Archway Road London N6 4HX, in the Borough of Haringey. This FRA is submitted to accompany a full planning application for the development of the site to provide residential accommodation.

The Site is currently used as a car washing facility. see Figure 2.1 below.



Figure 2.1 Site Location

2.2 Scope of FRA

The objective of the FRA/Drainage Strategy is to assess the current flood risk to the development and to demonstrate that the risks will be managed both now and over the lifetime of the development. This assessment will take future climate change into account and will have regard to the vulnerability of its users. The Drainage Strategy will provide for a sustainable surface water drainage scheme

The assessment has been undertaken in accordance with the provisions of the National Planning Policy Framework (NPPF), The London Plan and references other regional and local policies as described in Section 5. This has included a review of hydrology, flood risk and existing drainage, as well as topographic data, online regulatory flood mapping and the Local Authority's Strategic Flood Risk Assessment.

3 Site Location & Environmental Setting

3.1 Site Location

The site is located at 501-511 Archway Road London and is in the London Borough of Haringey, (Grid Reference: TQ 27944 88500).

The site is triangular in shape and is bounded by Archway Road to the north and east, Baker's Lane to the south existing residential development to south west and a filling station/convenience store to the west.

The total area of the site is approximately 1000m²

The site is currently used as a car washing facility. It is completely covered in buildings or hardstandings, see Figure 3.1.



Figure 3.1 Aerial View

3.2 Topography & Existing Drainage

The topographical survey in **Appendix A** shows that the site generally slopes from south east to north west.

Sewer records were acquired from Thames Water full copies are included in **Appendix B**. These show a number of sewers both foul and surface water adjacent to the site. An extract is included in Figure 3.2.

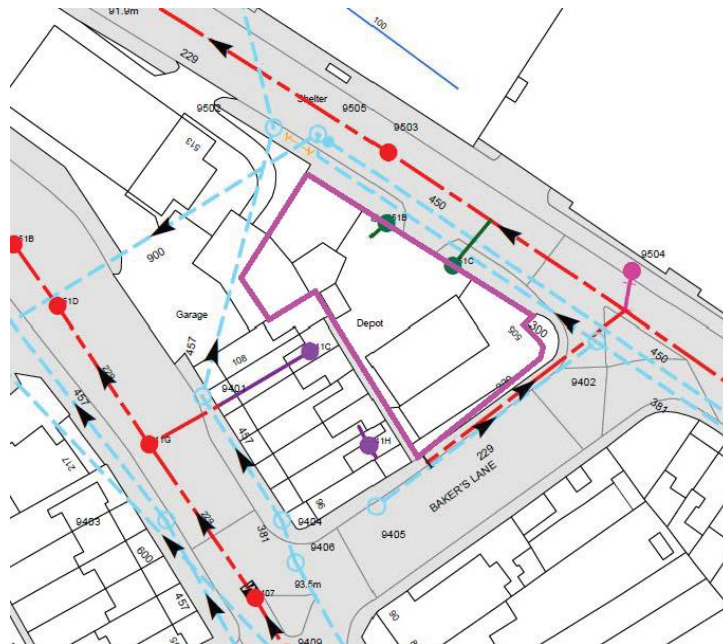


Figure 3.2 Existing Sewers

The published British Geological Survey (BGS) mapping identifies the site to be wholly underlain by the London Clay Formation, see Figure 3.3 below. The site does not have any superficial geology.



Figure 3.3 Bedrock Geology

3.3 EA Flood Data

The EA's flood mapping website provides flood risk information in respect of River and Sea and Surface Water flooding to inform FRAs for planning applications. In the case of this site the potential flood risks associated with each of these flood sources is shown on **Figures 3.4** and **3.5** below.

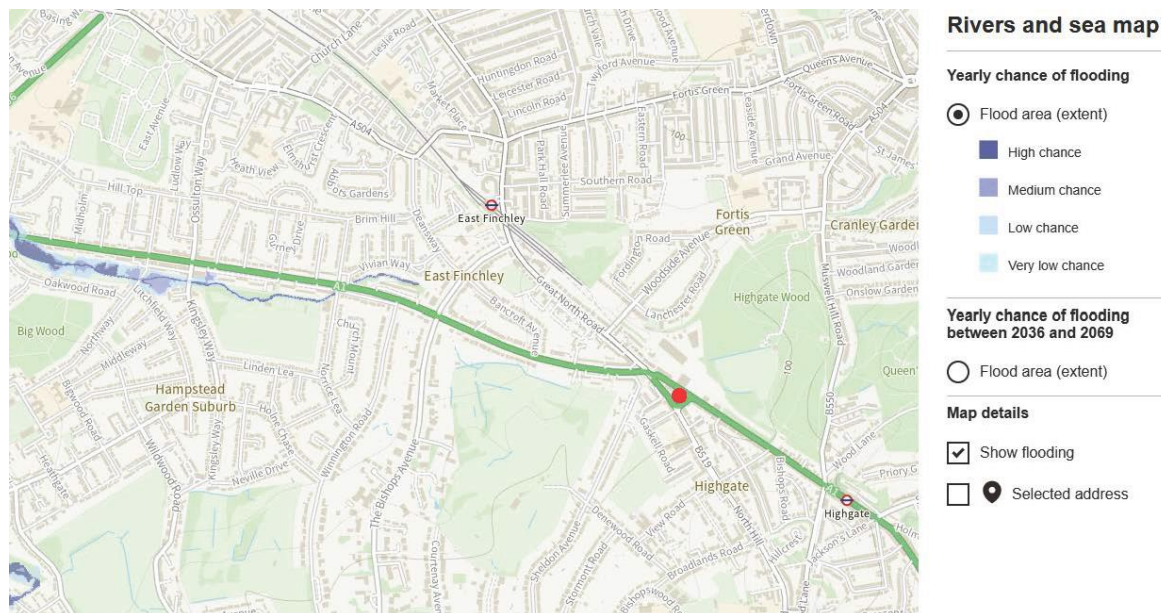


Figure 3.4 River and Sea Flood Risk

This map shows that the site is at very low risk of flooding from Rivers or Sea, i.e. it is located within Flood Zone 1 which is the lowest flood risk category and is suitable therefore for all types of development.

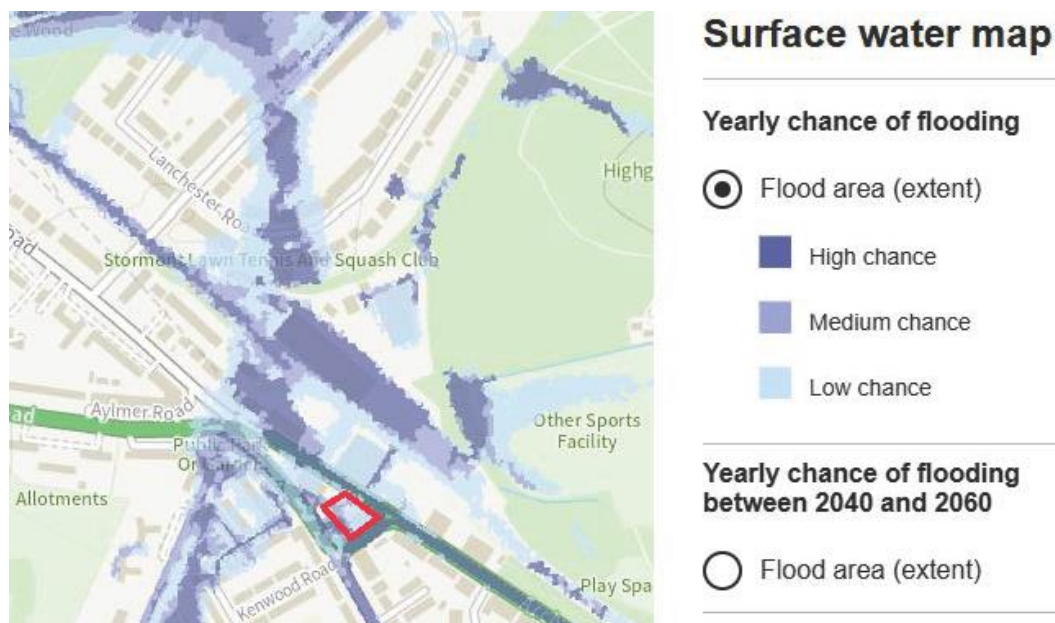


Figure 3.6 Surface Water Flooding

This map shows that there is potential for some low risk of surface water flooding on the site. This is likely due to lack of existing drainage infrastructure on the site. Development of the site will include a fully sustainable drainage strategy which will remove this small flood risk.

4 Development Proposals

The site is located at the junction of Archway Road and Baker's Lane London N6 4HX. It is made up of the south eastern block of a large island site bounded by Archway Road, Baker's Lane and North Hill. The total site area is approximately 1000m²

Development proposals are for a total of 16 residential units comprising a single four storey block containing 14 apartments fronting Archway Road with 2 semi-detached two storey properties on Baker's Lane.

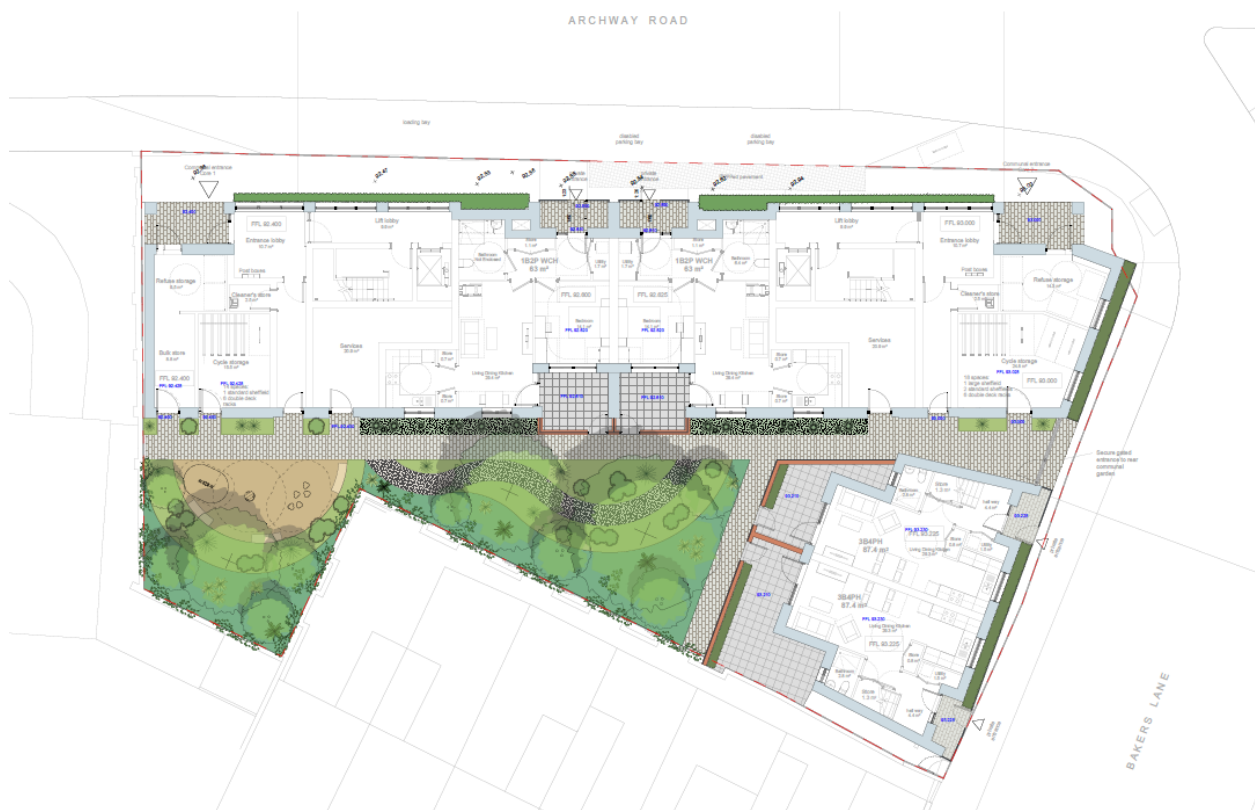


Figure 4.1 Development Layout

Proposed Development plans are included in **Appendix C**.

