jms™ Group

Engineering That Brings Design To Life.

Surface Water Drainage and SuDS Strategy Report

Project Reference: EX26/138/03

Land Adjacent to 1 Russet Close,

Uxbridge

UB10 0NJ

Contents

List of Figures

List of Tables

Revisions and Additional Material

Document History and Status

Revision	Date	Purpose/Status
-	12.06.2026	First Issue

Document Details

Project Director	Ben Norman
Report Author	Mathan Rengasamy
Project Number	EX26/138/03

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | Registered No. 9119667 England

Preamble

This report has been prepared by JMS Consulting Engineers Ltd. on the instructions of the Client and for the sole use and benefit of the Client.

JMS Consulting Engineers Ltd. shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared and provided. If the Client wishes to pass copies of the report to other parties for information, the whole of the report should be copied. No professional liability or warranty is extended to other parties by JMS Consulting Engineers Ltd. as a result of permitting the report to be copied or by any other cause without the express written agreement of JMS Consulting Engineers Ltd.

The conclusions and recommendations made in this report are limited to those that can be made based on the research carried out. The results of the research should be viewed in the context of the work that has been carried out and no liability can be accepted for matters outside of the stated scope of the research. Any comments made based on information obtained from third parties are given in good faith on the assumption that the information is accurate. No independent validation of third-party information has been made by JMS Consulting Engineers Ltd.

1.0 Introduction

1.1.1 JMS Engineers have been appointed to prepare a surface water drainage strategy and SuDS report that will support the planning application for the development at Land Adjacent to 1 Russet Close, Uxbridge, UB10 0NJ

1.1.2 This report will review and aim to meet the requirements set out by London Borough of Hillingdon. The report will include a surface water drainage strategy and will consider the use of SuDS wherever possible.

2.0 Location & Existing Conditions

2.0.1 The application site is in London Borough of Hillingdon.

2.0.2 The site is located at Land Adjacent to 1 Russet Close, Uxbridge, UB10 0NJ and has a total site area of approximately 300 m². The site is currently undeveloped and predominantly covered by natural vegetation, with no significant existing impermeable surfaces or buildings present. The site is therefore considered to be a greenfield site.

2.0.3 The British Geological Survey (BGS) information shows the site is in superficial deposits of Boyn Hill Gravel Member-Sand and gravelas shown in **Figure 1**. The bedrock shown in **Figure 2** is London Clay Formation-Clay, silt and sand.

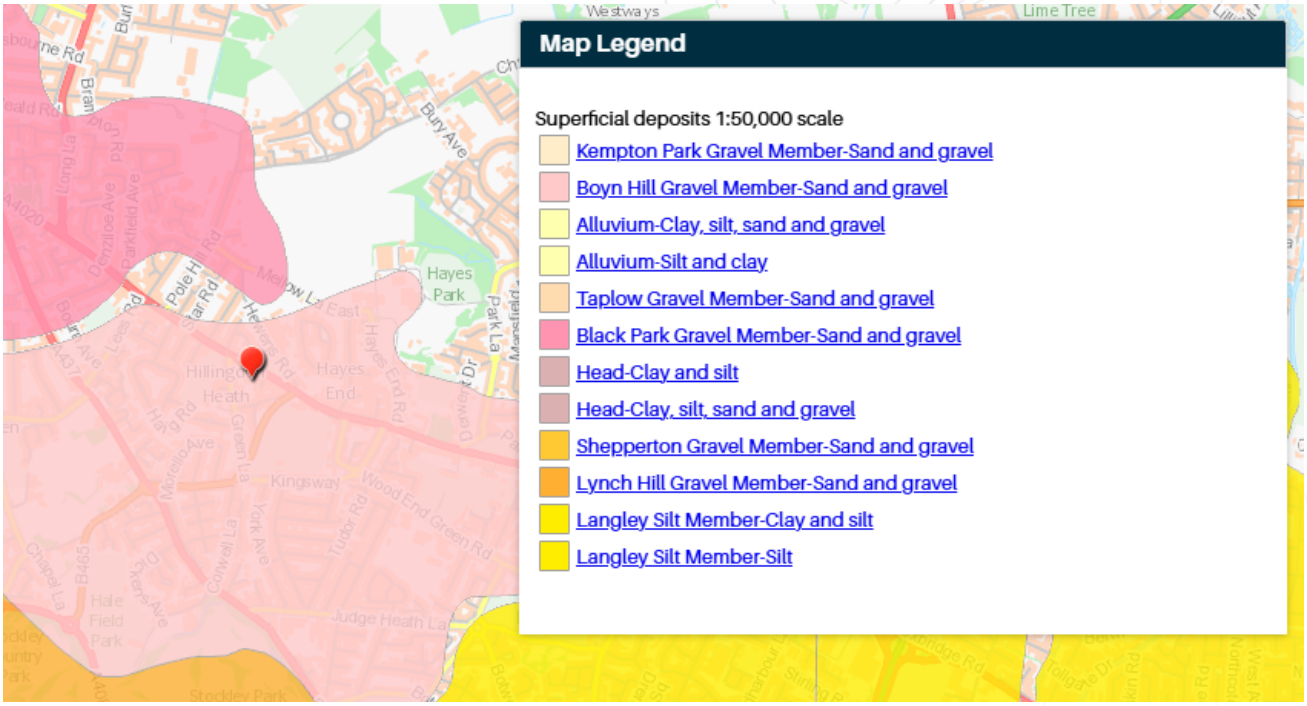


Figure 1 Superficial Deposits

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | Registered No. 9119667 England

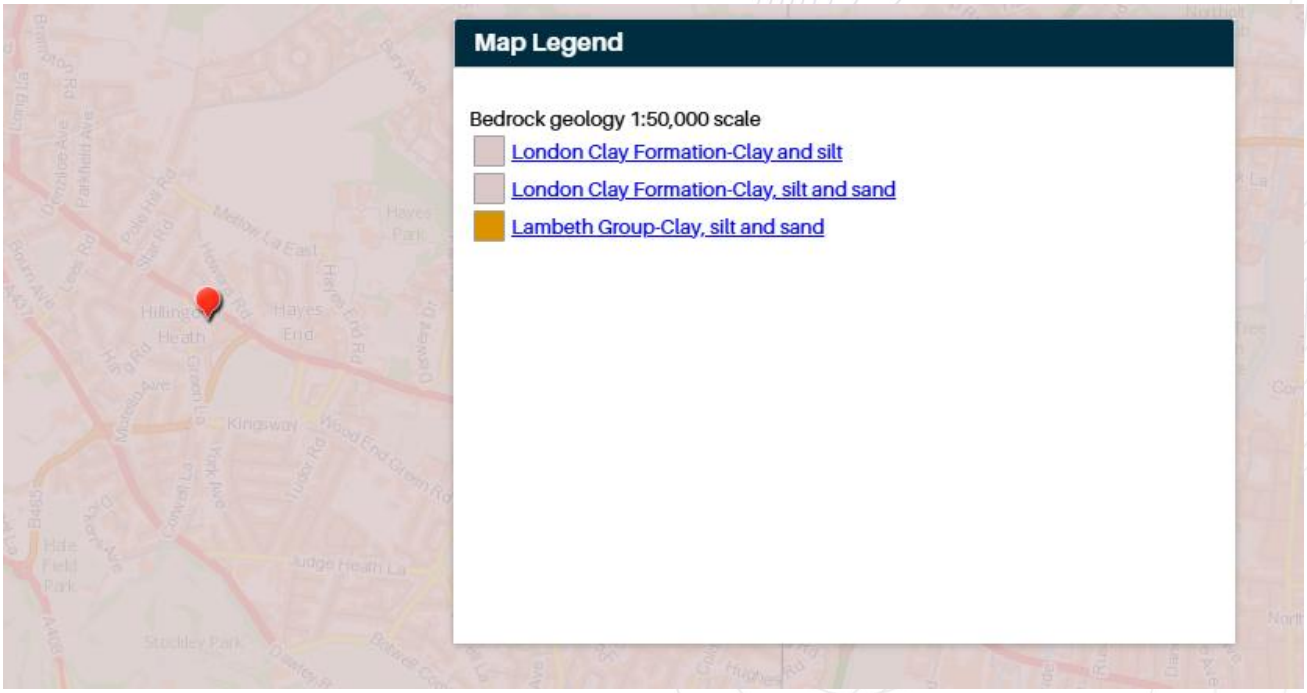


Figure 2 Bedrock Geology

2.0.4 A site investigation was undertaken by STM Environmental in September 2025 to assess the ground conditions at the site. The investigation comprised a borehole to a depth of 1.20 m below ground level, which encountered Made Ground comprising dark grey sandy silt with rare brick fragments to approximately 0.40 m depth, underlain by dark orange gravelly sandy silt to the termination depth. No groundwater was encountered during the investigation. The borehole log is provided in **Appendix E.**

2.1 Existing Sewer Assets

2.1.1 Thames Water asset records indicate the presence of both public foul and surface water sewers within the vicinity of the site, including sewers located within Russet Close and Uxbridge Road. The records show that flows are generally directed northwards along Russet Close before discharging into the public sewer network within Uxbridge Road. The relevant Thames Water sewer records are included in **Appendix A.**

2.2 Site Proposals

2.2.1 The proposed development comprises the construction of two new residential dwellings with associated access, parking, hard and soft landscaping, and private rear gardens. The total impermeable area associated with the proposed development is approximately 230 m^2, including the driveway and parking areas. The proposed site layout at the time of writing is provided in **Appendix B.**

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

2.3 Existing Drainage Regime

2.3.1 Surface water runoff generated by the existing site is assumed to infiltrate naturally into the ground, due to the favourable infiltration characteristics of the underlying soils present across the site.

2.3.2 The table below presents the estimated greenfield peak runoff rates for the site for a range of storm events.

	QBAR	1:1 Year Storm Event	1:30 Year Storm Event	1:100 Year Storm Event
Greenfield Runoff (l/s)- For- 0.17ha	0	0	0.1	0.1

Table 1: Greenfield runoff rate

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

3.0 SuDS Considerations

3.0.1 Consideration of SuDS is a planning requirement for new developments. SuDS are designed to replicate the natural course of drainage as closely as possible with a view to reducing the impact of flooding, removing pollutants at source and combining water management with green space.

Developments should utilise SuDS where possible and ensure that surface water run-off is managed as close to its source as possible in line with the following hierarchy:

1. Into ground (infiltration).
2. To a surface water body.
3. To a surface water sewer.
4. To a combined sewer.

3.0.2 Sustainable Drainage Systems should be included in the design in order to manage surface water flood risk. SuDS should be inspired by natural drainage processes and manage water as close to its source as possible whilst offering pollution control and landscape benefits.

3.1 National and Local Planning Policy

3.1.1 For this development, the London Borough of Hillingdon is the Local Planning Authority (LPA) and the Lead Local Flood Authority (LLFA) for surface water drainage matters. The drainage strategy, flood risk and Sustainable Drainage Systems (SuDS) requirements have been considered in accordance with the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), Building Regulations Approved Document H, the Non-Statutory Technical Standards for Sustainable Drainage Systems, and relevant local planning policies.

3.1.2 Policy DMEI 10 (Water Management, Efficiency and Quality) of the Hillingdon Local Plan and Policy SI 13 (Sustainable Drainage) of the London Plan, seeks to ensure that development proposals incorporate sustainable drainage measures where appropriate, manage surface water runoff arising from the development, and minimise flood risk both on-site and elsewhere.

3.1.3 The surface water drainage strategy has also been prepared with reference to the London Borough of Hillingdon's requirements and the drainage hierarchy set out within the London Plan. In accordance with the hierarchy, priority should be given to infiltration to ground where feasible, followed by discharge to a watercourse, surface water sewer, and finally a combined sewer as a last resort. The proposed drainage strategy aims to minimise surface water runoff from the site and ensure that flood risk is not increased elsewhere.

3.1.4 The key drainage and SuDS objectives for the proposed development are as follows:

- Manage surface water runoff through the use of appropriate Sustainable Drainage Systems (SuDS).
- Restrict runoff rates and volumes to minimise the risk of flooding both on and off site.
- Prioritise infiltration-based drainage solutions where ground conditions are suitable.

- Ensure foul and surface water drainage systems remain separate.
- Provide suitable exceedance flow routing and storage during extreme rainfall events.
- Demonstrate that suitable maintenance and management arrangements are in place for all proposed drainage infrastructure.

