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SURFACE WATER DRAINAGE STRATEGY FOR PLANNING

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STRUCTURAL ENGINEERS

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STRUCTURAL CALCULATIONS

27 EASTBURY ROAD, NORTHWOOD, HA6 3AJ

CLIENT

Tushar Shah

27 EASTBURY ROAD, NORTHWOOD, HA6 3AJ

PROJECT NO:26018

27 February 2026

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Job ref	: 26018
Sheet	: **Sheet Ref / 2 -**
Made By	:
Date	**:27 February 2026**
Checked	**:**
Approved	:

Location:	27 Eastbury Road, Northwood, HA6 3AJ				
Application:	Demolition of an existing detached house and redevelopment to provide new dwelling.				
Prepared for:	Tushar Shah				
Title:	Surface Water Drainage Strategy for Planning				
Project No.:	26018	**Date:**	27/02/2026	**Issue No.:**	26018SUDs-1-Rev -

1.0 Introduction

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1.01 This Surface Water Drainage Strategy has been prepared by RM-DMS on behalf of Tushar Shah, for the purpose of supporting the planning application for a residential redevelopment at the site of 27 Eastbury Road Northwood HA6 3AJ. The report will assess the surface water drainage strategy for the proposed development.

1.02 The planning application is for the demolition of an existing dwelling and the construction of a new dwelling the application is retrospective. The newly introduced built footprint will cover approximately 200m² in the main house and 38m² in the form of hard standing. The area of porous paving will be 190m² and green landscaping will be 200m² giving a total site footprint of 628m².

1.03 In order to mitigate flood risk posed by post development runoff, adequate control measures will be required within the site. This will ensure that surface water runoff is dealt with at source and the flood risk off site is not increased.

2.0 Existing Ground Conditions

2.01 The 1:50,000 BGS map shows the bedrock geology underlying the site to consist of London Clay Formation-Clay over mudstone. These sedimentary rocks are marine in origin. They are detrital and comprise coarse- to fine-grained slurries of debris from the continental shelf flowing into a deep-sea environment, forming distinctively graded beds.

2.02 BGS mapping indicates that the site is not underlain by superficial geological deposits.

2.03 The soil type taken from the BGS UKSO Soil Map Viewer, shows a soil parent material of Deep Pre-quaternary Marine/Estuarine. Clay/Silt with a soil texture of Clay to Silt.

2.04 Nearby BGS borehole logs show that there is no resting groundwater level within 5m of the surface.

2.05 The published Environment Agency Groundwater Vulnerability map shows the site is not located within an area classified as a Groundwater Source Protection Zone.

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iGES Talisman House, 11 Talisman Square, KENILWORTH, CV8 1JB. e-mail:info@iges.co.uk Tel: 01926 851113 Fax: 01926 851394

Job No. 7403 | Site : St Helen's School, Northwood. | Client : St Helen's School. | Engineer : Bridges Pound Limited. | BOREHOLE LOG BH WS1 | Sheet 1 of 1

Method: Endrive Rig System. | Date: 25/07/01 - 25/07/01 | Drilling Crew: Premier Sampling | Logged By: DMB | Scale: 1:50

Dia (mm): 82MM | Coord | Ground Level m.: 82.70

Date & Casing Depth	Depth m.	Sample Type	Water Level	SPT N or Cu	M/C %	Depth m.	Description of Strata
						0.03	Paving slabs. Made Ground.
						0.10	Building Sand. Made Ground.
1.00	0.40	J	DRY				Stiff brown slightly sandy gravelly CLAY with many fine roots and rootlets. Gravel fraction comprises fine to medium rounded quartz, subrounded to sub angular flints, occasional brick and tarmac fragments. TOPSOIL/MADE GROUND.
1.00	0.80	P/J	DRY	160	19	0.65	Stiff light brown slightly gravelly CLAY. Gravel fraction comprises fine to coarse rounded quartz, sub rounded to sub angular flints. Includes some to occasional roots and rootlets. HEAD.
	1.00 - 1.45	SJ	DRY	4N	35	0.80	Soft to firm light brown mottled grey laminated CLAY including some fine roots and rootlets and some relict root traces. Weathered LONDON CLAY. Includes some orange ironstaining mottling. Becomes firm to stiff with depth. Includes occasional fine corestones, fine sandy lenses and relict root traces.
1.00	1.60	P/J	DRY	100			
1.00	1.80	P	DRY	100			
1.00	2.00 - 2.45	SJ	DRY	16N	28		
1.00	2.60	P/J	DRY	100	31		
1.00	2.80	P	DRY	100			
1.00	2.90	P	DRY	130			
1.00	3.00 - 3.45	SJ	DRY	14N	30		
1.00	3.60	P	DRY	125			Occasional fine sand lenses noted.
1.00	3.80	P	DRY	125			
1.00	3.95	P	DRY	150			
1.00	4.00 - 4.45	SJ	DRY	15N	31		
1.00	4.50	P	DRY	180			
1.00	4.60	J	DRY		28		Fine to coarse sand sized selenite crystals noted. Slightly fissured structure.
1.00	4.70	P	DRY	160			
1.00	4.90	P	DRY	175			
1.00	5.00 - 5.45	SJ	DRY	16N	29		
1.00	5.50	P	DRY	170			
1.00	5.70	P	WET	250			Moderately strong light brown mudstone noted between 5.7 and 5.8m, wet.
1.00	5.90	P	DRY	190			
1.00	6.00 - 6.45	SJ	DRY	18N	27		Includes rare fine to medium corestones.
25/07/01						6.45	