5 National Policy, Local Planning Policy & SuDS Guidance

5.1 National Planning Policy

The National Planning Policy Framework (NPPF) which was first published in 2012 was last updated in December 2024. Flood risk is primarily regulated through planning policy and key requirements with respect to flooding are outlined in the latest NPPF. The NPPF requires that an FRA should be submitted with planning applications for all development sites within Flood Zones 2 and 3; and all development sites with an area greater than one hectare to determine the risks of flooding from all sources including rivers, the sea, sewers and groundwater.

The NPPF sets out that flood risk should be defined according to Flood Zone 3 (High Probability), Flood Zone 2 (Medium Probability) and Flood Zone 1 (Low Probability). Flood Zone 3 represents land that the Environment Agency (EA) consider could be affected by flooding:

In terms of flood risk, the NPPF classifies land uses according to vulnerability as follows:

- Essential infrastructure;
- Highly vulnerable
- More vulnerable
- Less vulnerable
- Water compatible development;

The proposed development is for residential use which is designated as a 'More Vulnerable' land use in accordance with the NPPF.

NPPF is supported by Planning Practice Guidance, the latest PPG flood risk update being published in February 2024

This guidance provides further information on the requirements for flood risk assessments including sustainable drainage systems (SuDS) which should be included in FRAs. The PPG also includes advice on flood risk vulnerability and flood zone compatibility.

5.2 Regional Policy

The London Plan, 2021

The latest version of the London Plan was published in March 2021.

With regard to surface water drainage, the London Plan notes in **Policy SI 13**

“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.

rainwater use as a resource (for example rainwater harvesting, and blue roofs for irrigation;

rainwater infiltration to ground at or close to source;

rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens);

rainwater discharge direct to a watercourse (unless not appropriate);

controlled rainwater discharge to a surface water sewer or drain;

controlled rainwater discharge to a combined sewer.”

5.3 Local Policy

Haringey's development plan is currently made up of the Strategic Policies, Development Management Policies, Site Allocations and Tottenham Area Action Plan, alongside the London Plan. The council is currently preparing 2 additional plans, the Wood Green Area Action Plan, and the North London Waste Plan. Once adopted, these will form part of the development plan.

Haringey's Local Plan – Strategic Policies

Haringey's current Local Plan was published in March 2013 (and updated in July 2017) and sets out the vision and key policies for the future development of the borough up to the year 2026.

Policy SP5 (Water Management and Flooding) sets out that all development within the borough will need to be water efficient during construction and operation and reduce all forms of flooding. The requirements relevant to this Site are summarised below;

Improve the water environment, water quality and drainage systems;

Minimise water use and illustrate how development would contribute to general and flash flooding;

Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF, and will apply the NPPF Sequential Test and Exception Test;

Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding;

Implement SuDS from strategic to individual site level to improve water attenuation, quality and amenity; and

Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection of essential services such as water and power.

Haringey Development Management DPD

Haringey's Development Management DPD was adopted in July 2017 and gives effect to Haringey's spatial strategy and the key objectives of the Strategic Local Plan by supporting proposals that contribute to the delivery of sustainable development. The Development Management DPD sets out criteria against which planning applications are assessed. The following policies relating to flood risk and drainage are considered relevant to the proposed development.

Policy DM24 – Managing and Reducing Flood Risk

- All proposals for new development must avoid and reduce the risk of flooding to future occupants and not result in an increased risk of flooding;
- Sufficient evidence for the council to assess whether the requirements of the Sequential Test and Exception test (where required) have been satisfied; and
- All proposals for new development must manage and reduce surface water runoff and manage water and wastewater discharges.

Policy DM25 – Sustainable Drainage Systems

- All new development must seek to manage surface water as close to its sources as soon as possible in line with the London Plan drainage hierarchy;
- The councils will require SuDS to be sensitively incorporated into new development;
- Major development proposals will be required to reduce surface water flows to greenfield runoff rate for a 1 in 100 year critical storm, where this cannot be achieved justification must be provided to demonstrate that the runoff rate has been reduced as much as possible; and

- All development should include at least one 'at source' SuDS measure resulting in a net improvement in water quantity or quality.

Policy DM29 – On Site Management of Waste Water and Water Supply

- All new development must demonstrate that the local public sewer network has adequate capacity to serve the existing and proposed development. Where such capacity does not exist suitable alternatives for the discharge of surface or foul water must be made.

Haringey's Surface Water Management Plan

Haringey's Surface Water Management Plan (SWMP) outlines the preferred surface water management strategy for LBH in the context of flooding from surface water flooding from sewers, drains, groundwater, and runoff from land, small watercourses and ditches which occurs due to heavy rainfall. The SWMP establishes a long-term action plan to manage surface water, will have an influence over future capital investment, maintenance, public engagement and understanding, emergency planning and future developments.

Haringey Council Level 2 Strategic Flood Risk Assessment

The Haringey Council Level 2 Strategic Flood Risk Assessment (SFRA) was published in March 2013 and looks exclusively at flood risk within LBH. The primary objective of the SFRA is to be part of the evidence base support the Local Plan in order to inform the allocation of development within the borough.

Haringey SuDS Design Requirements.

Haringey, as Lead Local Flood Authority (LLFA) have produced a document setting out SuDS design requirements for Technical Assessment of planning submissions. This has be referenced in producing this FRA and Drainage Strategy for the proposed Development.

6 Flood Risk Assessment

6.1 Sources of Flooding

NPPF identifies six potential sources of flooding which should be assessed;

Flooding from rivers or fluvial flooding;

Flooding from the sea or tidal flooding;

Flooding from land;

Flooding from groundwater;

Flooding from sewers; and

Flooding from reservoirs, canals, and other artificial sources.

6.2 Flooding from Rivers or Sea

The Planning Practice Guidance (PPG) which supports NPPF includes advice on flood risk vulnerability and flood zone compatibility. Table 1 of the PPG defines the following flood zones relating to the probability of river and sea flooding, without the presence of defences:

Zone 1 - low probability: less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year;

Zone 2 - medium probability: between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% to 0.1%) or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% to 0.1%) in any year;

Zone 3a - high probability: 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability flooding from the sea (>0.5%) in any year; and

Zone 3b - the functional floodplain: where water has to flow or be stored in times of flood; identification should take account of local circumstances but would typically flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme 1 in 1,000 (0.1%) flood.

As noted in Section 3 (Figure 3.4) the site is shown on the EA's Flood Map for Planning to be wholly located within Flood Zone 1, the lowest flood risk level.

Tables 2 and 3 of the PPG, provide a matrix of vulnerabilities for different types of development against compatibility within each Flood Zone as follows;

Essential Infrastructure, e.g. essential transport and utility infrastructure, wind turbines;

Highly Vulnerable, e.g. emergency services (those required to be operational during flooding), basement dwellings;

More Vulnerable, e.g. residential dwellings, hospitals, schools, hotels, drinking establishments;

Less Vulnerable, e.g. retail, offices, storage and distribution, leisure, restaurants; and

Water-Compatible Development, e.g. docks, marinas, wharves.

The NPPF includes a requirement for a Sequential Test the aim of which is to steer development away from areas of greatest flood risk. As this site is wholly within Flood Zone 1 then NPPF and PPG do not require a Sequential Test.

6.3 Flooding from Land (Local Surface Water Flooding)

Surface water and sewer flooding (Pluvial Flooding) occurs when natural and engineered systems have insufficient capacity to deal with the volume of rainfall in a catchment. Pluvial flooding tends to occur in urban areas during extreme, high intensity, rainfall events which overwhelm the local surface water drainage systems. This flood water is then conveyed via overland flow routes dictated by the local topography.

Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding. Increased run-off from developed areas consisting of impermeable surfaces can increase overland flows. If the flow paths of these overland flows are not carefully considered during the detail design and planning stages, flooding from overland flows could occur.

The EA's surface water flood mapping for the site, see Figure 3.6 shows the site to be at Very Low risk of flooding from surface water. This risk is designated by the EA as having less than 0.1 % chance of flooding in any year i.e. flood risk less than 1 in 1000 years. Some low level flooding is shown on the site, this is likely to be due to the fact that currently the site is 100% impermeable and existing drainage systems are inadequate to accept uncontrolled run off during excessive rainfall events.

The proposed development will include a fully sustainable drainage system, see Section 7.0 which will restrict flows close to greenfield run off. This will remove any surface water flood risk.

It is recommended to have the finished floor levels designed above the surrounding ground levels to ensure there are no significant flood risk on the site from overland flow or blocked sewers or drains.

An existing public surface water sewer network serves the site and the surrounding area. A new sustainable surface water drainage network will be designed and installed to serve the proposed development. This will include on site attenuation with a restricted discharge rate, in accordance with Haringey's SuDS Design Requirements and the London Plan. It will also include a climate change adjustment such that a future 1 in 100 annual probability storm event would be accommodated without causing flooding of internal or vulnerable areas of the site. This drainage strategy is described in Section 7.

6.4 Flooding from Sewers

Haringey's draft Surface Water Management Plan (SWMP) includes mapping of recorded instances of sewer flooding within the Borough, listed by postcode, see **Appendix D**.

The postcode for this site, N6-4 records a total of between 1-5 properties suffered from sewer flooding. This is not considered as a significant risk factor to the Development.

6.5 Flooding from Groundwater

The bedrock geology under the site, the London Clay Formation, is unlikely to support a significant groundwater body.

This is confirmed in the SFRA which notes that "*Haringey was at risk from fluvial, sewer and pluvial flooding but not **groundwater** or tidal flooding*". Mapping included in the SWMP (see **Appendix E**) shows areas within the Borough which have increased potential for elevated groundwater. None of these are in the vicinity of this site.

6.6 Flooding from Reservoirs, Canals, and other Artificial Sources

The EA website states "Flooding from reservoirs is unlikely in this area." This is therefore not a risk to the development of the site.

7 Outline Drainage Proposals

7.1 Surface Water Drainage

The existing site is currently totally impermeable, comprising buildings and concrete hard standings. Run from the site is assumed to discharge into the adjacent public sewerage network at an uncontrolled rate.

In order to assess the current discharge from the site, the Modified Rational Method has been used to predict the current surface water discharge rate from the site for a range of storm events using the following formula

$Q = 2.78 * C * i * A$ Where:

Q = Peak Discharge (l/s)

i = Rainfall Intensity (mm/hr) (50.8 mm/hr for 1yr, 5 min storm TRRL Report 595)

A = Impermeable Area (ha)

C = Runoff Coefficient

7.2 Existing Surface Water Run-Off

Using the above formula peak run off rates from the existing site were calculated for a series of storm events and are summarised in Table 7.1 below

Storm Event	1 in 1 year	1 in 30 Year	1 in 100 year
Run off l/s	12.85	28.59	36.40

Table 7.1 Existing Run Off

7.3 Drainage Hierarchy

The London Plan Policy SI 13, see para 5.3 above, states that there should be a preference for green over grey SuDS features for proposed developments, in line with the drainage hierarchy set out in Table 7.2 below. This Table discusses how the development complies with this hierarchy.

Table 7.2 Sustainable Drainage Hierarchy Selection	
Method	Suitability
1 Rainwater used as a resource (for example rainwater harvesting, blue roofs for irrigation)	This is normally done by having a blue roof system. Given that the relatively small roof area of the two separate buildings it isn't considered viable to use this in this situation.
2 Rainwater infiltration to ground at or close to source	The underlying ground comprises the London Clay Formation which is not compatible with infiltration techniques. Also given the constrained nature of the site it would not be possible to achieve required set back of features from foundations.
3 Rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)	Not considered practical for this site, see above.
4 Rainwater discharge direct to a watercourse (unless not appropriate)	There are no adjacent watercourses so this option isn't practical in this instance.
5 Controlled rainwater discharge to a surface water sewer or drain	Surface water from this development will discharge at a controlled rate to the adjacent Thames water surface water network. The preliminary drainage strategy is shown on drawings 2021012-ARC-CRE8-ZZ-XX-DR-C-0001-3 in Appendix F
6. Controlled rainwater discharge to a combined sewer.	Not applicable as surface water sewer available

The London Plan and Haringey's SuDS design requirements state that development proposals should aim to achieve greenfield run off rates.

