

Foul and Surface Water Drainage Report

Church Farm House, Church Lane, Yapton BN18 0EP

Planning ref: Y/48/25/PL

For

Victoria and Peter Newman

Rev – P1

Reference C3267

Date 5th November 2025

Revision	Date of Issue	Comments	Prepared By	Checked By
P	05/11/2025	Initial Issue	MR	CS
P1	21/11/2025	Updated to ADC comments	MR	CS

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1 Introduction

- 1.1.1 CGS Civils Ltd has been appointed to undertake a drainage strategy report for a proposed development at Church Farm House, Yapton
- 1.1.2 The purpose of this drainage strategy is to demonstrate how the development area can be satisfactorily drained without increasing flood risk onsite and elsewhere, and support application.
- 1.1.3 The existing site consists of a tennis court, a garage, and an access road. The proposed development will involve the removal of the tennis court and the construction of a new single-storey residential dwelling. The proposed development is located at OS Grid Reference **SU 98168 03600** and has the postcode **BN18 0EP**.
- 1.1.4 The proposed site plan can be found in **Appendix A**.

Fig 1. Site Location



2 Executive Summary:

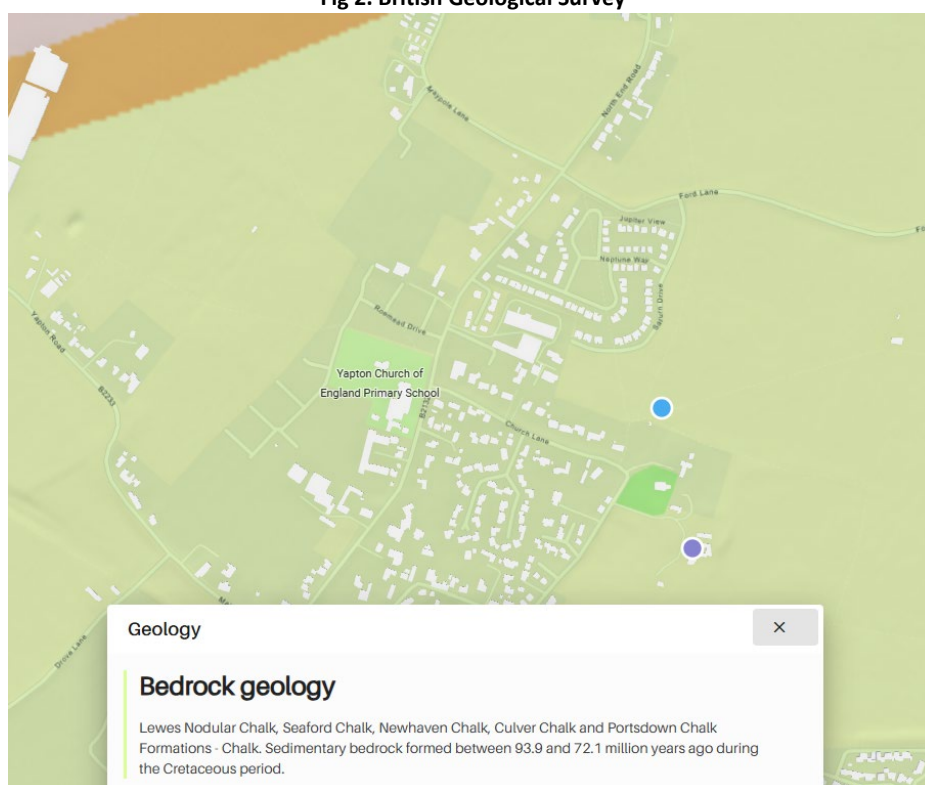
- 2.1.1 Surface water runoff will be discharged into the ground via a proposed infiltration basin with recorded infiltration rate of 2.19×10^{-5} m/s. The infiltration system has been designed to accommodate storm events up to the 1 in 100-year return period, with an additional 45% allowance for climate change and a further 10% allowance for urban creep.
- 2.1.2 The foul water will discharge into the existing public foul water manhole located within Church Lane. This connection is subject to Southern Water approval under a Section 106 agreement.

3 Site Geology

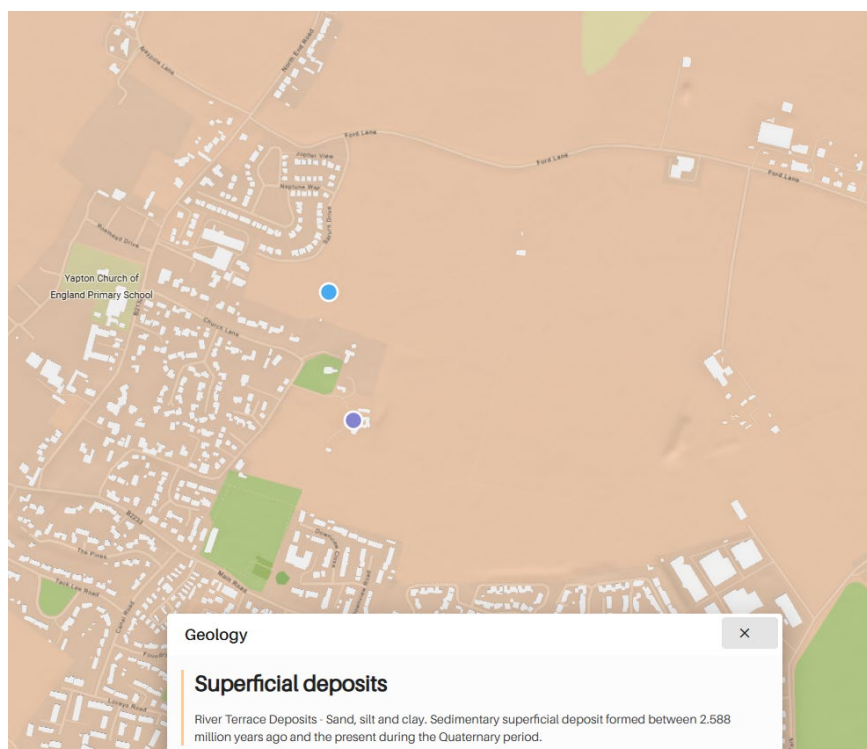
3.1 British Geological Survey information

- 3.1.1 The British Geological Survey confirms the bedrock geology to be made up Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formations- Chalk. The BGS website confirms the superficial deposits on site to be made up of River Terrace Deposits- Sand, silt and clay.
- 3.1.2 The British Geological survey also holds records of historical boreholes near the site which give some insight into the ground geology.
- Borehole SU90SE33 (Located approx.250m south-east from the site) – Clay to a depth of 1.4mbgl followed by chalk.
- 3.1.3 The British Historical Borehole log can be found in **Appendix B**.

Fig 2. British Geological Survey

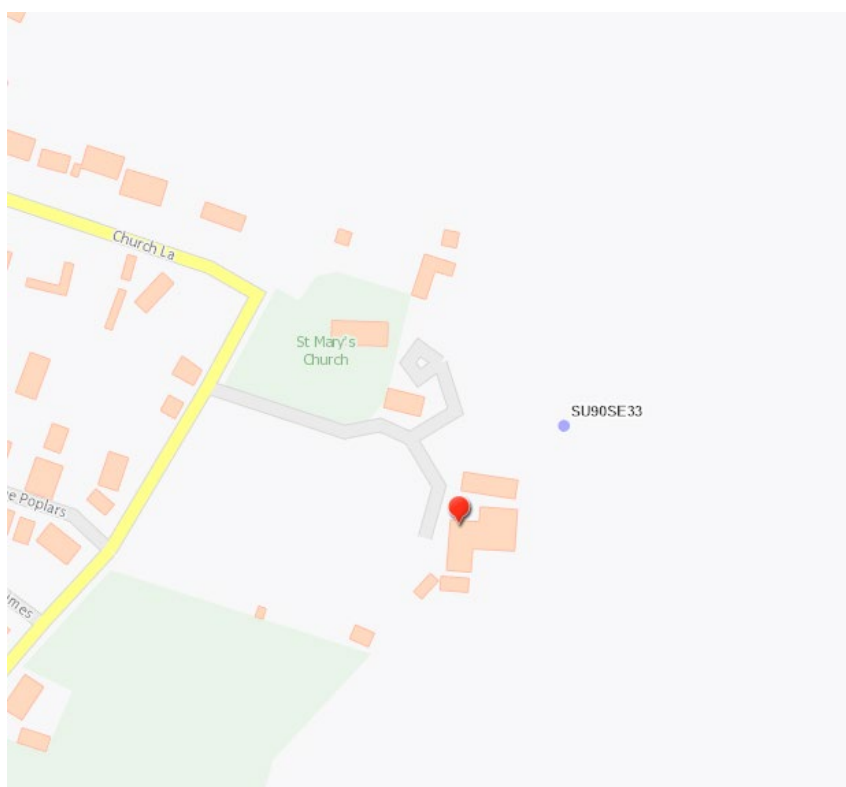


Snippet from BGS Website showing Bedrock geology <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>



Snippet from BGS Website showing superficial deposits <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

Fig 3. British Geological Survey



Snippet from BGS Website showing historical borehole log location

3.2 Geological Assessment

- 3.2.1 No full intrusive ground investigation was carried out on site; however, soakaway infiltration testing in accordance with BRE365 was undertaken by CGS Civils Ltd on 24th October 2025.
- 3.2.2 The infiltration testing confirmed that the site is underlain by soils with good permeability characteristics. One trial pit excavation was undertaken to a depth of 0.60 m below ground level (mbgl) at the location of the proposed infiltration basin. The excavation revealed dark, free-draining soils, and no groundwater was encountered during the testing.
- 3.2.3 The shallow soakaway test recorded the slowest infiltration rate as 2.19×10^{-5} m/s. This value has been adopted in the proposed surface water drainage strategy.
- 3.2.4 The groundwater levels were monitored between 25th October 2024 and 11th March 2025, with the results indicating that the peak groundwater level is 1.65m below ground level.
- 3.2.5 The infiltration test report, groundwater level monitoring report, and geotechnical statement relating to the proposed drainage strategy are provided in **Appendix C**.

4 Existing Drainage

- 4.1.1 The site is currently an existing grass tennis court and gravel driveway. It is therefore presumed that surface water runoff follows the natural topography of the land, discharging via overland flow routes.

Fig 3. Photos from the site



5 Proposed Drainage Strategy

5.1 SuDS Hierarchy

- 5.1.1 All options for the destination of run-off generated on site have been assessed in line with the SuDS hierarchy as set out in Building Regulations Part H document and DEFRA's Draft National Standards for SuDS.

Table 1. SuDS Hierarchy

Discharge Destination	
Rainwater Harvesting	Rainwater harvesting tank is proposed
Discharge to Ground	All surface water runoff from roof area is to be discharged into the proposed shallow infiltration basin with a recorded infiltration rate of 2.19×10^{-5} m/s
Discharge to Watercourse	N/A
Discharge to Surface Water Sewer	N/A
Discharge to Other Sewer	N/A

5.2 Proposed Hydraulic Calculation Specifications:

Table 2. SuDS Hierarchy

Hydraulic Calculations Settings:	
Rainfall Methodology	FEH-22
Volumetric Run-off Coefficient Cv	1
CV Winter and Summer	1
Additional Storage (m ³ / ha)	0.0
Maximum Rainfall (mm/hr)	75
Infiltration Basin Design	Base Coefficient (m/hr): 0.07920
	Side Coefficient (m/hr): 0.00000
	Factor of Safety: 3
	Porosity: 1.0
	Time to Half Empty (mins): 430

5.3 Surface Water Drainage

- 5.3.1 Based on the information obtained from the British Geological Survey, the infiltration testing, and the groundwater level monitoring results, it is proposed that all surface water runoff will be discharged to ground via infiltration, using the slowest infiltration rate of 2.19×10^{-5} m/s. Roof runoff will be collected through a positive drainage network before being discharged to the infiltration system. The proposed infiltration basin has been designed to accommodate the 1 in 100-year storm event, including a 45% allowance for climate change and an additional 10% allowance for urban creep.
- 5.3.2 The proposed infiltration basin has been designed to allow infiltration through the base only, in accordance with the requirements of the Arun District Council Surface Water Guidance. The highest groundwater level was recorded at 5.850 m below ground level (mbgl), while the base of the proposed infiltration basin is set at 6.900 mbgl. This provides over 1.0 m vertical separation between the base of the infiltration feature and the highest recorded groundwater level, ensuring adequate freeboard.
- 5.3.3 The drainage strategy demonstrates that, during the 1% AEP (1 in 100-year) event—including a 45% climate change allowance and a 10% urban creep allowance—the maximum water level within the infiltration basin is 7.439 m AOD. This level is fully contained within the basin, remaining below the top of banking and the cover levels of the drainage network. Consequently, it does not pose any risk of flooding to the property or off-site areas, ensuring a minimum freeboard of 300 mm between the maximum water level in the basin and the finished floor level of the building.