2.05.1 Local Borehole log

3.0 Nearby Watercourses / Drainage Features:

3.01 Having reviewed local mapping, most of these watercourses are a few miles south/east of Northwood (HA6). Northwood's immediate area is largely suburban and does not contain major rivers or brooks on maps, but the River Brent and its tributaries run through nearby parts of Barnet and Hendon in Greater London.

The following are those nearest to the site:

Main Nearby Watercourses

River Brent – A significant river in northwest London; its sources are in the Mill Hill / Barnet area, and it flows southeast through Hendon and beyond.
Dollis Brook – A tributary of the River Brent running through parts of Barnet and Finchley; feeds into the Brent near Hendon.
Silk Stream – A smaller tributary of the River Brent formed by Deans Brook and Edgware Brook; flows through Colindale/Hendon.

Local Tributaries and Brooks

These are smaller streams feeding into the Brent and Silk systems in north/north-west London:

Deans Brook – A short stream in the Mill Hill/Edgware area feeding the Silk Stream.
Burnt Oak Brook – Small tributary of the Silk Stream.
Edgware Brook – Another minor tributary of the Silk Stream.
Edgwarebury Brook – Feeds Deans Brook before it joins the Silk Stream.
Mutton Brook – Tributary of the River Brent further south in Barnet.
Folly Brook – Another tributary of Dollis Brook, flowing through suburban green spaces.

3.02 There are no drains or ditches located within the site periphery.

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4.0 Existing Drainage

4.01 Asset records obtained from Thames Water Utilities Ltd indicate the presence of a surface water sewer and a foul water sewer flowing beneath Eastbury Road and it is fully expected a connection will be already in place from the former property to both these sewers.

4.02 According to Thames Water Utilities Ltd there are manhole covers located along the stretch of surface water sewer in vicinity to the site therefore cover and invert levels have been provided within Thames Water. These levels appear to demonstrate adequate falls into the drainage if the existing connection is not available.

4.03 Despite this, given the topographic elevation of the site, at least 3m above Eastbury Road, it can be confidently assumed that gravity connection to Thames Water surface water sewer is viable.

4.04 In light of this, it is assumed that surface water generated within the existing site boundary is likely to currently discharge at an uncontrolled rate to either Local Authority storm water drainage or the surface water sewer beneath Nugents Park.

4.05 Extract from Thames Water Asset Plan.

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5.0 The Proposed Scheme

5.01 The scheme involves the construction of a new house in replacement of an existing building. The new premises will sit over 200m² and will be of traditional structure over three stories and does not include a basement.

5.02 The development is generally level and there are no steps within the design of the Ground Floor.

5.02.1 Site and Ground Floor Plan

5.02.2 1st Floor Plans

5.03 The development will develop the following areas:

Impervious	200m².
The area of semi-pervious	190m².
Green landscaping	200m².

5.04 The increase on the site will be limited as the original building was of a similar size.

6.0 Surface Water Drainage Strategy.

6.01 In order to mitigate flood risk posed by post development runoff, adequate control measures will need to be considered within the site. This will ensure that surface water runoff is dealt with at source and flood risk is not increased elsewhere.

6.02 Drainage Methodology Hierarchy

- Infiltration to the practically achievable maximum.
- Discharge to surface water courses.
- Discharge to surface water sewer.

