



The Old Piggery, Fryern Road Storrington, West Sussex, RH20 4BJ

Detailed Drainage Strategy

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Executive Summary

This Detailed Drainage Strategy has been prepared by Arbtech Consulting Ltd in support of the discharge of Planning Condition 3 attached to permission DC/26/0357, granted by Horsham District Council on 1 May 2026 for the conversion, change of use, alteration and extension of an existing building to form one detached self-build dwelling at Land North of West Wantley Barn, Fryern Road, Storrington, West Sussex.

The site lies in Flood Zone 1 and matters of fluvial, tidal, surface water and groundwater flood risk to the site are not the subject of this report. This Detailed Drainage Strategy addresses the detailed design of the surface water and foul drainage systems for the proposed development and demonstrates compliance with the National Planning Policy Framework (December 2024), the Planning Practice Guidance on Flood Risk and Coastal Change, the non-statutory technical standards for sustainable drainage systems, CIRIA C753 The SuDS Manual, the West Sussex County Council Lead Local Flood Authority policy for the management of surface water, and Approved Document H of the Building Regulations.

BRE Digest 365 infiltration testing was undertaken on site on 25 June 2026 by PT (West Midlands) Ltd. Two trial pits were excavated and neither achieved the 75%-25% effective depth fall within the observation period; Trial Pit A recorded no measurable fall over 273 minutes and Trial Pit B a total fall of 40 mm over 288 minutes, after which infiltration ceased entirely. Testing was abandoned and no infiltration coefficient could be derived. Infiltration drainage is conclusively ruled out at this site, consistent with the Weald Clay Formation bedrock. Full results are appended at Appendix C.

Application of the drainage hierarchy confirms that discharge to an ordinary watercourse is the appropriate disposal route. An ordinary watercourse runs approximately 2 m beyond the eastern site boundary. Surface water from a positively drained catchment of 432 m², comprising the dwelling roof and the block paved driveway and parking area, is attenuated within a fully tanked permeable pavement construction providing 36.34 m³ of storage and discharged to the watercourse at a peak rate of 0.9 l/s through a 24 mm orifice housed in an SEL Controflow 300 Series level invert flow control chamber. Storage has been designed for all events up to and including the 1% AEP event with a 45% climate change allowance, and no flooding is predicted in any modelled event.

The proposed peak discharge of 0.9 l/s is equal to the calculated greenfield 1% AEP rate for the contributing catchment. The existing site, comprising a redundant agricultural building and a crushed hardcore yard, currently discharges uncontrolled to the same watercourse; the proposal therefore represents a clear betterment in both peak rate and volume of discharge.

There is no public foul sewer within 30 m of any site boundary and connection is not reasonably available. Foul drainage will be treated by a Marsh Shallow Ensign:Ultra 10 PE package sewage treatment plant certified to BS EN 12566-3, sized in accordance with British Water Flows and Loads for a design occupancy of six persons, with treated effluent discharged to the same watercourse at a separate outfall, registered with the Environment Agency under the General Binding Rules for small sewage discharges to surface water.

Subject to the strategy set out in this report and shown on the accompanying drawings, the proposed development at The Old Piggery satisfies the requirements of Planning Condition 3 of permission DC/26/0357 and Policy 38 of the Horsham District Planning Framework (2015). The strategy discharges safely and sustainably without increasing flood risk on or off site over the design lifetime of the development.

1.0 Introduction

1.1 This Detailed Drainage Strategy (DDS) has been commissioned by the applicant to discharge Planning Condition 3 of permission DC/26/0357, granted by Horsham District Council (HDC) on 1 May 2026 for the conversion, change of use and alterations and extensions to an existing building to form one detached self-build dwelling and associated works at Land North of West Wantley Barn, Fryern Road, Storrington, West Sussex, known as The Old Piggery, RH20 4BJ (Arbtech reference 44028094).

1.2 Condition 3 states: “No development shall commence until a drainage strategy detailing the proposed means of foul and surface water disposal has been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the approved scheme.” The stated reason is that the matter is fundamental to ensure that the development is properly drained and to comply with Policy 38 of the Horsham District Planning Framework (2015).

1.3 This DDS has been prepared in accordance with the National Planning Policy Framework (NPPF, December 2024), the Planning Practice Guidance on Flood Risk and Coastal Change, the non-statutory technical standards for sustainable drainage systems (Defra, 2015), CIRIA C753 The SuDS Manual, Environment Agency guidance SC030219 Rainfall Runoff Management for Developments, BS 8582:2013, the West Sussex County Council Lead Local Flood Authority Policy for the Management of Surface Water, and Approved Document H of the Building Regulations.

1.4 The purpose of this report is to satisfy the requirements of Planning Condition 3 and to demonstrate that the proposed surface water and foul drainage systems are designed in accordance with the drainage hierarchy, sustainable drainage principles, applicable British Standards and the requirements of the Building Regulations.

1.5 The assessment is based on the following information:

- ⇒ Horsham District Council Decision Notice DC/26/0357, dated 1 May 2026
- ⇒ Topographical survey by The Survey House Ltd, drawing 2026-2668-001, dated 2 June 2026, with levels referenced to Ordnance Datum Newlyn (Appendix I)
- ⇒ Approved planning drawings by Manorwood Construction Ltd, series 2509OL_R4, dated 23 February 2026
- ⇒ BRE Digest 365 soakaway assessment by PT (West Midlands) Ltd, project PT1791, dated 25 June 2026 (Appendix C)
- ⇒ Southern Water Wastewater Asset Plan, reference 2117751, data updated 17 April 2026 (Appendix F)
- ⇒ HR Wallingford UK SuDS Greenfield Runoff Rate Estimation Tool v2.2.3 (Appendix D) and Causeway Flow+ v15.0 storm network simulation (Appendix E)
- ⇒ British Geological Survey 1:50,000 geological mapping (DiGMapGB) for bedrock and superficial deposits
- ⇒ Marsh Industries Ensign range technical specification and installation manual (Appendix G)
- ⇒ Althon Limited AH4C A angled headwall product specification (Appendix H)

1.6 All comments and opinions are based on the information available at the time of writing. No liability is accepted if the information is found to be inaccurate, incomplete or misleading.

1.7 This report has been prepared for the benefit of the applicant, Horsham District Council and West Sussex County Council in their capacity as Lead Local Flood Authority. Third parties should not use or rely upon the contents without written approval from Arbtech Consulting Ltd.

