



Project Ref: 4620

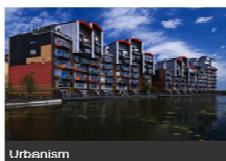
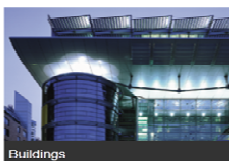
Annex at 28 Wood Lane, Highgate, London, N6 5UB

Flood Risk Statement and Proposed Drainage Strategy

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CAR is an independent consultancy providing specialist advice for policy makers, design professions and the construction industry. Founded in 1987, CAR's interdisciplinary team is at the forefront of new thinking in all aspects of the built environment.

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EXECUTIVE SUMMARY

This Drainage Strategy has been prepared by CAR Ltd, on behalf of its client, to support a planning application for a new annex building and associated infrastructure to replace a previous outbuilding within the garden of 28 Wood Lane, Highgate, London, N6 5UB. The site area measures approximately 0.06 hectares.

The drainage strategy proposed takes into consideration the current constraints of the site, Thames Water drainage connection points and the proposed use of the building.

The surface water strategy also considers the SuDS hierarchy, surface water infiltration requirements, landscaping proposals and water quality treatment stages in accordance with the CIRIA SuDS Design Manual (C753).

A desktop review concluded that the site is within Flood Zone 1 and is not in an area which is at risk of surface water flooding. Based on this, and that the site area is less than 1 hectare, a detailed Flood Risk Assessment for the proposed development is not required.

It is proposed that the surface water runoff will be attenuated and discharged into the Thames Water surface water within the passageway between numbers 98 and 100 Priory Gardens. Storage capacity will be provided for events up to the 1 in 100 year storm return period, including an allowance for 40% climate change.

Foul water drainage will discharge by gravity into the existing Thames Water public sewer within the passageway between numbers 98 and 100 Priory Gardens.

The above approach represents a sustainable drainage strategy which is in accordance with the London Borough of Haringey's' SuDS guidance documentation and the National Planning Policy Framework (NPPF).

The proposed drainage strategy is shown on drawing 4620-SK2500 within Appendix A of this document.



1. INTRODUCTION

CAR Ltd have been appointed by the client to prepare a Flood Risk Statement and proposed below ground drainage strategy to support a planning application for the construction of a new outbuilding within the rear garden at 28 Wood Lane, Highgate, London. This report is to be read in conjunction with all other supporting documents which form part of the application.

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2. EXISTING SITE

The existing site is situated in the London Borough of Haringey, located approximately 120m northeast of Highgate Station, served by the Northern Line of the London Underground network (see Figure 2.1).

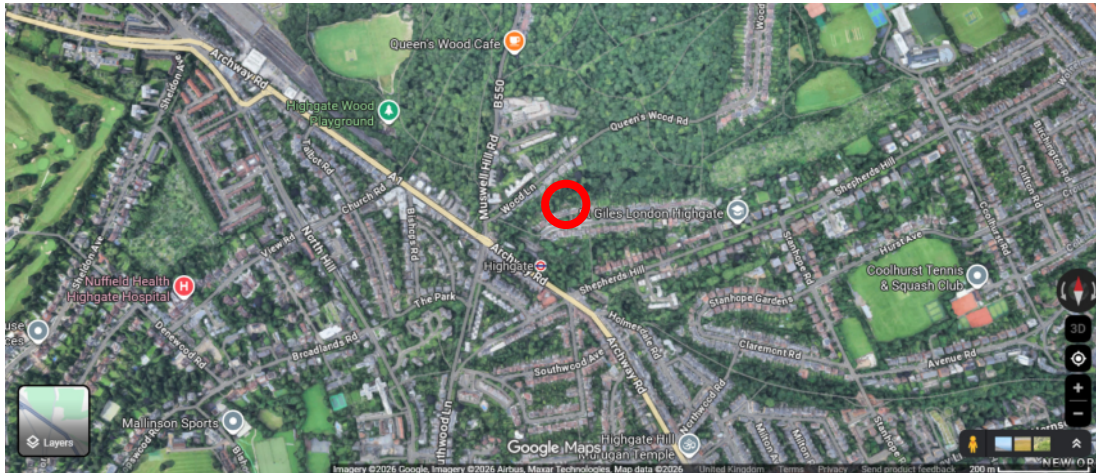


Figure 2.1 - Site location (Images from Google maps)

The closest watercourse is Mutton Brook, situated approximately 1.8 km to the northwest of the site. The site is not close to any watercourses shown on the Lost Rivers of London map (Figure 2.2).