7.4 Greenfield Run Off Rates

Greenfield runoff rates have been calculated for this area using the FEH method. The results of these calculations are shown in Table 7.3 and in **Appendix G**.

Table 7.3 Greenfield Run Off Rates					
Return Period (years)	Qbar	1 in1	1 in 30	1 in100	1 in 200
Greenfield Run Off (l/s)	0.53l/s	0.45l/s	1.22l/s	1.69l/s	1.98l/s

7.5 Proposed Discharge Rate

As the lower return period run off rates, Qbar and 1 in 1 year, are very low, less than 1.0l/s they are considered too small to allow for practical flow control.

It is proposed therefore to restrict total flows from the development to the 1 in 100 year return period rate of 2.0 l/s, equivalent to the 1 in 200 year return period storm. This is still below the 5.0l/s rate recommended in the Environment Agency's Report – SC030219. It is also significantly less than the existing run off rates noted in Table 7.1.

7.6 Sustainable Drainage Systems

In line with Policy SI 13 of the London Plan and Haringey's SuDS Design Requirements for Technical Assessment. The drainage system for the development has been designed in accordance with Sustainable Urban Drainage principles. These were developed with reference to the hierarchy as set out in the London Plan, and Haringey's Guidance Document.

From the above selection assessment it is considered that the most suitable solution for this development is to provide for below ground attenuation under landscaped areas.

The site has been split into two catchments as shown on drawing 2021008-CRE-XX-00-DR-C-000002 in **Appendix F**.

In order to achieve a discharge rate of 2.0l/s, it is estimated that a total attenuation volume of approximately 50 m³ would be required in order to accommodate the 1 in 100 year critical storm event including an additional allowance of 40 % to account for climate change.

This attenuation will be provided within two underground geocellular tanks located underneath the landscaping area. One tank with storage volume of 12m³ will serve the smaller building fronting Baker's Lane and the other tank with storage volume of 40.8m³ will serve the main building fronting Archway Road. Connections

It is proposed to connect attenuated surface water at the controlled rates noted above to the sewers in Baker's Lane and Archway Road respectively. Connections to these sewers will be made via a Section 106 Agreement in accordance with the Water Industry Act 1991. A pre development enquiry was sent to Thames Water who responded, see **Appendix B**, confirming that a discharge rate of 2.0l/s would be acceptable.

The proposed drainage strategy for this development is illustrated on drawings 2021012-ARC-CRE8-ZZ-XX-DR-C-0001 to 003 in **Appendix F** and summarised in the Haringey pro-forma document in **Appendix H**.

7.7 Surface Water Treatment

Surface water drainage systems are required to provide an adequate level of pollution treatment depending on the pollution hazard indices for the land uses as set out in the SuDS Manual C753 published by CIRIA. The proposed pollution mitigation indices must exceed the required pollution hazard indices in accordance with the above document.

Table 26.2 from C753, see below sets out the pollution indices for different land use classifications.

Table 26.2 Pollution hazard indices for different land use classifications					
	Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
	Residential roofs	Very low	0.2	0.2	0.05
	Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
	Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, home zones and general access roads) and non- residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
	Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
	Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

As the site is designated for residential use and there is no vehicle access to the site then only run off from residential roofs and external footpaths will enter the sewerage system. The appropriate hazard indices are highlighted in the above Table. The maximum hazard indices are as follows

Total Suspended Solids (TSS)	0.2
Metals	0.2
Hydro-carbons	0.05

Mitigation will be provided through the use of SuDS, the final selection of which will be made at detailed design stage.

The majority of hard paved areas on the development will be constructed of permeable materials through which run off will permeate prior to discharging to geocellular attenuation areas.

Table 26.3 from the SuDS manual, see below provides indicative mitigation indices for different SuDS components.

Table 26.3			
Indicative SuDS mitigation indices for discharges to surface waters			
Mitigation indices			
Type of SuDS component	TSS	Metals	Hydrocarbons
Fliter Strip	0.4	0.4	0.5
Filter drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types for separate events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area		

The mitigation indices for permeable pavements are;

TSS	0.7
Metals	0.6
Hydrocarbons	0.7

The proposed mitigation therefore provides a sufficient level of mitigation against the sources identified.

7.8 Foul Drainage

There are existing public foul sewers in Baker's Lane and Archway Road adjacent to the site.

The overall peak design flow from the development has been assessed at 4.95l/s. Confirmation of capacity for these flows was requested from Thames Water who confirmed in their response to a pre development inquiry, see **Appendix B**, that there is capacity in the 225mm dia foul sewer in Archway Road at manhole reference 9503. A connection to this sewer is shown on the Drainage Strategy Drawing 2021012-ARC-CRE8-ZZ-XX-00-DR-C-0003 in **Appendix F**

Flows from the development will be collected on site by a new on site sewerage network and connection to the sewer in Archway Road will be made via a Section 106 application to Thames Water under the provisions of the Water Industry Act 1991.

8 Drainage Management Strategy

The PPG sets out the requirement for developers to consider the operation, management and maintenance of all SuDS features. The on-Site drainage networks and SuDS will be privately managed and maintained for the lifetime of the development, ensuring that they remain fit for purpose and function satisfactorily.

The on-site management team for the development will be responsible for the maintenance of the SuDS included within the Scheme. Table 8.1 sets out an indicative maintenance schedule of the anticipated maintenance and repairs, in line with guidance from the CIRIA SuDS Manual.

Table 8.1: Sustainable Drainage Maintenance Regime	
Suds Feature/Task	Frequency
Underground Attenuation	
Inspection of silt traps and removal of any sediment/debris	Quarterly or as required
Jetting of main structure to remove any sediment build up	Annually or as required
Permeable Pavements	
Inspection and clearing of debris, leaves etc.	Monthly or as required
Sweeping and removal of silt and other sediments to maintain infiltration quality	Annually or as required
Discharge Control (Hydrobrake)	
Removal of sediment	As required
Inspect for damage and blockages	Monthly for first three months after installation then at six monthly intervals

9 Conclusions & Recommendations

The site is wholly located within Flood Zone 1, which has the lowest probability of flooding from tidal and fluvial sources. There is therefore no restriction on the types of development which can be on the site.

The EA's website indicates that the site is at low risk from surface water flooding during extreme storm events so no special flood protection measures will be required, other than implementation of a new sustainable drainage system which will mitigate any potential risk from surface water flooding. External levels will be designed to direct any overland flow during excessive rainfall away from proposed or existing buildings.

The risk of flooding from groundwater, sewers and artificial sources has also been assessed and found to be low.

Greenfield runoff rates from the site have been calculated for a series of return period storms. These are lower than what is considered practical to discharge to so discharge from the site has been restricted to 2.0l/s which is equivalent to approximately a 1 in 200 year return period storm. This rate is significantly lower than current unrestricted run off from the site. Thames Water have confirmed that this discharge rate is acceptable.

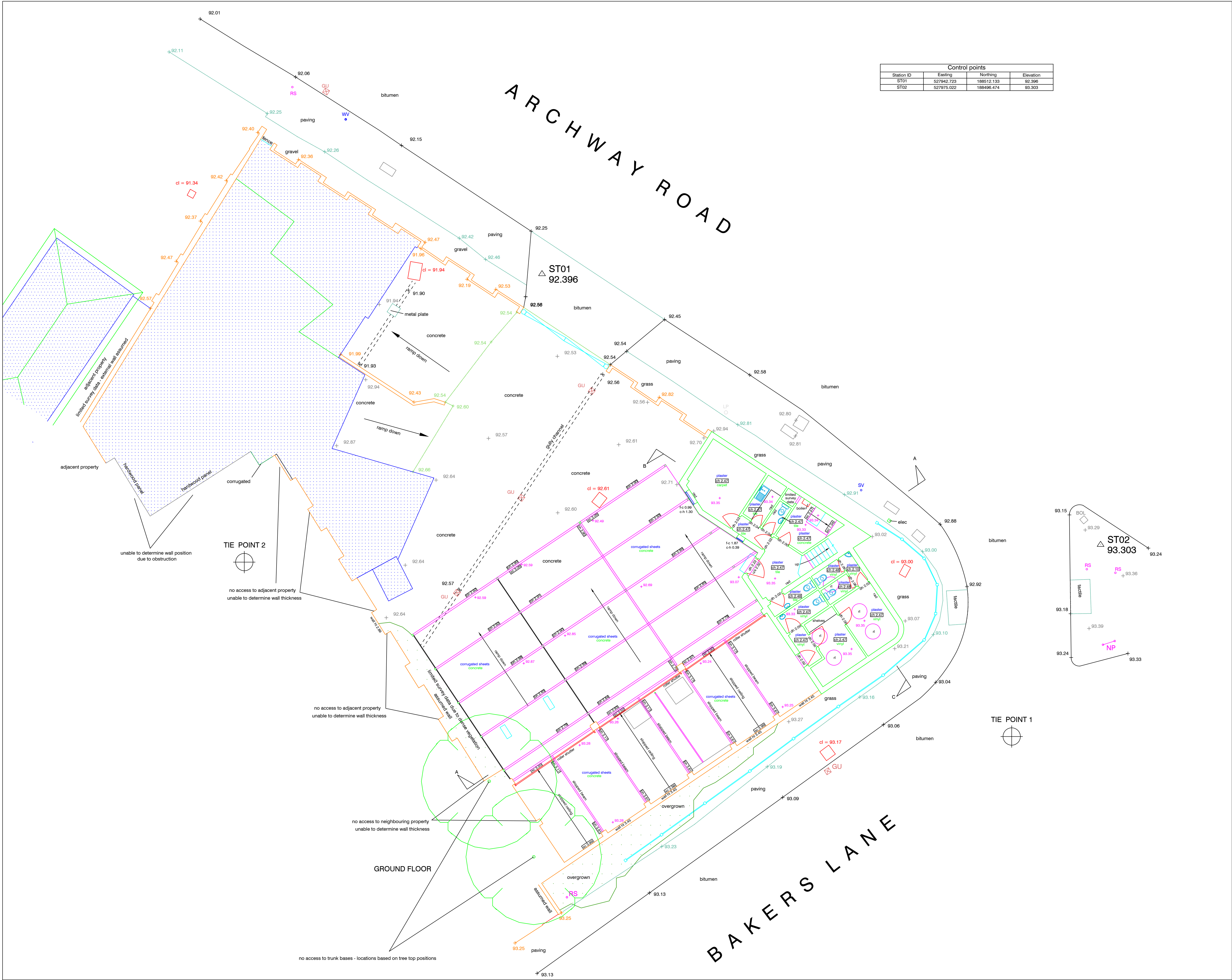
Restricting the surface water run off from the development to this reduced rate requires a total attenuation volume of approximately 50m³. This will be provided in underground geocellular storage tanks located underneath landscaping areas. Surface water flows to the restricted discharge rates will connect to off site public sewer network.

The on-site drainage network and Sustainable Drainage Systems will be privately managed and maintained for the lifetime of the development, ensuring that they remain fit for purpose and function appropriately. The management company/operator would be appointed post-planning.

Foul drainage will be collected on site via a new piped sewerage system and discharged to the adjacent public foul sewer network. Thames Water have confirmed that there is sufficient capacity within adjacent public foul sewer networks to accept flows from the Development.

This report demonstrates that the proposed Development has a low probability of flooding from fluvial, tidal, groundwater and artificial sources and confirms that the pluvial flood risk can be managed appropriately in line with local and national policy. It also confirms that surface water runoff from the site can be managed sustainably to ensure that flood risk is not increased elsewhere. It is considered that the information provided within this report satisfies the requirements of the National Planning Policy Framework, London Plan and local policy.