- 5.3.4 The proposed infiltration basin is located 4.5 m from the nearest building. Although slightly below the conventional 5 m guideline, this is fully justified based on the principles in the susdrain fact sheet “Using SuDS Close to Buildings” (Steve Wilson, 2012). The basin has a limited depth of 0.6 m and is designed to infiltrate only through its base, acting as a shallow, wide-area (blanket) infiltration system rather than a deep point soakaway. The measured infiltration rate of 2.19×10^{-5} m/s ensures controlled percolation, eliminating any risk of ground erosion or instability.
- 5.3.5 The proposed bioretention planters are designed to receive storm water runoff before it is discharged into the infiltration basin, providing additional water treatment and reducing the volume entering the basin.
- 5.3.6 The proposed SuDS features provide both biodiversity and water management benefits. The bioretention planters incorporate native planting to attract pollinators, increase structural diversity, and enhance ecological connectivity across the site. They also slow, filter, and temporarily store runoff. The open infiltration basin is designed as a shallow, planted depression supporting wet-tolerant and moisture-loving vegetation, creating habitat diversity, supporting invertebrates, and providing foraging opportunities for birds and small mammals.
- 5.3.7 Exceedance flow routes have been designed to follow the natural site topography, directing any overland flow towards the garden areas along the western site boundary and further south towards Church Lane.
- 5.3.8 As part of the proposed drainage network, a rainwater harvesting tank is included to facilitate the reuse of rainwater.
- 5.3.9 The proposed location and size of the infiltration basin, situated between the tree protection zones, have been approved by Barry Holdsworth Ltd. The approval statement is provided in **Appendix D**.
- 5.3.10 Proposed Drainage Strategy, Contributing Area Plan & Exceedance Flow Routes and Hydraulic calculations have been carried out which can be found at **Appendix D**.

5.4 Water Quality

- 5.4.1 A key requirement of any SuDS system is that it protects the receiving water body from the risk of pollution.
- 5.4.2 Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals, and various organic and inorganic contaminants) Therefore the first 5-10mm of rainfall should be adequately treated with SuDS.
- 5.4.3 The new SuDS Manual (Ciria C753, November 2015) introduces slightly different approach compared to the previous version for the water quality management of surface water. The Manual describes risks posed by the surface water runoff to the receiving environment as a function of:
- The pollution hazard at a particular site (i.e., the pollution source)
 - The effectiveness of SuDS treatment components in reducing levels of pollutants to environmentally acceptable levels
 - The sensitivity of the receiving environment
- 5.4.4 The EA website indicates that the site does not lie within a Source Protection Zone.
- 5.4.5 The recommended approaches for water quality risk management are given in the SuDS Manual Table 26.1.

Table 26.1 from SuDS manual. Approaches to Water Quality Risk Management

Table 26.1 Approaches to Water Quality Risk Management			
Design method	Hazard Characterisation	Risk Reduction	
		For Surface Water	For Groundwater
Simple Index Approach	Simple pollution hazard indices based on land use (Table 26.2)	Simple SuDS hazard mitigation indices (Table 26.3)	Simple SuDS hazard mitigation indices (Table 26.4)
Risk Screening	Factors characterising traffic density and extent of infiltration likely to occur (Table 26.5)	N/A	Factors characterising unsaturated soil depth and type, and predominant flow type through the soils (Table 26.5)
Detailed Risk Assessment	Site specific information used to define likely pollutants and their significance	More detailed, component specific performance information used to demonstrate that the proposed SuDS components reduce the hazard to acceptable levels	
Process-based treatment modelling	Time series rainfall used with generic pollution characteristics to determine statistical distributions of likely concentrations and loadings in the runoff	Models that represent the treatment processes in the proposed SuDS components give estimates of reductions in even mean discharge concentrations and total annual load reductions delivered by the system	

5.4.6 As per Table 26.1 Simple Index approach will be used as a design method for this site.

5.4.7 Table 26.2 will provide hazard classification of different land uses. The land uses for the surface water drainage for this site are.

- Residential Roofs
- Individual Property driveways and residential car parks
- Low traffic roads

5.4.8 To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index for each contaminant type that equals or exceeds the pollution hazard index for each contaminant type. Therefore, the following must be achieved for the surface running off the site.

Total SuDS mitigation index $\geq$ pollution hazard index

5.4.9 Pollution Hazard Indices are given for different land uses in Table 26.2 of the SuDS manual;

Table 26.2 from SuDS manual. Pollution Hazard Indices for Different Land Use Classifications

Table 26.2 Pollution hazard indices for different land use classifications				
Land Use	Pollution Hazard Level	Total Suspended solids (TSS)	Metals	Hydro-Carbons
Residential roofs	Very Low	0.2	0.2	0.05
Other roofs (Typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g., 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

5.4.10 From Table 26.2 the following information is tabulated in Table 1

Table 1: Pollution hazard index and destination of runoff for the proposed site

Table 3: Pollution Hazard Index and Destination of runoff for the proposed Site					
Land Use	Destination of Runoff	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential Roof	Ground Water	Very Low	0.2	0.2	0.05

5.4.11 The SuDS mitigation index will be obtained from Table 26.3 (for groundwater) of the SuDS manual.

Table 26.4 from SuDS manual. Indicative SuDS Mitigation Indices for discharges to ground waters.

Table 26.4 Indicative SuDS mitigation indices for discharges to groundwater			
Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good containment attenuation potential of at least 300mm in depth	0.6	0.5	0.6
A soil with good contaminant attenuation potential of at least 300mm in depth	0.4	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, i.e., graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20mm gravel) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth.	0.4	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area		

5.4.12 SuDS mitigation indices are tabulated in Table 5 as follows:

Table 5: SuDS mitigation index

Table 4 Mitigation Indices						
Runoff Source	Destination of Runoff	Mitigation Index Source	Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roof	Ground water	Table 26.3 (for ground waters)	A layer of dense vegetation underlain by a soil with good containment attenuation potential of at least 300mm in depth (infiltration basin) & Bioretention Planters	0.6+ 0.8	0.5+ 0.8	0.6+0.8

5.4.13 The above analysis demonstrates that the SuDS devices within the design will mitigate any pollution present within the surface water system.

5.5 Foul water drainage

- 5.5.1 The foul water will discharge into the existing public foul water manhole located within Church Lane. This connection is to be agreed under S106 Southern Water application.

5.6 Construction Phase Drainage

- 5.6.1 It is an offence to cause or knowingly permit the entry of any polluting, poisonous or noxious material in the water environment. If the pollution is serious enough to lower the ecological status of the water body as set out in terms by the Water Framework Directive (2000/60/EC) than prosecution may occur.
- 5.6.2 Remediation of any damage caused will not require the polluter to be prosecuted first. If the water pollution is serious enough to be classed an environmental damage, the damage will require to be remediated such that the area is returned to the condition it would have been in if the damage had not occurred.
- 5.6.3 If any pollution has not been reported or the polluter has not taken actions to prevent any further damage; they would then be causing an offence. Third parties (e.g., Private water supply users, landowners, recreation users and the public) who may be affected by possible damage may also report the risk of any environmental damage to the enforcing authority.
- 5.6.4 The principles of SuDS (Sustainable Drainage Systems) shall be applied to all components of design and construction regarding surface water management. Any design or site works that may impact on the site drainage or the water quality shall:
- Soakaway where soils allow
 - Consider and manage erosion
 - Remove pollutants in surface water
 - Retain any silts on site and prevent silts from discharging to watercourses or drains
 - Keep runoff rates at existing greenfield runoff
 - Prevent accidental spillages reaching watercourse
- 5.6.5 As infiltration on site is viable, the temporary drainage for the development will be in the form of land drains which will discharge into the ground.
- 5.6.6 Pollution will be controlled via the use of catchpit manholes and geotextiles.
- 5.6.7 Any potential hazardous substances will be within a controlled compound with a separate drainage system that will contain a penstock valve / containment kit in the event of a spillage.

6 Summary and Conclusions

- 6.1.1 CGS Civils has been instructed to produce a Drainage statement under National Planning Policy Framework (NPPF) to support the Planning Application for a construction of self-build single storey energy efficient dwelling.
- 6.1.2 The Surface Water will discharge into the ground based on the recorded infiltration rate of 2.19×10^{-5} m/s. The infiltration system has been designed to accommodate storm events up to the 1 in 100-year return period, with an additional 45% allowance for climate change and a further 10% allowance for urban creep.
- 6.1.3 The Foul water will discharge into the existing public foul water manhole located within Church Lane. This connection is to be agreed under S106 Southern Water application.
- 6.1.4 The report has demonstrated that the proposed drainage measures ensure that suitable means of surface water and foul drainage can be achieved for the proposed development.
- 6.1.5 A maintenance and management plan has been written up for the drainage network including the SuDS features and can be found within **Appendix E**.

7 Appendices

7.1 Appendix A – Site Plan

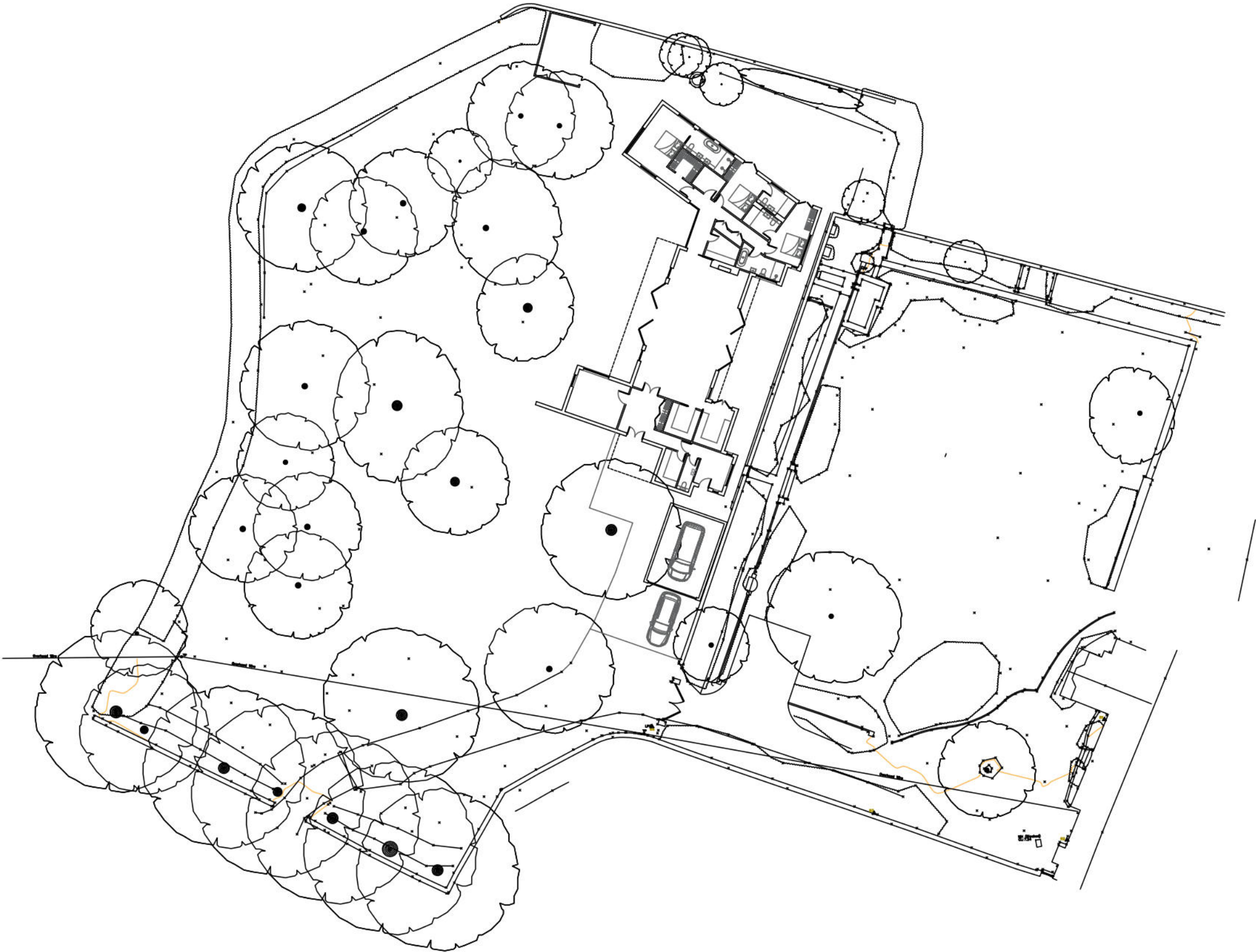
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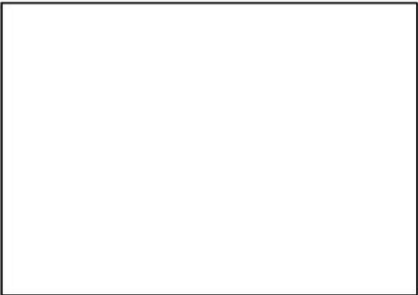
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The contractor is to verify all details of the existing structure and inform the Structural Engineer of any discrepancies prior to the procurement of the new structure.