SUITABILITY OF SUDS COMPONENTS			
SUDS COMPONENT	DESCRIPTION	SUITABILITY	ADOPTED
Infiltrating SuDS	Infiltration can contribute to reducing runoff rates and volumes while supporting baseflow and groundwater recharge processes. The suitability and infiltration rate depends on the permeability of the surrounding soils	Incompatible ground conditions and insufficient space to implement infiltration SuDS	x
Permeable Pavement	Pervious surfaces can be used in combination with aggregate sub-base and/or geocellular/modular storage to attenuate and/or infiltrate runoff from surrounding surfaces and roofs. Liners can be used where ground conditions are not suitable for infiltration	There is limited external paved areas, however these should be made permeable where ever possible to maximise interception of runoff. However, given the underlying ground conditions, this assessment has considered all external paced areas as drained through the system	✓
Green Roofs	Green Roofs provide areas of visual benefit, ecological value, enhanced building performance and the reduction of surface water runoff. They are generally more costly to install and maintain than conventional roofs but can provide many long-term benefits and reduce the on-site storage volumes	Greenroofs have been considered suitable based on the approved DA drawing	x
Rainwater Harvesting	Rainwater Harvesting is the collection of rainwater runoff for use. It can be collected form roofs or other impermeable area, stored, treated (where required) and then used as a supply of water for domestic, commercial and industrial properties	Rainwater harvesting should be considered, but not allowed for in this report	✓
Swales	Swales are designed to convey, treat and attenuate surface water runoff and provide aesthetic and biodiversity benefits. They can replace conventional pipework as a means of conveying runoff; however, space constraints of some sites can make it difficult incorporating them into the design	Swales have been discounted as these typically require larger open areas with unrestricted access.	x
Rills and Channels	Rills and Channels keep runoff on the surface and convey runoff along the surface to downstream SuDS components. They can be incorporated into the design to provide a visually appealing method of conveyance; they also provide effectiveness in pre-treatment removal of silts	Rills and Channels have been discounted at this time given the limited open space	x
Bioretention Systems / Rainwater Gardens	Bioretention systems can reduce runoff rates and volumes and treat pollution through the use of engineer soils and vegetation. They are particularly effective in delivering interception, but can also be an attractive landscape feature whilst providing habitat and biodiversity	Bioretention Systems and Rainwater Gardens have been discounted as these typically require larger open areas (with unrestricted access).	x
Retention Ponds and Wetlands	Ponds and Wetlands are features with a permanent pool of water that provide both attenuation and treatment of surface water runoff. They enhance treatment processes and have great amenity and biodiversity benefits. Often a flow control system at the outfall controls the rates of discharge for a range of water levels during storm events	Retention Ponds and Wetlands have been discounted as these typically require larger open areas (with often restricted access). The site is relatively constrained with limited open space to utilise open-air SuDS devices of this nature	x
Detention Basins	Detention Basins are landscaped depressions that are usually dry except during and immediately following storm events, and can be used as a recreational or other amenity facility. They generally appropriate to manage high volumes of surface water from larger sites such as a neighbourhood	These have been discounted as these typically require significant open areas (with often unrestricted access). The site is relatively constrained with limited open space to utilise open-air SuDS devices of this nature	x
Geocellular Systems	Attenuation storage tanks are used to create a below-ground void space for the temporary storage of surface water before infiltration, controlled release or use. The inherent flexibility in size and shape means they can be tailored to suit the specific characteristics and requirements of any site	Given the highly constrained nature of the site, with limited external areas to implement other attenuation strategies, attenuation storage through geo-cellular means is consider the most suitable approach to providing the required storage volumes	✓
Proprietary Treatment Systems	Proprietary treatment systems are manufactured products that remove specific pollutants from surface water runoff. They are especially useful where site constraints preclude the use of other methods and can be useful in reducing the maintenance requirements of downstream SuDS	Proprietary Treatment Systems will likely be required on roof outlets (in the form of sediment traps). Runoff from site is considered of 'low risk'.	✓
Filter Drains and Filter Strips	Filter drains are shallow trenches filled with stone, gravel that cerate temporary subsurface storage for the attenuation, conveyance and filtration of surface water runoff. Filter strips are uniformly graded and gently sloping strips of grass or dense vegetation, designed to treat runoff from adjacent impermeable areas by promoting sedimentation, filtration and infiltration	Limited area to implement these SuDS Features	x

Fig 4 - Suitability of various SuDS Devices for the management and treatment of surface water runoff.

7.0 Infiltration Potential.

7.01 The BGS records that the site is underlain with London Clay is Formation has been borne out by the borehole logs included within the structural assessment of the site.

7.02 Although slow infiltration rates expected within the clay, some infiltration is considered possible and an attenuation-based drainage strategy has been designed for all the water that does not infiltrate (for the purpose of design a worst-case scenario of 100% has been assumed), this attenuated water will discharge to the surface water sewer beneath Pollards Hill West.

7.03 All SUDS facilities will be designed to accommodate and dispose of runoff from storms up to the 1:100 year + 40% climate change event.