2.0 Site Description

Site Location and Surroundings

2.1 The application site is located on the eastern side of Fryern Road, approximately 1 km north of Storrington, West Sussex (approximate OS BNG centroid 508937/115610). The site falls within the administrative area of Horsham District Council, with West Sussex County Council acting as the Lead Local Flood Authority and Southern Water as the sewerage undertaker. The application area is approximately 1,970 m² and comprises a redundant agricultural building — the former piggery — set within a curtilage surfaced in crushed hardcore, with grass and scrub beyond.

2.2 The approved development comprises the conversion, alteration and extension of the existing building to form a single three-bedroom, six-person detached self-build dwelling with a footprint of 215.91 m² and a gross internal area of 194.10 m². The proposed external works comprise a block paved driveway and parking area, an Indian sandstone patio, and soft landscaping with native hedging and tree planting. The finished floor level of the dwelling is set at 30.825 m AOD, providing not less than 150 mm of freeboard above the adjacent external ground level and above the cover level of the lowest external inspection chamber.

Topography

2.3 The topographical survey records site levels generally in the range 30.20 to 30.90 m AOD, falling gently from west to east towards the watercourse on the eastern boundary. Ground level in the vicinity of the proposed dwelling and driveway is approximately 30.57 m AOD. The total fall across the developed part of the site is modest, at approximately 0.4 m, and the vertical relationship between the proposed drainage system and the receiving watercourse has been a governing consideration in the design set out in Sections 6 and 7.

Geology

2.4 British Geological Survey DiGMapGB mapping confirms the site is underlain by the Weald Clay Formation (mudstone, Lower Cretaceous, Wealden Group) as the bedrock geology, classified as Unproductive strata by the Environment Agency. Superficial deposits of Alluvium and Head, comprising clay, silt, sand and gravel, are recorded and are classified as Secondary A and Secondary Undifferentiated respectively. The site lies outside any defined Source Protection Zone. The Weald Clay Formation exhibits very low permeability and site-specific BRE Digest 365 testing has been undertaken to inform the drainage strategy (Section 3 and Appendix C).

Hydrology and Existing Drainage

2.5 An ordinary watercourse, recorded on Ordnance Survey mapping as an inland river, runs approximately 2 m beyond the eastern site boundary. The surveyed bed level at the proposed outfall location is 29.75 m AOD. A pond lies approximately 11 m to the east and historic mapping records infilled ponds between 2 m and 11 m east of the site. Ancient woodland is present on site and at 72 m to the east and 182 m to the north.

2.6 The existing building has no formal drainage system. Runoff from the roof and from the crushed hardcore yard currently discharges uncontrolled, by sheet flow and shallow infiltration, towards the watercourse on the eastern boundary. There is no existing foul drainage; the building is unoccupied. The existing surfaces are therefore already substantially impermeable and the receiving watercourse already receives uncontrolled runoff from them, which is material to the assessment of betterment set out in Section 6.

2.7 The Southern Water Wastewater Asset Plan, reference 2117751, records no public foul sewer within the site or within 30 m of any site boundary. The nearest recorded public foul assets lie within the built-up area of Storrington to the south-east. A copy of the asset plan is provided at Appendix F.

3.0 Site Investigation

Purpose

3.1 The drainage hierarchy set out in the Planning Practice Guidance and in Approved Document H3 requires that infiltration be considered as the first option for surface water disposal, and discounted only where it can be demonstrated to be unviable. Site-specific infiltration testing was therefore commissioned to establish whether soakaway drainage could form the primary disposal route.

3.2 Site investigation was undertaken by PT (West Midlands) Ltd on behalf of Arbtech Consulting Ltd on 25 June 2026 (project reference PT1791, engineer Brian Smith), comprising two BRE Digest 365 trial pit infiltration tests within the proposed drainage area. The investigation was undertaken in accordance with the methodology set out in BRE Digest 365.

Soil Profile

3.3 The BRE Digest 365 investigation did not include stratigraphic logging, and soil profile information is limited to the trial pit record and site photographs appended at Appendix C. The absence of measurable infiltration in either pit is consistent with the Weald Clay Formation bedrock and the cohesive superficial deposits recorded by the British Geological Survey.

BRE Digest 365 Testing

3.4 Two trial pits were excavated and tested. Trial Pit A was 1.60 m deep, 1.00 m long by 0.30 m wide, with a base area of 0.30 m². Trial Pit B was 1.50 m deep with the same plan dimensions and base area. Each pit was filled to a water depth of 1.00 m and the fall in water level recorded at intervals.

3.5 The results were as follows. In Trial Pit A no measurable fall in water level was recorded over the 273-minute observation period. In Trial Pit B the water level fell by a total of 40 mm over the 288-minute observation period, with no further fall recorded after 108 minutes. In neither pit was the 75% to 25% effective depth fall achieved, and no infiltration coefficient could be derived from either test. The testing engineer recorded the conclusion that poor infiltration was observed and that further testing was abandoned. Full field records, the trial pit location plan and site photographs are appended at Appendix C.

Trial Pit	Depth (m)	Base area (m ²)	Observation	Result
A	1.60	0.30	273 minutes	No measurable fall recorded
B	1.50	0.30	288 minutes	40 mm total fall; static after 108 minutes

Table 3.1 — BRE Digest 365 infiltration test results (PT1791, 25 June 2026)

Conclusion

3.6 The recorded fall rates fall far below the threshold required for soakaway viability. On the basis of the recorded rates the half-empty time greatly exceeds the 24-hour limit specified in BRE Digest 365, and the ground is not suitable for soakaway drainage. Infiltration is conclusively ruled out at this site as a means of surface water disposal, and equally rules out a BS 6297 drainage field as a means of secondary treatment for foul effluent. Accordingly all storage components have been modelled with base and side infiltration coefficients set to zero, and the surface water attenuation is fully tanked. A secondary benefit of excluding infiltration is that no pollutant pathway to groundwater is created, which is relevant given the site's former agricultural use.

4.0 Planning Policy Context

Planning Practice Guidance and Drainage Hierarchy

4.1 The Planning Practice Guidance on Flood Risk and Coastal Change, and Approved Document H3 of the Building Regulations, establish a hierarchy for the disposal of surface water. Discharge should be to infiltration in the first instance; where infiltration is not practicable, to a watercourse; where that is not practicable, to a surface water sewer; and only as a last resort to a combined sewer. Approved Document H2 establishes an equivalent hierarchy for foul drainage, requiring connection to a public foul sewer where one is reasonably available, and permitting a package sewage treatment plant where it is not.