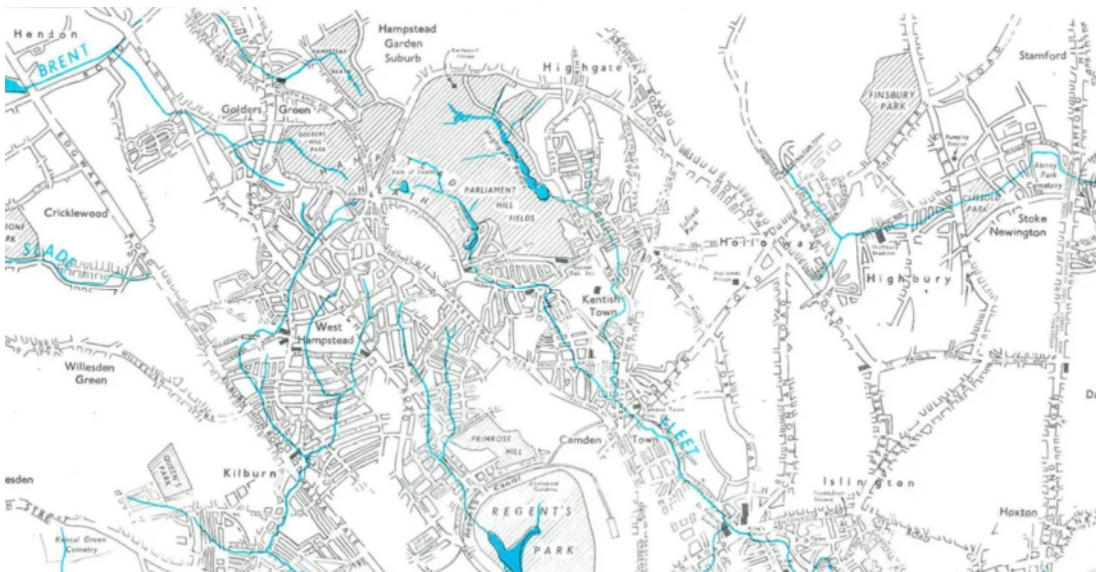


Figure 2.2 – Extract from the Lost Rivers of London map

The annex site area is approximately 0.06 hectares and the proposed annex building is to be positioned to the north-east side of the site, over the footprint of a previous outbuilding which was destroyed by a fallen tree. Figure 2.3 shows an extract of the existing topographical survey.

Currently, brick retaining walls line a lowered area, approximately level with the footpath to the south (Figure 2.4).



Figure 2.4 – Remnants of previous garage building to the south of the site, looking east

The northern end of the site is raised approximately 2.5m and covered with overgrown vegetation. There are a number of trees and hedges within the site and within neighbouring sites, close to boundaries. The site is accessed by foot from the main property off Wood Lane to the northwest, and vehicular access is from the passageway between numbers 98 and 100 Priory Gardens to the southeast. Gardens of properties 30 and 32 Wood Lane sit on the north and east boundary of the proposed building.

The Thames Water asset plan of the area shows foul and surface water sewers within Priory Gardens; an extract can be seen in Figure 2.5.

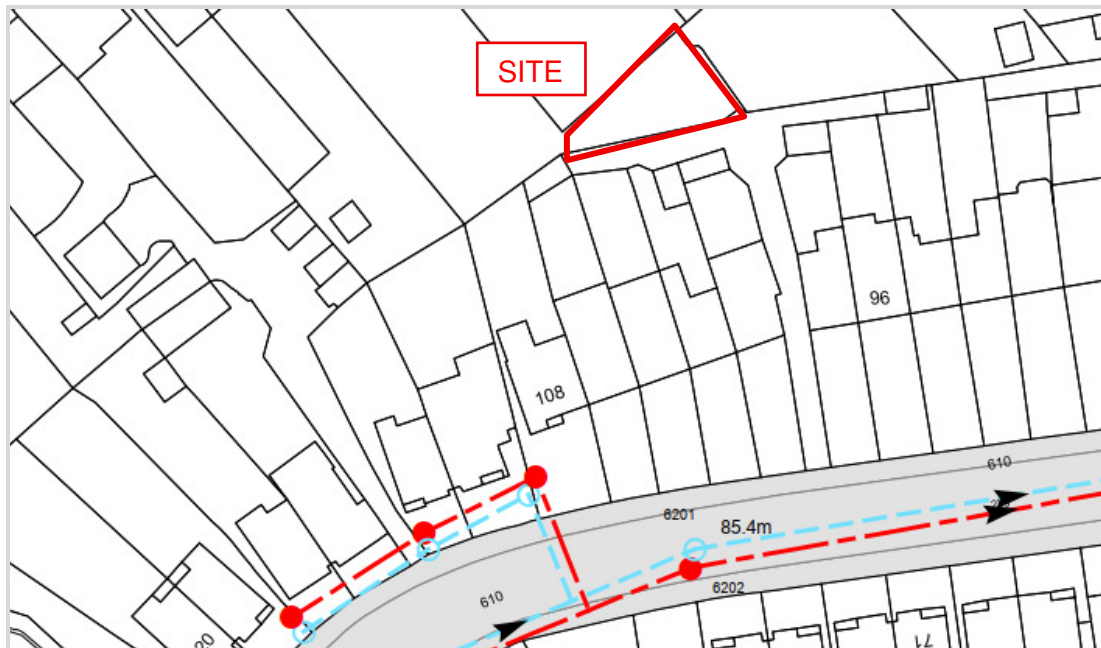


Figure 2.5 – Extract from Thames Water Asset Plan

There is an existing manhole located within the passageway. Both soil vent pipes and rainwater pipes from numbers 98 and 100 Priory Gardens are present within the passageway. It is therefore assumed that there are existing surface water and foul water drains here that can be utilised. A CCTV drainage survey of the existing drainage system will be required early in the next design stage.