3.2 SuDS Incorporation

3.2.1 The underlying geology of the site comprises sand, gravel and silt deposits, which are generally considered favourable for infiltration. On this basis, it is assumed that the site may be suitable for infiltration-based surface water drainage solutions, subject to detailed design and any further site-specific investigations, where required. The ground investigation records are provided in **Appendix E.**

3.2.2 Therefore, in accordance with the drainage hierarchy, the proposed surface water drainage strategy is to discharge surface water to the ground via infiltration.

3.2.3 Table 7.1 below from the SuDS Manual sets out the various components that may be considered in providing SuDS.

Component Type	Description	Collection Mechanism	Design Criteria						Further Information (Chapter Ref)
			Water Quantity (Chapter 3)			Water Quality (Chapter 4)	Amenity (Chapter 5)	Biodiversity (Chapter 6)	
			Peak Runoff Rate	Runoff Volumes					
				Small Events (Interceptio	Large Events				
Rainwater Harvesting Systems	Systems that collect runoff from the roof of a building or other paved surface for use	P		●	●		●		11
Green roofs	Planted soil layers on the roof of buildings that slow and store runoff	S	○	●		●	●	●	12
Infiltration systems	Systems that collect and store runoff, allowing it to infiltrate into the ground	P	●	●	●	●	●	●	13
Proprietary treatment systems	Subsurface structures design to provide treatment to runoff	P				●			14
Filter strips	Grass strips hat promote sedimentation and filtration as runoff is conveyed over the surface	L		●		●	○	○	15
Filter drains	Shallow stone-filled trenches that provide attenuation, conveyance and treatment of runoff	L	●	○		●	○	○	16
Swales	Shallow landscaped depressions that allow runoff to pond temporarily on the surface, before filtering through vegetation and underlying soils	L	●	●	●	●	●	●	17
Bioretention systems	Trees with soil-filled tree pits, tree planters or structural soils used to collect, store and treat runoff	P	●	●	●	●	●	●	18
Trees	Structural paving through which runoff can soak and subsequently be stored in the sub-base beneath, and/or allowed to infiltrate into the ground below	P	●	●		●	●	●	19
Pervious pavements	Structural paving through which runoff can soak and subsequently be stored in the sub-base beneath, and/or allowed to infiltrate into the ground below	S	●	●	●	●	○	○	20
Attenuation storage tanks	Large, below-ground voided spaces used to temporarily store runoff before infiltration-controlled release or use	P	●						21
Detention basins	Vegetated depressions that store and treat runoff	P	●	●		●	●	●	22

Ponds and wetlands	Permanent pools of water used to facilitate treatment of runoff – runoff can also be stored in an attenuation zone above the pool	P	●			●	●	●	23
P-Point L-Lateral S-Surface ● – likely valuable contribution to delivery of design criterion ○ - some potential contribution to delivery of design criterion, if specifically included in the design									

Figure 3 CIRIA Table 7.1 SuDS Components

3.2.4 In accordance with Policy DMEI 10 (Water Management, Efficiency and Quality) of the Hillingdon Local Plan, Policy SI 13 (Sustainable Drainage) of the London Plan, together with the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), and the Non-Statutory Technical Standards for Sustainable Drainage Systems, the proposed development is required to provide a SuDS strategy that incorporates appropriate allowances for climate change.

3.2.5 The proposed site layout offers the opportunity to apply a range of SuDS measures in accordance with the table above. Proposals are as follows:

- **Pervious pavement**– Located within the driveway and parking areas, the system facilitates the infiltration of surface water runoff into the underlying ground, reducing peak flows during rainfall events, improving water quality through natural filtration, and contributing to overall flood risk mitigation.

  SuDS Benefits **– Water quantity. Water quality.**

- **Cellular Soakaway –** Located within the rear garden area, below-ground voided storage is provided to temporarily store surface water runoff during storm events, allowing it to gradually infiltrate into the surrounding ground.

  SuDS Benefits **– Water quantity.**

- **Rainwater Harvesting Units (Water Butt) -** Proposed at each dwelling – Used to store roof runoff water for landscaping purposes, offering benefits in terms of water quality and amenity.

  SuDS Benefits **– Water quantity, Water quality and Amenity.**

3.2.6 By use of the above, the development proposals aim to drain all developed areas via SuDS measures and address the SuDS pillars of water quantity, water quality, and amenity. In this instance, the proposed SuDS features are primarily designed to provide drainage and water management functions, and therefore opportunities to incorporate significant biodiversity enhancements are limited within the scope of the scheme.

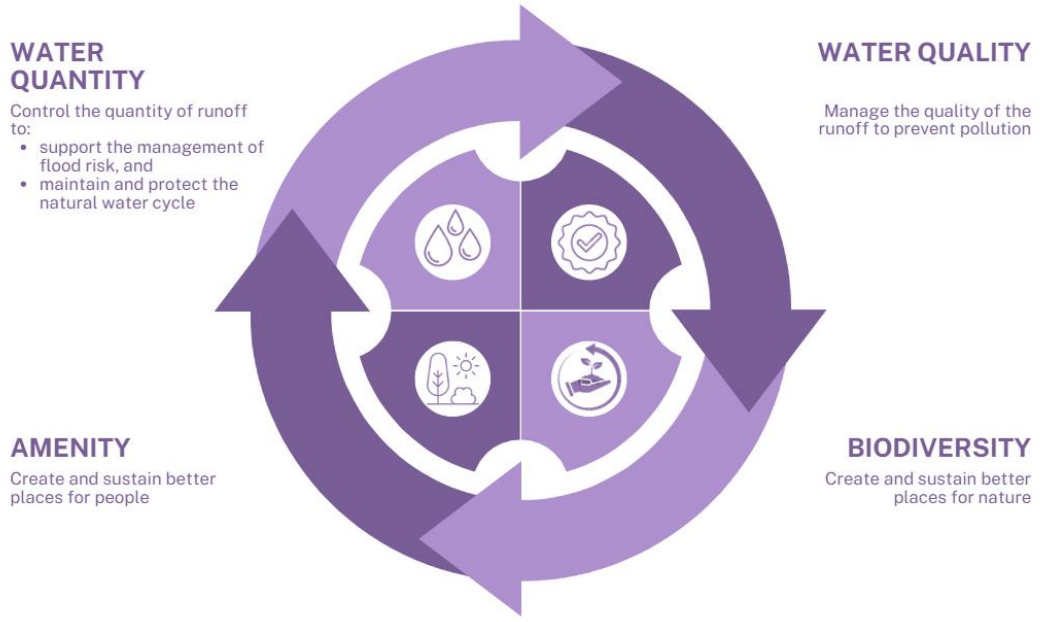


Figure 4 - Reference 4 pillars of SuDS Diagram CIRICA C753 p.6

3.2.7 The above table gives examples of various SuDS components, which may offer SuDS elements in accordance with the requirements. Permeable paving offers an opportunity as a method of managing surface water at source. As per table 7.1 (Figure 5), surface water is slowed at source by soaking through the surfacing. Permeable surfacing offers the added benefit of filtering the runoff as it drains through, hence improving the quality.

3.2.8 In accordance with Table 26.2 of CIRIA Report C753, the pollution hazard level can be classified as 'very low' and 'Low'. Using table 26.3 of the same document, the mitigation indices values for permeable surfacing exceed the pollution hazard values taken from the previous table. This ensures that proposals offer enough pollution risk mitigation.

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
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, homezones 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	Medium	0.7	0.6	0.7

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | Registered No. 9119667 England

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	High	0.8	0.8	0.9

Figure 5 Extract from Table 26.2 CIRIA SuDS Manual Pollution hazard indices for different land use classifications

	Mitigation Indices		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter 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

Figure 6 Extract from Table 26.3 CIRIA SuDS Manual 2015 Indicative SuDS mitigation indices for discharges to surface waters

3.2.9 The above proposals ensure that an 'at source' SuDS measure is applied, and betterment is provided in terms of surface water runoff velocity and quality. Pollution indices from different land types can be found per as per table 26.15 CIRIA SuDS Manual 2015, below.

Land use surface type (Lust)	Impermeability (IMP_{RF})	Total suspended solids pollution index (PI_{TSS})	Organic pollution index (PI_{Org})	Hydrocarbon pollution index (PI_{PAD})	Metals Pollution index (PI)
Roofs					
• Industrial / Commercial	1.0	0.3	0.3-0.4	0.2	0.4-0.8
• Residential	0.9	0.4-0.5	0.6-0.7	0.1	0.2-0.5
Highways					
1. Motorways	0.8-0.9	0.9	0.7	0.9	0.8
2. Major arterial highways	0.7-0.8	0.8	0.7	0.8	0.8
3. Urban distributor roads	0.6-0.7	0.7-0.8	0.5	0.8	0.7
4. Residential Street	0.4-0.6	0.4	0.6	0.6	0.6
5. Pavements	0.5-0.6	0.4	0.6	0.3	0.3

Car Parks / Hardstanding • Industrial/Commercial • Driveways (Residential)	 0.6-0.8 0.5	 0.6-0.7 0.5	 0.6-0.7 0.6	 0.7 0.4	 0.4-0.5 0.3
Open Areas • Gardens (All types) • Parks/Golf Courses • Grassed Areas (including verges, all types)	 0.1 0.2 0.1	 0.3 0.2-0.3 0.2-0.3	 0.2-0.3 0.2 0.2-0.3	 0 0 0.05	 0.01 0.02 0.05
Note 1 Pollution index values are based on reported land use type EMC distributions and impact potential thresholds from House et al (1991), Luker and Montague (1994), Butler and Clark (1995), D'Arcy et al (2000), Mitchell (2005) and Moy et al (2003)					

Figure 7: Impermeability and pollution indices for different land use types

3.2.10 The underlying ground strata is considered suitable for infiltration; therefore, infiltration through the permeable surfacing sub-base is feasible. The proposed design comprises an unlined sub-base to facilitate the infiltration of surface water runoff into the ground.

3.2.11 Pervious paving and the cellular soakaway is proposed. The permeable surfacing sub-base is included in the design in order to provide necessary storage attenuation within the voids of the sub-base. The sub-base thickness shall be designed to provide the necessary storage for all storm events.

3.2.12 The above proposals ensure that SuDS measures are applied, and betterment is provided in terms of surface water runoff velocity, quantity and quality.

3.3 Climate change

3.3.1 The appended drainage calculation allows for a 1:100-year storm plus 40% climate change, this has been sourced from the DEFRA Hydrology Data Explorer for Climate Change Allowances, as per **figure 8**, below.

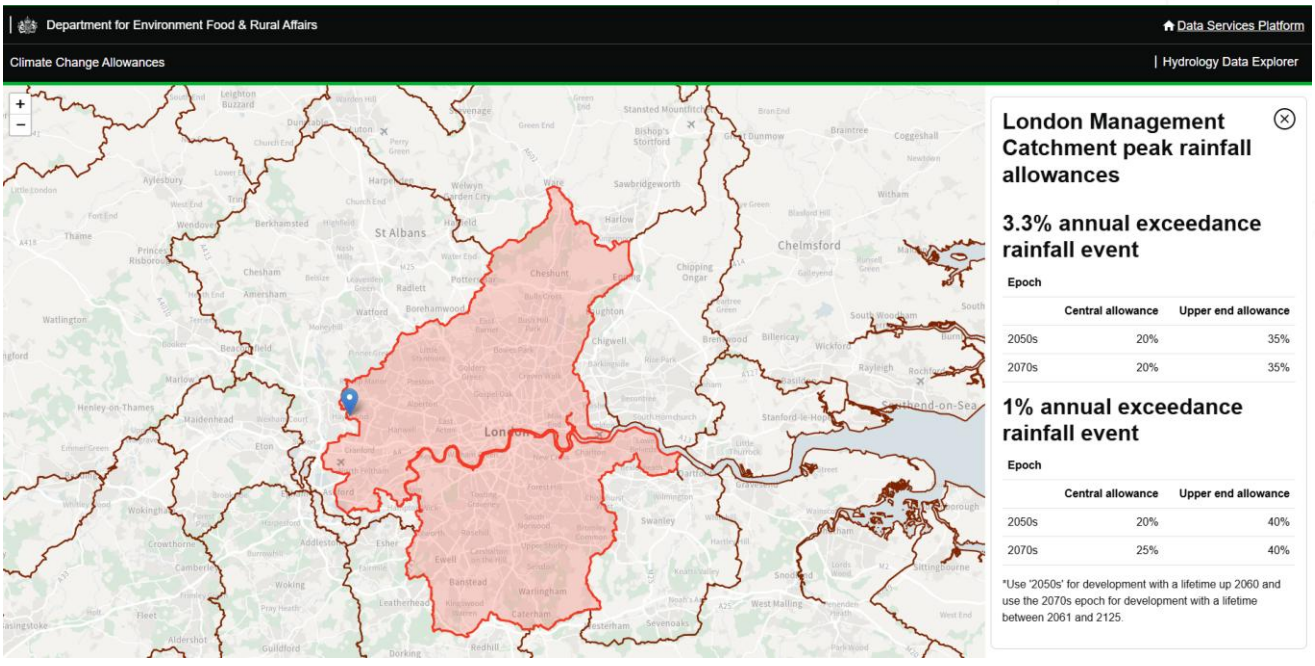


Figure 8 : Climate change allowances for peak rainfall in England by catchment area

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | Registered No. 9119667 England

3.4 Preliminary Surface Water Drainage Maintenance Schedules

3.4.1 This section of the report gives guidance on the maintenance of the drainage system and outlines who will be responsible. The proposed development comprises of site clearance, landscaping, parking, drainage and supporting infrastructure. The SuDS systems will aim to control runoff in terms of velocity and quality.