National Standards for Sustainable Drainage Systems

4.2 The non-statutory technical standards for sustainable drainage systems require that peak runoff rates and volumes from a developed site are controlled so as not to increase flood risk elsewhere, that drainage systems are designed so that flooding does not occur on any part of the site for a 1 in 30 year event, that flooding does not occur during a 1 in 100 year event in any part of a building or in utility plant, and that flows from the site are managed for events up to the 1 in 100 year return period with an appropriate allowance for climate change.

Climate Change Allowances

4.3 The site lies within the Arun and Western Streams management catchment. Environment Agency peak rainfall intensity allowances for the 1% annual exceedance probability event in this catchment are 20% central and 45% upper end for the 2050s epoch, and 25% central and 45% upper end for the 2070s epoch. The proposed development is residential with a design life extending beyond 2061 and the 2070s epoch therefore applies. The upper end allowance of 45% has been adopted throughout, consistent with Lead Local Flood Authority expectations for residential development.

Consents

4.4 Construction of the surface water and treated effluent outfalls in the bank of an ordinary watercourse requires Ordinary Watercourse Land Drainage Consent from West Sussex County Council under Section 23 of the Land Drainage Act 1991. A single application covering both outfalls will be submitted prior to commencement of the outfall works. The discharge of treated effluent to the watercourse will be registered with the Environment Agency under the General Binding Rules for small sewage discharges to surface water prior to first occupation. These consents are separate from planning and are not required to be in place in order to discharge Condition 3.

Summary

4.5 The strategy set out in this report applies the drainage hierarchy in the correct order, discounts infiltration on evidenced grounds, restricts discharge to the greenfield equivalent rate, provides attenuation for the 1% AEP event with a 45% climate change allowance, and delivers water quality treatment in accordance with CIRIA C753. It therefore accords with national policy, with the non-statutory technical standards, and with Policy 38 of the Horsham District Planning Framework (2015).

5.0 Drainage Hierarchy Assessment

Application of the Drainage Hierarchy

5.1 The drainage hierarchy has been applied to both the surface water and foul drainage systems as set out in the tables below.

Rank	Surface water option	Assessment
1	Infiltration	Discounted — evidenced by BRE 365 testing (PT1791) and Weald Clay geology
2	Discharge to watercourse	ADOPTED — ordinary watercourse approximately 2 m east of the eastern boundary
3	Discharge to surface water sewer	Not available
4	Discharge to combined sewer	Not available

Table 5.1 — Surface water drainage hierarchy

Rank	Foul water option	Assessment
1	Public foul sewer	Not reasonably available — no public sewer within 30 m of any boundary
2	Package sewage treatment plant	ADOPTED — discharge of treated effluent to the ordinary watercourse
3	Septic tank	Not permissible — may not discharge to surface water; drainage field not viable
4	Cesspool	Not required; last resort only

Table 5.2 — Foul water drainage hierarchy

Infiltration

5.2 Infiltration has been discounted on the basis of the BRE Digest 365 testing reported in Section 3 and appended at Appendix C, which recorded no measurable infiltration in either trial pit. This outcome is consistent with the Weald Clay Formation bedrock and the cohesive superficial deposits recorded across the site.

Watercourse Discharge

5.3 An ordinary watercourse runs approximately 2 m beyond the eastern site boundary and provides a viable receptor for both attenuated surface water and treated foul effluent. The surveyed bed level at the outfall location is 29.75 m AOD. Discharge to this watercourse at a controlled rate forms the basis of the surface water strategy set out in Section 6.

Surface Water and Foul Sewer Discharge

5.4 The Southern Water Wastewater Asset Plan confirms that there is no public surface water sewer, foul sewer or combined sewer within the site or within 30 m of any site boundary. Neither a surface water sewer connection nor a foul sewer connection is therefore reasonably available, and both options are discounted.

6.0 Surface Water Drainage Strategy

Contributing Catchment

6.1 The positively drained contributing catchment comprises the dwelling roof and the block paved driveway and parking area, as set out in Table 6.1. The roof area has been measured to the outer edge of the eaves and gutter line, which is the correct catchment for drainage purposes and is 6.7% greater than the 215.91 m² footprint recorded on the approved drawings measured to the external wall face. The Indian sandstone patio is laid to fall to adjacent soft landscaping, is not positively connected to the drainage system, and is excluded.

Surface	Area (m ²)	Treatment
Roof (measured to outer edge of eaves)	230.45	Drained to attenuation
Block paved driveway and parking (permeable)	201.87	Direct to sub-base storage
Patio (Indian sandstone, unconnected)	—	Excluded
Total positively drained catchment	432.32	0.0432 ha

Table 6.1 — Contributing catchment areas

6.2 A contributing area of 0.043 ha has been adopted in the hydraulic model. No urban creep allowance has been applied. This is justified on the basis that the curtilage is fixed and small, that Condition 14 of the planning permission removes permitted development rights for enlargement of the dwelling under Classes A, AA and B of Part 1 of Schedule 2 to the General Permitted Development Order, and that any additional hardstanding within the curtilage would most likely be laid over, or drain to, the permeable surface already provided.

Greenfield Runoff Rates

6.3 Greenfield runoff rates have been calculated using the IH124 method via the HR Wallingford UKSuDS Greenfield Runoff Rate Estimation Tool v2.2.3 (Appendix D), for the contributing impermeable area of 0.0432 ha at OS BNG 508942/115610. This follows the stated West Sussex County Council Lead Local Flood Authority position that QBAR should be calculated on the impermeable area being drained into the drainage system rather than on the gross site area.

6.4 The WRAP soil classification has been set to Class 4, with a standard percentage runoff of 0.47. The mapped value at this location is Class 1, which describes a well-drained permeable substrate with a standard percentage runoff of 0.10. That value is not consistent with the site-specific evidence: the site is underlain by the Weald Clay Formation, the superficial deposits are cohesive, and BRE Digest 365 testing recorded no measurable infiltration in either trial pit. The WRAP dataset is gridded at a coarse resolution and the mapped value is not considered representative of the ground conditions recorded on site. Class 4 has therefore been adopted as the value consistent with the site investigation.