Beams / Steelwork not to be ordered based on these drawings or calculations. Site live measurements MUST be taken.



Key Plan:



Rev: Date: Details:

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Church Farm House

Project No:
CFH_NEW

Drawing Status:
Planning

Drawn/Checked:
-

Client:
-

A1 Scale:
1:100

Drawing Title:
Location Plan

Date:
01.2025

Drawing No:
-

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-

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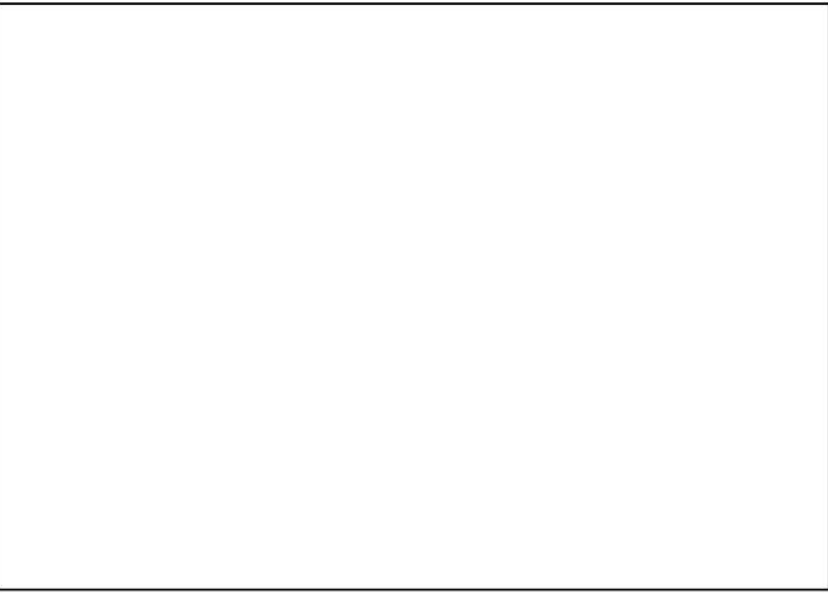
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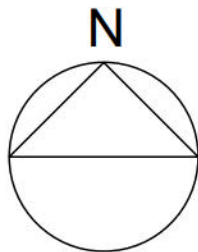
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Key Plan:



Rev:	Date:	Details:
A	14.11.25	Addition of rooflight over entrance hall



0 2 4 6 8 10

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Client: -	A1 Scale: 1:50
Drawing Title: Proposed Roof Plan	Date: 09.2025
Drawing No: P010	Revision: A

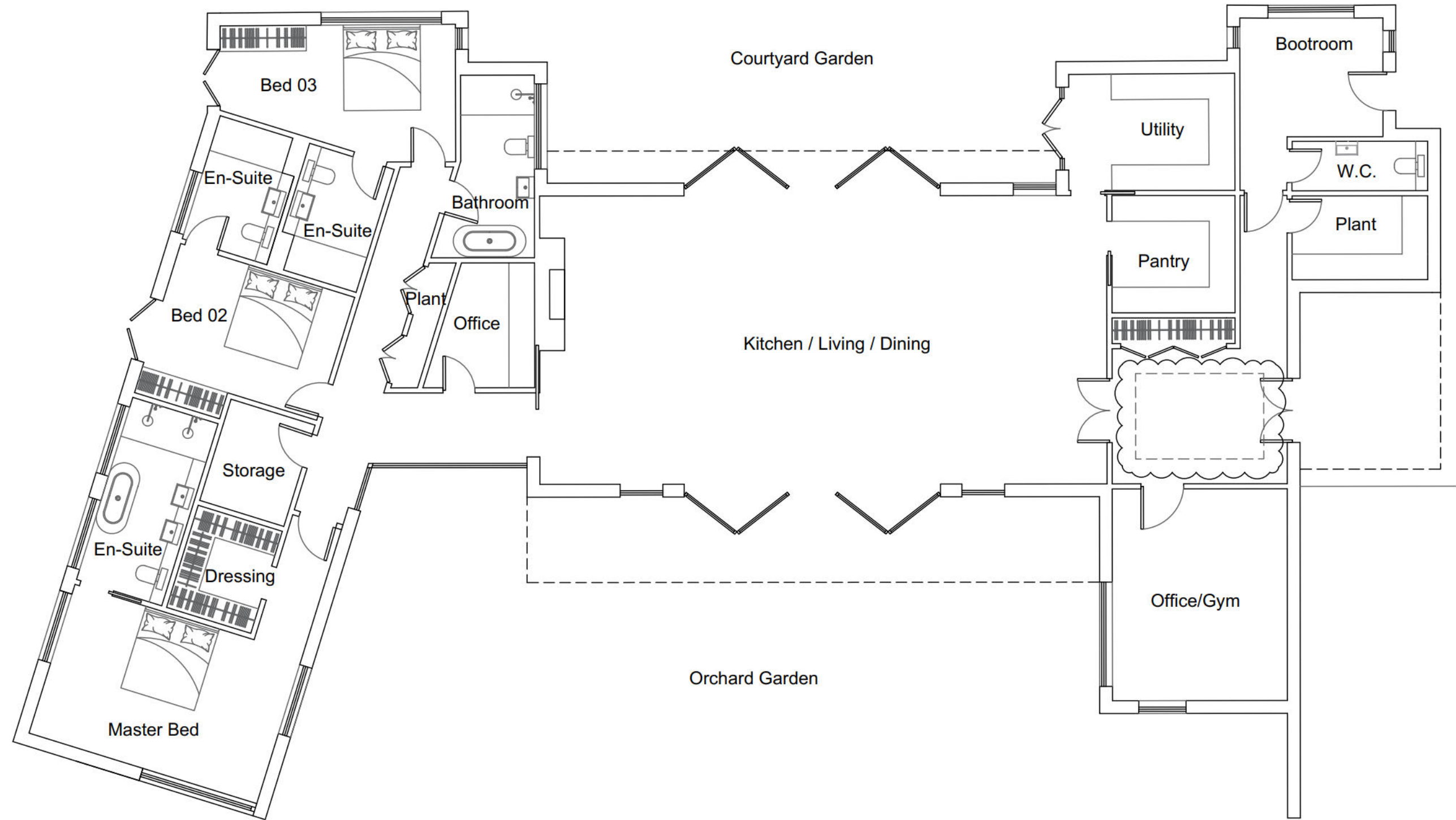
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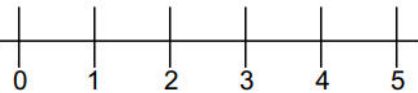
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Key Plan:



Rev:	Date:	Details:
A	14.11.25	Addition of roof light over entrance hall.



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Drawing Status: PLANNING	Drawn/Checked: -
Client: -	A1 Scale: 1:50
Drawing Title: Proposed Plan	Date: 01.2025
Drawing No: -	Revision: A

7.2 **Appendix B – Borehole Log**

SU 90 SE 33

9827 0349

Yapton Church

Surface level +6.4 m
Water not struck
September 1981

Block H

Waste 1.4 m
Bedrock 1.6 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil and made ground	0.3	0.3
Brickearth	Clay, very sandy, mottled brown and grey-brown; some small flint pebbles	1.1	1.4
Upper Chalk	Chalk, soft, weathered, pale yellowish brown; nodular flints	1.6+	3.0

7.3 **Appendix C – Infiltration Test Results Report, Groundwater Level Monitoring Report, Geotechnical Statement**

Ref: C3267

Victoria and Peter Newman

04th November 2025**Re: Church Farm House, Yapton– Soakaway Testing – Infiltration Test Result Summary**

The following investigation was carried out at the above location in accordance with our quotation.

1. Site Works

The purpose of the investigation was to supply soakaway test data in general accordance with BRE document 365 (Soakaway Design) at location which would be located infiltration device to serve proposed residential dwelling.

The appended drawing illustrates the position of the test pit. The BRE365 pit was excavated to a depth of 0.6m in line with the approximate depth of the proposed infiltration basin.

The testing commenced on 26th October 2025 with three test being undertaken in accordance with BRE 365.

2. BRE 365 Soakaway Test Findings

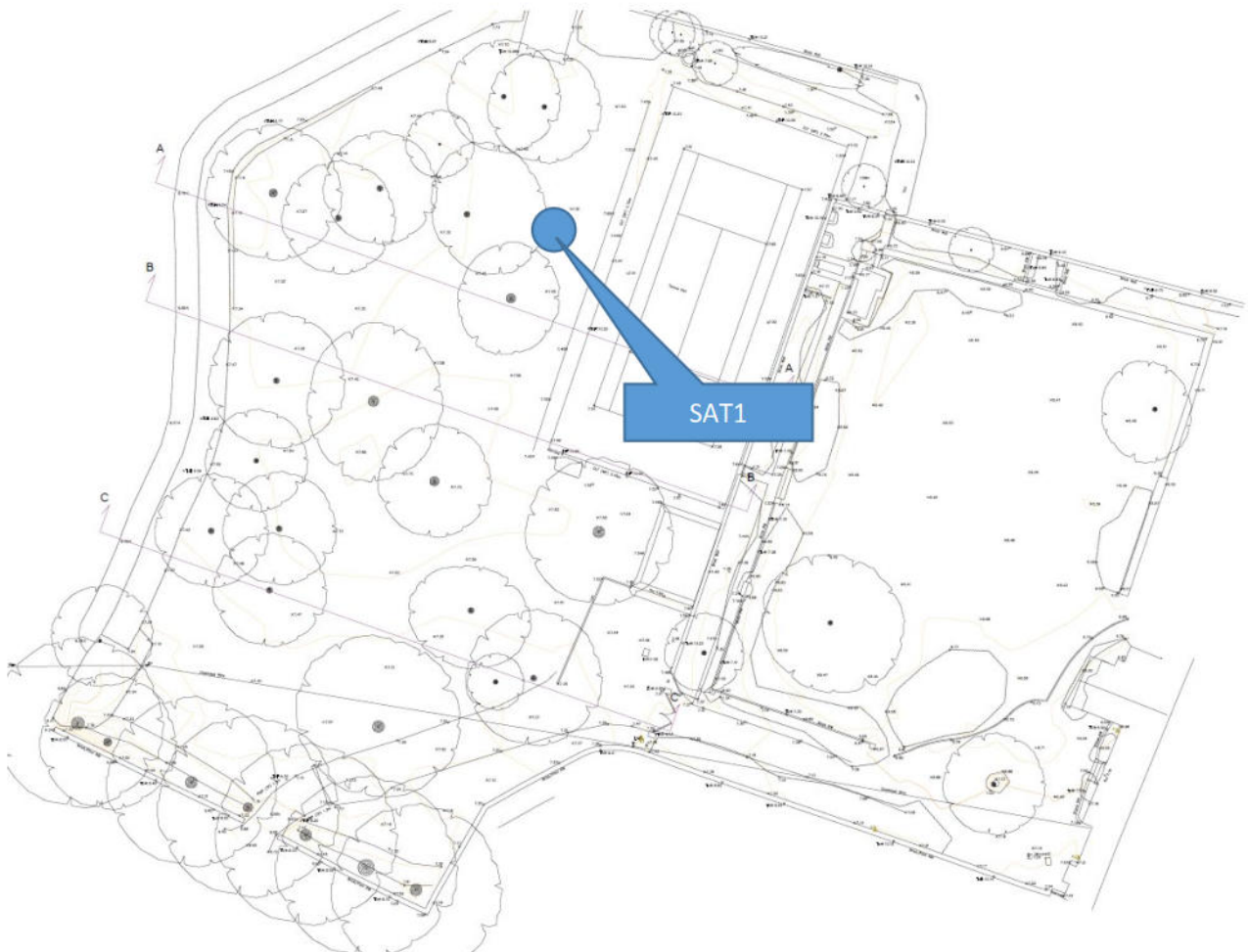
(SAT1) Testing of the sub soils which was noted as dark loam soils produced a BRE 365 design infiltration rate of **2.19x10⁻⁵m/s**. This rate was the slowest taken from all three tests. This is considered a good rate and will likely be suitable for most infiltration devices.