3.4.2 The rainwater from the roofs is collected via rainwater pipes and will be carried to the network. The maintenance of the collection system is the responsibility of the developer, see **Table 2** below.

Table 2: System storage operation and maintenance requirements (rainwater pipes and chambers)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Inspection of silt trap chamber and removal of debris when necessary	Quarterly or as required following monitoring
Remedial actions	Check for blockages in manholes and pipes. Rodding and jetting of pipes to be carried out. CCTV survey can be carried out to inspect condition of pipework.	Quarterly or as required following monitoring
Monitoring	Inspect collection apparatus for debris and litter. Remove where necessary to prevent blockages in the system	Monthly or after periods of heavy rainfall

3.4.3 **Permeable surfacing:** Maintenance of the permeable surfacing and sub-base will be the responsibility of the developer, see **Table 3** below.

Table 3: System storage operation and maintenance requirements (permeable surfacing)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Sweeping. [NOTE: Any jointing material between the blocks that is lost or displaced as a result of sweeping must be replaced. New jointing material must be the same type as that removed or a suitable replacement]	3 no. times a year: - • At the end of Winter; • Mid-summer; and • After autumn leaf fall. Also as required based on site specific observations
Occasional Maintenance	Stabilise and mow contributing and adjacent areas to prevent excess sediment being washed into the paving	As required
Remedial actions	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users	As required

	Rehabilitation of surface and underlying sand a geo-textile	As required (if local distortion or settlement occurs as a result of wash out of bedding)
Monitoring	Inspect for evidence for weed growth or deposits affecting run off. If required, take remedial action	Monthly for 3 no. months after installation, then during regular maintenance visits

3.4.4 **Rainwater Harvesting**: The maintenance of the rainwater harvesting is the responsibility of the developer, see **Table 4** below.

Table 4: System Storage operation and maintenance requirements (Rainwater Harvesting)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdrawal devices, overflow areas, pumps, filters, Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and debris.	Annually (and following poor performance)
Occasional Maintenance	Cleaning and/or replacement of filters	Three monthly (or as required)
Remedial actions	Repair of overflow erosion damage or tank damage. Pump repairs structural performance.	As required

3.4.5 **Cellular Soakaway:** The maintenance of the Cellular attenuation is the responsibility of the developer, see **Table 5** below.

Table 5: System Storage operation and maintenance requirements (Cellular soakaway)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Remove litter, debris and grass cuttings from upstream chamber to prevent being washed into the tank. Inspection of the chamber and the removal of any sediment/debris when required.	Quarterly or as required following monitoring
Monitoring	Inspect for evidence of deposits affecting run off	Monthly for 3 no. months after installation, then during regular maintenance visits.

3.4.6 The design life of the development is likely to exceed the design life of each of the SuDS components listed above. During the routine inspections of any drainage components, it may become apparent that they have reached the end of their functional lifetime. In the interest of sustainability, repairs should be the first-choice solution where practicable. If this is not the case, then it will be necessary for the property owners to undertake complete replacement of the component in question.

4.0 Surface Water Strategy

The surface water drainage strategy has been developed in accordance with the proposed SuDS measures, the drainage hierarchy, and London Borough of Hillingdon as the Lead Local Flood Authority guidance, as outlined below.

A. Store rainwater for later use:

Rainwater harvesting (water butt) is proposed for garden irrigation purposes.

B. Use infiltration techniques, such as porous surfaces:

The proposed surface water drainage strategy incorporates permeable paving to manage runoff from the front driveway and parking areas. Surface water will infiltrate through the permeable paving surface and be temporarily stored within the underlying sub-base layer before infiltrating into the ground in accordance with SuDS principles.

Surface water runoff from the roofs of the proposed dwellings will be collected via rainwater downpipes and directed to a cellular soakaway located within the rear garden. The soakaway will provide attenuation storage and facilitate the infiltration of roof runoff into the ground. Supporting calculations and drawings are provided in **Appendices C and D.**

C. Attenuate rainwater in ponds or open water features for gradual release:

Not applicable.

D. Permeable storage structure water features for gradual release:

Not applicable.

E. Direct rainwater direct to the watercourse:

Not applicable.

F. Discharge rainwater to a surface water sewer/drain:

Not applicable.

G. Discharge rainwater to combined sewer:

Not Applicable.

H. Discharge rainwater to foul sewer:

Not applicable.

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

4.1 Surface Water Management During Construction

4.1.1 Consideration for surface water needs to be taken during the construction process, and how it is managed, including flood risk and pollution control.

4.1.2 Generally, there are three options for managing surface water during construction

- Build, use and remediate permanent surface water drainage system
- Install, use and remove a temporary surface water drainage system
- Utilise existing drainage system with pollution control measures (brownfield sites only)

4.1.3 For this developed site, it is recommended to build, use and remediate the permanent surface water drainage system.

4.1.4 Project and Site Managers should sign up for the Met Office weather warning system and take appropriate action. https://www.metoffice.gov.uk/public/weather/warnings

4.1.5 Consideration for the following legislation and guidance should be made for a construction surface water management plan:

Legislation and Guidance
The Water Environment (England and Wales) Regulation 2009
Land Drainage Act 1991
SEPA Engineering in the Water Environment Good Practice Guide Temporary Construction Methods
Control of Water Pollution from Construction Sites – Guide to Good Practice (SP156)
Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (C532)
Control of Water Pollution from Linear Construction Projects – Technical Guidance (C648)
Control of Water Pollution from Linear Construction Projects – Site Guide (C649)
Environmental Good Practice – Site Guide (C650)
Site Handbook for the Construction of SUDS (C698)
The SUDS Manual (C753)
BS 8582:2013 Code of Practice for Surface Water Management for Development Sites

Figure 9 Legislation and Guidance for Surface Water Construction Management

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | Registered No. 9119667 England

4.2 Designing for Exceedance

4.2.1 Consideration should be given to external levels to ensure they are set above overland flood risk levels, and low points are created to direct water away from the building footprints during exceedance events.

4.2.2 CIRIA document C635 *Designing for exceedance in urban drainage – good practice* states that "at present there are no guidelines on the return period of event (extreme event) that should be used for design exceedance". However, Section 3.4 also states that "it is suggested that return periods of 1 in 30, to 1 in 100-year events would form a suitable framework for most applications".

4.2.3 In accordance with the above, the system has been modelled using a 1 in 100-year event inclusive of climate change.

5.0 Conclusions

5.1 The proposed site is a greenfield site.

5.2 Ground investigation data, including borehole records, indicates that the site is underlain by gravelly sandy soils with no groundwater encountered during the investigation. Based on these findings, the ground is considered likely to be suitable for infiltration-based SuDS features.

5.3 Various SuDS components are proposed, namely permeable surfacing with the sub-base, cellular soakaway and rainwater harvesting (water butt). The inclusion of such features means that sustainable drainage principles are used to deal with all surface water runoff.

5.4 The drainage strategy and SuDS measures in this report are in accordance with the requirements of the local and national policies.

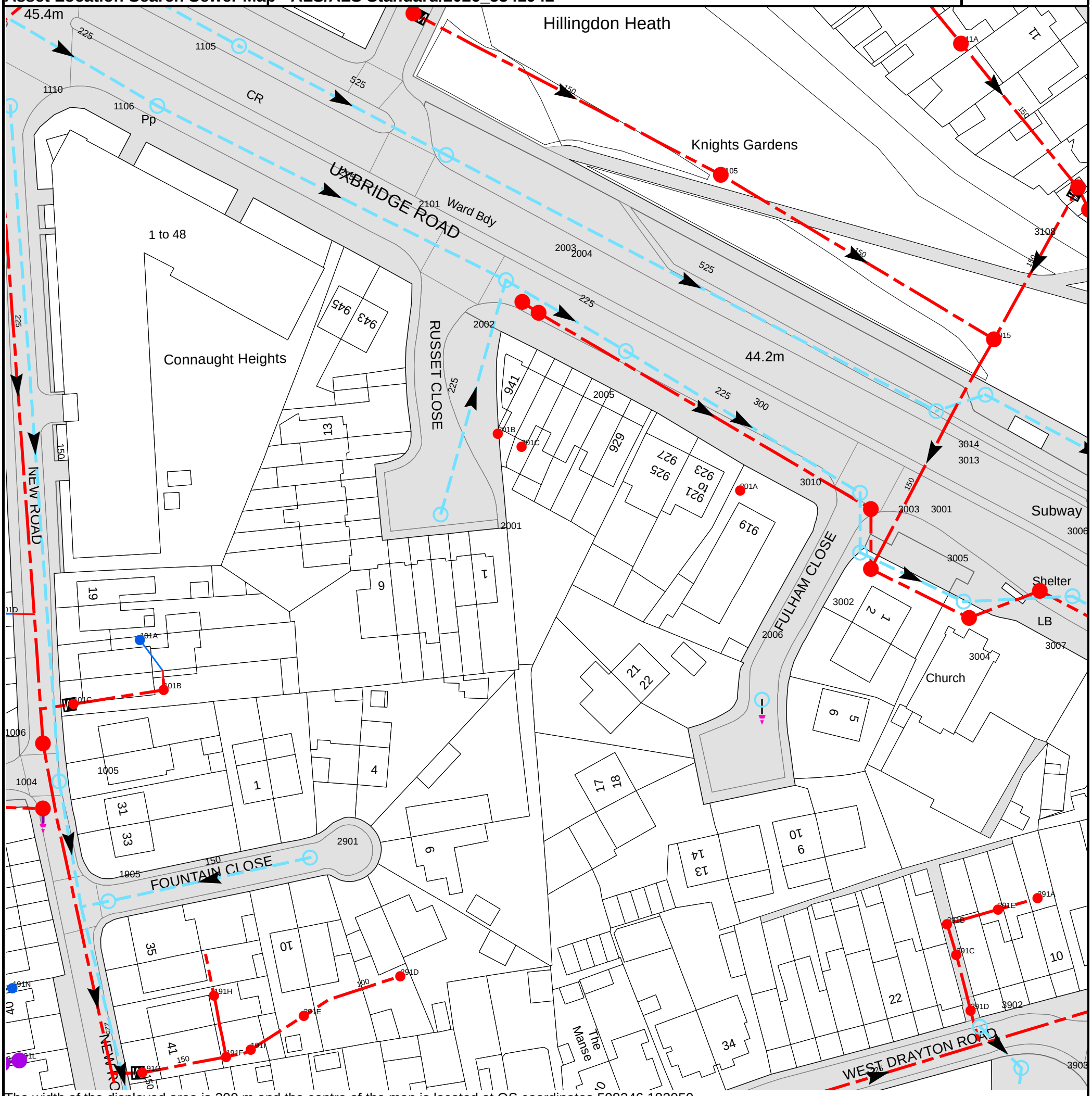
Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

6.0 Appendices

Appendix A – Thames Water Asset Plan

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

Asset Location Search Sewer Map - ALS/ALS Standard/2026_5341942



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 508246,182050

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.