7.04 <u>Discharge</u>

7.05 Surface water generated within the existing site boundary is assumed to currently discharge at an uncontrolled rate to either the Local Authority storm water drain or the surface water sewer beneath Nugents Park.

7.06 In light of this, it is proposed to connect and discharge post development runoff at a controlled rate to the existing surface water sewer connection located beneath Nugents Park East of the site boundary.

7.07 Thames Water Utilities Ltd records do give drainage inverts, given that the relative levels, it can be confidently assumed that a gravity connection is viable. It is therefore proposed to use the existing dwellings surface water connection for the development.

This is in line with Thames Wates policy *'you do not need Thames Water's consent if you are reconnecting into an existing junction via the same existing connection after demolishing and rebuilding'*. Therefore, there will be no requirement for the developer to obtain Thames Water consent as part of this development.

7.08 <u>Proposed Discharge Rate</u>

7.09 Existing greenfield runoff rates for the total site have been calculated as 0.6 l/s for the 1:1 annual runoff event, 1.6 l/s for the 1:30 year event and 2.2 l/s for the 1:100-year event.

7.10 Runoff from the proposed road and driveways will be collected and stored in tanked permeable pavement / porous tarmac located beneath this area. Surface water runoff from the roof areas of the proposed dwellings will be directed to the area of tanked permeable paving. Check dams will be utilised within the subbase where the topography is on a gradient, so as to maximise storage potential.

7.11 From the tanked permeable pavement, runoff will be gradually discharged to the surface water sewer located beneath Pollards Hill West. It is initially proposed to utilise the existing service connection for the site however, if this is not possible a new surface water connection should be installed directly opposite the site entrance.

7.12 Outflow from the proposed drainage system (tanked permeable pavement / porous tarmac) to the surface water sewer will be limited to the greenfield runoff rate of 2.2 l/s for all storms up to the 1:100 year + 40% climate change event via a Hydro-Brake flow control device.

7.13 This discharge rate complies to Thames Water guidance which states that any new surface water connection should be limited to 5.0 l/s per hectare. The total site area is 4060m2 therefore surface water runoff should be limited to 2.2 l/s if connection to a sewer is to be applied to the design.

7.14 Water Quality

7.15 A key element of Suds is that they have the potential to improve the quality of surface water discharged from a site. This has the added benefit of helping to protect the downstream receiving water body. To assess this, the "Pollution hazard indices for different land use classifications", provided in the CIRIA Suds Manual (C753) as Table 26.2, has been reviewed. The indices use four different methods of assessing pollution potential, based on the hazard level, total suspended solids (TSS), metals and Hydrocarbons.

7.16 Adequate treatment must be delivered to the water runoff to remove pollutants through Suds devices, which are able to provide pollution mitigation. Pollution Hazards and the Suds Mitigation have been indexed in the CIRIA 753 'The SUDS Manual'.

7.17 The Pollution Hazard Indices are summarised in Fig 5 (reference: Table 26.3. CIRIA Suds Manual 2015).

Land Use	Pollution Hazard Level	Total suspended Solids (TTS)	Metals	Hydrocarbons
Residential Roofs	Very Low	0.7	0.6	0.7
Individual property driveways	Low	0.7	0.6	0.7
Standard to be achieved	Low	Yes	Yes	Yes

7.18 Fig 5 - Summary of Pollution hazard Indices for different Land Use.

7.19 From review of the available Suds which could be implemented, Fig 6 assesses the potential water quality index score against the most appropriate methods.

Land Use	Treatment Stage	Total suspended Solids (TTS)	Metals	Hydrocarbons
Permeable Pavement	Primary	0.7	0.6	0.7
Total Provision		0.7	0.6	0.7
Adequate Provision		Yes	Yes	Yes

7.20 Fig 6 - Cumulative Score for Proposed Suds Management Train

7.21 The Suds Manual considers roof runoff to be clean and does not require additional treatment. There were also be limited external (non-trafficked) paved areas that will be drained via silt traps to eliminate gross pollutants prior to discharge to the combined sewer.

7.22 For the driveways and terraces, these are shown to be permeable and it is proposed that the driveways be formed over storage tanks to slow the water flow off each individual plot. The terraces however are to be in contact with the underlying strata the underlying ground conditions should allow for some nominal interception/exfiltration of runoff from these areas and therefore allow self-treatment. When extreme rainfall events occur, additional surface drainage is shown (and should be provided) to allow runoff (beyond that of the first flush) to be directed into the drainage system. To further minimise the risk of blockage and siltation, the inspection chambers upstream of the attenuation devices and flow controls should include silt/trash buckets to remove gross pollutants.