3. GEOLOGY

A review of the British Geological Survey maps of the area (Figure 3.1) indicate that the underlying geology consists of Claygate Member (clay, silt and sand) and London Clay Formation (clay, silt and sand). Trial pits and window samples will be excavated on site within the next design stage to provide site specific information on the ground.

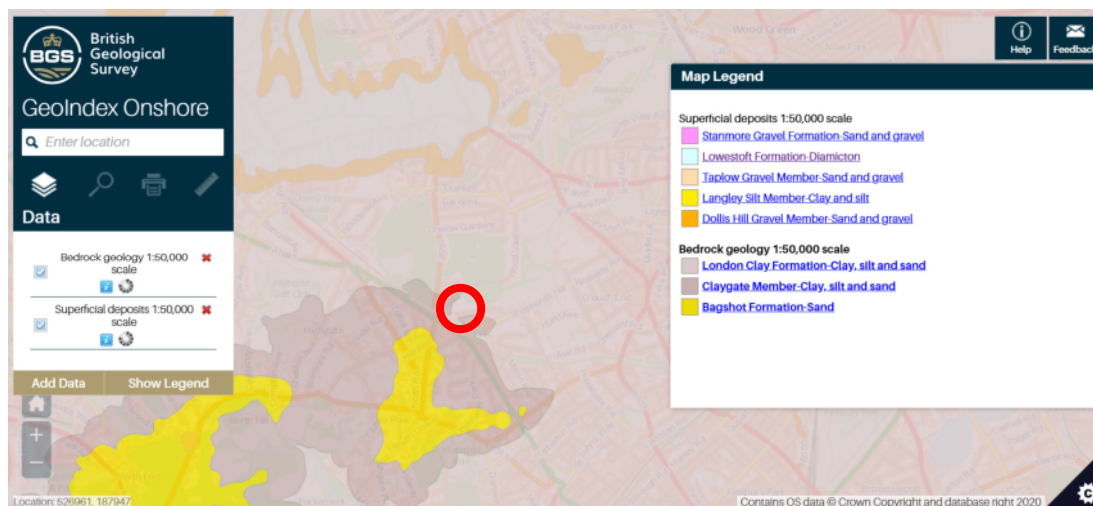


Figure 3.1 - Extract from Geological Maps (British Geological Survey database)

The LandIS Soilscape viewer indicates the site is situated on loamy and clayey soil which suffers from impeded drainage (Figure 3.2).

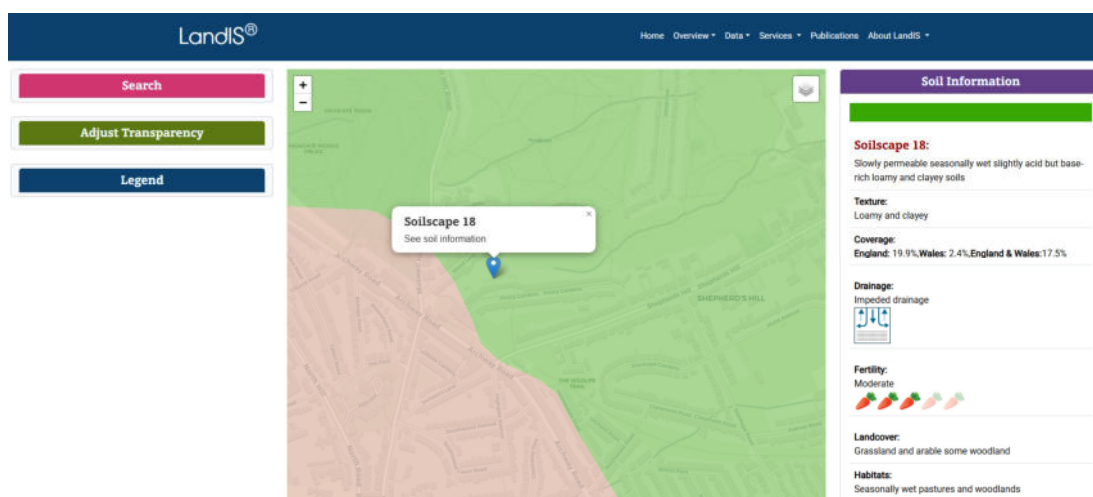


Figure 3.2 - Extract from Soilscape online digital viewer (landis.org.uk)

The interactive Magic Maps by Defra provide geographic information about the natural environment from across government. This indicates the site is close to an underlying Secondary A aquifer (Figure 3.3) and located within a medium to low ground water vulnerability zone (Figure 3.4).