The third infiltration test result has been adopted for detention basin.

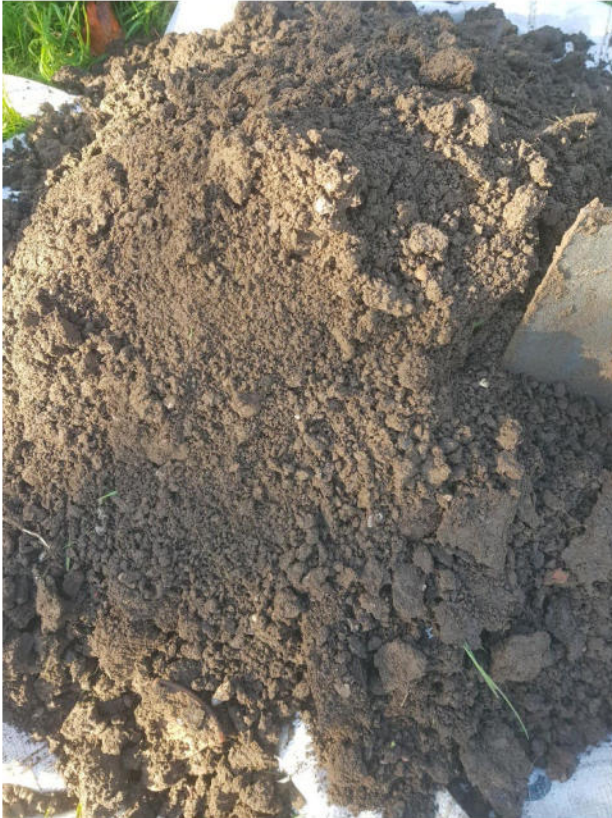
3. BRE 365 Soakaway Test Results

Test Pit No	Infiltration Rate (1-3 Tests)			Depth of Test	Soil Type
SAT1	2.60x10 ⁻⁵ m/s	2.28x10 ⁻⁵ m/s	2.19x10⁻⁵m/s	0.6m	Dark loam soils

Appendix A – Soakaway Test Location Plan



Appendix B – Site Photographs





Consulting Civil Engineers

Appendix C – Soakaway Test Results

Job: Church Farm House, Yapton - Test 1

Infiltration Calculator

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

V_{p75-25} = Effective storage volume between 75% and 25% effective depth

a_{p50} = Internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} = The time for the water level to fall from 75% to 25% effective depth

f = Infiltration rate

Trial pit width	=	0.3
Trial pit depth	=	0.6
Trial pit length	=	1

a_{p50} =

1.08

 m/squared

t_{p75-25} =

3200

 seconds

V_{p75-25} =

0.09

 m/cubed

F =

2.6E-05

Job: Church Farm House, Yapton - Test 2

Infiltration Calculator

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

V_{p75-25} = Effective storage volume between 75% and 25% effective depth

a_{p50} = Internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} = The time for the water level to fall from 75% to 25% effective depth

f = Infiltration rate

Trial pit width	=	0.3
Trial pit depth	=	0.6
Trial pit length	=	1

a_{p50} = 1.08 m/squared

t_{p75-25} = 3650 seconds

V_{p75-25} = 0.09 m/cubed

F = 2.28E-05

Job: Church Farm House, Yapton - Test 3

Infiltration Calculator

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

V_{p75-25} = Effective storage volume between 75% and 25% effective depth

a_{p50} = Internal surface area of the trial pit up to 50% effective depth and including the base area

t_{p75-25} = The time for the water level to fall from 75% to 25% effective depth

f = Infiltration rate

Trial pit width	=	0.3
Trial pit depth	=	0.6
Trial pit length	=	1

a_{p50} =

1.08

 m/squared

t_{p75-25} =

3800

 seconds

V_{p75-25} =

0.09

 m/cubed

F =

2.19E-05

Groundwater Monitoring

[illegible]

Project:	Church Farm House, Yapton
Project No:	C3267
Client:	Victoria Newman

GWM

19 November 2025

Our ref: NN1892R02

Chris Slade
chris@cgscivils.co.uk

Attention: Mr Slade

Dear Sir,

**RE: APPLICATION Y/48/25/PL, CHURCH FARM HOUSE, CHURCH ROAD, YAPTON -
RESPONSE TO ENGINEERS COMMENT RELATING TO MADE GROUND (CONSULTATION
COMMENT 1.3)**

CGS Civils Ltd (CGS) have asked E3S Consulting Ltd (E3S) to provide a response to a consultation comment regarding the above planning application concerning the Made Ground encountered on site. This response is confined to comment 1.3 only and is based on the information provided by CGS including the soakaway testing report and proposed drainage layout. E3S have previously been involved in the site through the installation of the groundwater monitoring well and provision of a factual letter report and borehole log of the strata encountered.

Engineers comment 1.3 relates to concern regarding the identified presence of Made Ground within the borehole log. The 0.80m of Made Ground encountered comprised two layers, a topsoil layer of 0.40m thickness with no discernible Made Ground content, overlying a 0.40m thick layer of dark brown clay with gravel to cobble sized brick fragments encountered. These visual descriptions coupled with the underlying natural soil descriptions indicates that Made Ground is consistent with reworked natural strata which have been impacted minimally by historic anthropogenic activity.

Whilst no strata descriptions have been provided within the soakaway test report provided by CGS, the photographs of the near surface excavated soils provided within the report show what appear to be gravel sized brick fragments within a matrix that appears to generally correspond with the descriptions contained within the borehole log.

Whilst guidance advises infiltration into Made Ground should be avoided, this recommendation would generally be aimed at avoiding issues related to unpredictable settlement, instability and the potential for groundwater contamination through remobilisation of contaminants within that Made Ground. When considering these risks the following comments can be made;

Based on the currently provided information, the infiltration basin proposed will be a small (capacity of 36m³), open, shallow sided (max 1:3 slope) depression that will sit on what would be anticipated to be a retained marginal thickness of reworked soil (potentially as little as 0.20m thickness left in situ within the base area based on existing information). Given the shallow nature of the basin, the shallow sided design combined with marginal thickness of remaining Made Ground, it is considered unlikely that the presence of identified Made

Ground would be of substantial impact to stability and it is assumed that minimum distances from proposed structures etc have been included within the design.

Whilst no desktop assessment in relation to contaminated land has been undertaken or requested in relation to the proposed development. The available, purely visual classification of the strata encountered within the exploratory hole locations indicates reworked near surface soils marginally impacted with inert materials (brick fragments) with no visual or olfactory signs of contamination noted within the borehole log. Therefore, whilst the presence of elevated levels of contaminants cannot be excluded, at this time the risk is considered low, especially given that the excavation relating to the construction of the infiltration basin will involve the removal of the majority of the Made Ground layer.

However, as a precautionary approach, it is recommended that as part of the basin excavation, a watching brief is undertaken to include visual inspection specifically targeting unexpected visual or olfactory signs of contamination. If any unexpected signs are encountered, then works should be stopped and appropriate assessment undertaken.

Should you have any immediate comments of queries relating to the above, please do not hesitate to contact the undersigned.

Kind Regards,

For and on behalf of E3S Consulting Ltd,

Chris Barron BSc (Hons) MEnvSc CGeol FGS

7.4 Appendix D – Barry Holdsworth Ltd approval letter, Proposed Drainage Strategy, Contributing Area Plan & Exceedance Flow routes and Hydraulic Calculations, 'Using SuDS Close to the Building' document

Using SuDS close to buildings



In this fact sheet Steve Wilson summarises the role of the designer in overcoming any potential challenges related to using SuDS components that rely on infiltration close to buildings.

The author

Steve Wilson is a Chartered Civil Engineer with 30 years' experience of geotechnical engineering. He has a Masters Degree in geotechnical engineering and has wide experience of foundation design and construction. Steve provided advice to the former Commission for New Towns on subsidence and settlement issues with their housing stock in the south east and this often involved in the investigation and assessment of subsidence and heave caused by trees in clay soils (especially London Clay). He has extensive experience in the design and construction of infiltration drainage and has investigated many soakaway failures. He has also provided advice on settlement of foundations caused by water consolidation of loose sand infill to Chalk solution features.

Introduction

Permeable pavements are a widely used SuDS approach that can allow water to infiltrate into the ground. They allow source control to be included in dense developments. Similarly rain gardens are one of the simplest ways of retrofitting SuDS to existing buildings. However space constraints mean that both approaches often need to allow water to soak into the ground near to building foundations.

The Building Regulations state that "Infiltration devices should not be built within 5m of a building or road or in areas of unstable land". This is to prevent water that soaks into the

ground from adversely affecting soil properties and causing excessive movement of foundations. Complying with this guidance means that it often proves difficult for designers to locate permeable pavements, small basins and similar infiltration systems close to buildings and the benefits of allowing water to soak into the ground are lost (groundwater recharge, water availability to nearby trees, etc). Some SuDS methods such as rain gardens do not have to rely on infiltration to work, but will allow some water to soak into the ground if they are not lined. Similarly shallow tanks and permeable pavements may be designed as leaky or partial infiltration systems even on clayey soils.



Unlined rain garden close to building foundations (deliberately filled for research)

Many designers do not realise it is possible to override the crude rule of thumb in the Building Regulations with appropriate geotechnical assessment. In some instances

SuDS infiltration systems and unlined storage systems (such as rain gardens) can even be located immediately next to buildings. This is useful if disconnecting downpipes as it makes the process easier and less costly.

However, allowing water to soak into the ground close to foundations should always be done in consultation with a Geotechnical Adviser or Registered Ground Engineering Professional¹.

The “5m rule” in the Building Regulations was originally devised as a rule of thumb to be applied to traditional soakaways that are relatively deep in relation to foundations and concentrate runoff into a quite small area of ground. Many SuDS methods differ to the traditional soakaway in that they are shallow and act as a blanket or plane infiltration system. They keep infiltrating water spread out over a wider area, unlike traditional solutions. Also remember that in some areas of the UK a traditional soakaway at 5m may be too close to foundations, for example where solution features are present in Chalk (CIRIA 2002).

The Building Regulations – what is the objective of the 5m rule

In 2002, as part of a research project by CIRIA, advice was sought from the Department for Transport, Local Government and the Regions (DTLR) Building Regulations Division (now Communities and Local Government) regarding the statement in the Building Regulations that soakaways should be located at least 5m from buildings. They provided the following statement in relation to permeable pavements that allow dispersed infiltration and evaporation of rainwater:

“As pervious paving permits dispersed absorption of rainfall it should not create any problems with concentrated outflow of water gathered over an area but discharged at a single point as in the case of soakaways. If the paving is combined with a storage system the outlet must be at a sufficient distance to ensure that discharged water does not impair

the stability of any building. 5 metres is given as a guideline, if foundation details and geotechnical data are available to show that a shorter distance is safe then it can be used.”

It is clear that the “5m rule” was intended to be a guideline and that infiltration or unlined attenuation can be allowed closer to building foundations if it can be demonstrated that it is safe to do so.



Permeable pavement with infiltration close to house foundations

Further evidence that rainwater can be allowed to soak into the ground close to building foundations is given in a response to an appeal made by an applicant against the enforcement of Requirement H3 in the Building Regulations. The Department for Communities and Local Government considered the possible effects of rainwater in foundations and concluded that distributed rainwater soaking into the ground will reduce the risk of saturation and erosion (Appeal against refusal in respect of a 5 bay aircraft hangar port –DETR, 1998 Reference 45/3/125). As part of this assessment they also considered the risk of collapse without warning of the structure. Where there is the potential for this (eg where solution features could develop unnoticed below the surface) a rigorous geotechnical assessment would be required even a normal soakaway located 5m from a building.

Comparison of SuDS to traditional soakaways

Well-designed shallow SuDS that are at or close to the ground surface are quite different

from traditional soakaway drainage. They are designed on the principle of source control and the roof area draining to these SuDS features (or area of hardstanding) should not be that large compared to the infiltration area.

A traditional soakaway will typically drain between 30m² and 300m² of impermeable area to every 1m² area in the base of the soakaway (ie a ratio of between 30:1 and 300:1). SuDS features close to buildings should normally be designed with a ratio of impermeable area to base area of less than 10:1 and the depth of the stored water should not be greater than 300mm. Thus the flow of water from the base of the SuDS features is much less concentrated than in a normal soakaway.