7.23 As such, with inclusion of gross pollutant traps to RWPs, permeable paving to the terraces and surface drainage, the site is considered to have very low pollutant risk.

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7.24 As the ground was found to accept infiltration a soakaway was installed, a crate system was installed to the front driveway and the surface water was diverted to it:

ALTERNATIVE SOAKAWAY SIZES			
	trench soakaways		
width of trench *[mm]*:	**450**	**600**	**900**
required trench length *[m]*:	29.23	23.30	16.69
	ring soakaways		
diameter of ring *[mm]*:	1050	1350	1500
required pit diameter *[m]*:	1.47	1.45	1.44

** Based on effective depth and number of pits as in Soakaway Data table*

SUMMARY OF CALCULATIONS		
critical design rainfall duration 't_{crit}' =	120	*min*
required storage volume 'V_{req}' =	18.70	m^3
provided storage volume 'V_{prov}' =	19.12	m^3
utilisation factor =	**0.98**	***.OK***
required time to discharge 50% 't_{50}' =	3.99	*hours*
utilisation factor =	**0.17**	***.OK***

GENERAL DATA		
site location:	**England and Wales**	
soakaway type:	**geocellular units**	(?)
impermeable area drained to soakaway 'A' *[m^2]* =	**350**	
60 min rainfall depth of 5 year return period 'R' *[mm]* =	**20**	(?)
M5-60 to M5-2d rainfall ratio 'r' =	**0.50**	
allowance for climate change:	**40%**	

SOAKAWAY DATA		
soakaway width 'W' [m] =	**8.65**	
soakaway length 'L' [m] =	**2.00**	
total depth from ground level 'D_b' *[m]* =	**2.30**	
depth to drain invert level 'D_d' *[m]* =	**1.00**	
soakaway effective depth 'D_{eff}' *[m]* =	1.30	
free volume in infill aggregate *[%]* =	**85**	(?)

SOIL INFILTRATION DATA		
allowance for infiltration through soakaway base:	**30%**	(?)
available on-site infiltration test results:	○ Yes ◉ No	(?)
soil infiltration rate 'f' *[m/s]* =	**3.50E-05**	(?)

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION (?)

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	**M10-D**			**M50-D**			**M100-D**			outflow from soakaway *[m^3]*	required storage *[m^3]*
			Z2	rainfalls *[mm]*	inflow *[m^3]*	Z2	rainfalls *[mm]*	inflow *[m^3]*	Z2	rainfalls *[mm]*	inflow *[m^3]*		
5	0.39	7.80	1.21	13.18	4.61	1.61	17.59	6.15	1.86	20.28	7.10	0.20	6.90
10	0.54	10.80	1.22	18.49	6.47	1.66	25.07	8.77	1.92	29.07	10.18	0.40	9.78
15	0.65	13.00	1.23	22.42	7.85	1.68	30.58	10.70	1.96	35.64	12.47	0.60	11.87
30	0.82	16.40	1.24	28.47	9.96	1.71	39.22	13.73	2.00	45.95	16.08	1.20	14.88
60	1.00	20.00	1.24	34.72	12.15	1.73	48.44	16.95	2.03	56.84	19.89	2.40	17.50
120	1.19	23.80	1.24	41.32	14.46	1.72	57.39	20.09	2.01	67.13	23.50	4.80	**18.70**
240	1.38	27.60	1.23	47.51	16.63	1.71	66.06	23.12	1.99	76.86	26.90	9.59	17.31
360	1.51	30.20	1.22	51.56	18.04	1.70	71.83	25.14	1.97	83.22	29.13	14.39	14.74
600	1.68	33.60	1.21	56.88	19.91	1.68	78.95	27.63	1.94	91.31	31.96	23.98	7.98
1440	2.03	40.60	1.19	67.57	23.65	1.64	93.01	32.55	1.89	107.15	37.50	57.56	0.00

** Z2 is growth factor from M5 rainfalls*

8.0 ADOPTION AND MAINTENANCE

8.01 All onsite SuDS and drainage systems will be privately maintained. In addition to a long-term maintenance regime, it is recommended that all drainage elements implemented on site should be inspected following the first rainfall event post construction and monthly for the first quarter following construction.

8.02 General maintenance of key SuDS components is provided in Appendix 4.

8.03 The maintenance of proprietary devices will be subject to the final installed product and should be undertaken in accordance with the Manufacturer's maintenance schedule and regime. The proposals have aimed to incorporate mechanisms that require minimal maintenance and reduce failure liability.