Appendix A **Topographical Survey**



Control points			
Station ID	Easting	Northing	Elevation
ST01	527942.723	188512.133	92.396
ST02	527975.022	188496.474	93.303

Symbol & Abbreviation Key.

SANITARY (INDICATIVE ONLY)

- WC
- BIDET
- URINAL
- WASH HAND BASIN
- SINK
- SLUICE
- SINK & DRAINER
- SHOWER TRAY
- BATH

ANNOTATION

- ah 1.99 ARCH HEIGHT
- spr 1.78 SPRINGER HEIGHT
- bn 2.43 BEAM HEIGHT TO UNDERSIDE
- un 2.43 UNDERSIDE
- dh 1.99 DOOR HEIGHT
- fc 1.55 FLOOR TO CILL HEIGHT
- ch 0.89 CILL TO HEAD HEIGHT
- ce 2.88 CEILING HEIGHT
- ls 1.58 HIGHEST / LOWEST POINT OF SLOPING CEILING
- sc 2.88 SUSPENDED CEILING HEIGHT

OTHER ABBREVIATIONS

- a/c AIR CONDITIONING UNIT
- bl BOILER
- ck COOKER
- cbd CUPBOARD
- elec ELECTRICS
- fb FLOOR BOARDS (SYMBOL INDICATES BOARD DIRECTION)
- fp FIREPLACE
- pr PIPE RISER
- rad RADIATOR
- rl ROOF LIGHT
- rsd ROLLER SHUTTER DOOR
- tk TANK

Notes.

Coordinates related to OS National Grid from ST01 (No scale factor applied)
Levels related to GPS

Additional data added		DB		29/04/2022	
Rev	Details of Revision	Drawn	Date	Drawn	Date

Surveyed	Drawn	Date	Checked	Date	Approved	Date
DB	DB	08/04/2022	GM	13/04/22	GM	13/04/22



Interlocks Surveys Limited
St. Andrews House
Radford Semele
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Warwickshire
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T: 01926 330123
F: 01926 330120
E: info@interlocksurveys.co.uk

Client.

LONDON BOROUGH OF HARINGEY
HC100000, HARINGEY COUNCIL
LONDON ROAD, ALEXANDRA HOUSE
LONDON, N22 7TR

Title.

TOPOGRAPHIC & MEASURED BUILDING
505-511, ARCHWAY ROAD
LONDON, N6 4HX

Dwg No. **220002**

Sheet. **1 of 2**

Scale. 1:100 A1 Sheet

Rev. -

Appendix B Thames Water Sewer Records and Pre Development Enquiry

Carson Consulting Engineers
16 Nightingale Walk
WINDSOR
SL4 3HS

Search address supplied The American Carwash Co Ltd
505-511
Archway Road
London
N6 4HX

Your reference C389

Our reference ALS/ALS Standard/2025_5109417

Search date 24 January 2025

Notification of Price Changes

From 1st April 2024 Thames Water Property Searches will be increasing the prices of its CON29DW Residential and Commercial searches along with the Asset Location Search. Costs will rise in line with RPI as per previous years, which is sat at 6%.

Customers will be emailed with the new prices by February 28th 2024.

Any orders received with a higher payment prior to the 1st April 2024 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Search address supplied: The American Carwash Co Ltd, 505-511, Archway Road, London, N6 4HX

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, 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 address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

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.

This report 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.

Payment for this Search

A charge will be added to your suppliers account.

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. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational 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 operational issues or 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

The map displays a residential area with several streets and buildings. Key streets include ARCHWAY ROAD, NORTH HILL, and BAKER'S LANE. The map is overlaid with various colored lines and markers, likely representing different types of infrastructure or routes. Red dashed lines with arrows are prominent, running along the main roads. Blue dashed lines with arrows are also visible, often branching off the red lines. Green and purple lines are shorter and connect specific points. Markers include red dots, blue dots, green dots, purple dots, and pink dots, some of which are labeled with alphanumeric codes (e.g., 51A, 51B, 51C, 51D, 51E, 51F, 51G, 51H, 51I, 51J, 51K, 51L, 51M, 51N, 51O, 51P, 51Q, 51R, 51S, 51T, 51U, 51V, 51W, 51X, 51Y, 51Z). The map also shows various building footprints, some labeled with numbers (e.g., 8506, 8507, 8508, 8509, 8510, 8511, 8512, 8513, 8514, 8515, 8516, 8517, 8518, 8519, 8520, 8521, 8522, 8523, 8524, 8525, 8526, 8527, 8528, 8529, 8530, 8531, 8532, 8533, 8534, 8535, 8536, 8537, 8538, 8539, 8540, 8541, 8542, 8543, 8544, 8545, 8546, 8547, 8548, 8549, 8550, 8551, 8552, 8553, 8554, 8555, 8556, 8557, 8558, 8559, 8560, 8561, 8562, 8563, 8564, 8565, 8566, 8567, 8568, 8569, 8570, 8571, 8572, 8573, 8574, 8575, 8576, 8577, 8578, 8579, 8580, 8581, 8582, 8583, 8584, 8585, 8586, 8587, 8588, 8589, 8590, 8591, 8592, 8593, 8594, 8595, 8596, 8597, 8598, 8599, 8600, 8601, 8602, 8603, 8604, 8605, 8606, 8607, 8608, 8609, 8610, 8611, 8612, 8613, 8614, 8615, 8616, 8617, 8618, 8619, 8620, 8621, 8622, 8623, 8624, 8625, 8626, 8627, 8628, 8629, 8630, 8631, 8632, 8633, 8634, 8635, 8636, 8637, 8638, 8639, 8640, 8641, 8642, 8643, 8644, 8645, 8646, 8647, 8648, 8649, 8650, 8651, 8652, 8653, 8654, 8655, 8656, 8657, 8658, 8659, 8660, 8661, 8662, 8663, 8664, 8665, 8666, 8667, 8668, 8669, 8670, 8671, 8672, 8673, 8674, 8675, 8676, 8677, 8678, 8679, 8680, 8681, 8682, 8683, 8684, 8685, 8686, 8687, 8688, 8689, 8690, 8691, 8692, 8693, 8694, 8695, 8696, 8697, 8698, 8699, 8700, 8701, 8702, 8703, 8704, 8705, 8706, 8707, 8708, 8709, 8710, 8711, 8712, 8713, 8714, 8715, 8716, 8717, 8718, 8719, 8720, 8721, 8722, 8723, 8724, 8725, 8726, 8727, 8728, 8729, 8730, 8731, 8732, 8733, 8734, 8735, 8736, 8737, 8738, 8739, 8740, 8741, 8742, 8743, 8744, 8745, 8746, 8747, 8748, 8749, 8750, 8751, 8752, 8753, 8754, 8755, 8756, 8757, 8758, 8759, 8760, 8761, 8762, 8763, 8764, 8765, 8766, 8767, 8768, 8769, 8770, 8771, 8772, 8773, 8774, 8775, 8776, 8777, 8778, 8779, 8780, 8781, 8782, 8783, 8784, 8785, 8786, 8787, 8788, 8789, 8790, 8791, 8792, 8793, 8794, 8795, 8796, 8797, 8798, 8799, 8800, 8801, 8802, 8803, 8804, 8805, 8806, 8807, 8808, 8809, 8810, 8811, 8812, 8813, 8814, 8815, 8816, 8817, 8818, 8819, 8820, 8821, 8822, 8823, 8824, 8825, 8826, 8827, 8828, 8829, 8830, 8831, 8832, 8833, 8834, 8835, 8836, 8837, 8838, 8839, 8840, 8841, 8842, 8843, 8844, 8845, 8846, 8847, 8848, 8849, 8850, 8851, 8852, 8853, 8854, 8855, 8856, 8857, 8858, 8859, 8860, 8861, 8862, 8863, 8864, 8865, 8866, 8867, 8868, 8869, 8870, 8871, 8872, 8873, 8874, 8875, 8876, 8877, 8878, 8879, 8880, 8881, 8882, 8883, 8884, 8885, 8886, 8887, 8888, 8889, 8890, 8891, 8892, 8893, 8894, 8895, 8896, 8897, 8898, 8899, 8900, 8901, 8902, 8903, 8904, 8905, 8906, 8907, 8908, 8909, 8910, 8911, 8912, 8913, 8914, 8915, 8916, 8917, 8918, 8919, 8920, 8921, 8922, 8923, 8924, 8925, 8926, 8927, 8928, 8929, 8930, 8931, 8932, 8933, 8934, 8935, 8936, 8937, 8938, 8939, 8940, 8941, 8942, 8943, 8944, 8945, 8946, 8947, 8948, 8949, 8950, 8951, 8952, 8953, 8954, 8955, 8956, 8957, 8958, 8959, 8960, 8961, 8962, 8963, 8964, 8965, 8966, 8967, 8968, 8969, 8970, 8971, 8972, 8973, 8974, 8975, 8976, 8977, 8978, 8979, 8980, 8981, 8982, 8983, 8984, 8985, 8986, 8987, 8988, 8989, 8990, 8991, 8992, 8993, 8994, 8995, 8996, 8997, 8998, 8999, 9000, 9001, 9002, 9003, 9004, 9005, 9006, 9007, 9008, 9009, 9010, 9011, 9012, 9013, 9014, 9015, 9016, 9017, 9018, 9019, 9020, 9021, 9022, 9023, 9024, 9025, 9026, 9027, 9028, 9029, 9030, 9031, 9032, 9033, 9034, 9035, 9036, 9037, 9038, 9039, 9040, 9041, 9042, 9043, 9044, 9045, 9046, 9047, 9048, 9049, 9050, 9051, 9052, 9053, 9054, 9055, 9056, 9057, 9058, 9059, 9060, 9061, 9062, 9063, 9064, 9065, 9066, 9067, 9068, 9069, 9070, 9071, 9072, 9073, 9074, 9075, 9076, 9077, 9078, 9079, 9080, 9081, 9082, 9083, 9084, 9085, 9086, 9087, 9088, 9089, 9090, 9091, 9092, 9093, 9094, 9095, 9096, 9097, 9098, 9099, 9100, 9101, 9102, 9103, 9104, 9105, 9106, 9107, 9108, 9109, 9110, 9111, 9112, 9113, 9114, 9115, 9116, 9117, 9118, 9119, 9120, 9121, 9122, 9123, 9124, 9125, 9126, 9127, 9128,

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.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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
941H	n/a	n/a
9405	93.07	91.77
951B	n/a	n/a
9503	92.24	89.86
9413	94.3	88.3
951C	n/a	n/a
941D	n/a	n/a
9402	93.08	91.15
9504	93.14	n/a
0405	94.17	88.37
0403	97.01	95.36
041B	n/a	n/a
0404	97.1	94.96
041C	n/a	n/a
841F	n/a	n/a
941F	n/a	n/a
9411	95.81	94.57
9410	94.95	93.76
941A	n/a	n/a
941B	n/a	n/a
951A	n/a	n/a
8507	91.82	89.63
8506	91.81	89.9
9501	n/a	n/a
851B	n/a	n/a
851D	n/a	n/a
841E	n/a	n/a
941G	n/a	n/a
9403	92.91	90.61
941E	n/a	n/a
9401	92.65	91.58
9408	93.53	91.37
9407	93.4	90.6
9502	91.95	90.04
9404	93.07	91.8
9409	93.37	91.12
9406	93.16	91.87
941C	n/a	n/a
9505	92.06	79.4
8504	91.79	89.37
8508	92.01	85.89
841A	n/a	n/a
841D	n/a	n/a
8401	95.67	91.93
8402	95.75	91.57
8407	92.57	79.14
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.