Parameter	Value	Source
SAAR	890 mm	FEH22 mapped value
WRAP soil class	4	Adopted — see paragraph 6.4
SPR	0.47	Derived from WRAP Class 4
Hydrological region	7	Mapped value
QBAR	0.30 l/s	IH124
Q1 / Q2 / Q30 / Q100	0.2 / 0.2 / 0.6 / 0.9	IH124 with growth curve factors

Parameter	Value	Source
	l/s	

Table 6.2 — Greenfield runoff rate parameters and results (Appendix D)

Hydraulic Modelling

6.5 Surface water attenuation storage has been sized using Causeway Flow+ v15.0 storm network simulation with FEH22 point rainfall depth-duration-frequency input for the site centroid, and the 45% climate change uplift on peak rainfall intensity applied to the 1% AEP event. Critical storm durations of 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960 and 1440 minutes were assessed for the 2 year, 30 year and 1% AEP + 45% CC return periods. A volumetric runoff coefficient of 1.000 has been adopted for the summer profile, meaning that all rainfall falling on the contributing area is assumed to reach the drainage system. This is conservative relative to the conventional summer value of 0.75 and increases the modelled runoff volume by approximately one third. Base and side infiltration coefficients have been set to zero throughout and a safety factor of 2.0 has been applied to the storage. Full output is appended at Appendix E.

Storage Sizing

6.6 Attenuation is provided within the Type 3 granular sub-base beneath the permeable block paved driveway and parking area, functioning as a fully tanked storage layer. The construction comprises 80 mm concrete block permeable paving over a 50 mm bedding course over a 600 mm open-graded Type 3 sub-base, a total construction depth of 730 mm. The storage layer measures 21.907 m by 9.215 m on plan, an area of 201.87 m², with a base invert level of 29.945 m AOD and a formation level at the top of the Type 3 of 30.545 m AOD. At an assumed void ratio of 30% this provides an effective storage volume of 36.34 m³.

6.7 The critical storm duration for the 1% AEP + 45% CC event is the 240-minute FEH22 summer profile event. Peak storage utilised at this event is 35.32 m³ against the 36.34 m³ provided, giving a margin of 1.02 m³. The peak water level of 30.539 m AOD is contained entirely within the granular sub-base, 136 mm below the finished paving surface at 30.675 m AOD. No flooding is predicted at any return period and the mass balance is 100% in all events. The half drain-down time is 520 minutes, well within the 24 hours expected by the non-statutory technical standards.

Event	Critical duration	Peak level (m AOD)	Stored (m ³)	Flooding (m ³)
1 in 2 year	360 min summer	30.092	8.26	0.000
1 in 30 year	240 min summer	30.260	18.39	0.000
1% AEP + 45% CC	240 min summer	30.539	35.32	0.000

Table 6.3 — Hydraulic modelling results (Causeway Flow+ v15.0, Appendix E)

Discharge Rate and Flow Control

6.8 Discharge is controlled by a fixed 24 mm diameter orifice with a discharge coefficient of 0.600, housed within an SEL Controflow 300 Series level invert flow control chamber at an invert level of 29.945 m AOD. The level invert configuration has been selected specifically because it introduces no drop across the chamber, which is material on a site where the available fall between the storage invert and the receiving watercourse is limited. The peak modelled discharge in the 1% AEP + 45% CC event is 0.9 l/s.

6.9 The proposed discharge compares with the calculated greenfield rates as set out in Table 6.4. The orifice response tracks the greenfield growth curve closely because both scale with the severity of the event. In the critical design case — the 1% AEP event with a 45% climate change uplift applied to the proposed scheme but not to the greenfield comparator — the proposed discharge is equal to the greenfield rate.

Event	Greenfield rate (l/s)	Proposed rate (l/s)	Ratio
1 in 2 year	0.2	0.4	2.00
1 in 30 year	0.6	0.7	1.17
1 in 100 year (proposed includes +45% CC)	0.9	0.9	1.00

Table 6.4 — Proposed discharge rates compared with greenfield rates

6.10 A lower discharge rate is not achievable at this site. Restricting to the greenfield 1 in 1 year rate of 0.2 l/s would require an orifice aperture of approximately 11.5 mm, and restricting to QBAR would require approximately 14 mm; neither aperture is maintainable. In addition, the additional storage required to support a lower rate would drive the storage invert below the bed level of the receiving watercourse, at which point the system could not discharge by gravity at all. The adopted rate is therefore the lowest that the site levels physically permit.

6.11 The blockage risk that underlies conventional minimum aperture guidance is substantially mitigated at this site by the pre-treatment inherent in the system. Runoff reaches the flow control only after passing through the block joints, the bedding course, a geotextile separation layer and 600 mm of Type 3 sub-base, and the water arriving at the orifice is effectively filtered. The control is further protected by a silt trap with a minimum 450 mm sump immediately upstream, and by a coarse stainless steel screen to the upstream face of the orifice plate with a clear open area of not less than ten times the orifice area. The orifice plate is removable on a machined seating so that the aperture can be inspected and cleared without excavation, and the orifice diameter, invert level and design discharge are to be recorded on a durable plate fixed within the chamber.

6.12 The existing roof and crushed hardcore yard currently discharge uncontrolled to the same watercourse. The proposal introduces attenuation and rate control across the whole developed area for the first time, and peak discharge to the watercourse is unambiguously reduced relative to the existing situation for all return periods.

System Components

6.13 The system components are as follows. Rainwater downpipes are 110 mm uPVC discharging via SEL Raintaina filter units providing interception and filtration of silt and debris at source; units discharging onto the permeable paving are type RTNA05002 with PVOD05002 diffuser, and remote units discharging outside the permeable paving are type RTNA05001 with PVOD05101 diffuser. The permeable pavement comprises 80 mm concrete block permeable paving over 50 mm bedding over 600 mm Type 3 open-graded sub-base. The storage is fully tanked with an F-LowFlex 300 WASP light duty impermeable geomembrane to base and sides with protective geotextile to both faces, and all pipe penetrations are formed with WASP invert puddle flanges to provide a rigid watertight connection through the liner. Flow control is by the SEL Controflow 300 Series level invert chamber described at paragraph 6.8. The outfall is described at paragraph 6.14.

Outfall

6.14 The surface water outfall discharges to the ordinary watercourse on the eastern boundary through an Althon AH4C A precast concrete angled headwall, which discharges at 45 degrees to the direction of flow. The manufacturer records this as the Environment Agency's preferred arrangement for discharge to a watercourse. The unit has a backwall height of 600 mm, nominal

dimensions of 1200 by 400 by 600 mm, and is manufactured to BS EN 15258:2008 in a DC4/DS4 self-compacting mix. It is supplied complete with a 450 by 300 mm toe extension founding the structure below bed level, a 100 mm HDPE flap valve with adjustable ballast weight set for low flow operation, and a cranked grating. The outfall pipe is 110 mm with an invert level of 29.850 m AOD, set 100 mm above the surveyed bed level and above the normal water level. The headwall is bedded on a minimum of 150 mm of compacted Class 6A granular material and set level or with a slight fall of 1:50 from pipe to spill mouth, fixed with four M8 chemical anchors. Rip-rap or concrete apron scour protection is provided to the bed and banks for a minimum of 1 m either side of the outfall, and the bank is reinstated to profile and seeded. Full product details are appended at Appendix H.