A traditional soakaway will have a ratio at the higher end of scale where it drains a road or several houses. Therefore it is a concentrated point source of water in the ground and the height of these types of soakaways means that water also flows out sideways. As a result the risk of water affecting the soils under shallow foundations can be quite high if the soakaway is located close to buildings. Because infiltration from a plane feature is much more dispersed, has a shallow height and has a short retention time there is less potential for flow to occur laterally in any significant quantities.

It is possible to analyse water flow into the ground using computer programmes. This is known as numerical modelling. A model of water flow from a SuDS permeable pavement that was constructed close to foundations is shown in Figure 1. The water flows vertically (shown by the black arrows) and the velocity is low until it meets the groundwater table just below the foundations.

How can infiltrating water cause problems?

Freeman et al (2002) identified the most common causes of settlement or subsidence to buildings. Those that can be associated with infiltrating water are listed below:

- Erosion - soil can be washed by infiltrating water into open features such as broken pipes, gullies, joints, solution features or faults. Water flow through the ground on its own does not wash soil particles out – the particles need somewhere to go. SUDS will not cause erosion if there is nowhere to wash soil particles out to.

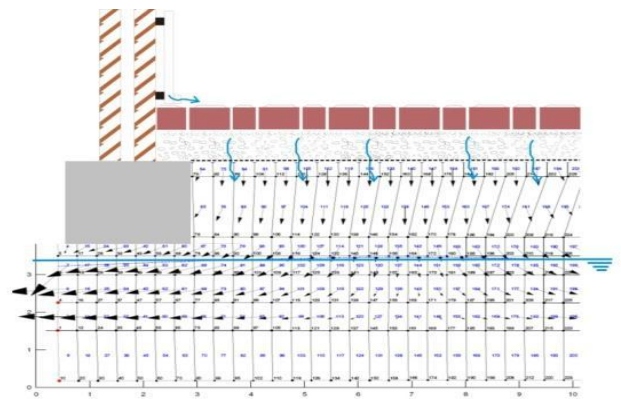


Figure 1 Numerical model of water flow from a SuDS permeable pavement

- Settlement of filled or loose ground by water flow (made ground or infill to solution featuresⁱⁱ). This is most likely in low density material with high void ratios. It is less likely to occur in well compacted or dense fill, especially where infiltrating water is spread out.
- Collapse of mine workings and natural cavities – this can be caused by infiltrating water.
- Soil softening - clays in particular that can be softened leading to reduced strength and increased settlement. The effects on slope stability may also need to be assessed if the foundations are close to the top of a slope. Softening of clay soils will occur if the moisture content increases. Clay has a very low permeability and in normal circumstances the softening caused by water does not extend to a great depth. For example this normally occurs for 200mm to 300mm or

so below the surface of clay with a perched water table above it.

Softening of clay soils next to broken drainage pipes has been reported. However in these cases the pipe has been located very close to the foundations and most of the runoff from every rainfall event from a large drained area (typically at least half of the roof of a house) has been collecting and standing in contact with the clay for a long period of time. This is different to shallow plane infiltration where the water is soaking into the ground at around 300mm to 400mm depth and the foundations are typically at least 1m below that. Most of the rainfall in a correctly designed plane infiltration or attenuation system will be held in the shallow surface soils or blocks and will evaporate. Thus there will be limited softening of clay at depth and it is not likely to affect the foundations.

- Variations in groundwater level – this relates to a loss of bearing capacity in granular soils where the groundwater level increases. Groundwater mounding (an increase in water level) can occur below soakaways. This rarely happens to any great degree under normal small soakaways and is even less likely to occur below shallow plane SuDS, again because of the dispersed nature of the water storage and the effects of evapotranspiration.
- Shrinkage and heave - clay soils that are desiccated (dried out) can heave when the moisture content is increased or the soils can be dried out by trees for example and cause subsidence. Heave is generally only a problem where trees are removed prior to construction of buildings.
- Swelling occurs when a clay soil has a suction in the soil pores that draws water into the soil and it increases in volume. Swelling only occurs in response to suction pressure, ie the clay must be dry and below its equilibrium moisture

content, or where soil overburden has been removed (eg heave in basement excavations). Clay at its natural equilibrium moisture content will not swell significantly. Heave is normally a major problem when trees have been removed from a site prior to constructing a building.

Thus water from small rain gardens or similar features will not cause swelling over and above that which occurs over the natural cycle. The water from shallow plane SuDS will actually reduce the soil moisture deficit caused by trees and potentially reduce the adverse effects. Where rain gardens are located in areas already affected by trees they may reverse some of the shrinkage that has occurred. This may cause some heave of the foundations, but again because of the dispersed nature of the water the effects will not be concentrated locally at one point. Instead any effect will be uniformly distributed over a wide area. This reduces the risk of cracks occurring in the building due to localised differential ground movement.

For adverse effects to occur as a result of water soaking into the ground, the foundations also need to be of a form that can be affected (for example piled foundations are likely to be far less susceptible to any adverse impacts of infiltrating water, if at all). Permeable paving that only collects and drains rainwater falling directly on it can be used against any building providing there is no point source of water from any other impermeable surfaces connected into it.

Conclusion

The “5m rule” in the Building Regulations is a guideline and many designers do not realise it is possible to override the crude rule of thumb when using shallow SuDS infiltration systems and unlined storage systems (such as rain gardens). The problems caused by large volumes of water from relatively deep point soakaways are not likely to occur with shallow

SuDS draining small areas and with appropriate design and assessment they can be located closer to buildings than 5m. This is useful if disconnecting downpipes as it makes the process easier and less costly.

References

DETR (1998). Requirement H3: Appeal against refusal in respect of a 5 bay aircraft hangar port (Ref: 45/3/125)

Freeman TJ, Driscoll RMC and Littlejohn GS (2002). Has your house got cracks? Second Edition. BRE and ICE, Thomas Telford Publishing, London.

Her Majesty's Government, (2010). The Building Regulations. Approved Document H. Drainage and waste disposal DTLR, London

CIRIA (2002). Engineering in Chalk, CIRIA Report C574.

ⁱⁱ A Geotechnical Adviser is defined by the Site Investigation Steering Group as a Chartered Engineer or Geologist with a minimum of 10 years post charter experience in geotechnical engineering (5 years acting as a geotechnical specialist).

The Register of Ground Engineering Professionals is administered by The Institution of Civil Engineers.

ⁱⁱ Solution features are common phenomena within Chalk areas. They are formed by dissolution of the Chalk as a result of chemical weathering, probably during the Quaternary period. This results in sinkholes in the chalk surface or pipes within the chalk mass. These features are often infilled with soft or loose materials. (For more information see CIRIA, 2002).

For further advice on designing SuDS schemes close to buildings please contact Steve Wilson, EPG Ltd on: 07971277869 or email stevewilson@epg-ltd.co.uk





Barry Holdsworth Ltd
Horticultural Consultancy

Mr Nikolas Antoniou
NJA Town Planning Ltd
The Beehive
City Place
Gatwick
RH6 0PA

19.11.2025

Reference: Drainage Strategy for new dwelling at Church Farm House, Church Lane, Yapton, BN18 0EP

Dear Nikolas

Thank you for forwarding the revised drainage strategy plans by CGS Civils in regard to the new dwelling at Church Farmhouse, Yapton. I have carefully analysed the route of the foul and rain water pipes and proposed swale in regard to the storm water. I am able to approve the strategy and plans, which will have a minimal impact on the trees found within the grounds of the site.

Please contact me if you wish to discuss this further.

Kind regards

Barry

Barry Holdsworth MBA, RHS. Dip, MCI Hort, M.Arbor.A, MCMI



Infiltration Basin
Designed to recorded infiltration rate of 2.19×10^{-5} m/s
Top of banking: 7.600-7.500
Inlet pipes 1500 IL: 6.900
Basin base level: 6.900
Max Water Level: 7.439
Depth 0.600m
A storage volume of 34.91 m^3 is provided to accommodate the Designed to 1 in 100-year storm event, including a 45% allowance for climate change and 10% urban creep.
Proposed Infiltration Basin calculations have been undertaken with infiltration allowed through the base only.
Final size and location to be confirmed at detail design stage.

Proposed Bio Retention Planter Unit 1
lined with impermeable geomembrane and designed with perforated pipe 1000
Dimensions: $1.000\text{m} \times 6.000\text{m} \times 0.400\text{m}$
Top of Bioretention: 7.600
Inlet pipe 1000 IL: 7.180
Out pipe 1000 IL: 7.150
Bioretention Base Level: 7.150
Depth 0.450m
Storage volume of 0.78 m^3 is provided to accommodate the 1-in-100-year storm event, including a 45% allowance for climate change and 10% urban creep.

Underground garden rainwater harvesting system tank.
Graf Platin Tank 3000 litre
 $2.450\text{m} \times 2.100\text{m} \times 1.050\text{m}$
CL: 7.600
IL of inlet: 7.120
IL of outlet: 7.040
BL 6.255
Subject to manufacturer details.
Final location and size subject to clients' requirements.

SA1 Infiltration Test
• 0.600m depth
• Slowest infiltration rate:
 2.19×10^{-5} m/s
INFORMATIVE
Additional infiltration testing is to be undertaken during the winter period to confirm the actual infiltration rate, which will be adopted at the detailed design stage

INFORMATIVE
ALL WORKS WITHIN ROOT PROTECTION ZONE TO BE CARRIED OUT BY HAND AND UNDER SUPERVISION OF ARBORICULTURAL CONSULTANT

Proposed Bio Retention Planter Unit 2
lined with impermeable geomembrane and designed with perforated pipe 1000
Dimensions: $13.0\text{m} \times 0.500\text{m}$
Top of Bioretention: 7.600
Inlet pipe 1000 IL: 7.100
Bioretention Base Level: 7.100
Depth 0.500m
Storage volume of 2.027 m^3 is provided to accommodate the 1-in-100-year storm event, including a 45% allowance for climate change and 10% urban creep.

Groundwater level monitoring GW1
Ground level: 7.500
Peak groundwater level: (1.65mBGL): 5.850

For continuation see drawing no: 102 Sheet 2

DRAINAGE LEGEND

EXISTING FEATURES

Ex FWD Existing foul water sewer/drain and manhole (as taken from Southern Water Asset Plan)

PROPOSED FEATURES

FWD Foul Drainage

Pipe crossing (thickening denotes pipe above)

SWD Surface Water Drainage

Pipe surrounded with tree protection membrane

Land Drainage 1000 perforated pipe

Rainwater pipe (final location tbc)

Storm water catchpit chamber (4500)

Storm water rodding eye

Proposed Bioretention planter unit with perforated 1000 pipe

Soil stack (final location tbc)

Foul water inspection chamber (4500)

Foul water access chamber (3000)

Finished floor level

Proposed surface level (shown indicatively only for drainage purposes)

BH1 Groundwater level monitoring location SA1 Infiltration Test location

Tree Protection Zone (as taken from Barry Holdsworth Ltd 'Tree Protection Plan' dated: 12.08.25)

ABBREVIATIONS

MH - MANHOLE

IC - INSPECTION CHAMBER

AC - ACCESS CHAMBER

CP - CATCHPIT

BC - BRAKE CHAMBER

RE - RODDING EYE

IL - INVERT LEVEL

SL - SUMP LEVEL

RA - RESTRICTED ACCESS COVER

CL - COVER LEVEL

TL - TOP OF CELLULAR SA

BL - BASE OF CELLULAR SA

FL - FORMATION LEVEL

VP - VENTILATION PIPE

SU - SUMP UNIT

DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL
WATER AUTHORITY

DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
LOCATION AND DEPTH OF EXISTING UTILITIES

Site Specific Notes

- Proposed drainage designed based on desktop study, groundwater level monitoring report and infiltration test results.
- Proposed infiltration basin designed to the worst case recorded infiltration rate of 2.19×10^{-5} m/s and to be located as far from the building as practicably possible.
- The infiltration system has been designed to cater the Critical 1 in 100 year + 45% climate change event + 10% for urban creep allowance.
- Final RWP's and SVP's locations are to be confirmed at detail design stage.
- The proposed foul water is to be discharged into the existing public foul water manhole located in Church Lane. This connection is to be agreed under S106 application with Southern Water.
- External levels to be designed by others.