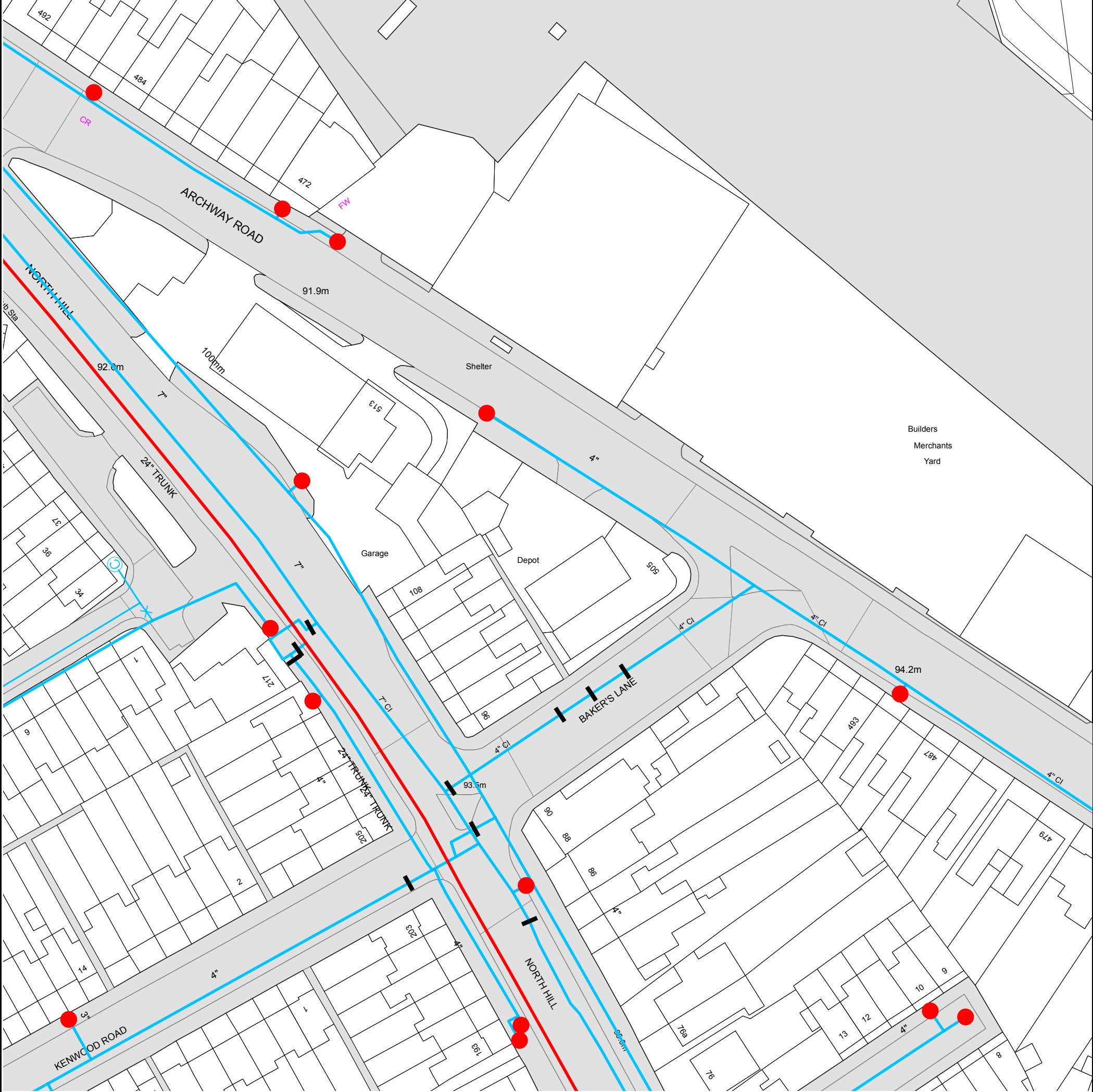
	Agreement
	Chamber
	Operational Site

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.



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 527940, 188499.
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.
Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.



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:** Indicates 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.

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 980 8800.

If you are unhappy with our service, you can speak to your original goods or customer service provider. If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.



Sam Carson

Carson Consulting Engineers Ltd.
16 Nightingale Walk
Windsor
SL4 3HS



14 February 2025

Pre-planning enquiry: Confirmation of sufficient capacity

Site: 505-511 Archway London N6 4HX

Dear Sam,

Thank you for providing information on your development.

Proposed site: 16 new flats (following demolition of existing 946m² car wash).

Proposed foul water discharge by gravity to 225mm foul sewer in Archway Rd, chamber ref. TQ27889503.

Proposed surface water (826m² impermeable area) discharge by gravity to 450mm surface sewer, chamber ref TQ27889502, attenuated and restricted to 2 l/s for all storms up to & including 1:100+40%CC.

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

Where existing connections are proposed, we recommend a drainage survey to check for that the existing drainage is fit for purpose.

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

Where existing connections are proposed, we recommend a drainage survey to check for that the existing drainage is fit for purpose.

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 still 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, provide approved by the LLFA, then Thames Water would not have any objections to the proposal.

Please see our [FAQ's leaflet](#) for additional information.

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.

The views expressed by Thames Water in this letter are in response to this pre-planning enquiry at this time and do not represent our final views on any future planning applications made in relation to this site.

If you have any further questions, please contact me on 0800 009 3921.

Best Regards

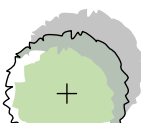
A handwritten signature in purple ink, appearing to read "J. Kitching".

James Kitching
Development Engineer
Developer Services – Sewer Adoptions Team

Get advice on making your sewer connection correctly at connectright.org.uk
Clearwater Court, Vastern Road, Reading, RG1 8DB
Find us online at developers.thameswater.co.uk

Appendix C **Proposed Development Plans**

KEY



Proposed tree



Proposed multi stem tree/shrub



Proposed defensive hedge



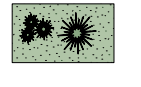
Proposed evergreen hedge



Woodland planting (shrubs, perennial and grass).
Selected plant species per planting plans & schedules



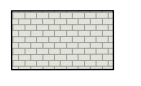
Ornamental and native shrub & perennial planting for
shade. Selected plant species per planting plans &
schedules



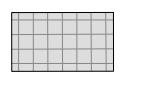
Defensive low planting. Selected plant species per
planting plans & schedules



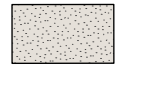
Climber plants



Tobermore - Fusion, block paving, 200x100x60, colour Silver or
similar. Pavers on support layers per Structural Engineer's details &
specifications. Surface finishes to be laid to falls & coordinated with
site wide drainage strategy & drainage outlets per Drainage
Engineer's details & specifications.



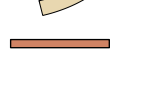
Tobermore - Mayfair Slabs, 400x400x40, colour Silver or similar.
Pavers on support layers per Structural Engineer's details &
specifications. Surface finishes to be laid to falls & coordinated with
site wide drainage strategy & drainage outlets per Drainage
Engineer's details & specifications.



Self binding gravel, Breedon Gravel, or similar approved.



Playground bark mulch



Bespoke Timber bench, mounted to planter, Logic-Bespoke, or similar



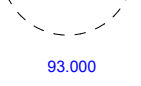
215mm wide brick wall, height of 400mm



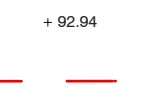
Metal railing, height of 1100mm on patios and 2100mm on eastern
boundary



Waterlilies Balance Post, 5 pcs, Robinia Balancing, Kompan (NRO820)
Max fall height 32cm



Double Springer Robinia Spinners, Kompan (NRO103)
Max fall height 65cm



Spinner Plate, Kompan (NRO110)
Max fall height 100cm



Proposed levels



Existing levels



Site boundary

Rev	Date	Details
PL2	28.04.25	For planning
PL1	07.03.25	For planning
SK1	24.01.25	For comments

Client:	Anna French Associates Ltd Room 74, The Mansion House Wrest Park Silsoe, Bedfordshire MK45 4HR T 01525838796 E info@annafrenchassociates.co.uk W annafrenchassociates.co.uk
Project:	ARCHWAY ROAD
Drawing Title:	Landscape Proposals Ground Floor
Phase:	FOR PLANNING
Drawing Number:	AFA-336-P-001
Rev:	PL2
Date:	24.01.2025
Drawn by:	MZ
Scale:	1:100@A1

DO NOT SCALE FROM DRAWING.

Appendix D Sewer Flood Mapping

1. Sewer flood records relate to internal and external flooding of properties
2. Data supplied by Thames Water Ltd and is correct as at June 2010

Haringey Council

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license for the Drain London project.
Digital geological data reproduced from British Geological Survey
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Approved by
S.IP