Water Quality

6.15 Water quality has been assessed using the simple index approach set out in CIRIA C753. The pollution hazard indices for the contributing surfaces and the mitigation indices for the proposed SuDS component are set out in Table 6.5. The mitigation indices provided by the pervious pavement exceed the pollution hazard indices for both contributing surfaces across all three determinands, and a single treatment stage is therefore sufficient. No additional water quality component is required. The Raintaina filter units at each downpipe and the silt trap upstream of the flow control provide further stages of sediment capture.

Surface / component	TSS	Metals	Hydrocarbons
Pollution hazard index — residential roof	0.2	0.2	0.05
Pollution hazard index — residential driveway and parking	0.5	0.4	0.4
Mitigation index — pervious pavement	0.7	0.6	0.7

Table 6.5 — CIRIA C753 simple index assessment

Exceedance

6.16 The storage is designed to contain the 1% AEP event with a 45% climate change allowance with no flooding. For events beyond that design standard, or in the event that the orifice becomes obstructed, water surcharging the sub-base will emerge at the surface of the permeable pavement, which is the lowest point of the hardstanding and is set 150 mm below the finished floor level of the dwelling. Overland flow will follow the existing natural fall of the site from west to east and discharge to the same watercourse that receives the controlled discharge. No new flow path is created and no flow is directed towards the dwelling or towards neighbouring property. The exceedance route is not to be obstructed by landscaping, fencing or future hardstanding.

7.0 Foul Drainage Strategy

Foul Design Basis

7.1 Approved Document H2 requires connection to a public foul sewer where one is reasonably available. The Southern Water Wastewater Asset Plan, reference 2117751 with data updated 17 April 2026, records no public foul sewer within the site or within 30 m of any site boundary, and the nearest recorded public foul assets lie within the built-up area of Storrington to the south-east. Connection is not reasonably available and a package sewage treatment plant is therefore proposed. A copy of the asset plan is provided at Appendix F as the evidence base for this conclusion.

7.2 Peak foul design flow has been calculated in accordance with the British Water Code of Practice Flows and Loads for a design occupancy of six persons, as recorded on the approved drawings. At 150 litres per person per day and 60 g BOD₅ per person per day this gives a design flow of 0.90 m³ per day and an organic load of 360 g BOD₅ per day.

7.3 Condition 12 of the planning permission imposes a water consumption limit of 110 litres per person per day under the optional requirement of Part G of the Building Regulations. That is a water efficiency standard and is not an appropriate basis for sizing foul drainage; the plant has been sized on the standard design flow set out above.

Treatment Plant

7.4 A Marsh Shallow Ensign:Ultra 10 PE package sewage treatment plant, or equal approved, is proposed. The unit is certified to BS EN 12566-3 and the manufacturer states that its range is sized in accordance with British Water Flows and Loads. On that basis a 10 population equivalent rating equates to 1.50 m³ per day and 600 g BOD₅ per day, giving a utilisation of 60% against the design flow and organic load and providing headroom against both. The Ultra specification incorporates a Polylok tertiary filter, an advanced compressor with integral low pressure alarm, and an RCD electrical connection.

Parameter	Rated capacity	Design load	Utilisation
Hydraulic loading	1.50 m ³ /day	0.90 m ³ /day	60%
Organic loading	600 g BOD ₅ /day	360 g BOD ₅ /day	60%

Table 7.1 — Treatment plant capacity assessment

7.5 The manufacturer's published test results for the Ensign range, tested and approved to BS EN 12566-3/A1:2009, are 11.5 mg/l BOD₅, 19.2 mg/l suspended solids and 8.4 mg/l ammoniacal nitrogen, equating to approximately 97% pollutant removal. This satisfies the 20:30:20 standard that regulatory authorities normally require of treatment plants discharging to a watercourse, with margin on all three determinands.

7.6 The tank measures 2,860 mm by 1,912 mm by 1,600 mm high. The cover level is 30.675 m AOD, achieved by means of a 266 mm riser above the natural cover level of 30.409 m AOD. The inlet invert is 29.909 m AOD and the outlet invert 29.834 m AOD, a drop of 75 mm across the unit. The depth from finished ground level to inlet invert is 766 mm, well within the manufacturer's normal maximum of 1.5 m.

Installation

7.7 The plant will be installed with a full concrete base and surround in accordance with the manufacturer's installation and operation manual, appended at Appendix G. The concrete method is specified rather than a granular surround because the ground conditions recorded on site will not allow water entering the excavation to drain away, and the manufacturer identifies the concrete surround as essential where the water table can rise above the base of the system.

The excavation measures 3,310 mm by 2,362 mm, being the tank dimensions plus 450 mm each way, to a formation level of 28.409 m AOD. A 250 mm compacted hardcore sub-base is provided, followed by a 150 mm concrete base to the full excavation plan with its underside at 28.659 m AOD, and a concrete surround of 150 mm nominal thickness and not less than 225 mm pour width brought up to approximately 300 mm below finished ground level.

7.8 The concrete is to achieve a 28 day compressive strength of 20 to 30 N/mm² with a slump of 25 to 50 mm. Groundwater is to be controlled and excluded throughout the installation and until the concrete base has set. The maximum pressure of 15 kN/m² around the plant is not to be exceeded, concrete is not to be discharged directly onto the tank, and vibrating pokers are not to be used. Each chamber is to be filled evenly with clean water to a depth of 700 mm before backfilling, with the water level maintained no more than 300 mm above the concrete level throughout. All turrets and access covers are to be sealed to prevent concrete entering the plant. Full installation requirements are set out in the manufacturer's manual at Appendix G and on drawing 44028094-1002.

7.9 Inlet and outlet pipework is 110 mm uPVC, with a short length of pipe with flexible joints immediately before and after the plant to accommodate differential movement. The plant is served by an external compressor housing and a mains electrical supply from the dwelling distribution board, protected by a 10 A MCB, RCD or RCBO with a 30 mA tripping current, and a low pressure alarm. The tank is vented remotely by a vent terminating not less than 5 m from any building, brought above ground level and fitted with a mushroom cowl. An air admittance valve is not permitted, as it would prevent the unrestricted two-way airflow the system requires.