8.04 The property owner will be responsible for the management and maintenance of SuDS devices.

MECHANISM FOR CONTRACT TO MAINTENANCE

8.05 CIRIA Publication C625 'Model Agreements for Sustainable Water Management Systems. Model agreements for Sud's were published in 2004. It is anticipated that the first year of responsibility for the maintenance of the drainage and SuDS network may be down to the client/developer. During this time frame, it is advisory to carry out the short-term monitoring and maintenance as per the guidance set out in this document.

8.06 It is recommended that monitoring and maintenance be initialized immediately via a maintenance regime. A detailed regime should be undertaken post completion of the network design once all design criteria have been obtained and construction details have been prepared. It is anticipated that all construction and site drawings will be shared post completion handover.

8.07 The handover documents can be used to prepare a maintenance regime for the SuDS devices and this can be carried out by a specialist maintenance management organization.

8.08 All maintenance documents should be held on site and copies offsite with a maintenance engineering company.

8.09 It is recommended that three competitive quotations are obtained for the cost of maintenance.

SURFACE WATER MANAGEMENT DURING CONSTRUCTION

8.10 During the construction phase temporary silt traps must be used in drainage trenches to trap silt entrained elsewhere in the site. This can be in the form of temporary check dams, geotextile flow retarders or similar structures.

8.11 To minimise the risk of silt pollution of the local highway drainage system, particularly during construction, no runoff should be directed highway drainage or existing surface drainage unless through appropriate erosion and sediment control measures (in

general accordance with International and Erosion Control Association (IECA) guidelines – refer to contractor's construction phase management plan).

REPLACEMENT OF ELEMENTS

8.12 Should replacement of any element be required, this should be undertaken in accordance with the manufacturer's specifications, and in a planned and controlled manor. Working on live drainage systems can pose a health and safety hazard and should only be undertaken by a competent contractor.

9.0 INDIVIDUAL ELLEMENT MAINTENANCE RAGIEME

Proposed permeable paving maintenance strategy

Maintenance for permeable paving primarily focuses on preventing clogs in the porous joints to ensure proper drainage. Routine cleaning, visual inspections, and proper winter care will help maintain functionality and appearance.

Routine maintenance

- Regular sweeping 3 monthly: Sweep the surface regularly to remove leaves, dirt, and other debris that can accumulate and clog the permeable joints.
- Twice annual cleaning: Manufacturers recommend cleaning the surface twice a year. A street sweeper with a strong vacuum is often the most effective method for removing compacted sediment from the joints.
- Inspect for ponding: After heavy rain, check the pavement for any standing water or slow-draining areas. Ponding indicates that the joints are becoming clogged and need cleaning.
- Replenish joint aggregate: Some vacuuming or power washing methods may remove some of the jointing grit. Check the joints after cleaning and top them up with the correct graded aggregate as needed to maintain the pavement's stability.

What to avoid

- Do not use kiln-dried sand: Use only the jointing grit specified by the manufacturer. Kiln-dried sand is too fine and will clog the pavement.
- No sand for de-icing: During winter, do not use sand for traction as it will block the joints. Use pure rock salt instead.
- Avoid high-pressure washing: When power washing, use medium pressure and a wide-angle nozzle. Applying pressure too aggressively can displace the jointing material and damage the surface.
- Keep soil and mulch away: Prevent soil, sand, and mulch from washing or spilling onto the permeable surface. When doing landscaping, use a cover to protect the pavement.
- No sealants: Never apply sealants to permeable paving, as this will prevent water from passing through and defeat its purpose.

Weed and stain removal

- Weed control: Weeds can be removed by hand, with a weed burner, or by using a glyphosate-based weed killer. Ensure you follow all manufacturer and safety instructions.
- Stain removal:
- Oil and tire marks: For stubborn stains, use a stiff brush with soapy water and rinse thoroughly.
- Moss: For moss growth, particularly in shaded areas, a light pressure wash combined with vacuuming can remove it.
- Restorative cleaning: If the pavement's infiltration rate has slowed significantly over time due to neglect, a deep restorative clean may be necessary. This involves specialized equipment to vacuum out the clogged joint aggregate, which is then replaced.

Winter maintenance

- De-icing: Permeable pavements generally require less de-icing salt than traditional surfaces. Use pure rock salt, not a mixture with sand.
- Snow removal: You can plow or shovel snow normally. Avoid storing large piles of dirty snow containing sand or other materials on the permeable surface, as this can lead to clogging upon melting.

METHOD STATEMENT: Soakaway Maintenance

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1. Scope of Works

To inspect, clean, and maintain the existing surface water soakaway system serving the private property to ensure it operates effectively and in accordance with UK drainage standards.