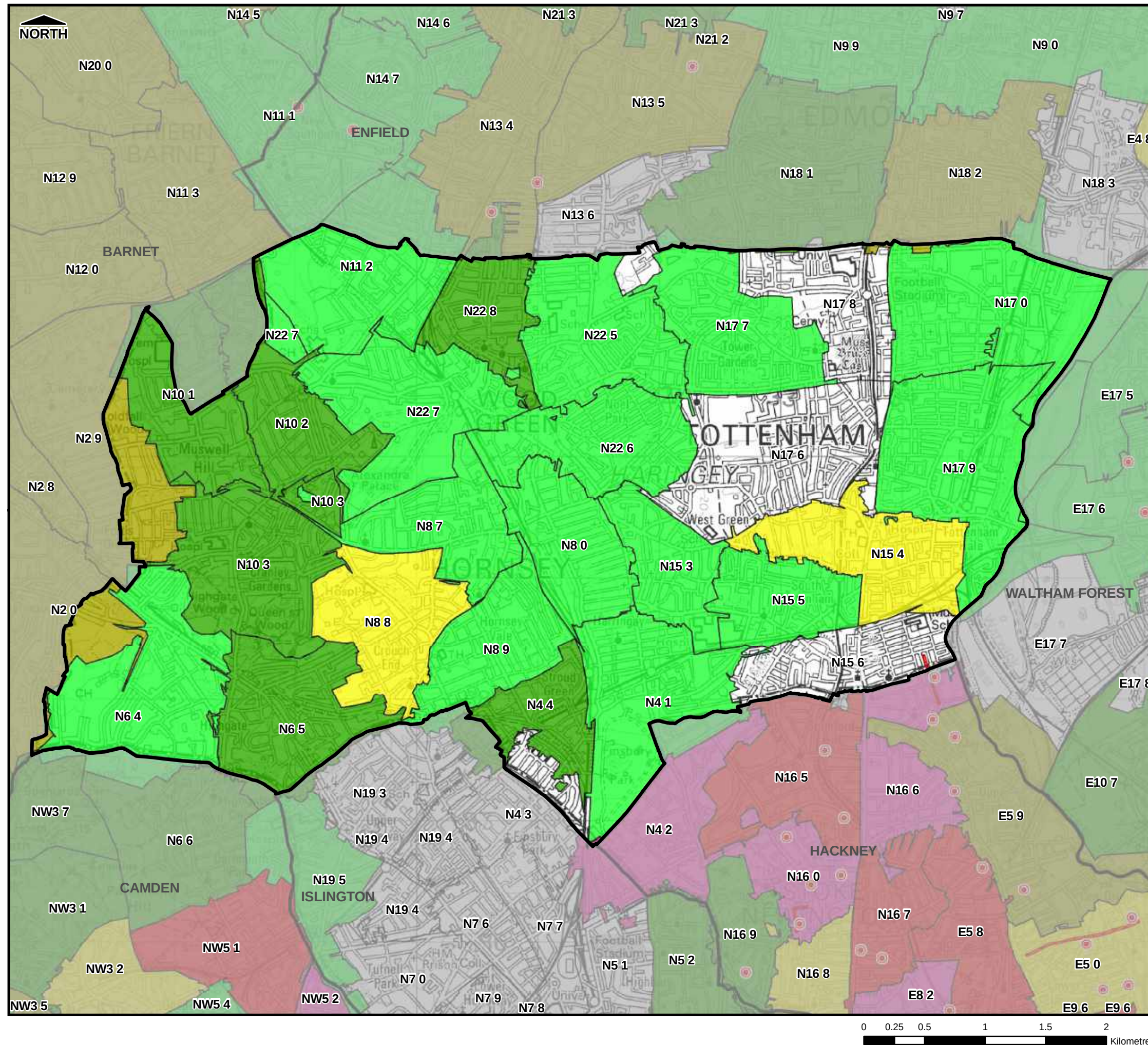
Recorded Incidents of Sewer Flooding

Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU



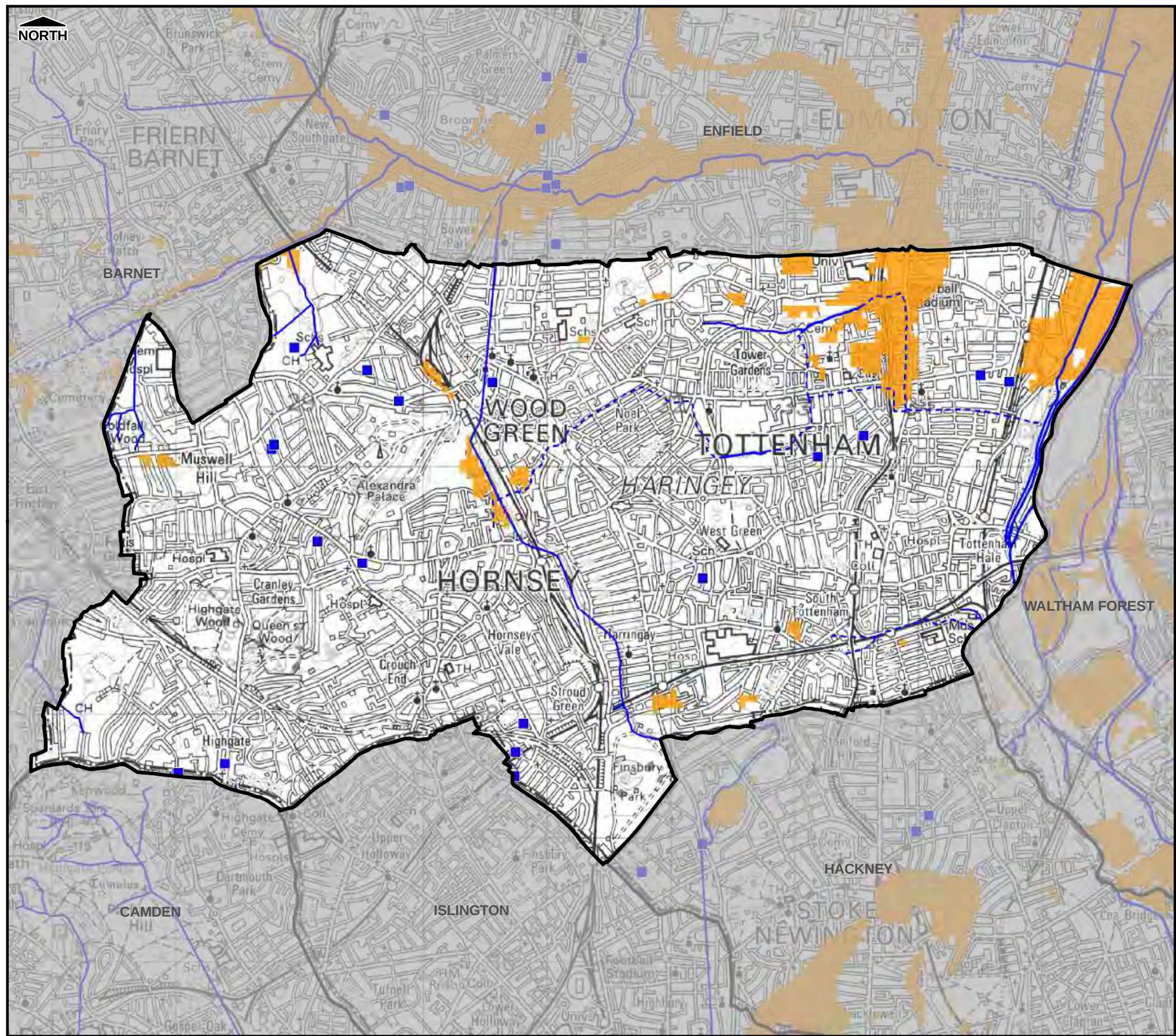
GREATER **LONDON** AUTHORITY

FIGURE 9



Appendix E **Groundwater Flood Mapping**

Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group4\ARC\mxd\GP4_Haringey_Fig10_PotentialElevatedGWMap.mxd



THIS DRAWING MAY BE USED ONLY FOR
THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Main River
- Ordinary Watercourse
- Groundwater Flood Incident (EA Records)
- Groundwater Flood Incident (Other Records)
- Increased Potential for Elevated Groundwater in Permeable Superficial Deposits
- Consolidated Aquifers
- Culverted Watercourse (Main River)

Notes

- The increased Potential for Elevated Groundwater map shows those areas within the London Boroughs where there is an increased potential for groundwater to rise sufficiently to interact with the ground surface or be within 2 m of the ground surface. Such groundwater rise could lead to the following consequences:
 - flooding of basements of buildings below ground level;
 - flooding of buried services or other assets below ground level;
 - inundation of farmland, roads, commercial, residential and amenity areas;
 - flooding of ground floors of buildings above ground level; and
 - overflowing of sewers and drains.
- Incident records shown are generally unconfirmed and may include issues such as water main bursts or non-groundwater related problems.
- Areas not shown to have increased potential for elevated groundwater should be considered to have a low potential for elevated groundwater – Lack of information does not imply 'no potential' of elevated groundwater in that area.
- Includes groundwater flood mapping provided by JBA Consulting. Copyright © Jeremy Benn Associates Limited 2008 - 2011, partially derived from data supplied by the Environment Agency

London Borough of Haringey



Surface Water Management Plan

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license for the Drain London project.
Digital geological data reproduced from British Geological Survey
(c) NERC Licence No 2011/053A

Scale at A3	Date	Drawn by	Approved by
1:32,000	07/04/2011	S.TURNBULL	S.IP

Increased Potential for Elevated Groundwater Map

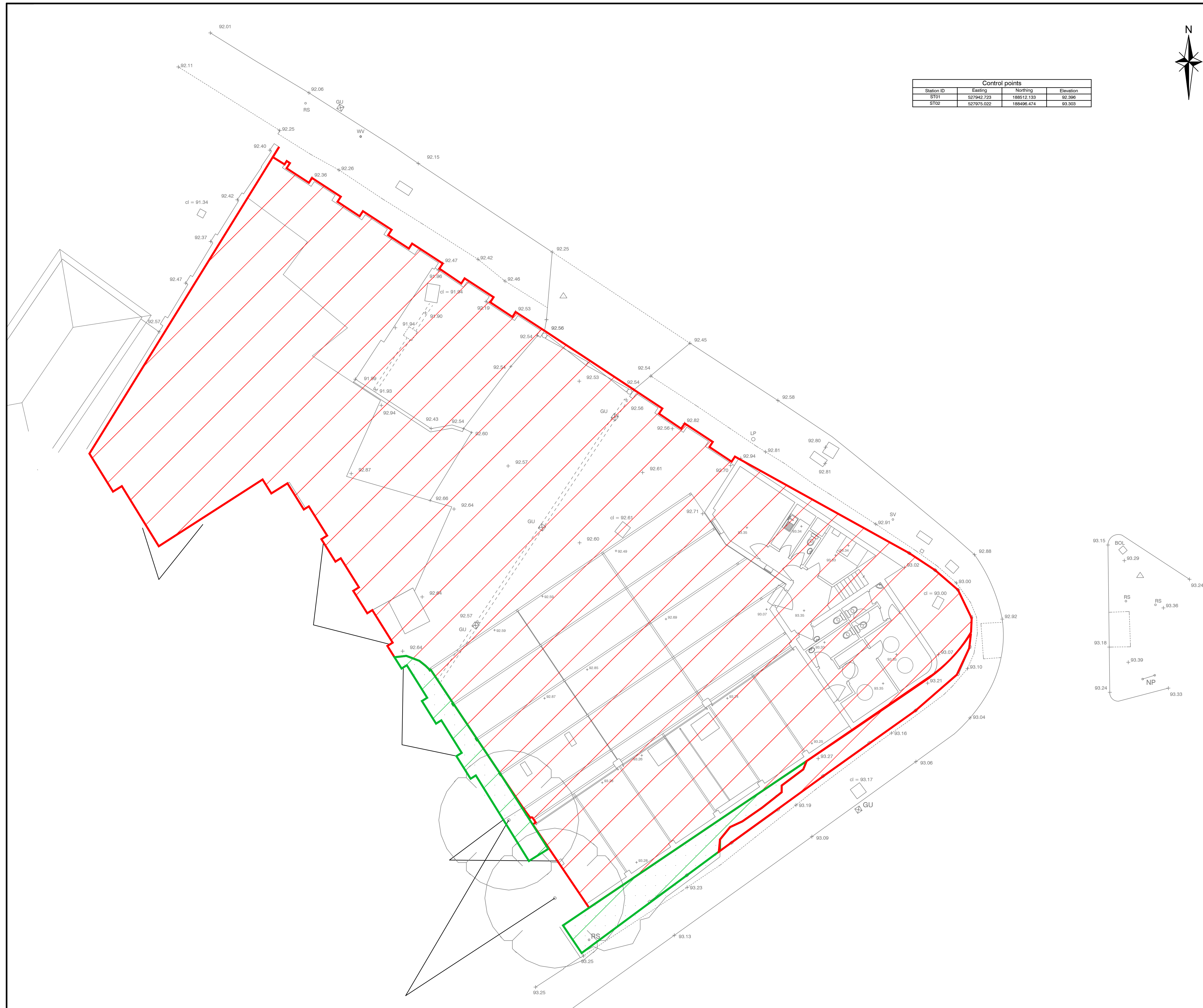
Consultants
CAPITA SYMONDS Flood Risk Management
Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

Drain London Programme Board Members



FIGURE 10

Appendix F **Drainage Strategy Drawings**



Control points			
Station ID	Easting	Northing	Elevation
ST01	527942.723	188512.133	92.396
ST02	527975.022	188496.474	93.303



Notes:

1. Do not scale from this drawing
2. This drawing is in metres unless stated otherwise.

Key

- Impermeable Area (current) - 910m²
 Permeable Area (current) - 36m²

Rev	By	Chkd	Apprvd	Date	Description

Client

CRE8 structures LLP

Studio 29 Paddington Works
8 Hermitage Street London
W2 1BE

0207 183 3093

www.cre8structures.com

505-511 Archway Road London

Drawing

Existing Impermeable and Permeable Area Plan

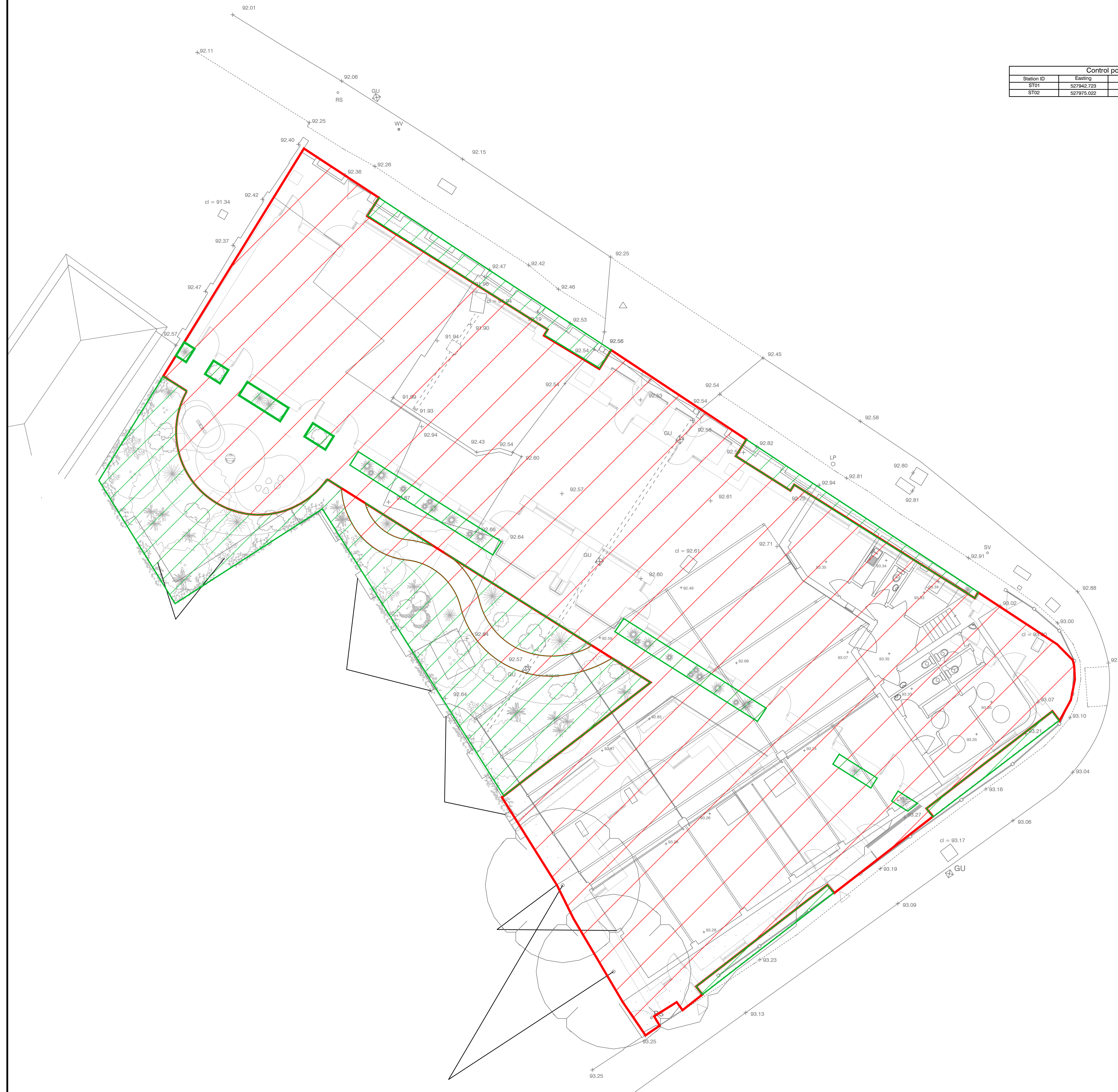
Drawn by:	MT	Date:	January 202
Checked by:	SC	Date:	January 202
Approved by:	SAC	Date:	January 202
Drawing No.			Revision

Drawing No.

Revision

Drawing Scale: 1:100 @ A

Drawing file path & name
Reference file path
... and Plot Date



Control points			
Station ID	Easting	Northing	Elevation
ST01	527942.723	188512.133	92.396
ST02	527975.022	188496.474	93.303

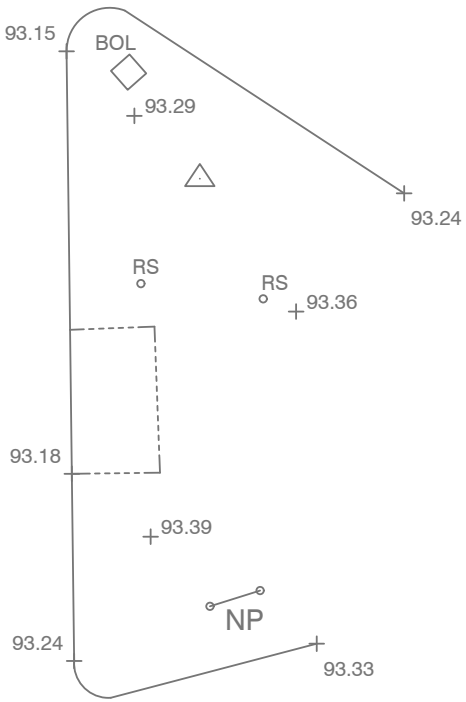


Notes:

1. Do not scale from this drawing
2. This drawing is in metres unless stated otherwise.

Key

-  Impermeable Area (proposed) - 800m²
 Permeable Area (proposed) - 212m²



A	MT		SAC	30/04/25	Soft Landscaping Plan added
Rev	By	Chkd	Apprvd	Date	Description

Client

Haringey Council

CRE8 structures LLP

Studio 29 Paddington Works
8 Hermitage Street London
W2 1BE

0207 183 3093

www.cre8structures.com

505-511 Archway Road London

Drawing

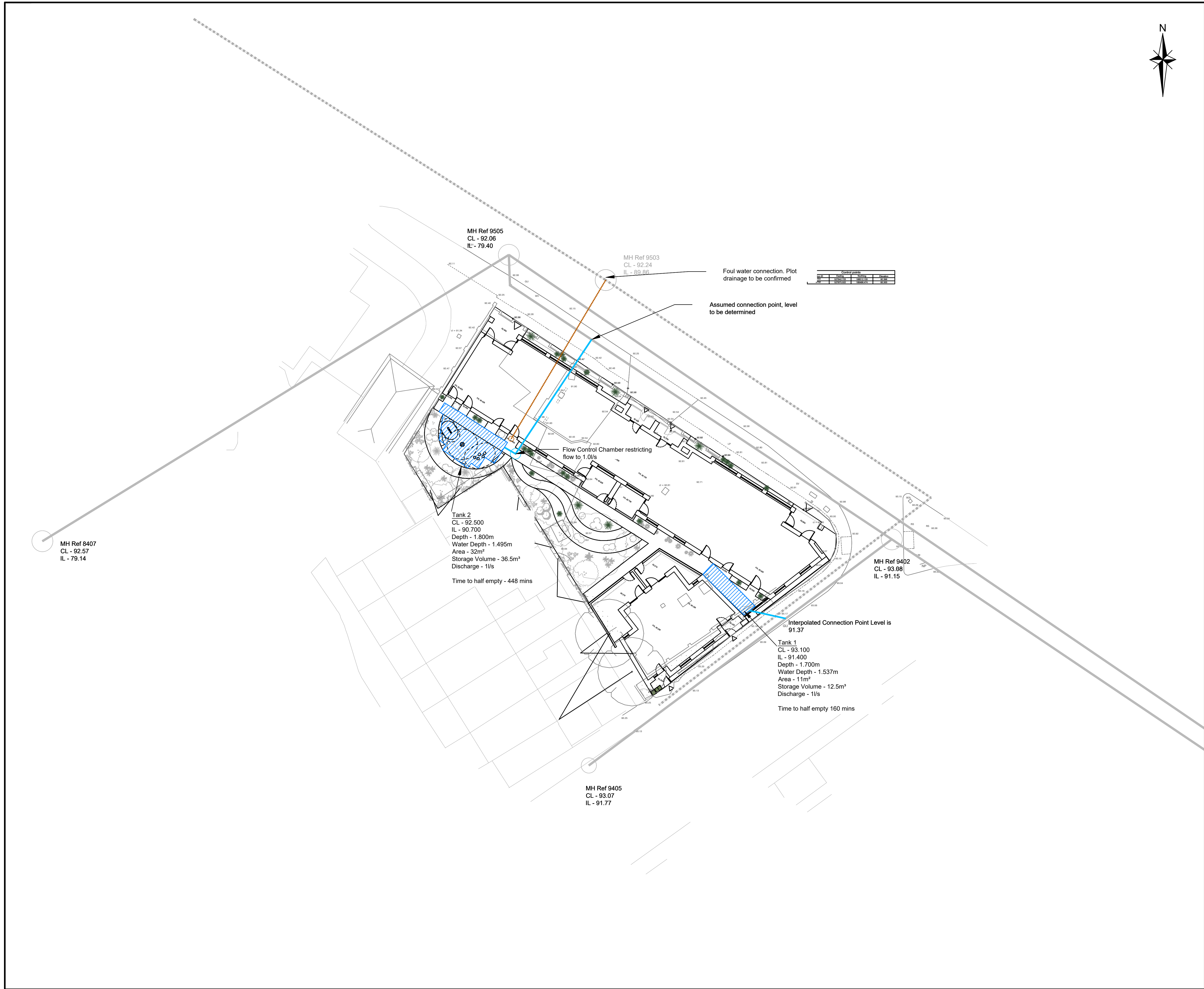
Proposed Impermeable and Permeable Area Plan

Drawn by:	MT	Date:	February 202
Checked by:	SC	Date:	February 202
Approved by:	SAC	Date:	February 202

Drawing No.	Revision
2021012-ARC-CRE8-ZZ-XX-DR-C-0002	A

Drawing Scale: 1:100 @ A1

[illegible]



- Notes:
- Do not scale from this drawing.
 - This drawing is in metres unless stated otherwise.
 - Topographical Survey provided by others. C&A accept no liability for any inaccuracies.
 - Sewer Records have been provided by Thames Water. C&A accept no liability for any inaccuracies.
 - The Site will discharge into the existing Thames Water Surface Water Sewer in Bakers Lane and Archway Road. The tanks will discharge at 1.0l/s at the assumed connection point and level.
 - Foul Water Connection Point is assumed. Thames Water Sewer Records do not provide a cover and invert level to be confirmed prior to construction.

Key

	Tank
	Surface Water Network
	Foul Water Network
	Existing Thames Water Surface Water Sewer
	Existing Thames Water Foul Water Sewer

B	MT		SC	29/04/25	Soft Landscaping Plan added and Drainage updated to suit	
A	SC		SC	14/03/25		Planning Issue
Draft	SC		SC	14/02/25		Draft Issue
Rev	By	Chkd	Apprvd	Date	Description	

Client

Haringey Council

CRE8 structures LLP

Studio 29 Paddington Works
8 Hermitage Street London
W2 1BE

0207 183 3093

www.cre8structures.com

505-511 Archway Road London

Drawing

Drainage Strategy

Drawn by:	MT	Date:	February 2025
Checked by:	SC	Date:	February 2025
Approved by:	SAC	Date:	February 2025
Drawing No.			Revision
2021012-ARC-CRE8-ZZ-XX-DR-C-0003			B
Drawing Scale: 1:200 @ A1			

Drainage Strategy
User and Plot Date

Appendix G **Drainage Calculations**

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

1 STANDARD Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

100 | 150

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.027	5.00	93.100	1200	12.444	59.532	1.450
Tank 1	0.000	5.00	93.100		46.892	45.652	1.700
2			93.170	1200	87.169	31.914	1.800
Tank 2	0.000		92.500		43.041	28.121	1.800
3	0.059	5.00	92.500	1500	7.786	36.133	1.650
4	0.000		92.350	1200	83.804	14.900	4.350

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	1	Tank 1	37.139	0.600	91.650	91.400	0.250	148.6	150	5.75	50.0
2.001	Tank 1	2	4.000	0.600	91.400	91.370	0.030	133.3	150	5.83	50.0
1.000	3	Tank 2	36.154	0.600	90.850	90.700	0.150	241.0	450	5.46	50.0
1.001	Tank 2	4	42.853	0.600	90.700	88.000	2.700	15.9	150	5.74	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	0.822	14.5	4.9	1.300	1.550	0.027	0.0	60	0.743
2.001	0.868	15.3	4.9	1.550	1.650	0.027	0.0	58	0.773
1.000	1.305	207.5	10.7	1.200	1.350	0.059	0.0	69	0.699
1.001	2.541	44.9	10.7	1.650	4.200	0.059	0.0	50	2.085