Siting

7.10 The plant is positioned not less than 7 m from the dwelling, 4 m from the watercourse to which it discharges, 3 m from any site boundary and 4 m from any road. It is installed with a full concrete base and surround as set out at paragraph 7.7. The plant, its excavation, the connecting pipework and the outfall are routed clear of the ancient woodland and its root protection area, and clear of the historic infilled ponds recorded to the east of the site. Access is provided for a vacuum tanker with a hose run not exceeding 30 m.

Gravity Network

7.11 Foul drainage from the dwelling is collected via 110 mm uPVC underground drainage laid at a gradient of 1:80 to a network of 450 mm diameter inspection chambers and thence to the treatment plant. Invert levels are as set out in Table 7.2. All chamber cover levels are at 30.675 m AOD, which is 150 mm below the finished floor level of the dwelling, providing the freeboard required by Approved Document H1.

Element	Cover level (m AOD)	Invert level (m AOD)	Cover to pipe crown
FWMH1	30.675	30.157	408 mm
FWMH2	30.675	29.986	579 mm
Treatment plant inlet	30.675	29.909	656 mm
Treatment plant outlet	30.675	29.834	731 mm
FWMH3	30.675	29.814	751 mm
Outfall headwall	30.620	29.750	760 mm

Table 7.2 — Foul drainage levels

7.12 The run from FWMH1 to a point 1.7 m downstream of FWMH2, a total length of 15.4 m, has less than 600 mm of cover to the pipe crown. In accordance with Approved Document H1 paragraph 2.44 this length of pipe is protected by a GEN3 concrete surround of 150 mm minimum

thickness all round, with movement joints formed by 18 mm compressible filler board at each pipe joint face coincident with the pipe joints, in accordance with Approved Document H1 Diagram 12. Solvent welded or fully sealed jointing is specified throughout this length and the drain is to be air tested in accordance with Approved Document H1 paragraph 2.60 both before and after placing the concrete surround. Where this length of drain passes through the tanked permeable pavement construction, the impermeable geomembrane is sealed to the pipe with a WASP invert puddle flange at both entry and exit.

Treated Effluent Outfall

7.13 Treated effluent discharges to the ordinary watercourse on the eastern boundary through a separate outfall, physically separated from the surface water outfall. The outfall comprises an Althon AH4C A precast concrete angled headwall discharging at 45 degrees, complete with a 450 by 300 mm toe extension founding the structure below bed level and a cranked grating. A flap valve is deliberately not specified on this outfall: the Environment Agency will expect the discharge to remain visible and accessible for inspection and sampling. The outfall pipe is 110 mm with an invert level of 29.750 m AOD and a cover level of 30.620 m AOD. A final effluent sampling chamber is provided immediately upstream of the outfall. Scour protection and bank reinstatement are as described at paragraph 6.14.

7.14 The discharge will operate under the Environment Agency General Binding Rules for small sewage discharges to surface water. The discharge volume of 0.90 m³ per day is well within the 5 m³ per day threshold, the discharge is of domestic sewage only, treatment is by a small sewage treatment plant rather than a septic tank, the plant is certified to BS EN 12566 and sized in accordance with British Water Flows and Loads, and there is no public foul sewer within 30 m of any site boundary. The discharge will be registered with the Environment Agency prior to first occupation.

8.0 SuDS Management Train and Maintenance

Four Pillars of SuDS

8.1 CIRIA C753 The SuDS Manual sets out four pillars of SuDS design: water quantity, water quality, amenity and biodiversity. Water quantity is addressed through the controlled discharge of 0.9 l/s, equal to the greenfield 1% AEP rate, 36.34 m³ of attenuation storage for the 1% AEP + 45% CC critical storm, and betterment against the existing uncontrolled runoff from the roof and hardcore yard. Water quality is delivered by the Raintaina filter units at each downpipe, the silt trap upstream of the flow control, and the pervious pavement itself, which under the CIRIA C753 simple index approach provides mitigation indices exceeding the pollution hazard indices for all contributing surfaces and all three determinands. Amenity is preserved because all engineered SuDS components are subterranean and the surface treatment is a conventional block paved driveway within a landscaped curtilage. Biodiversity is supported through the native hedging and tree planting shown on the approved landscape proposals; the decision notice confirms that the Local Planning Authority considers this permission exempt from the statutory biodiversity gain condition.

Maintenance Responsibilities

8.2 All drainage assets serving the development are private and lie wholly within the application site boundary. Maintenance responsibility rests with the owner of the property in perpetuity. No element of the proposed drainage system is offered for adoption by Southern Water or West Sussex County Council. The maintenance schedule set out in Table 8.1 is to be provided to the owner on completion together with as-built drawings and the manufacturers' operation and maintenance manuals.

Component	Action	Frequency
Permeable pavement	Brush and vacuum sweep the surface	Twice yearly, and after any construction or landscaping works
Permeable pavement	Inspect for ponding, rutting, weed growth or sediment build-up	Quarterly in year one, then annually
Permeable pavement	Remove and replace jointing material where clogged	As required, typically 10-15 years
Raintaina filter units	Remove filter cover, clear debris and silt	Six monthly
Silt trap	Inspect and record silt depth; empty when half the sump depth	Six monthly; empty at least annually
Flow control chamber	Inspect orifice and screen for obstruction and clear	Six monthly, and after any storm causing surface ponding
Flow control chamber	Confirm orifice aperture against the record plate	Annually
Outfalls	Clear debris, check flap valve and grating, check for scour	Six monthly and after significant rainfall
Whole surface water system	Confirm drain-down within 24 hours of a significant event	Annually
Treatment plant	Service by a competent engineer per	Annually

Component	Action	Frequency
	the manufacturer's instructions	
Treatment plant	Desludge by a registered waste carrier	Annually
Treatment plant	Check alarm, compressor and electrical supply	Six monthly
Effluent outfall	Inspect for solids carryover, odour, discolouration or fungal growth	Six monthly

Table 8.1 — Maintenance schedule

8.3 The permeable pavement surface is the component that degrades in service and sweeping is the single most important maintenance activity; it must not be omitted. The surface is not to be sealed, overlaid or surfaced with impermeable material at any time. Waste transfer notes and treatment plant service records are to be retained by the owner. On sale of the property the owner is required to inform the incoming owner in writing of the sewage discharge in accordance with the General Binding Rules, and a durable notice describing the necessary maintenance is to be fixed within the dwelling in accordance with Approved Document H2.