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
201B	n/a	n/a
201C	n/a	n/a
2003	n/a	n/a
2004	44.58	42.16
2005	44.42	42.99
201A	n/a	n/a
2006	42.9	42.1
3002	43.4	42.27
3010	43.98	42.42
3001	43.93	41.41
3003	43.39	41.31
3013	44.73	42.91
3004	43.46	42.09
3005	43.52	41.21
3014	44.13	42.15
3015	43.37	41.7
391E	n/a	n/a
391A	n/a	n/a
3006	43.72	41.17
3007	43.59	42.03
1006	44.69	42.72
1004	44.58	42.89
1005	44.57	43.76
101C	n/a	n/a
1905	44.4	43.57
101A	n/a	n/a
101B	n/a	n/a
191H	n/a	n/a
2901	44.27	43.66
2001	44.08	43.48
2002	44.7	43.26
3108	n/a	n/a
3107	n/a	n/a
2105	43.23	42.51
2101	44.9	43.38
1110	n/a	n/a
1106	45.44	44.03
1105	45.39	43.91
311A	n/a	n/a
2104	44.96	43.35
391B	n/a	n/a
391C	n/a	n/a
391D	n/a	n/a
3902	43.21	41.68
3903	43.25	41.65
191N	n/a	n/a
191L	n/a	n/a
191G	n/a	n/a
191F	n/a	n/a
191I	n/a	n/a
291E	n/a	n/a
291D	n/a	n/a

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

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

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

Sewer Fittings

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

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

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

- Inlet
- Outfall
- Undefined End

Other Symbols

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

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

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement

Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

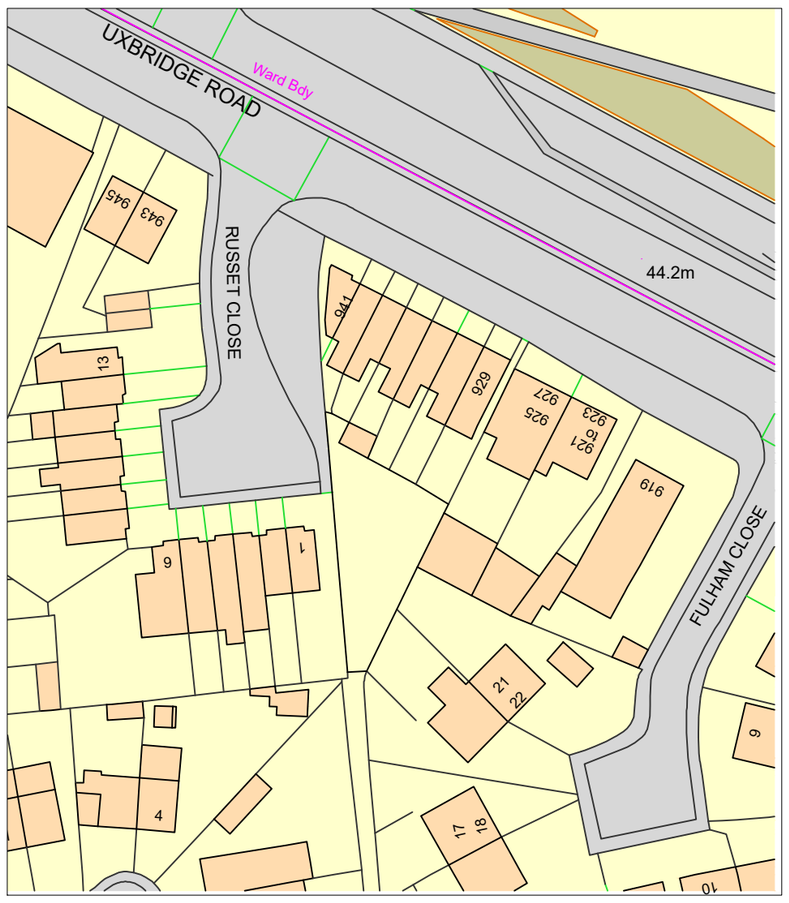
Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.

If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Appendix B – Architectural Plans

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England



LOCATION PLAN (SCALE 1:1250)

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE (U.N.O.).
2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS ON SITE PRIOR TO ANY CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE CLIENT AND DESIGNER BEFORE PROCEEDING.
3. MATERIALS FOR NEW CONSTRUCTION SHALL GENERALLY MATCH THE EXISTING SO THAT NEW WORK BLENDS WITH THE EXISTING, UNLESS NOTED OTHERWISE.
4. SPECIFICATIONS SHOWN ARE INDICATIVE FOR TYPICAL BUILDINGS AND OUTLINE REQUIREMENTS FOR COMPLIANCE WITH CURRENT BUILDING REGULATIONS AND GOOD BUILDING PRACTICE. SOME ITEMS MAY REQUIRE MODIFICATION TO SUIT SITE CONDITIONS. NOTWITHSTANDING THIS, THE CONTRACTOR REMAINS RESPONSIBLE FOR ENSURING THAT ALL WORKS COMPLY WITH THE LATEST BUILDING REGULATIONS AND FOR OBTAINING ALL REQUIRED COMPLETION CERTIFICATES. PRIOR TO COMMENCEMENT, THE CONTRACTOR SHALL OBTAIN FULL DETAILS OF:
   - PLANNING PERMISSIONS AND CONDITIONS
   - BUILDING REGULATIONS APPROVALS
   - OUTSTANDING INFORMATION AND STATUTORY REQUIREMENTS
5. ANY PROPOSED VARIATIONS FROM THE DRAWINGS SHALL BE APPROVED IN WRITING BEFORE WORKS COMMENCE. ALL WORKS ARE SUBJECT TO APPROVAL BY THE LOCAL AUTHORITY BUILDING CONTROL SURVEYOR OR OTHER APPOINTED INSPECTOR.
6. ANY STRUCTURAL DETAILS SHOWN ARE BASED ON LIMITED SITE INSPECTION AND CERTAIN ASSUMPTIONS. BEFORE COMMENCING WORKS, PARTICULARLY DEMOLITION, THE CONTRACTOR SHALL VERIFY THE VALIDITY OF ALL ASSUMPTIONS AND THE ADEQUACY OF THE STRUCTURAL DESIGN. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND SUPPORTS DURING CONSTRUCTION. DETAILED STEELWORK, CONNECTIONS, AND CALCULATIONS MAY BE CONTAINED IN A SEPARATE STRUCTURAL ENGINEER'S REPORT.
7. EXISTING AND PROPOSED DRAINAGE LAYOUTS ARE BASED ON LIMITED SITE INSPECTION ONLY. THE CONTRACTOR SHALL INVESTIGATE DRAINAGE DURING CONSTRUCTION AND PROVIDE ADEQUATE SYSTEMS FOR FOUL AND SURFACE WATER. FINAL ARRANGEMENTS SHALL BE CONFIRMED ON SITE.
8. THE CLIENT IS RESPONSIBLE FOR SERVING ALL NOTICES AND OBTAINING CONSENTS REQUIRED UNDER THE PARTY WALL ETC. ACT 1996.
9. THESE DRAWINGS ARE PREPARED PRIMARILY FOR STATUTORY APPROVALS (E.G. PLANNING AND BUILDING CONTROL) AND MAY NOT DEFINE THE FULL SCOPE OF WORKS. THEY SHALL NOT BE USED AS THE BASIS OF ANY BUILDING CONTRACT UNLESS EXPRESSLY AGREED IN WRITING.
10. NO SITE INVESTIGATION HAS BEEN CARRIED OUT UNLESS NOTED OTHERWISE. FINAL FOUNDATION DESIGN SHALL BE CONFIRMED ON SITE, TAKING ACCOUNT OF TREES, SOIL CONDITIONS, ROOTS, DRAINS, SERVICES, AND BUILDING CONTROL REQUIREMENTS.

PROFESSIONAL & CONTRACTUAL LIMITATIONS

11. THE DESIGNER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCING, SITE SAFETY, OR WORKMANSHIP, WHICH REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
12. ALL SETTING-OUT DIMENSIONS AND LEVELS SHALL BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION. NO RESPONSIBILITY IS ACCEPTED FOR ERRORS ARISING FROM FAILURE TO DO SO.
13. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS, AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY BEFORE WORKS PROCEED.
14. NO SUBSTITUTION OF MATERIALS, SYSTEMS, OR CONSTRUCTION DETAILS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE DESIGNER AND, WHERE APPLICABLE, BUILDING CONTROL.
15. THESE DRAWINGS DO NOT CONSTITUTE A FULL CONSTRUCTION ISSUE PACKAGE UNLESS EXPRESSLY STATED. ANY RELIANCE ON THESE DRAWINGS FOR CONSTRUCTION IS AT THE CONTRACTOR'S RISK UNLESS AGREED IN WRITING.
16. THE DESIGNER ACCEPTS NO RESPONSIBILITY FOR LATENT DEFECTS, UNFORESEEN GROUND CONDITIONS, HIDDEN SERVICES, OR CONCEALED STRUCTURAL ELEMENTS NOT VISIBLE AT THE TIME OF SURVEY.
17. ALL WORKS SHALL COMPLY WITH:
    a. CURRENT BUILDING REGULATIONS
    b. RELEVANT BRITISH STANDARDS AND APPROVED DOCUMENTS
    c. LOCAL AUTHORITY CONDITIONS
    d. STATUTORY UNDERTAKERS' REQUIREMENTS
18. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF EXISTING STRUCTURES, FINISHES, NEIGHBORING PROPERTIES, AND SERVICES THROUGHOUT THE WORKS.
19. THE CONTRACTOR SHALL ENSURE ADEQUATE WEATHER PROTECTION TO ALL WORKS AND MATERIALS DURING CONSTRUCTION.
20. ANY COST INFORMATION, BUILDABILITY ASSUMPTIONS, OR PROGRAMME IMPLICATIONS SHOWN OR IMPLIED ARE INDICATIVE ONLY AND DO NOT FORM PART OF ANY CONTRACTUAL COMMITMENT.

HEALTH, SAFETY & BUILDING SAFETY

21. HEALTH AND SAFETY DUTIES SHALL BE DISCHARGED IN ACCORDANCE WITH THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015. WHERE APPLICABLE, THE CLIENT SHALL APPOINT A PRINCIPAL DESIGNER AND PRINCIPAL CONTRACTOR IN WRITNG BEFORE CONSTRUCTION BEGINS. ICREATE DESIGNS WILL NOT BE ACTING AS PRINCIPAL DESIGNER UNDER CDM 2015.
22. WHERE THE PROJECT FALLS WITHIN THE SCOPE OF THE BUILDING SAFETY ACT 2022, THE CLIENT IS RESPONSIBLE FOR ENSURING APPROPRIATE DUTYHOLDER APPOINTMENTS, COMPETENCE, AND INFORMATION MANAGEMENT.

SCOPE, LIABILITY & LEGAL LIMITATIONS

23. THE DESIGNER'S APPOINTMENT IS LIMITED TO ARCHITECTURAL SERVICES ONLY AND DOES NOT EXTEND TO:
    - STRUCTURAL DESIGN
    - MECHANICAL AND ELECTRICAL DESIGN
    - PARTY WALL MATTERS (UNLESS SEPARATELY AGREED IN WRITING)
    - CONTRACT ADMINISTRATION OR SITE SUPERVISION (UNLESS SEPARATELY AGREED IN WRITING)
    - BUILDING WARRANTIES / MORTAGES / BUILDING INSURANCES / CIL / COUNCIL TAX MATTERS
    - NEW / EXISTING SERVICES AND UTILITIES (UNLESS SEPARATELY COMMISSIONED)
24. NO RESPONSIBILITY IS ACCEPTED FOR DELAYS, COSTS, OR DEFECTS ARISING FROM:
    - CONTRACTOR WORKMANSHIP
    - SUPPLY-CHAIN FAILURES
    - STATUTORY AUTHORITY DELAYS
    - VARIATIONS CARRIED OUT WITHOUT PRIOR WRITTEN APPROVAL
25. THE DESIGNER ACCEPTS NO RESPONSIBILITY FOR ANY LEGAL MATTERS INCLUDING, BUT NOT LIMITED TO:
    - BOUNDARY POSITIONS OR DISPUTES
    - RIGHTS OF WAY
    - EASEMENTS, COVENANTS, OR THIRD-PARTY RIGHTS
    - LAND OWNERSHIP ISSUES
    - TITLE CONSTRAINTS OR LEGAL ENCUMBRANCES

    THESE MATTERS REMAIN THE SOLE RESPONSIBILITY OF THE CLIENT AND THEIR APPOINTED LEGAL ADVISERS.
26. COPYRIGHT IN ALL DRAWINGS AND DOCUMENTS REMAINS WITH THE DESIGNER. USE IS LIMITED TO THIS PROJECT ONLY AND THE DOCUMENTS SHALL NOT BE REPRODUCED, REUSED, OR ISSUED TO THIRD PARTIES WITHOUT PRIOR WRITTEN CONSENT.