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.000	37.139	148.6	150	1 STANDARD	93.100	91.650	1.300	93.100	91.400	1.550
2.001	4.000	133.3	150	1 STANDARD	93.100	91.400	1.550	93.170	91.370	1.650
1.000	36.154	241.0	450	1 STANDARD	92.500	90.850	1.200	92.500	90.700	1.350
1.001	42.853	15.9	150	1 STANDARD	92.500	90.700	1.650	92.350	88.000	4.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	1	1200	Manhole	Adoptable	Tank 1		Junction	
2.001	Tank 1		Junction		2	1200	Manhole	Adoptable
1.000	3	1500	Manhole	Adoptable	Tank 2		Junction	
1.001	Tank 2		Junction		4	1200	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	✓
Summer CV	0.750	Drain Down Time (mins)	1440	100 year (l/s)	1.3
Winter CV	0.840	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	FEH	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.095	Betterment (%)	0
SAAR (mm)	690	QMed	0.5
Host	1	QBar	0.5
BFIHost	0.268	Q 1 year (l/s)	
Region	1	Q 30 year (l/s)	
QBar/QMed conversion factor	1.111	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Node Tank 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	2.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0041-1000-1700-1000
Invert Level (m)	91.400	Min Outlet Diameter (m)	0.075
Design Depth (m)	1.700	Min Node Diameter (mm)	1200
Design Flow (l/s)	1.0		

Node Tank 2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0041-1000-1800-1000
Invert Level (m)	90.700	Min Outlet Diameter (m)	0.075
Design Depth (m)	1.800	Min Node Diameter (mm)	1200
Design Flow (l/s)	1.0		

Node Tank 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	91.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	160

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	11.0	0.0	1.200	11.0	0.0	1.201	0.0	0.0	1.700	0.0	0.0

Node Tank 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	90.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	448

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	32.0	0.0	1.200	32.0	0.0	1.201	0.0	0.0	1.800	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	91.703	0.053	3.8	0.0595	0.0000	OK
120 minute winter	Tank 1	84	91.537	0.137	1.4	1.4312	0.0000	OK
15 minute summer	2	1	91.370	0.000	0.6	0.0000	0.0000	OK
240 minute winter	Tank 2	180	90.877	0.177	2.0	5.3934	0.0000	SURCHARGED
15 minute winter	3	10	90.913	0.063	8.3	0.1107	0.0000	OK
15 minute summer	4	1	88.000	0.000	0.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	2.000	Tank 1	3.8	0.796	0.262	0.2941	
120 minute winter	Tank 1	Hydro-Brake®	2	0.6				4.0
240 minute winter	Tank 2	Hydro-Brake®	4	0.6				11.6
15 minute winter	3	1.000	Tank 2	8.3	0.875	0.040	0.5306	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	114	92.249	0.599	5.0	0.6778	0.0000	SURCHARGED
120 minute winter	Tank 1	116	92.249	0.849	4.6	8.8699	0.0000	SURCHARGED
15 minute summer	2	1	91.370	0.000	0.6	0.0000	0.0000	OK
360 minute winter	Tank 2	344	91.474	0.774	3.9	23.5380	0.0000	SURCHARGED
360 minute winter	3	344	91.474	0.624	4.9	1.1031	0.0000	SURCHARGED
15 minute summer	4	1	88.000	0.000	0.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	2.000	Tank 1	4.6	0.627	0.314	0.6538	
120 minute winter	Tank 1	Hydro-Brake®	2	0.7				14.4
360 minute winter	Tank 2	Hydro-Brake®	4	0.7				41.7
360 minute winter	3	1.000	Tank 2	3.9	0.479	0.019	5.7284	

Results for 100 year Critical Storm Duration. Lowest mass balance: 98.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	1	116	92.225	0.575	4.8	0.6506	0.0000	SURCHARGED
120 minute winter	Tank 1	116	92.225	0.825	4.4	8.6185	0.0000	SURCHARGED
15 minute summer	2	1	91.370	0.000	0.6	0.0000	0.0000	OK
360 minute winter	Tank 2	344	91.474	0.774	3.9	23.5380	0.0000	SURCHARGED
360 minute winter	3	344	91.474	0.624	4.9	1.1031	0.0000	SURCHARGED
15 minute summer	4	1	88.000	0.000	0.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	1	2.000	Tank 1	4.4	0.627	0.306	0.6538	
120 minute winter	Tank 1	Hydro-Brake®	2	0.7				14.1
360 minute winter	Tank 2	Hydro-Brake®	4	0.7				41.7
360 minute winter	3	1.000	Tank 2	3.9	0.479	0.019	5.7284	

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.86%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	188	92.938	1.288	4.2	1.4566	0.0000	FLOOD RISK
240 minute winter	Tank 1	188	92.937	1.537	3.9	12.5452	0.0000	FLOOD RISK
15 minute summer	2	1	91.370	0.000	0.7	0.0000	0.0000	OK
360 minute winter	Tank 2	344	92.195	1.495	6.3	36.4952	0.0000	SURCHARGED
360 minute winter	3	344	92.195	1.345	6.8	2.3759	0.0000	SURCHARGED
15 minute summer	4	1	88.000	0.000	0.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	2.000	Tank 1	3.9	0.527	0.265	0.6538	
240 minute winter	Tank 1	Hydro-Brake®	2	1.0				24.1
360 minute winter	Tank 2	Hydro-Brake®	4	0.9				58.3
360 minute winter	3	1.000	Tank 2	6.3	0.509	0.030	5.7284	

Appendix H Haringey SuDS Pro Forma

SuDS Flows and Volumes – LLFA Technical Assessment Proforma

This form identifies the information required by Haringey LLFA to enable technical assessment of flows and volumes determined as part of drainage / SuDS calculations.

Note : * means delete as appropriate; Numbers in brackets refer to accompanying notes.

SITE DETAILS

- 1.1 Planning application referenceTBA.....
- 1.2 Site name ...505-511 Archway Road London N6 4HX.....
- 1.3 Total application site area ⁽¹⁾1000.....m²..... ha
- 1.4 Is the site located in a CDA or LFRZ N
- 1.5 Is the site located in a SPZ N

VOLUME AND FLOW DESIGN INPUTS

- 2.1 Site area which is positively drained by SuDS ⁽²⁾ 1000.....m²
- 2.2 Impermeable area drained pre development ⁽³⁾ 910.....m²
- 2.3 Impermeable area drained post development ⁽³⁾ 844m²
- 2.4 Additional impermeable area (2.3 minus 2.2) -66m²
- 2.5 Predevelopment use ⁽⁴⁾ Mixed*
- 2.6 Method of discharge ⁽⁵⁾ Surface Water Sewer*
- 2.7 Infiltration rate (where applicable) N/A m/hr
- 2.8 Influencing factors on infiltration N/A.....
- 2.9 Depth to highest known ground water table N/A..... mAOD
- 2.10 Coefficient of runoff (Cv) ⁽⁶⁾100%.....
- 2.11 Justification for Cv used
- 2.12 FEH rainfall data used (Note that FSR is no longer the preferred rainfall calculation method) Y
- 2.13 Will storage be subject to surcharge by elevated water levels in watercourse / sewer N
- 2.14 Invert level at outlet (invert level of final flow control) TBA
- 2.15 Design level used for surcharge water level at point of discharge⁽¹⁴⁾ ? N/A..... m AOD

SuDS Flows and Volumes – LLFA Technical Assessment Proforma

CALCULATION OUTPUTS

Sections 3 and 4 refer to site where storage is provided by attenuation and / or partial infiltration. Where all flows are infiltrated to ground omit Sections 3 -5 and complete Section 6.

3.0 Defining rate of runoff from the site

- 3.2 Max. discharge for 1 in 1 year rainfalll/s/ha, 0.45l/s for the site
- 3.2 Max. discharge for Q_{med} rainfalll/s/ha, 0.53 Q_{bar} ..l/s for the site
- 3.3 Max. discharge for 1 in 30 year rainfalll/s/ha, 1.22l/s for the site
- 3.4 Max. discharge for 1 in 100 year rainfalll/s/ha, 1.69l/s for the site
- 3.5 Max. discharge for 1 in 100 year plus 30%CCl/s/ha,l/s for the site

4.0 Attenuation storage to manage peak runoff rates from the site

- 4.1 Storage - 1 in 1 yearm³.....m³/m² (of developed impermeable area)
- 4.2 Storage - 1 in 30 year ⁽⁷⁾m³.....m³/m²
- 4.3 Storage - 1 in 100 year ⁽⁸⁾m³.....m³/m²
- 4.4 Storage - 1 in 100 year plus 40%CC ⁽⁹⁾ ...50.....m³.....m³/m²

5.0 Controlling volume of runoff from the site

- 5.1 Pre development runoff volume⁽¹⁰⁾m³ for the site
- 5.2 Post development runoff volume (unmitigated) ⁽¹⁰⁾.....m³ for the site
- 5.3 Volume to be controlled/does not leave site ^(5.2 - 5.1)m³ for the site
- 5.4 Volume control provided by
- Interception losses⁽¹¹⁾ 0m³
 - Rain harvesting⁽¹²⁾ 0m³
 - Infiltration (even at very low rates) 0m³
 - Separate area designated as long term storage⁽¹³⁾ 50m³
- 5.5 Total volume control (sum of inputs for 5.4) 208m³ ⁽¹⁵⁾

6.0 Site storage volumes (full infiltration only)

- 6.1 Storage - 1 in 30 year ⁽⁷⁾m³.....m³/m² (of developed impermeable area)
- 6.2 Storage - 1 in 100 year plus CC ⁽⁹⁾m³.....m³/m²

SuDS Flows and Volumes – LLFA Technical Assessment Proforma

Notes

1. All area with the proposed application site boundary to be included.
2. The site area which is positively drained includes all green areas which drain to the SuDS system and area of surface SuDS features. It excludes large open green spaces which do not drain to the SuDS system.
3. Impermeable area should be measured pre and post development. Impermeable surfaces includes, roofs, pavements, driveways and paths where runoff is conveyed to the drainage system.
4. Predevelopment use may impact on the allowable discharge rate. The LLFA will seek for reduction in flow rates to GF status in all instances. The design statement and drawings explain / demonstrate how flows will be managed from the site.
5. Runoff may be discharge via one or a number of means.
6. Sewers for Adoption 6th Edition recommends a Cv of 100% when designing drainage for impermeable area (assumes no loss of runoff from impermeable surfaces) and 0% for permeable areas. Where lower Cv's are used the application should justify the selection of Cv.
7. Storage for the 1 in 30 year must be fully contained within the SuDS components. Note that standing water within SuDS components such as ponds, basins and swales is not classified as flooding. Storage should be calculated for the critical duration rainfall event.
8. Runoff generated from rainfall events up to the 1 in 100 year will not be allowed to leave the site in an uncontrolled way. Temporary flooding of specified areas to shallow depths (150-300mm) may be permitted in agreement with the LLFA.
9. Climate change is specified as 30% increase to rainfall intensity, unless otherwise agreed with the LLFA / EA.
10. To be determined using the 100 year return period 6 hour duration rainfall event.
11. Where Source Control is provided Interception losses will occur. An allowance of 5mm rainfall depth can be subtracted from the net inflow to the storage calculation where interception losses are demonstrated. The Applicant should demonstrate use of subcatchments and source control techniques.
12. Please refer to Rain harvesting BS for guidance on available storage.
13. Flow diverted to Long term storage areas should be infiltrated to the ground, or where this is not possible, discharged to the receiving water at slow flow rates (maximum 2 l/s/ha). LT storage would not be allowed to empty directly back into attenuation storage and would be expected to drain away over 5-10 days. Typically LT storage may be provided on multi-functional open space or sacrificial car parking areas.
14. Careful consideration should be used for calculations where flow control / storage is likely to be influenced by surcharged sewer or peak levels within a watercourse. Storm sewers are designed for pipe full capacity for 1 in 1 to 1 in 5year return period. Beyond this, the pipe network will usually be in conditions of surcharge. Where information cannot be gathered from Thames Water, engineering judgement should be used to evaluate potential impact (using sensitivity analysis for example).
15. In controlling the volume of runoff the total volume from mitigation measures should be greater than or equal to the additional volume generated.