STANDARD DRAINAGE NOTES

- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
- ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
- ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
- BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SPURS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
- ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT; THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER. IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
- COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
- ALL UN-REFERENCED PIPES ARE TO BE 100mm DIA
- ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 295 AND BS65 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911-PART 1.
- ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN 124, UNLESS OTHERWISE STATED.
- ALL ADOPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
- ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT PART-H, AND TO THE SATISFACTION OF THE BUILDING CONTROL INSPECTOR.
- THE CONTRACTOR IS TO KEEP A RECORD OF ANY VARIATIONS MADE ON SITE, INCLUDING THE RELOCATION OF SEWERS OR DRAINS, SO THAT AN AS CONSTRUCTED DRAWING CAN BE PREPARED UPON COMPLETION OF THE PROJECT.
- STUB CONNECTIONS TO ADOPTABLE MANHOLES SHALL BE MADE FROM VITRIFIED CLAY AND CONSIST OF TWO ROCKER PIPES LAID AT THE SAME GRADIENT AS THE UP OR DOWNSTREAM PIPE.
- IF ANY SUB SOIL DRAINAGE SYSTEMS ARE UNCOVERED DURING THE WORKS CONTACT THE ENGINEER FOR INSTRUCTIONS. SUB SOIL DRAINS ARE TO BE DIVERTED AROUND NEW WORKS AND CONNECTED INTO THE SURFACE WATER.
- NO PRIVATE AREAS ARE TO DRAIN ONTO ADOPTABLE AREAS AND VICE VERSA.
- ALL EXISTING MANHOLE COVERS, GULLIES, ETC. ARE TO BE RAISED/LOWERED TO SUIT NEW LEVELS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE LOCATION AND DEPTH OF ALL EXISTING SERVICES AND UTILITIES THAT MAY BE PRESENT.
- UPON COMPLETION BUT PRIOR TO HANDOVER, CONTRACTOR TO CARRY OUT FULL CCTV SURVEY OF DRAINAGE SYSTEM WHICH IS TO BE REVIEWED BY ENGINEER TO ENSURE SATISFACTORY INSTALLATION
- PROPRIETARY PRODUCTS TO BE INSTALLED IN FULL ACCORDANCE WITH MANUFACTURER'S GUIDANCE.
- MANHOLE AND CHAMBER COVER GRADES:
 - 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
 - 'B125' IN ALL DRIVEWAYS
 - 'C250' IN PRIVATE PARKING AREAS
 - 'D400' IN CARRIAGEWAY/ACCESS ROAD

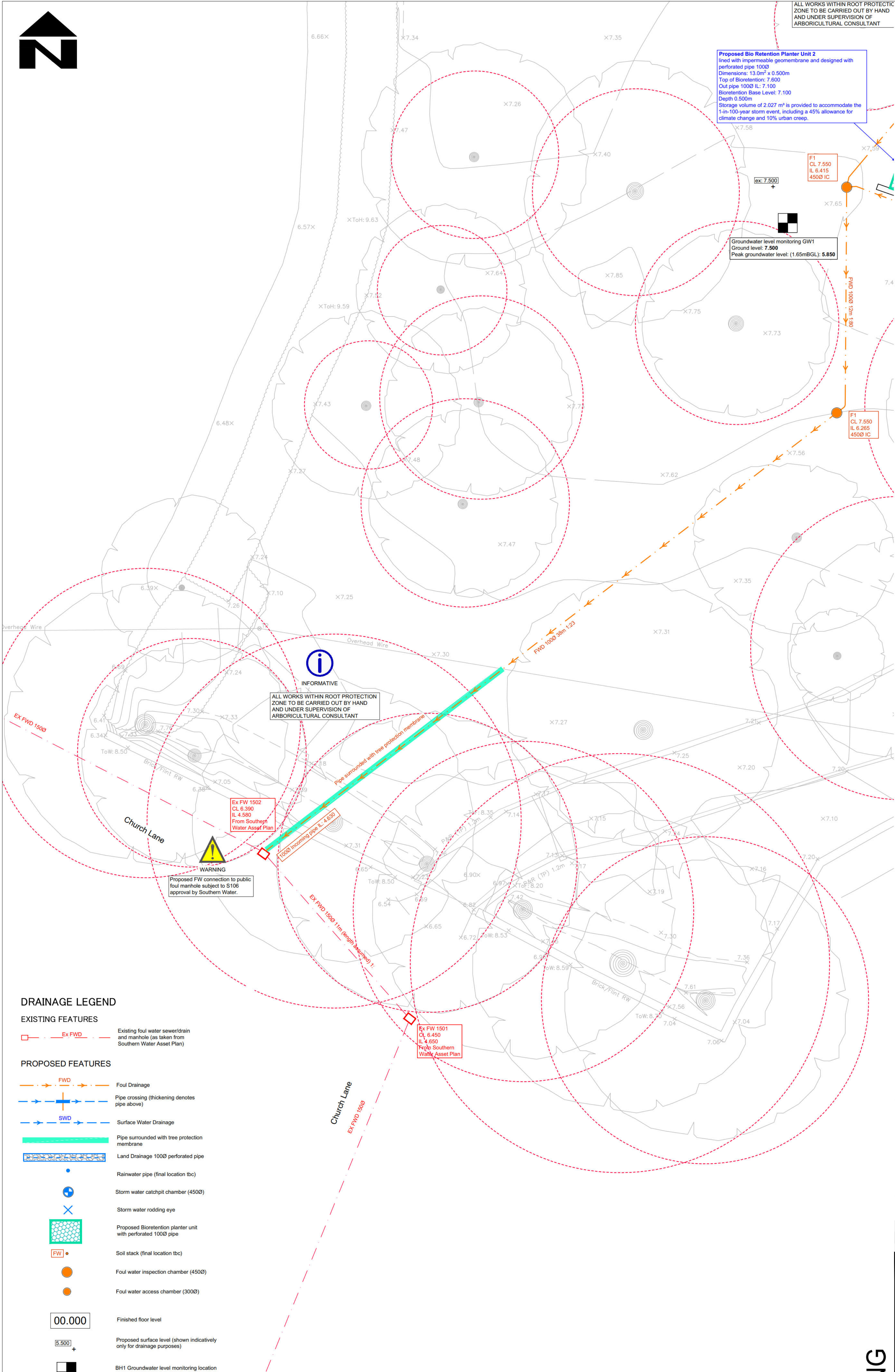
Prefixed to drawing numbers shall signify the following:-

PL = PLANNING	Shall not be used for contract or construction purposes
P = PRELIMINARY	Shall not be used for contract or construction purposes
T = TENDER	Shall not be used for construction purposes
C = CONSTRUCTION	These are the only drawings that shall be used for construction purposes
R = RECORD	Record of actual completed work

P1	19.11.25	UPDATED TO ADC COMMENTS	MR	CS	CS
P-	05.11.25	PRELIMINARY ISSUE	MR	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

 Consulting Civil Engineers					
CLIENT VICTORIA AND PETER NEWMAN					
ARCHITECT OOA LTD					
JOB TITLE CHURCH FARM HOUSE, YAPTON, BN18 0EP					
DRAWING TITLE PROPOSED DRAINAGE STRATEGY SHEET 1					
DRAWN	MR	ENGINEER	CS	CHECKED	CS
DATE	NOVEMBER 2025	SCALE @ A1	1:100	APPROVED	CS
JOB No.	C3267	STATUS	P	DRAWING No.	101
REV.					P1

FOR PLANNING



DRAINAGE LEGEND

EXISTING FEATURES

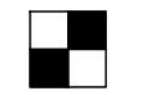
Ex FWD Existing foul water sewer/drain and manhole (as taken from Southern Water Asset Plan)

PROPOSED FEATURES

FWD Foul Drainage
Pipe crossing (thickening denotes pipe above)
SWD Surface Water Drainage
Pipe surrounded with tree protection membrane
Land Drainage 1000 perforated pipe
Rainwater pipe (final location tbc)
Storm water catchpit chamber (4500)
Storm water rodding eye
Proposed Bioretention planter unit with perforated 1000 pipe
Soil stack (final location tbc)
Foul water inspection chamber (4500)
Foul water access chamber (3000)

00.000

5.500



Proposed surface level (shown indicatively only for drainage purposes)

BH1 Groundwater level monitoring location
SA1 Infiltration Test location

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- Proposed infiltration basin designed to the worst case recorded infiltration rate of 2.19×10^{-3} m/s and to be located as far from the building as practicably possible.
- The infiltration system has been designed to cater the Critical 1 in 100 year + 45% climate change event + 10% for urban creep allowance.
- Final RWP's and SVP's locations are to be confirmed at detail design stage.
- The proposed foul water is to be discharged into the existing public foul water manhole located in Church Lane. This connection is to be agreed under S106 application with Southern Water
- External levels to be designed by others.

ALL WORKS WITHIN ROOT PROTECTIVE ZONE TO BE CARRIED OUT BY HAND AND UNDER SUPERVISION OF ARBORICULTURAL CONSULTANT

Proposed Bio Retention Planter Unit 2
lined with impermeable geomembrane and designed with perforated pipe 1000
Dimensions: 13.0m² x 0.500m
Top of Bioretention: 7.600
Out pipe 1000 IL: 7.100
Bioretention Base Level: 7.100
Depth 0.500m
Storage volume of 2.027 m³ is provided to accommodate the 1-in-100-year storm event, including a 45% allowance for climate change and 10% urban creep.

Groundwater level monitoring GW1
Ground level: 7.500
Peak groundwater level: (1.65mBGL): 5.850

F1
CL 7.550
IL 6.415
4500 IC

F1
CL 7.550
IL 6.265
4500 IC

INFORMATIVE
ALL WORKS WITHIN ROOT PROTECTION ZONE TO BE CARRIED OUT BY HAND AND UNDER SUPERVISION OF ARBORICULTURAL CONSULTANT

WARNING
Proposed FW connection to public foul manhole subject to S106 approval by Southern Water.