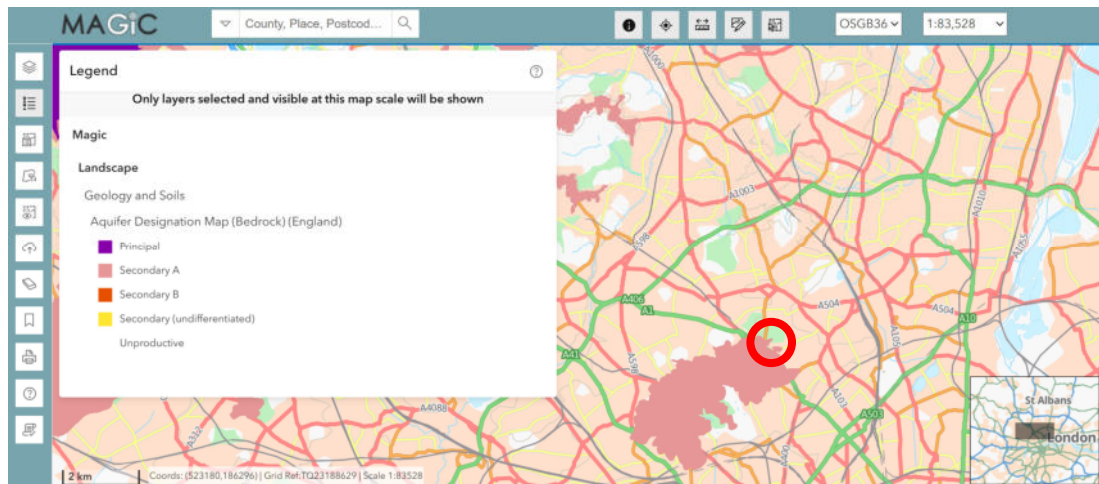


Figure 3.3 - Extract from Magic Maps – Principal aquifer (magic.defra.co.uk)

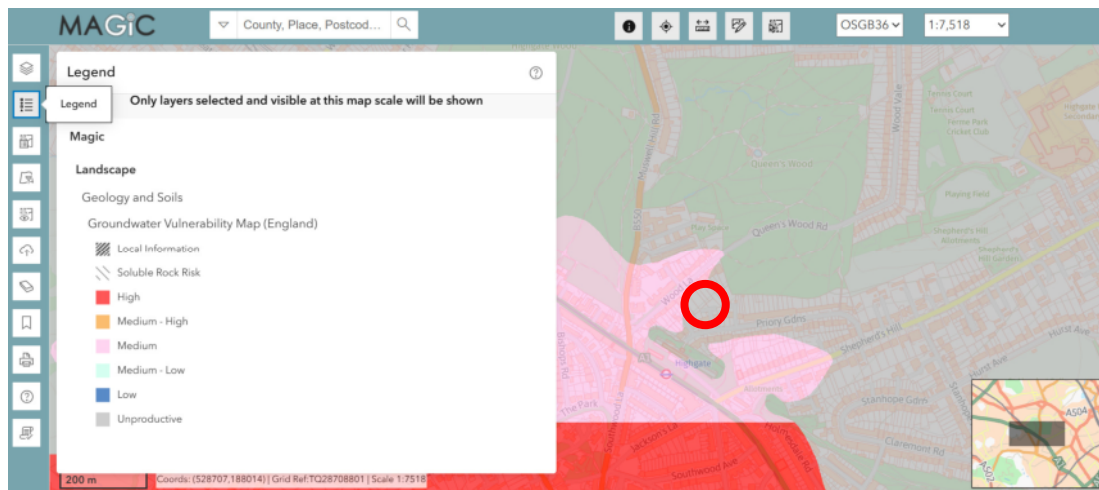


Figure 3.4 - Extract from Magic Maps – Groundwater vulnerability (magic.defra.co.uk)

4. FLOOD RISK

A review of the Environment Agency flood maps of the area show that the site is in Flood Zone 1 (Figure 4.1). The site is not in an area at risk of flooding from rivers or the sea.