Works may include:

- Location and exposure of soakaway chamber/crate system
- Removal of silt, debris, and sediment build-up
- Jetting of inlet pipework
- Inspection of geotextile membrane (if accessible)
- Structural integrity check of chamber or crates
- Backfilling and reinstatement of surface finishes

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2. References & Compliance

Works will be carried out in accordance with:

- **Health and Safety at Work etc. Act 1974**
- **Management of Health and Safety at Work Regulations 1999**
- **Confined Spaces Regulations 1997** (if applicable)
- UK Building Regulations – Part H (Drainage and Waste Disposal)
- HSE guidance on safe excavation and underground services

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3. Responsibilities

Site Supervisor

- Overall responsibility for safe execution of works
- Ensure RAMS are briefed to operatives

Operatives

- Follow control measures
- Use PPE as specified

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- Report defects or unsafe conditions

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4. Plant & Equipment

- Drain rods
- High-pressure water jetting unit
- Wet vacuum tanker (if required)
- Shovels and hand tools
- CAT & Genny (for service detection)
- Barriers and warning signage
- PPE (see Section 6)

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5. Sequence of Works

5.1 Pre-Start

- Confirm soakaway location via drawings and service plans (if available).
- Undertake underground service scan using CAT & Genny.
- Establish safe working area with barriers and signage.
- Conduct site-specific risk assessment and toolbox talk.

5.2 Access & Exposure

- Carefully excavate to expose soakaway cover or crate system (if buried).
- Store excavated material safely away from trench edges.
- Support excavation sides as required in accordance with HSE guidance.

5.3 Inspection

- Visually inspect chamber/crates for:
  - Silt accumulation
  - Blocked inlets
  - Structural damage
  - Standing water indicating poor percolation
- Inspect inlet pipework via access chamber.

5.4 Cleaning & Maintenance

- Remove silt and debris manually or by vacuum tanker.
- Jet inlet pipework to remove blockages.
- If accessible, flush crate system with clean water.
- Check condition of geotextile membrane (where visible).

5.5 Testing

- Conduct water test to confirm soakaway is dispersing correctly.
- Monitor water level drop over an agreed time period.

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5.6 Reinstatement

- Reinstate geotextile (if disturbed).
- Backfill in layers and compact appropriately.
- Reinstate turf, gravel, or hard landscaping to match existing finish.

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6. Health & Safety

6.1 Hazards

- Excavation collapse
- Underground services strike
- Contaminated water exposure
- Manual handling injuries
- Slips, trips and falls

6.2 Control Measures

- Service detection prior to digging
- Excavations not left unattended without barriers
- Trench support where required
- Use of gloves and waterproof PPE
- Safe manual handling techniques
- Good housekeeping

6.3 PPE

- Safety boots (steel midsole)
- Hi-visibility vest
- Cut-resistant gloves
- Eye protection
- Hard hat (if required)
- Waterproof clothing

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7. Environmental Considerations

- Prevent contaminated water entering surface drains.
- Remove silt and waste to licensed waste facility.
- Minimise noise and disturbance to neighbours.
- Avoid damage to tree roots and landscaping.

General Drainage system

General Drainage System Maintenance Schedule

Plan Effective Date: [TBC]

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1. Maintenance Frequency Overview

Frequency	Key Tasks
Monthly	- Visual inspection of drainage inlets (gullies, grates).
	- Clear surface debris/leaves from covers and channels.
Quarterly	- Check and clean catch pits, silt traps, and interceptors.
	- Inspect and clear ACO channels or trench drains.
	- Flush/jet small bore pipework (where prone to blockage).
Biannually	- CCTV inspection of drainage lines (if history of issues).
	- Check manholes for sediment, cracks, or water ingress.
	- Clean out sumps and pump chambers (if applicable).
Annually	- Full system audit: manholes, soakaways, swales, and attenuation tanks.
	- Silt level measurement in soakaways and tanks.
	- Maintenance of oil interceptors (empty if >25% full).
	- Check flow rates and ponding in surface water outlets.

2. Inspection & Maintenance Checklist

Use this checklist during inspections:

- Are surface inlets (e.g., gullies, channels) clear of debris?
- Are manhole covers secure and undamaged?
- Are pipe flows unrestricted?
- Are there signs of backflow, ponding, or blockages?
- Are silt traps/interceptors below threshold capacity?
- Are soakaways draining effectively?
- Any evidence of odour, pollution, or water contamination?
- Are pumps (if present) operational and alarms tested?