REV	DATES	COMMENTS

SCALE: 1:100@A3

DRG NO : 1RUSSETTCLOSE- 1

PROJECT/TITLE

ERECTION OF A THREE STOREY BUILDING TO CREATE 2 X SEMI-DETACHED DWELLINGS WITH ASSOCIATED CAR PARKING AND INSTALLATION OF VEHICULAR CROSSOVER

CLIENT :

MR. KRISHAN KUMAR KHANNA
98 POLL HILL ROAD
UB10 0QE

© ICREATE DESIGN LIMITED
Planning & Designing of All Types of Building Works
1 CRABTREE CLOSE, BUSHEY, WD23 3BJ
Tel: 07886759400 ; EM: ikreated@gmail.com

PRELIMINARY

HARD LANDSCAPE:
HANSON AQUAFLOW PERMEABLE BLOCK PAVING;COLOUR- CHARCOAL OR SIMILAR TO BE USED FOR ALL HARD LANDSCAPING. BEDDING LAYER TO BE 50MM OF 2-6MM CLEANSTONE AND SUB BASE IS TO CONSIST OF INBITEX (THERMALLY BONDED NONWOVEN GEOTEXTILE DEVELOPED TO OPTIMISE THE CLEANSING OF WATER ENTERING THE SYSTEM), 150MM OF MOT TYPE 3 AGGREGATE BASE (PURE CRUSHED GRANITE OR LIMESTONE, 40MM PRODUCT SCREENED TO CREATE REDUCED FINES AGGREGATE) AND OPTIONAL SC INTERGRID (FOR HEAVY TRAFFIC AREARS).

BINS

SHIRE DOUBLE DOOR PENT BIKE STORE - (H) 4'7" X (W) 6'2" X (D) 2'4" ; 2 NO. BIKE STORAGE CAPACITY.

BINS

1.8 mts high Feather edge Fence with concrete barge/gravel board at base and concrete posts at every 1.8mts.

Soakaway to be minimum 5m away from main house

ACO DRAINAGE CHANNEL; CONNECTION TO SURFACE WATER TBC

EV CHARGING POINT.

EV CHARGING POINT.

LOCKABLE GATE

SHIRE DOUBLE DOOR PENT BIKE STORE - (H) 4'7" X (W) 6'2" X (D) 2'4" ; 2 NO. BIKE STORAGE CAPACITY.

925-927 OUTBUILDING

1-6 RUSSET CLOSE

D1 ENTRY

STUDY ROOM

HALLWAY

UP

W/C

HTR

CUB'D

KITCHEN / DINING ROOM

BR

D2 ENTRY

BR

HALLWAY

UP

HTR

WC

KITCHEN / DINING / LIVING ROOM

PATIO -150LVL

PATIO -150LVL

GARDEN

GARDEN

HANSON PERMEABLE ECOGRANITE PAVING IN CORNISH NATURAL

Soakaway to be minimum 5m away from main house

1.8 mts high Feather edge Fence with concrete barge/gravel board at base and concrete posts at every 1.8mts.

ASH

HAZEL

MAGNOLIA

SYCAMORE

PROPOSED BLOCK PLAN

LANDSCAPE LAYOUT, EXTERNAL HARD LANDSCAPING MATERIAL, BIKE / REFUSE STORE - STILL AWAITING PLANNING APPROVAL

PROJECT/TITLE

ERECTION OF A THREE STOREY BUILDING TO CREATE 2 X SEMI-DETACHED DWELLINGS WITH ASSOCIATED CAR PARKING AND INSTALLATION OF VEHICULAR CROSSOVER

CLIENT :

MR. KRISHAN KUMAR KHANNA
98 POLL HILL ROAD
UB10 0QE

ICREATE
DESIGN LIMITED
Planning & Designing of All Types of Building Works
1 CRABTREE CLOSE, BUSHEY, WD23 3BJ
Tel: 07886759400 ; EM: ikreated@gmail.com

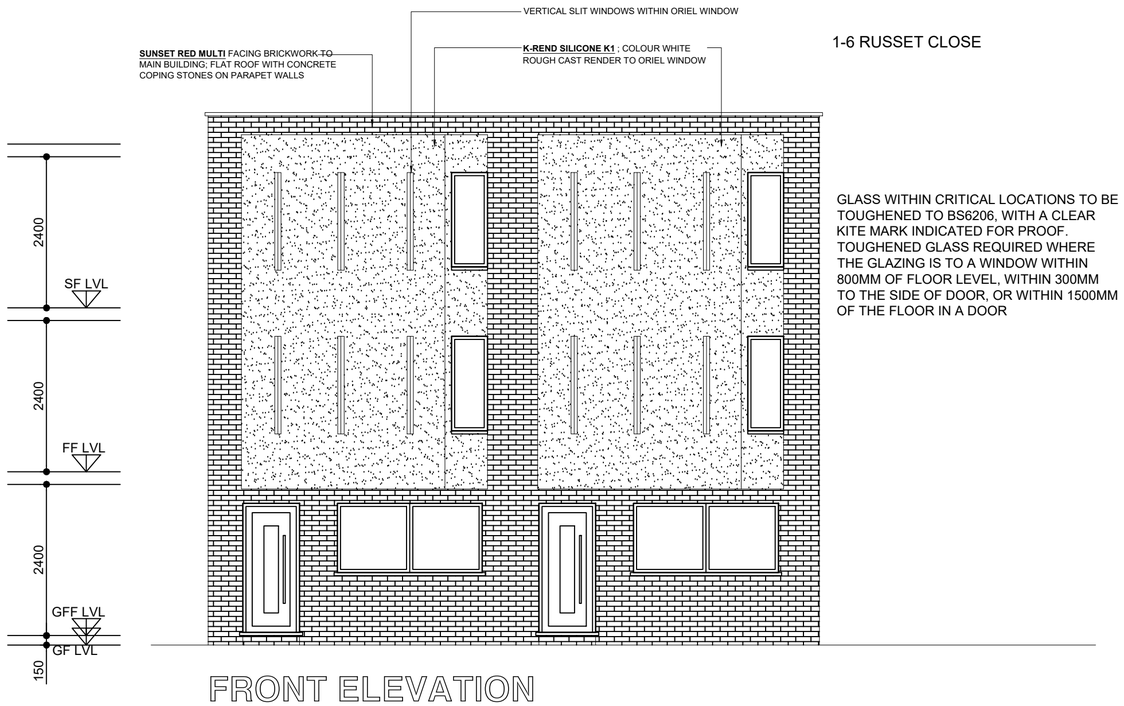
PRELIMINARY

REV	DATES	COMMENTS

SCALE: 1:100@A3

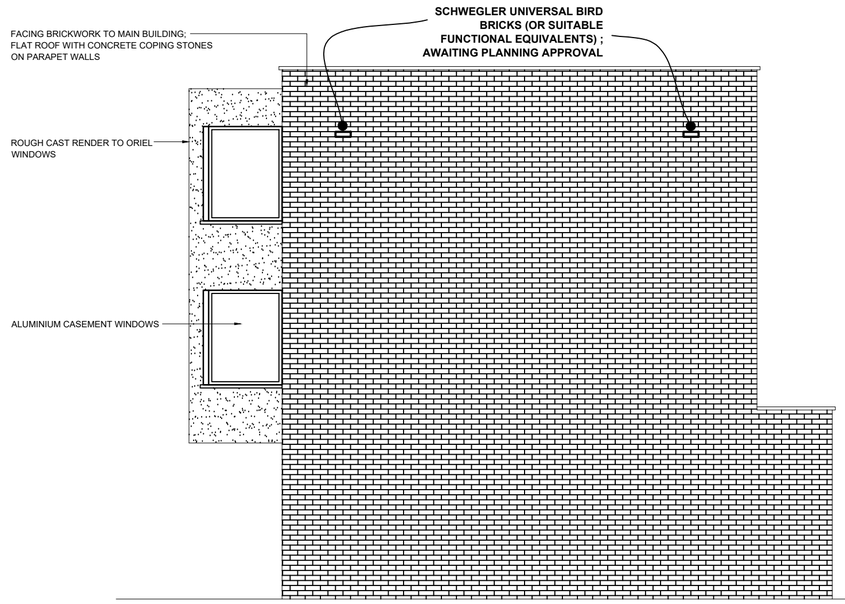
DRG NO : 1RUSSETTCLOSE- 001 - BL

1-6 RUSSET CLOSE



GLASS WITHIN CRITICAL LOCATIONS TO BE TOUGHENED TO BS6206, WITH A CLEAR KITE MARK INDICATED FOR PROOF. TOUGHENED GLASS REQUIRED WHERE THE GLAZING IS TO A WINDOW WITHIN 800MM OF FLOOR LEVEL, WITHIN 300MM TO THE SIDE OF DOOR, OR WITHIN 1500MM OF THE FLOOR IN A DOOR

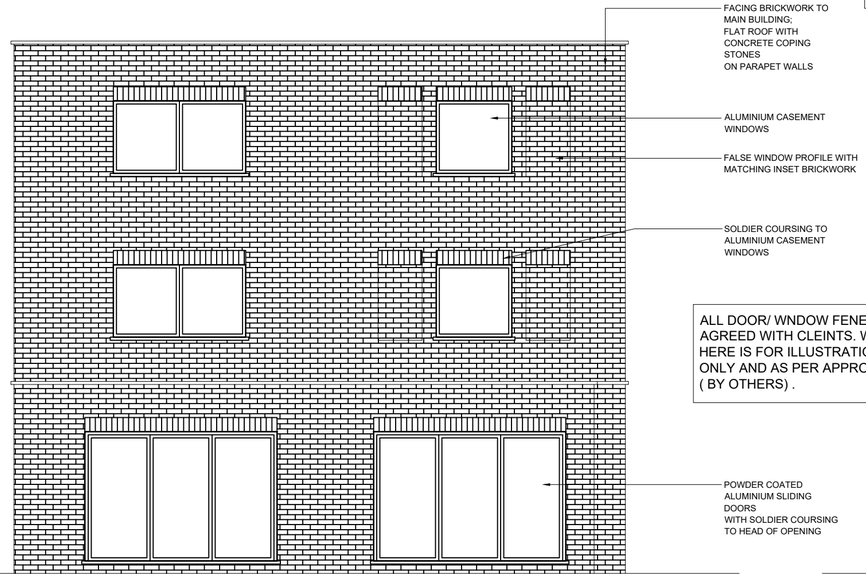
FRONT ELEVATION PROPOSED



SIDE ELEVATION PROPOSED (AS VIEWED FROM NO: 1-6 RUSSET CLOSE)

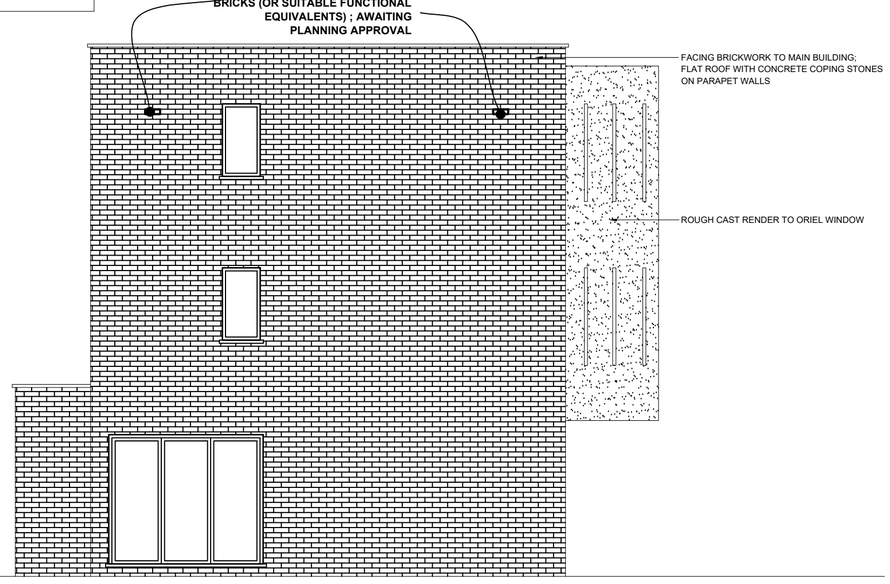
1-6 RUSSET CLOSE

HOLD : BAT AND BIRD BOXES



ALL DOOR/ WNDOW FENESTRATION TO BE AGREED WITH CLEINTS. WHAT IS SHOWN HERE IS FOR ILLUSTRATION PURPOSES ONLY AND AS PER APPROVED PLANNING (BY OTHERS) .