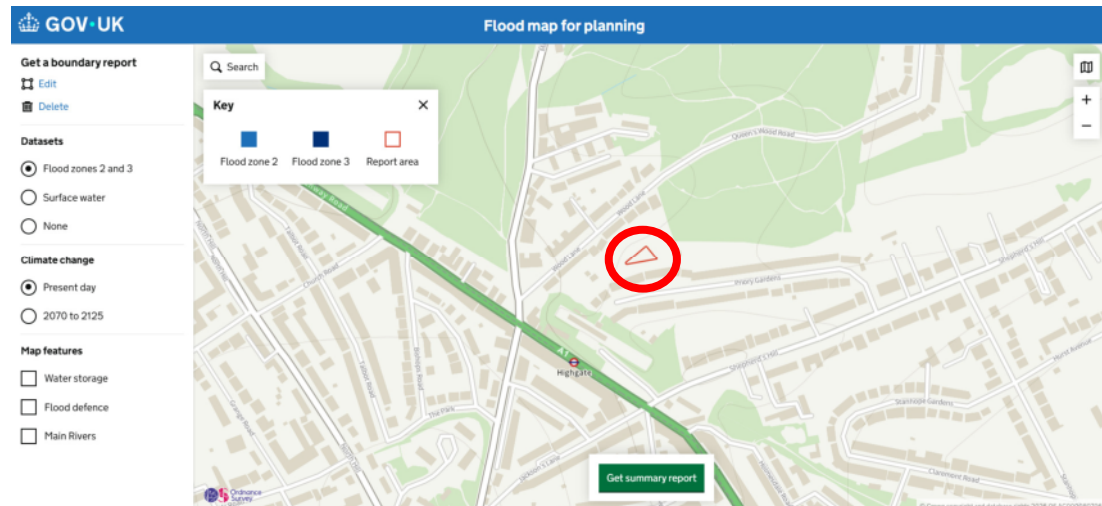


Figure 4.1 - Extract from Environment Agency Flood Maps (Flood Zone)

Surface water flood maps show that the site is not in an area at risk of surface water flooding, with a less than 1 in 1000 annual likelihood of flooding from surface water (Figure 4.2).

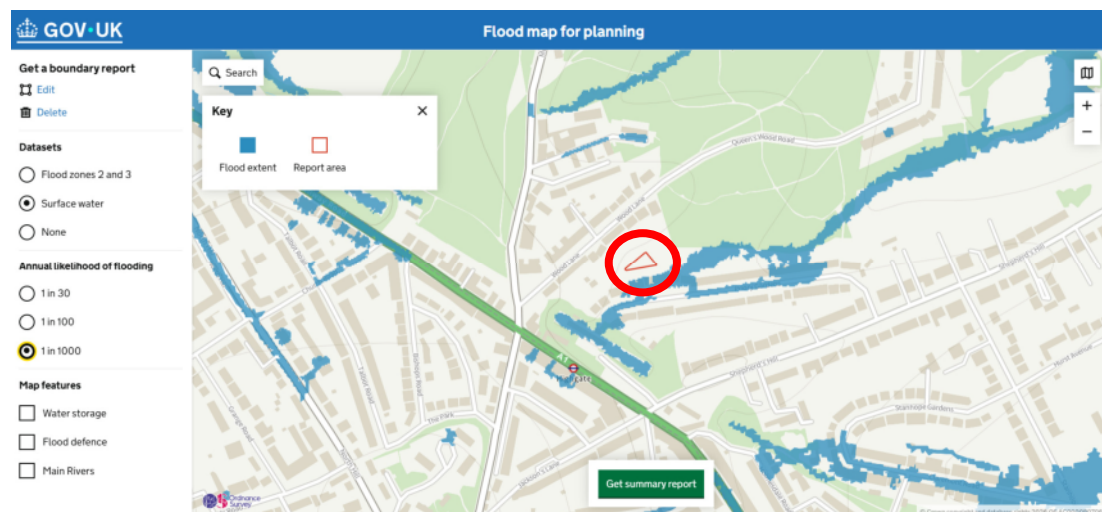


Figure 4.2 - Extract of Environment Agency Flood Maps (Surface water flooding)

Following the guidance within the National Planning Policy Framework (NPPF) for flood risk vulnerability and flood zone compatibility, the proposed residential building is “more vulnerable”, and so the development is deemed appropriate (Figure 4.3).

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

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Figure 4.3 - Extract from Government NPPF - Flood Risk Vulnerability and Flood Zone Compatibility

Based on the desktop review of site conditions, the site being located in Flood Zone 1 and not at risk of surface water flooding, it is concluded that a detailed flood risk assessment is not required for the site.

5. POLICY

The following policy documents should be reviewed in the development of the drainage strategy:

- National policy contained within the revised National Planning Policy Framework (NPPF), updated July 2021, issued by the Ministry of Housing, Communities and Local Government, with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change'.
- The Planning Practice Guidance (PPG) released in March 2014 ('Flood Risk and Coastal Change' section) and updated to incorporate the EA 'Flood Risk Assessments: Climate Change Allowances' guidance (most recently updated July 2021 as a live resource).
- Local planning policy contained within the London Borough of Haringey Local Plan. Relevant policies include Policy DM24: Managing and Reducing Flood Risk, Policy DM25: Sustainable Drainage Systems, Policy DM26: Critical Drainage Areas and Policy DM27: Protecting and Improving Groundwater Quality and Quantity.
- The London Plan Policy 5.13: Sustainable Drainage.
- The New London Plan Policy SI 13: Sustainable Drainage.
- London Borough of Haringey Surface Water Management Plan (2011).
- London Borough of Haringey Local SuDS Standards document, providing more specific guidance on the preparation of surface water drainage strategies in addition to the SPDs noted above.

6. PROPOSED DEVELOPMENT

The proposed works to the site include the removal of the remnants of the previous garage building and construction of a new annex building over the previous footprint. Due to ground levels on site and adjacent, retaining walls will be required on the west, northwest and northeast sides of the proposed building. Some landscaping works will also be required. Figure 6.1 shows the proposed site plan.