3. Cleaning & Maintenance Tasks

- **Jetting and Flushing:** Use water jetting equipment to clean blocked pipes.
- **Vacuum Removal:** Use vacuum tankers for silt removal in interceptors and chambers.
- **Debris Removal:** Manually remove leaves, litter, and other surface debris.
- **Oil Interceptors:** Empty when >25% full of oil/sediment, inspect filters and baffles.
- **Pump Maintenance:** Clean float switches, test alarms, grease moving parts if needed.

4. Record Keeping

Maintain detailed logs of:

- Inspection dates and findings
- Cleaning activities performed
- Silt and waste volumes removed
- Repairs completed or recommended

- CCTV reports (as needed)
- Any pollution incidents or flooding

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5. Emergency Procedures

Blockage or Flooding:

- Notify site management immediately.
- Use jetting/vacuum equipment to clear blockage.
- Investigate cause with CCTV if recurrence.

Contamination or Pollution:

- Isolate affected area.
- Deploy spill kits or absorbents.
- Notify environmental authority if required.

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6. Health & Safety Considerations

- Confined space entry requires permits and trained personnel.
- Use proper PPE (gloves, boots, eye protection).
- Secure all open chambers or manholes during work.
- Dispose of waste according to environmental regulations.

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7. Annual Review

- Review maintenance effectiveness every 12 months.
- Update plan based on drainage performance, site changes, or regulation updates.

Flow Restrictor Valve

Flow Restrictor Valve Maintenance Schedule

Asset Name: Flow Throttle Drawing 25042-001
Site/Location: 15-26 LINCOLN COTTAGES BRIGHTON BN2 9UJ
Device Type: [Hydro brake
Installation Date: [Insert Date]
Maintenance Lead: Ollie Lawrence of Kauto Construction Ltd
Plan Start Date: [TBC]

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1. Maintenance Frequency Overview

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Frequency	Key Tasks
Monthly	- Visual inspection (if accessible) for debris or blockage.
	- Check flow patterns at outlet for signs of restriction.
Quarterly	- Check surrounding chamber for sediment/silt buildup.
	- Clean grate or screen (if fitted).
Biannually	- Physical inspection and cleaning of the restrictor device.
	- Confirm device is securely fixed and free of corrosion/damage.
Annually	- Full operational test (where possible).
	- Confirm design flow rates match outflow (e.g., via timed outlet test).
	- CCTV inspection of upstream/downstream pipework (if accessible).

2. Inspection Checklist

- Is the valve/restrictor free from blockages?
- Is sediment accumulating in or around the chamber?
- Is the restrictor securely mounted?
- Are any signs of corrosion, damage, or wear present?
- Is the restrictor discharging water at expected rates?
- Are upstream flows backing up during rainfall?

3. Cleaning & Maintenance Procedure

1. **Prepare site:**
   - Isolate and secure access area (manhole or chamber).
   - Use appropriate PPE.
2. **Remove debris:**
   - Manually clear any blockage on or near the device.
   - Use jetting or vacuum equipment as needed.
3. **Inspect condition:**
   - Look for cracks, rust, loosening of bolts or fixings.
   - Check for obstructions upstream and downstream.
4. **Flush/flow test (if applicable):**
   - Introduce controlled water flow to test outlet rate.
   - Observe behaviour of flow restrictor.
5. **Record findings and actions taken.**

📋 4. Record Keeping

Maintain a log with the following:

- Date and time of inspection
- Name of inspector
- Observed condition of valve

- Maintenance or cleaning actions taken
- Volume of debris or silt removed
- Any recommended repairs or follow-ups

---

5. Emergency Response

In event of blockage or flooding:

- Notify maintenance lead/site supervisor.
- Use jetting equipment to clear blockage.
- Confirm flow resumes post-clearance.
- Conduct CCTV inspection if issue persists.

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6. Health & Safety Considerations

- Entry into chambers is confined space — only by trained personnel.
- Use gas monitors and appropriate PPE.
- Secure site perimeter to prevent unauthorised access.
- Ensure lifting aids are used for heavy covers.

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7. Annual Review

This schedule should be reviewed annually or after:

- Major flooding events
- Repairs or replacements of the flow restrictor
- Changes in site drainage or runoff patterns

9.0 CONCLUSION

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9.01 As has been demonstrated no surface water will be released into the public sewer as all envisaged water will be dealt with via infiltration.

9.02 This report and drawings have been produced in response to stipulated planning conditions for the proposed development, to demonstrate the consideration and implementation of SuDS measures. The proposals within this report meet both the national and local policy objectives by managing runoff on site for all storms up to and including the 1 in 100 years plus climate change storm event. Prior to construction, proposed discharge rates should be confirmed with the third party who manages the connecting infrastructure.

9.03 Author

Richard Millar I Eng AMI Struct E

Director and Engineer

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