REAR ELEVATION PROPOSED



SIDE ELEVATION PROPOSED

PRELIMINARY

PROJECT/TITLE

ERECTION OF A THREE STOREY BUILDING TO CREATE 2 X SEMI-DETACHED DWELLINGS WITH ASSOCIATED CAR PARKING AND INSTALLATION OF VEHICULAR CROSSOVER

REV	DATES	COMMENTS

SCALE: 1:50@A3

DRG NO : 1RUSSETTCLOSE - 010

CLIENT :

MR. KRISHAN KUMAR KHANNA
98 POLL HILL ROAD
UB10 0QE

© ICREATE DESIGN LIMITED
Planning & Designing of All Types of Building Works
1 CRABTREE CLOSE, BUSHEY, WD23 3BJ
Tel: 07886759400 ; EM: ikreated@gmail.com

Appendix C – Drainage Calculations

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

Greenfield Runoff Calc

JMS (Midlands) Ltd		Page 1
Victoria Count Tennant St Nuneaton Warwickshire CV11 4LZ		
Date 12/06/2026 12:12 File	Designed by MathanKumarRenga... Checked by	
XP Solutions	Source Control 2018.1	

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	0.023	Urban	0.000
SAAR (mm)	667	Region Number	Region 6

Results l/s

QBAR Rural	0.0
QBAR Urban	0.0
Q100 years	0.1
Q1 year	0.0
Q30 years	0.1
Q100 years	0.1

Structure-1- Cellular Soakaway

JMS (Midlands) Ltd		Page 1
Victoria Count Tennant St Nuneaton Warwickshire CV11 4LZ		
Date 11/06/2026 18:27	Designed by MathanKumarRenga...	
File CELLULAR SOAKAWAY CALC-...	Checked by	
XP Solutions	Source Control 2018.1	

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

Half Drain Time : 482 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	8.986	0.186	0.1	3.1	O K
30 min Summer	9.040	0.240	0.1	4.0	O K
60 min Summer	9.090	0.290	0.1	4.8	O K
120 min Summer	9.146	0.346	0.1	5.7	O K
180 min Summer	9.170	0.370	0.1	6.2	O K
240 min Summer	9.180	0.380	0.1	6.3	O K
360 min Summer	9.180	0.380	0.1	6.3	O K
480 min Summer	9.169	0.369	0.1	6.1	O K
600 min Summer	9.157	0.357	0.1	5.9	O K
720 min Summer	9.145	0.345	0.1	5.7	O K
960 min Summer	9.122	0.322	0.1	5.3	O K
1440 min Summer	9.081	0.281	0.1	4.7	O K
2160 min Summer	9.030	0.230	0.1	3.8	O K
2880 min Summer	8.990	0.190	0.1	3.2	O K
4320 min Summer	8.929	0.129	0.1	2.2	O K
5760 min Summer	8.890	0.090	0.1	1.5	O K
7200 min Summer	8.800	0.000	0.0	0.0	O K
8640 min Summer	8.800	0.000	0.0	0.0	O K
10080 min Summer	8.800	0.000	0.0	0.0	O K
15 min Winter	8.986	0.186	0.1	3.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	158.928	0.0	19
30 min Summer	103.488	0.0	33
60 min Summer	64.064	0.0	64
120 min Summer	39.879	0.0	122
180 min Summer	29.680	0.0	182
240 min Summer	23.832	0.0	242
360 min Summer	17.215	0.0	360
480 min Summer	13.545	0.0	414
600 min Summer	11.203	0.0	476
720 min Summer	9.571	0.0	534
960 min Summer	7.441	0.0	664
1440 min Summer	5.210	0.0	938
2160 min Summer	3.638	0.0	1340
2880 min Summer	2.824	0.0	1728
4320 min Summer	1.992	0.0	2464
5760 min Summer	1.566	0.0	3168
7200 min Summer	-0.012	0.0	0
8640 min Summer	-0.010	0.0	0
10080 min Summer	-0.008	0.0	0
15 min Winter	158.928	0.0	19

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	9.040	0.240	0.1	4.0	O K
60 min Winter	9.090	0.290	0.1	4.8	O K
120 min Winter	9.146	0.346	0.1	5.8	O K
180 min Winter	9.171	0.371	0.1	6.2	O K
240 min Winter	9.182	0.382	0.1	6.4	O K
360 min Winter	9.183	0.383	0.1	6.4	O K
480 min Winter	9.171	0.371	0.1	6.2	O K
600 min Winter	9.157	0.357	0.1	5.9	O K
720 min Winter	9.143	0.343	0.1	5.7	O K
960 min Winter	9.115	0.315	0.1	5.2	O K
1440 min Winter	9.063	0.263	0.1	4.4	O K
2160 min Winter	8.996	0.196	0.1	3.3	O K
2880 min Winter	8.944	0.144	0.1	2.4	O K
4320 min Winter	8.873	0.073	0.1	1.2	O K
5760 min Winter	8.847	0.047	0.1	0.8	O K
7200 min Winter	8.800	0.000	0.0	0.0	O K
8640 min Winter	8.800	0.000	0.0	0.0	O K
10080 min Winter	8.800	0.000	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	103.488	0.0	33
60 min Winter	64.064	0.0	62
120 min Winter	39.879	0.0	120
180 min Winter	29.680	0.0	178
240 min Winter	23.832	0.0	236
360 min Winter	17.215	0.0	346
480 min Winter	13.545	0.0	450
600 min Winter	11.203	0.0	484
720 min Winter	9.571	0.0	556
960 min Winter	7.441	0.0	710
1440 min Winter	5.210	0.0	1008
2160 min Winter	3.638	0.0	1424
2880 min Winter	2.824	0.0	1792
4320 min Winter	1.992	0.0	2464
5760 min Winter	1.566	0.0	3000
7200 min Winter	-0.012	0.0	0
8640 min Winter	-0.010	0.0	0
10080 min Winter	-0.008	0.0	0

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 508247 182039 TQ 08247 82039
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.008

Time (mins) From:	To:	Area (ha)
0	4	0.008

Model Details

Storage is Online Cover Level (m) 10.000

Cellular Storage Structure

Invert Level (m) 8.800 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03600

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	17.5	17.5	0.401	0.0	24.3
0.400	17.5	24.3			

Structure- 2- Permeable Paving

JMS (Midlands) Ltd		Page 1
Victoria Count Tennant St Nuneaton Warwickshire CV11 4LZ		
Date 11/06/2026 17:48	Designed by MathanKumarRenga...	
File PERMEABLE PAV CALC- 100...	Checked by	
XP Solutions	Source Control 2018.1	

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

Half Drain Time : 417 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	9.561	0.151	0.2	4.5	O K
30 min Summer	9.609	0.199	0.2	6.0	O K
60 min Summer	9.653	0.243	0.2	7.3	O K
120 min Summer	9.703	0.293	0.2	8.8	Flood Risk
180 min Summer	9.725	0.315	0.2	9.4	Flood Risk
240 min Summer	9.733	0.323	0.2	9.7	Flood Risk
360 min Summer	9.731	0.321	0.2	9.6	Flood Risk
480 min Summer	9.721	0.311	0.2	9.3	Flood Risk
600 min Summer	9.709	0.299	0.2	9.0	Flood Risk
720 min Summer	9.697	0.287	0.2	8.6	O K
960 min Summer	9.674	0.264	0.2	7.9	O K
1440 min Summer	9.632	0.222	0.2	6.7	O K
2160 min Summer	9.580	0.170	0.2	5.1	O K
2880 min Summer	9.538	0.128	0.2	3.9	O K
4320 min Summer	9.485	0.075	0.2	2.2	O K
5760 min Summer	9.460	0.050	0.2	1.5	O K
7200 min Summer	9.410	0.000	0.0	0.0	O K
8640 min Summer	9.410	0.000	0.0	0.0	O K
10080 min Summer	9.410	0.000	0.0	0.0	O K
15 min Winter	9.561	0.151	0.2	4.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	158.928	0.0	19
30 min Summer	103.488	0.0	33
60 min Summer	64.064	0.0	62
120 min Summer	39.879	0.0	122
180 min Summer	29.680	0.0	182
240 min Summer	23.832	0.0	242
360 min Summer	17.215	0.0	358
480 min Summer	13.545	0.0	404
600 min Summer	11.203	0.0	464
720 min Summer	9.571	0.0	522
960 min Summer	7.441	0.0	654
1440 min Summer	5.210	0.0	922
2160 min Summer	3.638	0.0	1300
2880 min Summer	2.824	0.0	1672
4320 min Summer	1.992	0.0	2336
5760 min Summer	1.566	0.0	2952
7200 min Summer	-0.012	0.0	0
8640 min Summer	-0.010	0.0	0
10080 min Summer	-0.008	0.0	0
15 min Winter	158.928	0.0	18

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	9.609	0.199	0.2	6.0	O K
60 min Winter	9.653	0.243	0.2	7.3	O K
120 min Winter	9.703	0.293	0.2	8.8	Flood Risk
180 min Winter	9.725	0.315	0.2	9.5	Flood Risk
240 min Winter	9.734	0.324	0.2	9.7	Flood Risk
360 min Winter	9.733	0.323	0.2	9.7	Flood Risk
480 min Winter	9.720	0.310	0.2	9.3	Flood Risk
600 min Winter	9.706	0.296	0.2	8.9	Flood Risk
720 min Winter	9.692	0.282	0.2	8.5	O K
960 min Winter	9.662	0.252	0.2	7.6	O K
1440 min Winter	9.606	0.196	0.2	5.9	O K
2160 min Winter	9.536	0.126	0.2	3.8	O K
2880 min Winter	9.486	0.076	0.2	2.3	O K
4320 min Winter	9.453	0.043	0.2	1.3	O K
5760 min Winter	9.444	0.034	0.1	1.0	O K
7200 min Winter	9.410	0.000	0.0	0.0	O K
8640 min Winter	9.410	0.000	0.0	0.0	O K
10080 min Winter	9.410	0.000	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	103.488	0.0	33
60 min Winter	64.064	0.0	62
120 min Winter	39.879	0.0	120
180 min Winter	29.680	0.0	178
240 min Winter	23.832	0.0	234
360 min Winter	17.215	0.0	346
480 min Winter	13.545	0.0	446
600 min Winter	11.203	0.0	476
720 min Winter	9.571	0.0	548
960 min Winter	7.441	0.0	696
1440 min Winter	5.210	0.0	980
2160 min Winter	3.638	0.0	1360
2880 min Winter	2.824	0.0	1676
4320 min Winter	1.992	0.0	2252
5760 min Winter	1.566	0.0	2992
7200 min Winter	-0.012	0.0	0
8640 min Winter	-0.010	0.0	0
10080 min Winter	-0.008	0.0	0

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 508247 182039 TQ 08247 82039
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.013

Time (mins) From:	To:	Area (ha)
0	4	0.013

Model Details

Storage is Online Cover Level (m) 10.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.03600	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	27.8	Slope (1:X)	0.0
Safety Factor	5.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	9.410	Membrane Depth (m)	210