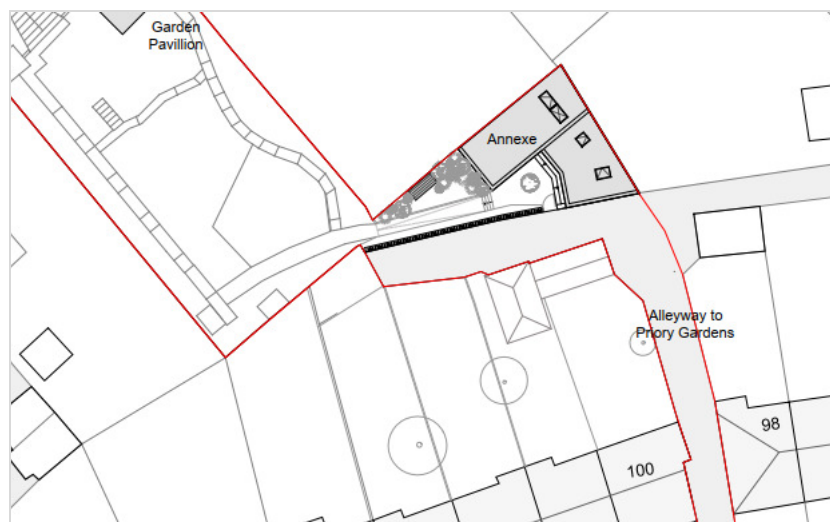


Figure 6.1 - Extract from Cooke Fawcett Architects Proposed Site Plan

The existing impermeable area on site is approximately 29.5m². The proposals will create a total of 83m² impermeable area.

7. PROPOSED DRAINAGE

7.1 Foul Water Drainage Strategy

The proposed foul drainage will be collected in a series of drains and manholes and discharged into the existing foul sewer either within the passageway to the south of the site, or within Priory Gardens. It is assumed that this connection can be achieved by gravity. This will be assessed once the drainage CCTV survey has been undertaken on site and if required a private pumping station will be incorporated into the design strategy.

The proposed foul network will be maintained by the site owner and all private drainage designed in accordance with Building Regulations Part H.

A drainage strategy drawing is included in Appendix A.

7.2 Surface Water Drainage Strategy

The NPPF recognises that flood risk and other environmental damage can be managed by minimising changes in the volume and rate of surface water runoff from development sites and recommends that priority is given to the use of SuDS in new developments.

Non-Statutory Technical Standards for SuDS set out general recommendations for control of development runoff, including the requirement to ensure that runoff from the site is not increased by development, and the requirement to manage surface water runoff for events up to and including the 1 in 100 (1%) annual probability event plus an additional allowance for the projected impacts of climate change, which in this case is 40%. These are the parameters for which the drainage strategy will be designed for.

The method of surface water discharge has been determined based on the hierarchy of surface water disposal as set out within Building Regulations – Approved Document H:

- a) Infiltration
- b) Discharge to a Watercourse
- c) Discharge to a Sewer.

Following the desktop study of the site, and trial pits excavated at the main house to the northwest of the site, it is concluded that the ground is not suitable for soakaways. The proposed surface water drainage will therefore discharge to an existing surface water sewer either within the passageway or within Priory Gardens. Surface water will be collected via a series of private drains and manholes and discharged to the Thames Water surface water network with a restricted flow of 2 l/s. An attenuation tank will be provided to collect and store water from the roof in order to achieve the restricted flow during specified storm events. The external paved areas will discharge to ground via permeable paving, with the subbase acting as a filter.

A drainage strategy drawing is included in Appendix A.

SuDS

It is a requirement of the NPPF that SuDS are used in all major developments, if practicable. CIRIA report C753 'The SuDS Manual' outlines the various types of SuDS, benefits, limitations, and design considerations.

The use of SuDS methods to be incorporated within the proposed development has been evaluated using the SuDS hierarchy and applicable techniques are summarised below:

- Permeable Paving - The use of permeable surfaces to provide water quality treatment prior to discharge in the hardstanding areas of the development is considered appropriate for the development.
- Attenuation – The use of a below ground modular tank to include storage for all events up to and including 1 in 100 (1%) annual probability plus 40% climate change is considered most appropriate for site use and lifecycle of the development.

Exceedance

To ensure flooding does not affect properties or discharge from the development in an exceedance event, surface water flows up to the 1 in 100 (1%) annual probability plus 40% climate change event shall be managed onsite.

The proposed attenuation tank serving the property will be designed to have sufficient capacity in excess of the 1 in 100 (1%) annual probability plus 40% climate change event. Additional storage is also available within the surface water drainage system and the permeable sub base of the hardstanding areas, although this has not been included in the calculations.

Therefore based on these measures, flooding in the 1 in 100 (1%) annual probability plus 40% climate change event is contained within the below ground storage system and will not impede access and egress to and from the site.

Pollution Control

Suitable pollution control measures will be included in the surface water drainage system to reduce the risk of pollution or contaminants entering the ground from surface water runoff from the development.