STANDARD DRAINAGE NOTES

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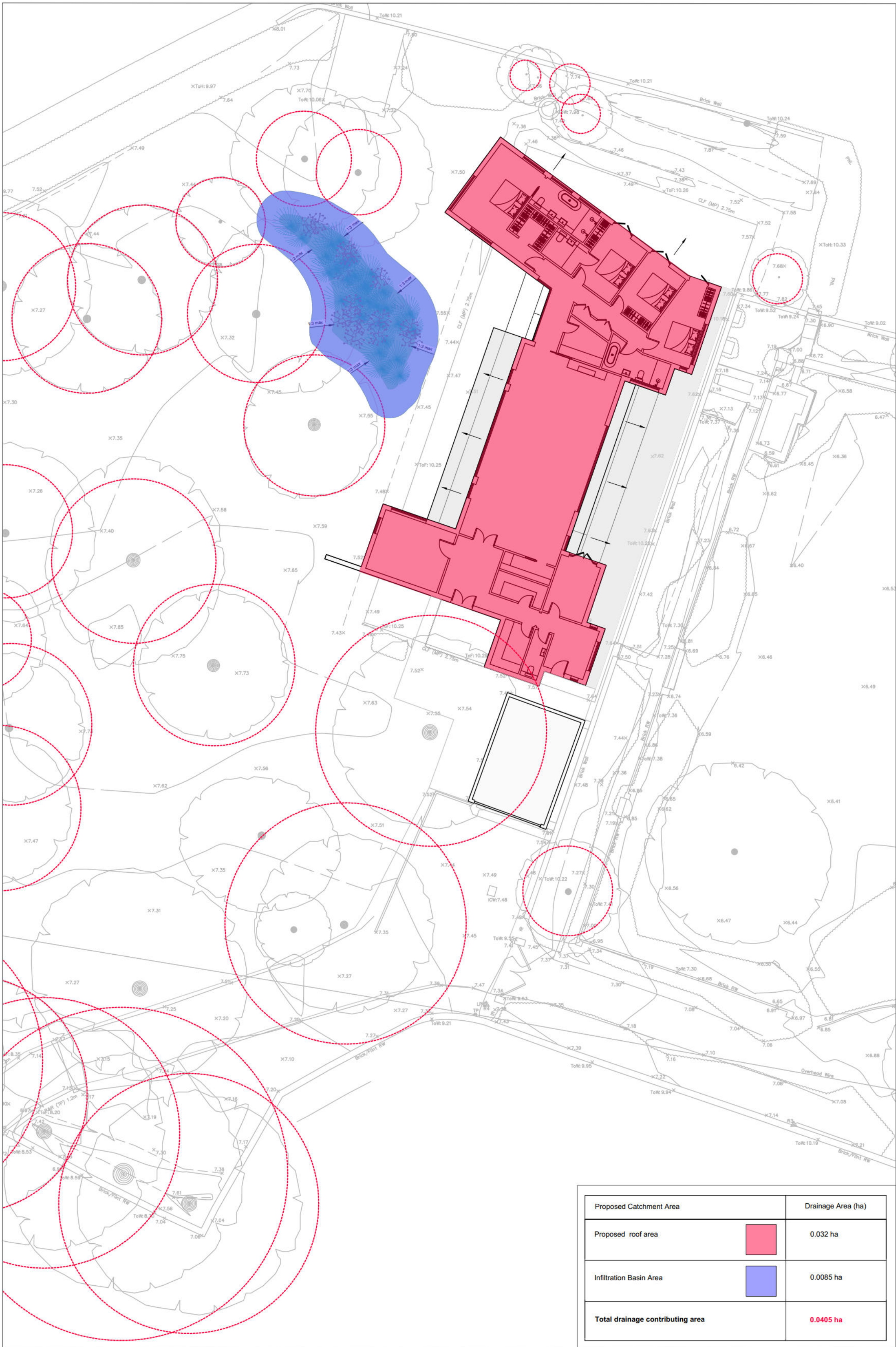
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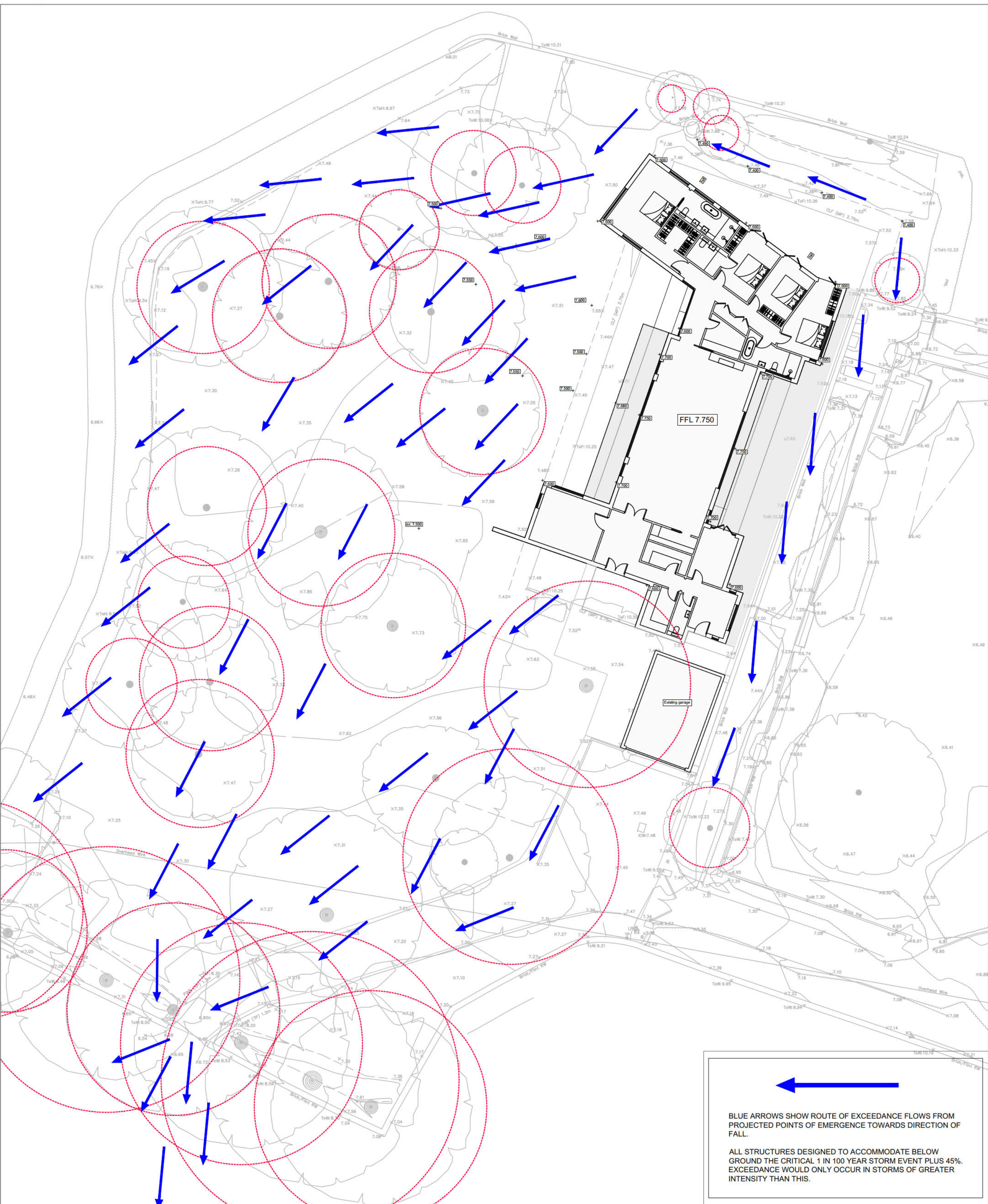
P1	19.11.25	UPDATED TO ADC COMMENTS	MR	CS	CS
P.	05.11.25	PRELIMINARY ISSUE	MR	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

CLIENT	VICTORIA AND PETER NEWMAN						
ARCHITECT	OOA LTD						
JOB TITLE	CHURCH FARM HOUSE, YAPTON, BN18 0EP						
DRAWING TITLE	PROPOSED DRAINAGE STRATEGY SHEET 2						
DRAWN	MR	ENGINEER	CS	CHECKED	CS	APPROVED	CS
DATE	NOVEMBER 2025		SCALE @ A1	1:100			
JOB NO.	C3267	STATUS	P	DRAWING NO.	101	REV.	P1

FOR PLANNING



CONTRIBUTING AREA PLAN (scale 1:200)



EXCEEDANCE FLOW ROUTES (scale 1:200)

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 Consulting Civil Engineers					
CLIENT VICTORIA AND PETER NEWMAN					
ARCHITECT OOA LTD					
JOB TITLE CHURCH FARM HOUSE, YAPTON, BN18 OEP					
DRAWING TITLE CONTRIBUTING AREA PLAN & EXCEEDANCE FLOW ROUTES					
DRAWN MR	ENGINEER CS	CHECKED CS	APPROVED CS		
DATE NOVEMBER 2025		SCALE @ A1 1:200			
JOB No. C3267	STATUS P	DRAWING No. 201	REV. P1		

FOR PLANNING ONLY

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	75.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
Infiltration Basin	0.008		7.500	450	10435.933	8493.074	0.600
B Planter 1	0.008	4.00	7.600	150	10440.850	8502.941	0.450
S1	0.008	4.00	7.600	450	10438.389	8500.204	0.460
B Planter 2	0.016	4.00	7.600	450	10435.473	8480.296	0.500
1			7.600	450	10438.850	8492.878	0.650
RE1		4.00	7.650	150	10443.785	8506.257	0.450
S2			7.600	450	10435.658	8482.672	0.570

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.001	B Planter 1	S1	1.000	0.600	7.150	7.140	0.010	100.0	100	4.04	57.3
2.002	S1	1	3.000	0.600	7.140	6.950	0.190	15.8	100	4.06	57.3
1.002	1	Infiltration Basin	1.000	0.600	6.950	6.900	0.050	20.0	100	4.14	57.3
2.000	RE1	B Planter 1	1.000	0.600	7.200	7.180	0.020	50.0	100	4.02	57.3
1.000	B Planter 2	S2	2.384	0.600	7.100	7.030	0.070	34.1	100	4.03	57.3
1.001	S2	1	5.700	0.600	7.030	6.950	0.080	71.3	100	4.13	57.3

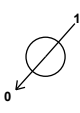
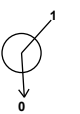
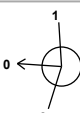
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.001	0.769	6.0	1.7	0.350	0.360	0.008	0.0	36	0.653
2.002	1.953	15.3	3.3	0.360	0.550	0.016	0.0	32	1.562
1.002	1.734	13.6	6.6	0.550	0.500	0.032	0.0	49	1.717
2.000	1.092	8.6	0.0	0.350	0.320	0.000	0.0	0	0.000
1.000	1.326	10.4	3.3	0.400	0.470	0.016	0.0	39	1.177
1.001	0.913	7.2	3.3	0.470	0.550	0.016	0.0	48	0.897

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.001	1.000	100.0	100	Circular	7.600	7.150	0.350	7.600	7.140	0.360
2.002	3.000	15.8	100	Circular	7.600	7.140	0.360	7.600	6.950	0.550
1.002	1.000	20.0	100	Circular	7.600	6.950	0.550	7.500	6.900	0.500
2.000	1.000	50.0	100	Circular	7.650	7.200	0.350	7.600	7.180	0.320
1.000	2.384	34.1	100	Circular	7.600	7.100	0.400	7.600	7.030	0.470
1.001	5.700	71.3	100	Circular	7.600	7.030	0.470	7.600	6.950	0.550

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.001	B Planter 1	150	Manhole	Adoptable	S1	450	Manhole	Adoptable
2.002	S1	450	Manhole	Adoptable	1	450	Manhole	Adoptable
1.002	1	450	Manhole	Adoptable	Infiltration Basin	450	Manhole	Adoptable
2.000	RE1	150	Manhole	Adoptable	B Planter 1	150	Manhole	Adoptable
1.000	B Planter 2	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.001	S2	450	Manhole	Adoptable	1	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Infiltration Basin	10435.933	8493.074	7.500	0.600	450	 1	1.002	6.900	100
B Planter 1	10440.850	8502.941	7.600	0.450	150	 1	2.000	7.180	100
						0	2.001	7.150	100
S1	10438.389	8500.204	7.600	0.460	450	 1	2.001	7.140	100
						0	2.002	7.140	100
B Planter 2	10435.473	8480.296	7.600	0.500	450	 0	1.000	7.100	100
1	10438.850	8492.878	7.600	0.650	450	 1	2.002	6.950	100
						2	1.001	6.950	100
						0	1.002	6.950	100
RE1	10443.785	8506.257	7.650	0.450	150	 0	2.000	7.200	100
S2	10435.658	8482.672	7.600	0.570	450	 1	1.000	7.030	100
						0	1.001	7.030	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
10	0	0	0
30	0	0	0
30	45	0	0
100	45	10	0

Node Infiltration Basin Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07920	Safety Factor	3.0	Invert Level (m)	6.900
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	430

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	43.0	43.0	0.200	58.1	58.1	0.400	75.4	75.4	0.600	95.0	95.0
0.100	50.3	50.3	0.300	66.5	66.5	0.500	84.9	84.9			

Node B Planter 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	7.150
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	6

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	6.1	0.0	0.200	6.1	0.0	0.400	6.1	0.0
0.100	6.1	0.0	0.300	6.1	0.0	0.450	6.1	0.0

Node B Planter 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	7.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	8

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	13.0	0.0	0.200	13.0	0.0	0.400	13.0	0.0
0.100	13.0	0.0	0.300	13.0	0.0	0.500	13.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	Infiltration Basin	164	7.000	0.100	2.9	4.6779	0.0000	OK
15 minute summer	B Planter 1	10	7.182	0.032	1.1	0.0583	0.0000	OK
15 minute summer	S1	10	7.166	0.026	2.2	0.0041	0.0000	OK
15 minute summer	B Planter 2	10	7.134	0.034	2.2	0.1369	0.0000	OK
15 minute summer	1	9	7.007	0.057	4.3	0.0090	0.0000	OK
15 minute summer	RE1	1	7.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	10	7.068	0.038	2.1	0.0061	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
180 minute winter	Infiltration Basin	Infiltration		0.3			
15 minute summer	B Planter 1	2.001	S1	1.1	0.591	0.180	0.0018
15 minute summer	S1	2.002	1	2.2	0.742	0.142	0.0091
15 minute summer	B Planter 2	1.000	S2	2.1	0.842	0.205	0.0061
15 minute summer	1	1.002	Infiltration Basin	4.3	1.609	0.317	0.0028
15 minute summer	RE1	2.000	B Planter 1	0.0	0.000	0.000	0.0000
15 minute summer	S2	1.001	1	2.1	0.621	0.291	0.0204

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Infiltration Basin	360	7.133	0.233	3.5	12.0860	0.0000	OK
15 minute summer	B Planter 1	10	7.209	0.059	3.2	0.1096	0.0000	OK
15 minute summer	S1	10	7.192	0.052	6.3	0.0082	0.0000	OK
15 minute summer	B Planter 2	11	7.176	0.076	6.5	0.3090	0.0000	OK
360 minute summer	1	360	7.133	0.183	2.5	0.0291	0.0000	SURCHARGED
15 minute summer	RE1	10	7.207	0.007	0.1	0.0001	0.0000	OK
15 minute summer	S2	11	7.150	0.120	5.9	0.0191	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute summer	Infiltration Basin	Infiltration		0.3			
15 minute summer	B Planter 1	2.001	S1	3.1	0.732	0.509	0.0045
15 minute summer	S1	2.002	1	6.2	0.920	0.407	0.0178
15 minute summer	B Planter 2	1.000	S2	5.9	0.979	0.569	0.0169
360 minute summer	1	1.002	Infiltration Basin	3.1	0.943	0.228	0.0078
15 minute summer	RE1	2.000	B Planter 1	-0.1	0.153	-0.010	0.0011
15 minute summer	S2	1.001	1	5.7	0.734	0.801	0.0446