Structure- 3 - Permeable Paving

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

Half Drain Time : 294 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	9.701	0.111	0.1	1.3	Flood Risk
30 min Summer	9.738	0.148	0.1	1.8	Flood Risk
60 min Summer	9.770	0.180	0.1	2.2	Flood Risk
120 min Summer	9.806	0.216	0.1	2.6	Flood Risk
180 min Summer	9.819	0.229	0.1	2.8	Flood Risk
240 min Summer	9.823	0.233	0.1	2.8	Flood Risk
360 min Summer	9.818	0.228	0.1	2.7	Flood Risk
480 min Summer	9.810	0.220	0.1	2.6	Flood Risk
600 min Summer	9.800	0.210	0.1	2.5	Flood Risk
720 min Summer	9.790	0.200	0.1	2.4	Flood Risk
960 min Summer	9.770	0.180	0.1	2.2	Flood Risk
1440 min Summer	9.735	0.145	0.1	1.7	Flood Risk
2160 min Summer	9.693	0.103	0.1	1.2	O K
2880 min Summer	9.664	0.074	0.1	0.9	O K
4320 min Summer	9.637	0.047	0.1	0.6	O K
5760 min Summer	9.628	0.038	0.1	0.5	O K
7200 min Summer	9.590	0.000	0.0	0.0	O K
8640 min Summer	9.590	0.000	0.0	0.0	O K
10080 min Summer	9.590	0.000	0.0	0.0	O K
15 min Winter	9.701	0.111	0.1	1.3	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	158.928	0.0	18
30 min Summer	103.488	0.0	33
60 min Summer	64.064	0.0	62
120 min Summer	39.879	0.0	122
180 min Summer	29.680	0.0	180
240 min Summer	23.832	0.0	240
360 min Summer	17.215	0.0	300
480 min Summer	13.545	0.0	360
600 min Summer	11.203	0.0	422
720 min Summer	9.571	0.0	490
960 min Summer	7.441	0.0	624
1440 min Summer	5.210	0.0	882
2160 min Summer	3.638	0.0	1252
2880 min Summer	2.824	0.0	1588
4320 min Summer	1.992	0.0	2248
5760 min Summer	1.566	0.0	2952
7200 min Summer	-0.012	0.0	0
8640 min Summer	-0.010	0.0	0
10080 min Summer	-0.008	0.0	0
15 min Winter	158.928	0.0	18

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	9.738	0.148	0.1	1.8	Flood Risk
60 min Winter	9.770	0.180	0.1	2.2	Flood Risk
120 min Winter	9.806	0.216	0.1	2.6	Flood Risk
180 min Winter	9.819	0.229	0.1	2.8	Flood Risk
240 min Winter	9.823	0.233	0.1	2.8	Flood Risk
360 min Winter	9.816	0.226	0.1	2.7	Flood Risk
480 min Winter	9.806	0.216	0.1	2.6	Flood Risk
600 min Winter	9.794	0.204	0.1	2.4	Flood Risk
720 min Winter	9.781	0.191	0.1	2.3	Flood Risk
960 min Winter	9.754	0.164	0.1	2.0	Flood Risk
1440 min Winter	9.707	0.117	0.1	1.4	Flood Risk
2160 min Winter	9.656	0.066	0.1	0.8	O K
2880 min Winter	9.636	0.046	0.1	0.6	O K
4320 min Winter	9.623	0.033	0.1	0.4	O K
5760 min Winter	9.616	0.026	0.0	0.3	O K
7200 min Winter	9.590	0.000	0.0	0.0	O K
8640 min Winter	9.590	0.000	0.0	0.0	O K
10080 min Winter	9.590	0.000	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	103.488	0.0	33
60 min Winter	64.064	0.0	62
120 min Winter	39.879	0.0	120
180 min Winter	29.680	0.0	176
240 min Winter	23.832	0.0	232
360 min Winter	17.215	0.0	332
480 min Winter	13.545	0.0	374
600 min Winter	11.203	0.0	448
720 min Winter	9.571	0.0	522
960 min Winter	7.441	0.0	664
1440 min Winter	5.210	0.0	924
2160 min Winter	3.638	0.0	1256
2880 min Winter	2.824	0.0	1556
4320 min Winter	1.992	0.0	2248
5760 min Winter	1.566	0.0	2992
7200 min Winter	-0.012	0.0	0
8640 min Winter	-0.010	0.0	0
10080 min Winter	-0.008	0.0	0

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 508247 182039 TQ 08247 82039
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.004

Time (mins) From:	To:	Area (ha)
0	4	0.004

Model Details

Storage is Online Cover Level (m) 10.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.03600	Width (m)	4.0
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	11.1	Slope (1:X)	0.0
Safety Factor	5.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	9.590	Membrane Depth (m)	110

Appendix D – Proposed Drainage Layout and Details

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

Note:
Proposed Total Impermeable Area including the roof and permeable paving -230m²

Note:
Arbitrary levels applied to drainage levels

General Notes:

1. Do not scale this drawing. All dimensions are in metres unless otherwise noted. Any discrepancies are to be recorded and reported to the engineers immediately.
2. This drawing is to be read in conjunction with all other engineers and architects drawings, and the specification.
3. All work is to be to the satisfaction of the engineer and local authority building control.
4. The contractor is responsible for and must take all necessary precautions to ensure the stability of the works at all times during construction.
5. All workmanship and materials are to be to current British Standards.
6. All services are to be located and protected as necessary by the contractor prior to the commencement of the works.
7. Any existing details which are shown on this drawing are for guidance only and are to be checked on site by the contractor. Any variations are to be recorded and reported to the engineer immediately.
8. All highway works are to be in accordance with the local authorities design guide and specification.
9. Prior to the occupation of the first dwelling, street nameplates shall be erected in accordance with the highway authority and to the wording agreed with the planning authority.
10. During construction works on site, all roads and footpaths are to be swept and kept clear of obstructions, this is to include existing highways as appropriate to ensure safe passage of all road users.
11. Provision shall be made for the installation of all mains services including ducting prior to the laying of the road base-course.
12. All road markings and signs are to be in accordance with `The Traffic Signs Regulations and Directions' 2016.
13. All sewer works are to be in accordance with the Sewerage Sector Guidance.
14. All private connections to adoptable sewers should be a minimum of 100mm diameter (foul) and 150mm diameter (surface) made in vitrified clay connecting soffit to soffit.

Soakaways

1. The proposed soakaways have been designed based on an assumed infiltration rate typical of the ground conditions encountered.
2. The proposed soakaways have been designed for a 1 in 100 year storm plus 40% climate change.
3. The proposed soakaways must be located at least 5m away from any building or structure.

Drainage Key

Surface Water Manhole Text	CL.00.00 IL.00.00 BD.00.00	Existing Foul Water Sewer	100mmØ
Surface Water Pipe	PN 1.000 100/80	Existing Foul Water Manhole	ExFW MH
Proposed Inspection chamber 480mm Ø >600mm Depth		Site Boundary	
Channel Drain		Rainwater Harvesting / Waterbutt	
Rodding Eye	RE IL.00.00	Arrow / Overland Flood Routes	
Rain Water Pipe	rwp	Cellular soakaway	
Permeable Surfacing		Existing Surface Water Manhole Text	
Difuser Unit		Existing Surface Water Pipe	PN 1.000 100/80

Note:
The contractors are to check all dimensions, drain runs and general conditions on site before works commence

Note:
All works to be carried out in accordance with current building regulations, British Standards, Code of Practice and Local Authority requirements

Scale
1:100
4m 3m 2m 1m 0m 2m 4m

For Planning Only

Issue	Notes	Drawn	Approved	Date
P1	Preliminary Issue	MKR	BN	12.06.2026

jms Group
Engineering that brings design to life
Award-winning Consulting Structural & Civil Engineers

Issuing Office:
JMS East Anglia (Ipswich): Unit 10, Brightwell Barns
Brightwell, Suffolk, United Kingdom, IP10 0BJ, Tel: 01473 487047

Project
Land Adjacent to 1 Russet Close
Uxbridge, UB10 0NJ

Drawing Title
Proposed Drainage Layout

Project No.	Drawing No.	Issue
EX26/138/03	201	P1

PRELIMINARY

Original Sheet Size: A1

Private Drainage Notes:

1. Inspection chamber covers and frames as follows:-

Brickwork and pre-cast concrete:

i) Private drives accepting vehicle traffic: BS EN124 class D400, 600mm clear opening, solid top cover and frame.
ii) Footpaths, verges and gardens: BS EN124 class B125, 600mm clear opening, solid top cover and frame.

Polypropylene:

iii) Areas accepting vehicle traffic: Class B
iv) Soft landscaped areas: Class C

2. Mortar haunching to inspection chamber and frames.

3. i) For use with brick inspection chambers in non adopted roads, private drives, footways and verges; heavy duty (150mm nominal thickness) precast reinforced concrete cover slab to BS 5911, bedded on 10mm thick mortar bed; or 150mm grade C25P in-situ concrete (reinforced with A393 mesh to BS 4483) cover slab.
Other locations inaccessible to vehicles; light duty (75mm nominal thickness) precast reinforced concrete cover slab to BS 5911, bedded on 10mm thick mortar bed; or 100mm grade C25P in-situ concrete (reinforced with A193 mesh to BS 4483) cover slab.
ii) For use with precast concrete inspection chambers in non adopted roads, private drives, footways and verges; heavy duty (150mm nominal thickness) precast reinforced concrete cover slab to BS 5911, of size and type to suit chamber sections.
Other locations inaccessible to vehicles: light duty (75mm nominal thickness) precast reinforced concrete cover slab to BS 5911, of size and type to suit chamber sections.

4. With precast or brick inspection chambers, cover slabs with a clear opening of 600x600mm are required. Offset to suit chosen face for step rungs.

5. 215mm thick walls in Class B engineering bricks to BS 3921 layered in English bond with frogs up. Inner faces to be plumb and in true alignment. Brick course to be level. Flush jointing to brickwork inner faces and precast concrete chamber sections to BS 5911.

6. All step rungs to BS 1247

i) General purpose pattern (with 230mm tail) to be built into chamber wall of brick inspection chambers.

ii) Precast concrete manhole pattern "let in" to chamber wall of precast inspection chambers. All step rungs to be horizontally and vertically staggered as shown on section x-x. Step rungs are not required to either type of inspection chamber where depth to soffit is less than 750mm.

7. Mass concrete infill.

8. Benching to rise vertically from edges of channel to a height not less than pipe (full section) soffit level. Steel float smooth hard surface with cement mortar 1:1 mix, 25mm thick.

9. 50mm min. thick mortar bed to half round channels.

10. 150mm min. thick mass concrete base slab (grade C20P) to precast, uPVC and brick types of inspection chamber.

11. 75mm thick lean mix concrete blinding.

12. Minimum of 2, and maximum of 4 courses of 215mm thick engineering bricks (Class B) to underside of cover & frame, built off cover slab, may be required to facilitate road or drive construction.

13. A brick relieving arch shall be turned over all pipes where they pass through the walls of a brick inspection chamber.

14. Pipes entering inspection chambers shall have a flexible joint within 150mm of the outer face of the brickwork or concrete surround.

15. Channel junctions within brick or precast concrete inspection chambers to be half round channel sections.

16. Backfill material to be as detailed above for normal pipe bedding.

17. Following the flexible joint from either a precast or brick inspection chamber (note 14 above) a `rocker' pipe of 600mm length shall be installed.

18. Precast concrete inspection chambers may (if chosen for use) have a purpose made base units.

19. Where precast concrete inspection chambers are constructed wholly above the water table, joints are to be sealed with mortar. In waterlogged ground or where the water table is above the base slab, joints are to be water tight using a mastic sealant or rubber rings of a type suitable to the chamber units.

Pipe Bedding Notes:

Mortar
1. Mortar shall be mixed only as and when required, the relevant proportions indicated in the following table, until its colour and consistency are uniform. The constituent materials shall be accurately gauged, allowance being made for bulking of sand.

Alternative Nominal Mixes By Volume		
Cement:Lime:Sand	Cement:Sand	Cement:Sand with Plasticiser
1 : ¼ : 3	1 : 3	1 : 2½ to 3

2. Ready-mixed lime:sand for mortar and ready-to-use retarded mortar shall comply with the relevant provisions of BS 4721 and to be of category 1.12 and designation (i) respectively.

3. All mortar shall be conveyed fresh to the works as required for use. Mortar which has begun to set or which has been site-mixed for a period of more than one hour shall not be used. Plasticising and set retarding mortar admixtures shall comply with BS 4887: part 1 and 2, respectively and shall be supplied with instructions for use.

4. Fine aggregate for mortar shall be washed natural sand or crushed natural stone and shall comply in all respects with BS 1200.

5. 20mm thick Flexcell, or similar approved filler to be used to form a flexible joint to the concrete surround at the leading edge of a sleeved coupling. Dimensions shown are irrespective of type or diameter of pipe. The surrounds must terminate at a pipe joint.

6. If pipes are surrounded in concrete, the joints are to be protected from the the ingress of concrete by wrapping them in polythene sheet or building paper.

General fill material
May be of selected locally excavated material or imported. It shall be uniform readily compacted material free from stones larger than 40mm dia. lumps of clay over 100mm, timber, frozen material, vegetable matter, tree roots and building rubbish. The material shall be placed and compacted in layers not exceeding 300mm loose depth. Mechanical compaction equipment shall not be used until there is a minimum of 450mm of compacted material above the crown of the pipe.