As outlined in Table 4.3 from the SuDS Manual (Figure 7.1), surface water runoff from the proposed development will receive treatment in line with the Simple Index Tool. This will be by the use of permeable paving sub-base and filter techniques incorporated into the attenuation system including a silt trap. This will help manage sediment control and water quality.

TABLE 4.3 Minimum water quality management requirements for discharges to receiving surface waters and groundwater			
Land use	Pollution hazard level	Requirements for discharge to surface waters, including coasts and estuaries ²	Requirements for discharge to groundwater
Residential roofs	Very low	Removal of gross solids and sediments only	
Individual property driveways, roofs (excluding residential), residential car parks, low traffic roads (eg cul de sacs, home zones, general access roads), non-residential car parking with infrequent change (eg schools, offices)	Low	Simple index approach ³ <i>Note: extra measures may be required for discharges to protected resources¹</i>	
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	Medium	Simple index approach ³ <i>Note: extra measures may be required for discharges to protected resources¹</i>	Simple index approach ³ <i>Note: extra measures may be required for discharges to protected resources¹</i> In England and Wales, Risk Screening ⁴ must be undertaken first to determine whether consultation with the environmental regulator is required. In Northern Ireland, the need for risk screening should be agreed with the environmental regulator.
Trunk roads and motorways	High	Follow the guidance and risk assessment process set out in HA (2009)	
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	High	Discharges may require an environmental licence or permit ⁵ . Obtain pre-permitting advice from the environmental regulator. Risk assessment is likely to be required ⁶ .	

Figure 7.1 - Table 4.3 from CIRIA SuDS Manual

In accordance with Table 26.2 of the SuDS Manual, the proposed development will be subject to the pollution hazard indices specified within Table 2. Table 3 presents the mitigation indices provided by each SuDS method proposed as part of the drainage strategy. It should be noted that the proposed site is predominately covered in roof area or soft landscaping, resulting in a very low hazard index.

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roof	Very low	0.2	0.2	0.05
Individual property driveway	Low	0.5	0.4	0.4

Table 2 - Pollution Hazard Indices

SuDS Measure	TSS	Metals	Hydrocarbons
Silt trap and permeable filter membrane (filter drainage)	0.4	0.4	0.4
Permeable Paving	0.7	0.6	0.7

Table 3 - Pollution Mitigation Indices

Flood Mitigation Measures

Site levels fall from north to south, towards Priory Gardens, and therefore localised flooding is not anticipated within the site boundary. However, the following measures will be adopted within the scheme which will mitigate the risk of localised surface water flooding.

- External ground levels largely as existing.
External ground levels remain largely as existing. There are no reported issues with surface water flooding at the current property and so it is not anticipated that there will be issues with the proposed development.
- Permeable paving.
The hardstanding spaces will utilise areas of permeable paving to reduce the impermeable area across the site.
- Raised threshold level.
The doorway into the property is approximately 400mm above ground level. This will mitigate the risk of water ingress at the entrance point.

8. DESIGN STANDARDS AND MANAGEMENT

All proposed drains and sewers shall be designed in accordance with Building Regulations – Approved Document H. The ongoing management and maintenance of the proposed foul and surface water management systems are expected to fall under the responsibility of the home owner.

Tables 4 and 5 below summarise the considerations relating to the maintenance of proposed SuDS techniques adopted within this drainage strategy.

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Cleaning: Brushing regularly and remove sweepings to avoid silting up of gullies	Monthly, or as required
	Emptying of silt from trapped gullies	Monthly, or as required
Occasional maintenance	Monitor effectiveness of permeable pavement (use an observation well)	As required
	Remove silt and spread locally outside design profile and reinstate surface	As required

Table 4 - Maintenance requirements for permeable paving

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove litter and debris	Monthly
	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
	Remove sediment from pre-treatment structures	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 the tank for sediment build up and remove if necessary	Every 5 years or as required

Table 5 - Maintenance requirements for modular attenuation

Long term management of surface water drainage assets, including any SuDS components, is crucial to ensure they continue to function. As such, a management and maintenance plan will need to be developed to ensure the systems continue to work effectively.



9. SUMMARY AND CONCLUSION

CAR Ltd has prepared this Flood Risk Statement and Drainage Strategy on behalf of the client, to support a planning application for a new outbuilding and associated infrastructure at 28 Wood Lane, Highgate, London, N6 5UB (site).

This report concludes:

- The surface water management strategy takes into consideration the constraints of the site, infiltration requirements and water quality treatment stages in accordance with the CIRIA SUDS Design Manual (C753) and the London Borough of Haringey guidance documents.
- Surface water runoff will be collected, attenuated and discharged to the nearby surface water sewer within Priory Gardens for events up to the 1 in 100 (1%) annual probability storm event including an allowance for 40% climate change.
- The principle of the foul water drainage strategy is to discharge into the public sewer within Priory Gardens via a gravity connection.
- The proposed outline drainage network has been developed in accordance with Building Regulations Part H.
- All SuDS features will be maintained throughout the lifetime of the development by the home owner.