Construction Sequence

8.4 Construction of the drainage system will follow the sequence set out below. First, excavation and formation of the permeable pavement box to 29.945 m AOD with installation of the geotextile separator and F-LowFlex 300 WASP impermeable geomembrane to base and sides. Second, installation of the flow control chamber, silt trap and outfall pipework with WASP invert puddle flanges at all liner penetrations. Third, placement and compaction of the 600 mm Type 3 open-graded sub-base. Fourth, installation of the foul gravity network including the concrete-surrounded length described at paragraph 7.12, with air testing before and after placing the surround. Fifth, installation of the treatment plant in accordance with paragraphs 7.7 to 7.9, with the electrical supply live before commissioning. Sixth, construction of both outfall headwalls with scour protection and bank reinstatement, following grant of Ordinary Watercourse Land Drainage Consent. Seventh, laying of the bedding course and block paving and connection of the rainwater downpipes through the Raintaina filter units. Eighth, commissioning of the treatment plant, testing of the alarm, and sweeping of the pavement surface to remove all construction-phase silt before handover.

8.5 During construction the permeable pavement is to be protected from silt-laden runoff from the wider construction area. The sub-base is not to be used as a haul route or material storage area once the geomembrane is installed. Any silt reaching the completed pavement is to be removed by vacuum sweeping before handover.

Conclusion

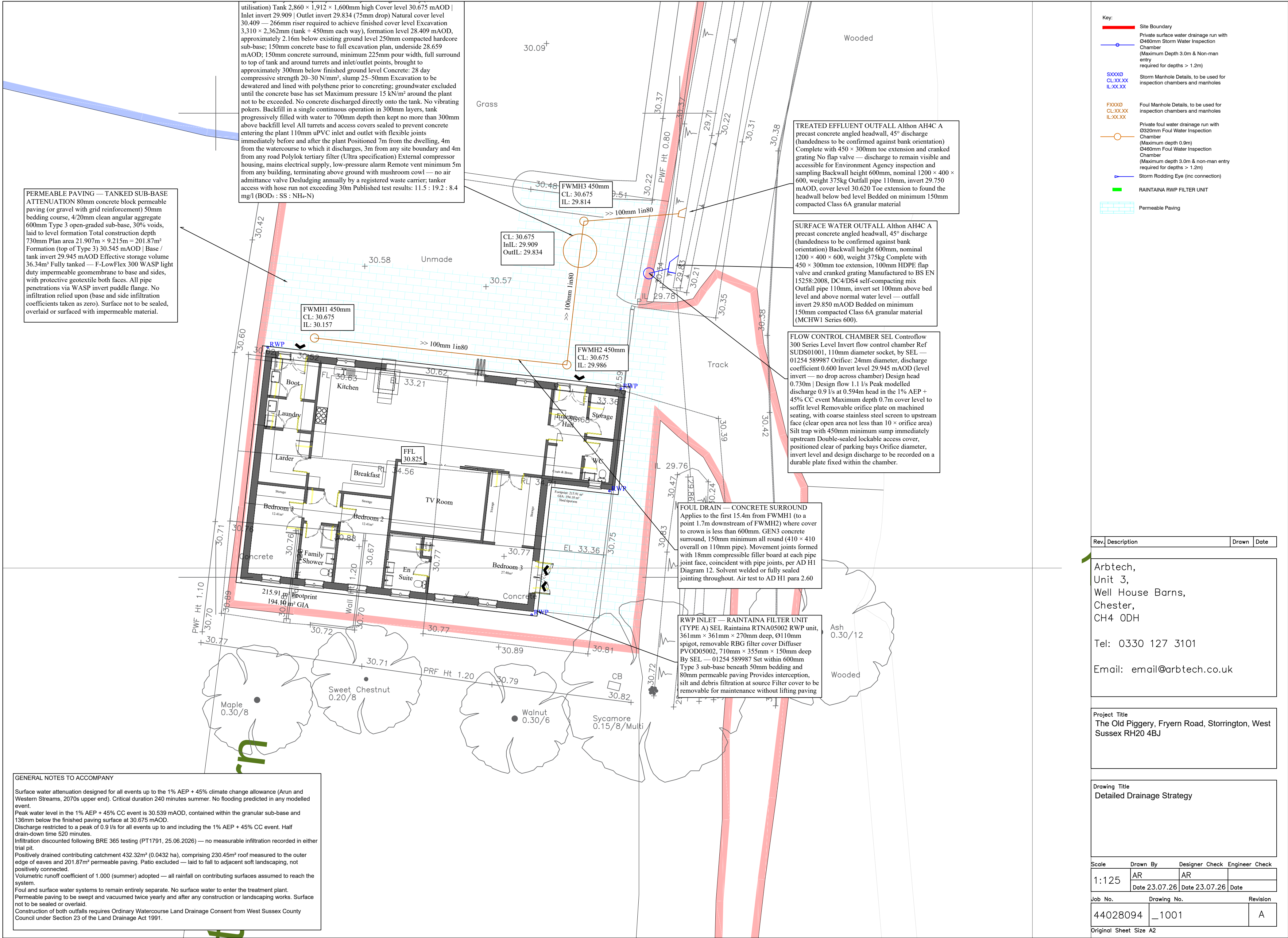
8.6 The proposed drainage strategy delivers a robust, technically sound and sustainable solution for the development at The Old Piggery. The strategy applies the drainage hierarchy correctly and discounts infiltration on evidenced grounds; restricts surface water discharge to 0.9 l/s, equal to the calculated greenfield 1% AEP rate; provides 36.34 m³ of attenuation designed for the 1% AEP event with a 45% climate change allowance with no predicted flooding; meets the CIRIA C753 treatment requirement with a single treatment stage; and provides foul treatment to BS EN 12566-3 with 40% capacity headroom and published performance well within the 20:30:20 standard. The strategy will not increase flood risk on or off site over the design lifetime of the development and satisfies the requirements of Planning Condition 3 of permission DC/26/0357.