Selected fill material
To be free from stones larger than 40mm dia. lumps of clay over 100mm, timber, frozen material, vegetable matter, tree roots and building rubbish. The material shall be placed uniformly on each side of the pipe in layers not exceeding 100mm. Each layer being compacted by hand tamping. Care to be taken not to displace the pipe from its correct line and level.

Private Drainage Notes:

1. Formation of trench beds and inspection chambers

i) Excavate immediately before laying beds and pipes or base slabs for inspection chambers.

ii) Remove all mud, rock projections, boulders and hard spots and replace with well compacted selected fill. Localised soft spots are to be hardened by tamping in granular bedding material.

iii) If oil contamination is found adjacent to trench, the trench profile is to be cut back by 150mm from the face of bedding material and replaced with crushed concrete.

2. Concrete and mortar

i) The concrete used to surround pipes and in the construction of gullies and inspection chambers is to be grade C20P (unless noted otherwise) and mixed using SRPC unless directed otherwise by the engineer or local authority. Sulphate resisting cement is to be used for in-situ or precast concrete and mortars to foul drains.

3. Covers and frames

All inspection chamber cover and frames are to be laid to have the top surface in alignment with both the longitudinal and transverse gradients of adjacent roads, drives, footways and verges. They are otherwise to be laid level. All cover levels as shown on the drainage layout/longsection are approximate. Actual cover levels are to be determined on site from the position in the road, drive, footpath or otherwise.

4. Pipes to as follows:

Pipe dia. (mm)	Type	Remark
100 Internal (110 NOM. dia.)	uPVC	BS EN 1401
150 Internal (160 NOM. dia.)	uPVC	BS EN 1401

5. The contractor/devloper is to ensure that all of the works comply with the following:

i) BS 8301: 1985 (code of practice for building drainage)

ii) The Building Regulations: Approved Document H 2002

iii) NHBC Technical requirements

iv) BRE Digest No. 363

6. The storage and installation of all proprietary drainage items used are to be strictly in accordance with the manufacturers instructions.

7. All uPVC items as specified on this drawing are to comply with BS EN 1401.

8. Mortar
Mortar shall be mixed only as and when required, the relevant proportions indicated in the following table, until its colour and consistency are uniform. The constituent materials shall be accurately gauged, allowance being made for bulking of sand.

Alternative Nominal Mixes by Volume		
Cement:Lime:Sand	Cement:Sand	Cement:Sand with plasticiser
1 : ¼ : 3	1 : 3	1 : 2½ to 3

9. Ready-mixed lime: Sand for mortar and ready-to-use retarded mortar shall comply with the relevant provisions of BS 4721 and to be of category 1.12 and designation (i) respectively.

10. All mortar shall be conveyed fresh to the works as required for use. Mortar which has begun to set or which has been site-mixed for a period of more than 1 hour shall not be used. Plasticising and set retarding mortar admixtures shall comply with BS 4887: part 1 and 2, respectively and shall be supplied with instructions for use.

11. Crushed natural stone and shall comply in all respects with BS 1200.

Materials for Below Ground Drainage

Material	British Standard
1. Rigid pipes:	
Vitrified clay	BS 65, BS EN 295
Concrete	BS 5911
Grey iron	BS 437
Ductile iron	BS EN 598
2. Flexible pipes:	
UPVC	BS EN 1401*
PP	BS EN 1852*
Structure walled Plastic pipes	BS EN 13476

*Application area code "UD" should normally be specified
Note
Some of these materials may not be suitable for conveying trade effluent.

Materials for Access Points

Material	British Standard
1. Inspection chambers and manholes.	
Clay brick & blocks	BS 3921
Vitrified clay	BS EN 295, BS 65
Concrete-precast	BS 5911
Concrete-in situ	BS 8110
Plastics	BS 7158
2. Rodding eyes and access fittings (excludes covers and frames).	As pipes refer to materials for below ground drainage

Table of Protection Requirements Relative to Cover

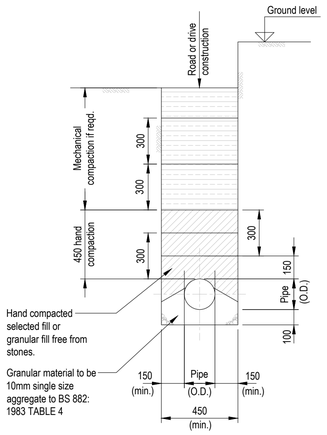
Location	Gardens (no traffic loading)		Paved or hard surfaces (light traffic loading)		Roads (carriageways & footways)	
Cover (mm) [from barrel of pipe]	Less than 600	More than 600	Less than 900	More than 900	Less than 900	More than 900
Type of protection required	Reinforced conc. or paving slab bridging	None	Reinforced conc. or paving slab bridging	None	Concrete surround	None

Notwithstanding these requirements the contractor is to give further consideration to the protection of drainage items from construction traffic and building works

Minimum Dimensions for Access Fittings and Inspection Chambers

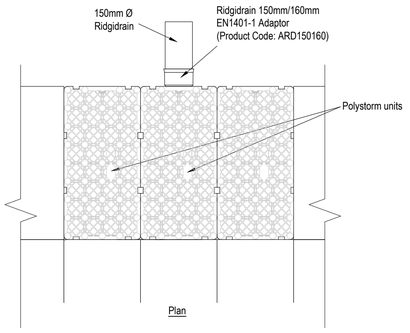
Type	Depth to invert from cover level (m)	Internal dimensions		Cover dimensions	
		Length (mm) x width (mm)	Circular dia. (mm)	Length (mm) x width (mm)	Circular dia. (mm)
Rodding eye		As drain but 100 min.			Same size as pipework.1
Access fitting Small 150 dia. 150x100 Large 225x100	0.6 or less, except where situated in a chamber	150x100 225x100	150 225	150x100.1 225x100.1	Same size as access fitting
Inspection chamber shallow Deep	0.6 or less 1.2 or less >1.2	225x100 450x450 450x450	190.2 450 450	- MIN. 430x430 MAX 300x300.3	190.1 430 access restricted to max 350.3

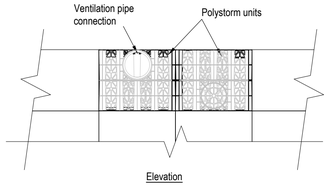
NOTES
1. The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame.
2. Drains up to 150mm.
3. A larger clear opening cover may be used in conjunction with a restricted access. the size is restricted for health and safety reasons to deter entry.



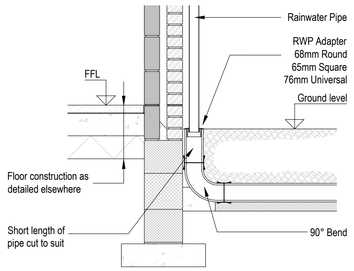
Normal Bedding
Scale 1:20

Note:
Pipe protection is required by one of the three methods shown where cover is <600mm in un-trafficked areas and <900mm elsewhere.

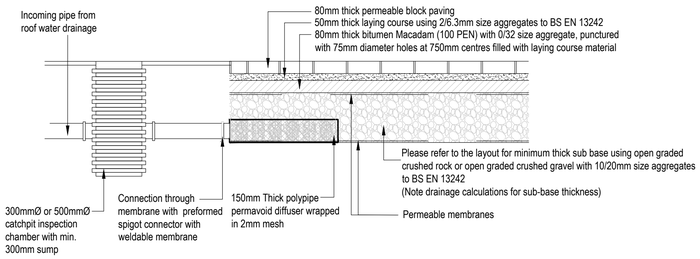




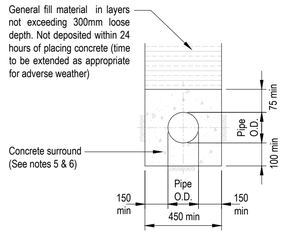
Polystorm 150mm ventilation pipe connection
Scale 1:20



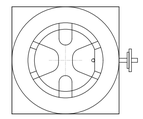
External RWP Connection Detail
Scale 1:20



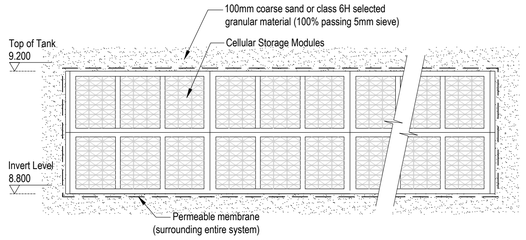
Typical Permeable Paving Construction Detail With Diffuser Unit
Scale 1:20



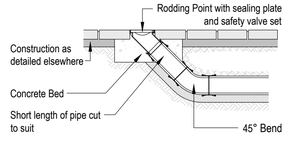
Concrete Surround Pipe Bedding
Scale 1:20



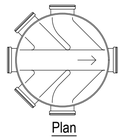
Plan



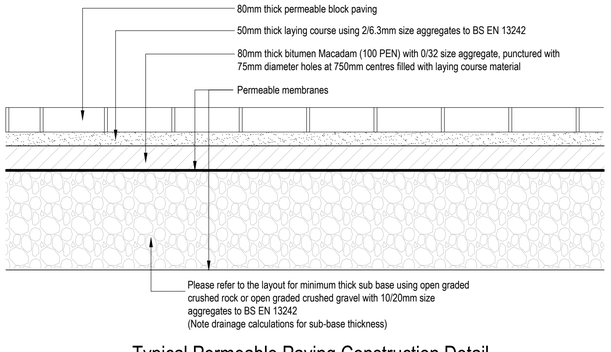
Cellular Storage Infiltration System - Typical Section
Scale 1:20



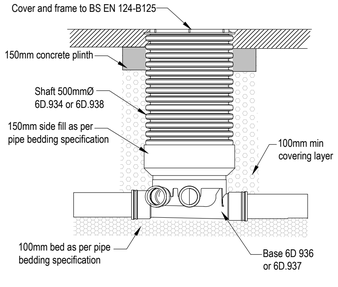
Rodding Point
Scale 1:20



Plan

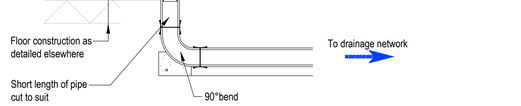


Typical Permeable Paving Construction Detail
Scale 1:10



Polypropylene Shallow Inspection Chamber Ø450mm (Light Loading B125)
Scale 1:20

Note:
3m maximum depth. Up to Ø150mm pipework for 450mm shaft, or up to 300mm pipework on 500mm shaft. B125 maximum Loading, suitable for car parks and private drives



Rainwater Harvesting Detail(Water butt)
SCALE 1:20

For Planning Only

Scale 1:200
5m 0m 5m 10m

Issue	Notes	Drawn	Approved	Date
P1	Preliminary Issue	MKR	BN	12.06.2026

jms Group
Engineering that brings design to life
Award-winning Consulting Structural & Civil Engineers

Issuing Office:
JMS East Anglia (Ipswich): Unit 10, Brightwell Barns
Brightwell, Suffolk, United Kingdom, IP10 0BJ, Tel: 01473 487047

Project
Land Adjacent to 1 Russet Close
Uxbridge, UB10 0NJ

Drawing Title
Drainage Construction Details

Project No.	Drawing No.	Issue
EX26/138/03	202	P1

PRELIMINARY

Appendix E – Ground Investigation Data

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England

Borehole Log

Borehole No. **BH01**

Sheet 1 of 1

Project Name: 1 Russet Close	Project No. GT-2025-000132	Co-ords: 508249.00 - 182052.00	Hole Type HA
Location: LA to 1 Russet Close, Uxbridge, UB10 0ST		Level:	Scale 1:50
Client: ICreate Designs Ltd		Dates: 09/09/2025 - 09/09/2025	Logged By A.Akanu

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.40			Made Ground - Dark grey sandy SILT, with rare fragments of bricks.
								Dark orange gravelly sandy SILT.
		1.00	D					
		1.20	B		1.20			End of borehole at 1.20 m

Remarks

Borehole advanced to a maximum depth of 1.2mbgl. No groundwater encountered. Elevation and borehole location grid references are approximated based on LiDAR data.

9.3 Appendix 3 – Site Investigation Photographs

Image showing the 1st to 1.2nd metre (left to right) of material retrieved from BH01

Registered Office Unit 27 Brightwell Barns, Waldringfield Road, Brightwell, Suffolk, United Kingdom, IP10 0BJ | **Registered No.** 9119667 England