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.20%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	Infiltration Basin	360	7.197	0.297	3.9	16.1957	0.0000	OK
15 minute summer	B Planter 1	10	7.227	0.077	4.2	0.1420	0.0000	OK
15 minute summer	S1	10	7.210	0.070	8.1	0.0111	0.0000	OK
15 minute summer	B Planter 2	11	7.245	0.145	8.4	0.5876	0.0000	SURCHARGED
360 minute summer	1	360	7.198	0.248	3.2	0.0394	0.0000	SURCHARGED
15 minute summer	RE1	10	7.227	0.027	0.3	0.0005	0.0000	OK
15 minute summer	S2	11	7.202	0.172	6.1	0.0274	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute summer	Infiltration Basin	Infiltration		0.3			
15 minute summer	B Planter 1	2.001	S1	3.9	0.701	0.644	0.0062
15 minute summer	S1	2.002	1	8.0	1.076	0.520	0.0205
15 minute summer	B Planter 2	1.000	S2	6.1	1.002	0.590	0.0187
360 minute summer	1	1.002	Infiltration Basin	3.1	0.943	0.226	0.0078
15 minute summer	RE1	2.000	B Planter 1	-0.3	0.213	-0.034	0.0026
15 minute summer	S2	1.001	1	6.1	0.784	0.856	0.0446

Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 98.38%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	Infiltration Basin	585	7.307	0.407	2.5	24.0385	0.0000	OK
15 minute summer	B Planter 1	11	7.328	0.178	6.1	0.3291	0.0000	FLOOD RISK
15 minute summer	S1	11	7.315	0.175	10.1	0.0278	0.0000	FLOOD RISK
15 minute summer	B Planter 2	12	7.396	0.296	12.2	1.2026	0.0000	FLOOD RISK
600 minute winter	1	585	7.308	0.358	1.9	0.0568	0.0000	FLOOD RISK
15 minute summer	RE1	11	7.328	0.128	0.8	0.0023	0.0000	SURCHARGED
15 minute summer	S2	12	7.336	0.306	7.8	0.0486	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
600 minute winter	Infiltration Basin	Infiltration		0.3			
15 minute summer	B Planter 1	2.001	S1	4.5	0.690	0.753	0.0078
15 minute summer	S1	2.002	1	9.4	1.198	0.611	0.0235
15 minute summer	B Planter 2	1.000	S2	7.8	1.001	0.752	0.0187
600 minute winter	1	1.002	Infiltration Basin	2.0	0.913	0.146	0.0078
15 minute summer	RE1	2.000	B Planter 1	0.8	0.255	0.098	0.0078
15 minute summer	S2	1.001	1	7.4	0.945	1.031	0.0446

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 97.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	Infiltration Basin	720	7.439	0.539	3.9	34.9136	0.0000	OK
15 minute summer	B Planter 1	12	7.504	0.354	8.4	0.6544	0.0000	FLOOD RISK
15 minute summer	S1	12	7.482	0.342	12.6	0.0544	0.0000	FLOOD RISK
15 minute summer	B Planter 2	12	7.597	0.497	16.8	2.0183	0.0000	FLOOD RISK
720 minute summer	1	720	7.439	0.489	3.0	0.0778	0.0000	FLOOD RISK
15 minute summer	RE1	12	7.504	0.304	1.6	0.0055	0.0000	FLOOD RISK
30 minute summer	S2	20	7.512	0.482	9.0	0.0767	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
720 minute summer	Infiltration Basin	Infiltration		0.3			
15 minute summer	B Planter 1	2.001	S1	5.6	0.712	0.923	0.0078
15 minute summer	S1	2.002	1	11.3	1.440	0.734	0.0235
15 minute summer	B Planter 2	1.000	S2	9.6	1.223	0.919	0.0187
720 minute summer	1	1.002	Infiltration Basin	3.0	0.919	0.220	0.0078
15 minute summer	RE1	2.000	B Planter 1	-1.6	-0.288	-0.190	0.0078
30 minute summer	S2	1.001	1	8.4	1.079	1.177	0.0446

7.5 **Appendix E – SuDS Maintenance and Management Plan**

SuDS Maintenance and Management Plan

Church Farm House, Church Lane, Yapton BN18 0EP

Planning Ref: Y/48/25/PL

For

Victoria and Peter Newman

Rev – P1

Reference **C3267**

Date **05th November 2025**

Revision	Date of Issue	Comments	Prepared By	Checked By
P	05/11/2025	Initial Issue	MR	CS
P1	21/11/2025	Updated to ADC comments	MR	CS

Maintenance

1.1 Introduction

- 1.1.1 During construction, the Contractor will be responsible for maintaining the drainage and SuDS (Sustainable Drainage Systems). Upon handover, the occupier will take on the responsibility of these duties as laid out in this report.
- 1.1.2 The maintenance schedule for the proposed development will be split down into two separate categories; SuDS features and regular private drainage.

1.2 SuDS at Church Farm House, Church Lane, Yapton

- 1.2.1 As listed above, in section 5.1.2, the SuDS features used on site will be **Rainwater Harvesting Tank, Bioretention Planter and Infiltration Basin**.
- 1.2.2 The SuDS features have been designed for easy maintenance and comprise:
- Regular Day-to-Day care – litter collection, regular gardening to control vegetation growth and checking inlets where water enters the SuDS features
 - Occasional tasks – checking the SuDS features and removing any silt that builds up in the SuDS feature
 - Remedial work – repairing damage where necessary

1.3 SuDS Drainage Maintenance Specification

1.3.1 Rainwater Harvesting Tank

In order to maintain the functioning of the rainwater harvesting tanks, the following maintenance requirements should be adhered to:

Operation and maintenance requirements for rainwater harvesting tanks		
Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Ensure that all inlets and outlets are clear of debris and blockage	Weekly
	Remove debris inlets and outlets	Weekly
	Inspect first flush diverter to ensure it is working correctly and not clogged	Weekly – Clean if necessary
	Clean Filter screens	Monthly – Replace if damaged
	Inspect the tank for sediment build-up and any signs of algae	Monthly
	Inspect roof and gutters and clear of all debris	Every 3 months
	Inspect pump for any signs of wear or damage and test to ensure it is functioning correctly	Every 3 months
	Check bottom of the tank for sediment build-up and clear if necessary	Every 6 months
	Ensure all downpipes are clear and functioning correctly and clear if necessary	Every 6 months
	Test water	Every 6 months
	Thorough tank cleaning – drain tank, scrub interior and rinse	Annually or as required
	Service the pump and filtration system and replace any worn parts	Annually
	Inspect overflow to ensure it is working correctly and clear any obstructions	Annually
	Monitor Water levels	Annually
Monitoring	Inspect for pests e.g mosquitoes and take measures to prevent	As required

1.3.2 Bio retention systems

In order to maintain the functioning of the bio retention systems, the following maintenance requirements should be adhered to:

Table 18.3 Operation and maintenance requirements for bio retention systems

Maintenance Schedule	Required Action	Typical Frequency
Regular Inspections	Inspection infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockages	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

1.3.3 Infiltration Basin

In order to maintain the functioning of the Infiltration Basin, the following maintenance requirements should be adhered to:

Table 21.3 Operation and maintenance requirements for Infiltration Basins

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter, debris, and trash	Monthly
	Cut the grass – for landscaped areas	Monthly (during growing season) or as required
	Cut the meadow grass in and around basin	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetations and remove nuisance plants (for the first 3 years)	Monthly (at start, then as required)
Occasional maintenance	Reseed areas of poor vegetation growth	Annually, or as required
	Prune and trim trees and remove cuttings	As required
	Remove sediment from pre-treatment system when 50% full	As required
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realign the rip-rap	As required
	Repair / rehabilitate inlets, outlets and overflows	As required
	Rehabilitate infiltration surface using scarifying and spiking techniques if performance deteriorates	As required
	Relevel uneven surface and reinstate design levels	As required
Monitoring	Inspect inlets, outlets and overflows for blockages and clean if required	Monthly
	Inspect banksides, structure, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and pre-treatment systems for silt accumulation; establish appropriate silt removal frequencies	Half Yearly
	Inspect infiltration surface for compaction and ponding	Monthly

1.4 General Drainage Maintenance Specification

1.4.1 Inlet Structures and Inspection Chambers

- Inlet structures such as rainwater downpipes, road gullies and channel drains should be free from obstruction at all times to allow free flow through the SuDS
- Inspection Chambers and Rodding Eyes are used on bends or where pipes come together. They allow access and cleaning to the system if necessary.

Inlet Structures and Inspection Chambers	
Regular Maintenance	Frequency
Inlet Structures Inspect rainwater downpipes, channel drains and road gullies, removing obstructions and silt as necessary. Check that there is no physical damage. Trim vegetation 1m min surround to structures and keep area free from silt and debris	Monthly
Inspection Chambers and below ground control chambers. Remove cover and inspect, ensuring that the water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in Autumn	Annually
Occasional Maintenance Check topsoil levels are 20mm above edges of chambers to avoid mower damage.	As necessary
Remedial Work Repair physical damage if necessary	As required

1.4.2 Below ground drainage pipes

- Below ground drainage pipes convey water to the SuDS system. They should always be free from obstruction to allow free flow.

Below Ground Drainage Pipes	
Regular Maintenance	Frequency
Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months then annually
Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
Remove sediment from pre-treatment inlet structures and inspection chambers.	Annually or as required
Maintain vegetation to designed limits within the vicinity of below ground drainage pipes and tanks.	Monthly or as required
Remedial Work	
Repair physical damage if necessary	As required
Monitoring	
Inspect all inlets, outlets and vents to ensure that they are in good conditions and operating as designed.	Annually
Survey inside of pipe runs for sediment build up and remove if necessary.	Every 5 years or as required

Management

2.1 Introduction

- 2.1.1 This SuDS Management Plan sets out the long-term management arrangements for the Sustainable Drainage Systems serving the development at Church Farm House, Church Lane, Yapton.
- 2.1.2 It defines responsibilities for the construction phase, post-construction operation, inspection oversight, record keeping and long-term governance to ensure the SuDS perform as designed for the lifetime of the development.

2.2 Management Responsibilities

- 2.2.1 During construction, the Contractor will be responsible for:
- Implementing temporary pollution and silt-control measures;
 - Protecting SuDS components from compaction or contamination;
 - Ensuring correct installation of all drainage elements;
 - Carrying out inspections to confirm SuDS are not obstructed or damaged;
 - Rectifying any defects before handover.

2.3 Operational Phase Management

- 2.3.1 Following completion and handover, the property owner/occupier will be responsible for:
- Long-term oversight of all SuDS elements;
 - Ensuring maintenance tasks are carried out in accordance with the maintenance plan;
 - Ensuring the system remains free-flowing and unobstructed;
 - Appointing suitably qualified contractors where specialist work is required.

2.4 Inspection Management

- 2.4.1 The occupier must ensure SuDS features are inspected at the intervals set out in the maintenance plan. Inspection management includes:
- Scheduling inspections for all SuDS components;
 - Reviewing the condition of inlets, outlets, basins, tanks, vegetation and pipework;
 - Identifying defects early to prevent performance loss;
 - Ensuring remedial works are undertaken promptly.
- 2.4.2 A full annual inspection should be completed to review overall system performance and confirm that all SuDS components continue to function as intended.

2.5 Access and Safety Management

- All SuDS components must remain accessible for inspection and maintenance.
- No landscaping or development should obstruct access to chambers, inlets, outlets, the infiltration basin or other SuDS structures.
- Any modifications that may affect access or performance must not be undertaken without professional review.

2.6 Performance Management

2.6.1 To ensure continued effectiveness:

- System performance will be reviewed annually, including hydraulic behaviour, overflow routes, vegetation condition and infiltration rates (where relevant).
- Any signs of deterioration, reduced infiltration, erosion, blockages or damage must be addressed immediately.
- SuDS features must not be altered, filled, paved over or removed without appropriate technical assessment.

2.7 Review and Updating of the Management Plan

2.7.1 This Management Plan must be reviewed:

- Annually, to ensure it remains appropriate;
- After major storms, if performance issues arise;
- Whenever drainage modifications or landscape changes are proposed.