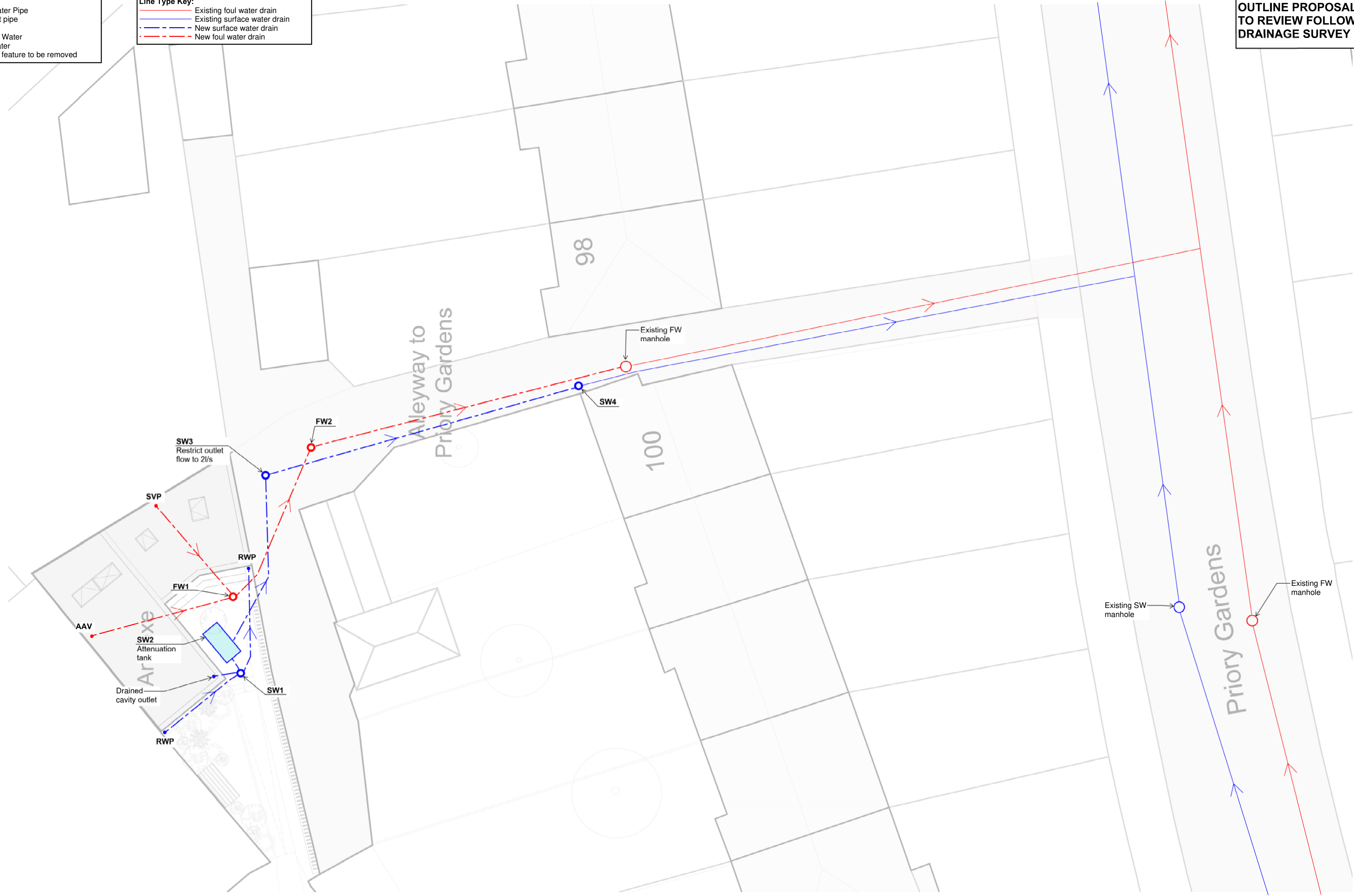
APPENDIX A

PROPOSED BELOW GROUND DRAINAGE STRATEGY

Key:	
RWP	Rain Water Pipe
SVP	Soil vent pipe
ex / EX	Existing
SW	Surface Water
FW	Foul Water
exXX	Existing feature to be removed

Line Type Key:	
—	Existing foul water drain
—	Existing surface water drain
---	New surface water drain
---	New foul water drain

OUTLINE PROPOSALS - SUBJECT
TO REVIEW FOLLOWING CCTV
DRAINAGE SURVEY



				Drawing Status	PRELIMINARY		Drawing Title	Annex Proposed Below Ground Drainage Strategy		Scale	1:150 @ A2	CAR Unit 6 25 Gwydir Street Cambridge CB1 2LG 01223 460475 www.carltd.com
				Job Title	28 Wood Lane Highgate London N6 5UB				Drawn	AB	Approved	
				Initial issue	AB	09.01.26	v1			Date	Jan 2026	
				Revision Details	By	Date	Suffix			Drawing Number	4620-SK2500	Rev v1