9.0 References

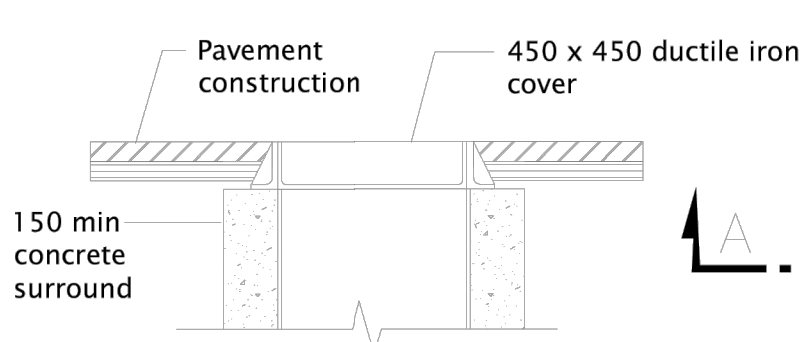
9.1 The following documents have been referred to in this report:

- ⇒ The Building Regulations 2010 (as amended), Approved Document H — Drainage and Waste Disposal.
- ⇒ National Planning Policy Framework — December 2024.
- ⇒ Planning Practice Guidance — Flood Risk and Coastal Change.
- ⇒ Non-statutory technical standards for sustainable drainage systems — Defra, March 2015.
- ⇒ CIRIA C753 — The SuDS Manual, 2015.
- ⇒ Environment Agency SC030219 — Rainfall Runoff Management for Developments, 2013.
- ⇒ BS 8582:2013 — Code of practice for surface water management for development sites.
- ⇒ BS EN 12566-3 — Small wastewater treatment systems for up to 50 PT.
- ⇒ British Water Code of Practice — Flows and Loads.
- ⇒ BRE Digest 365 — Soakaway Design.
- ⇒ West Sussex County Council — Policy for the Management of Surface Water.
- ⇒ Horsham District Planning Framework, 2015 — Policies 33, 37 and 38.
- ⇒ Environment Agency — General Binding Rules: small sewage discharge to a surface water.
- ⇒ Environment Agency — Flood risk assessments: climate change allowances.

Appendix A - Detailed Drainage Strategy Drawing (44028094-_1001)

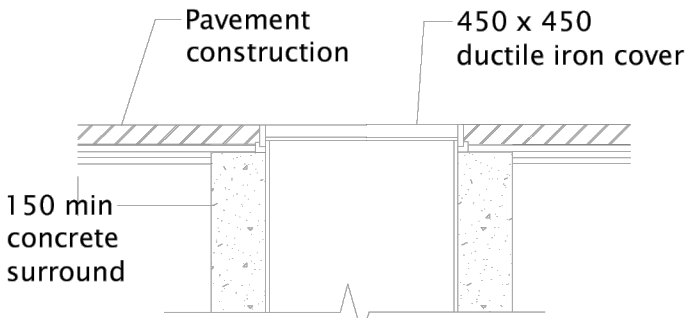


Appendix B – Construction Details Drawings (44028094-_1002 and _1003)



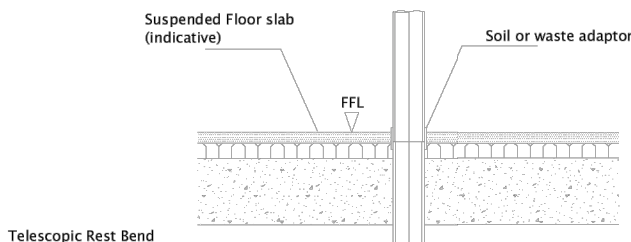
Alternative Cover Detail
Medium/Heavy Duty

(Pavement Construction)

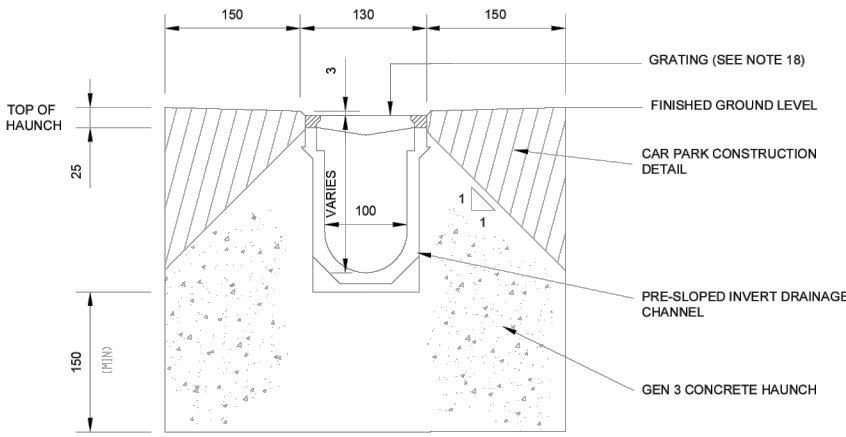


Alternative Cover Detail
Light Duty

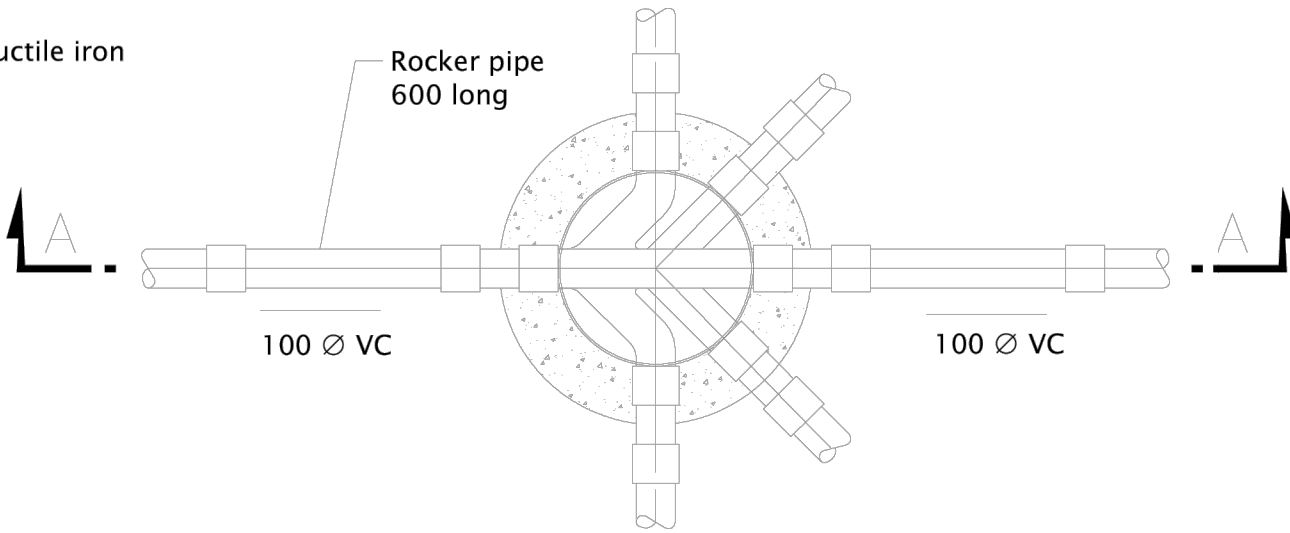
(Pavement Construction)



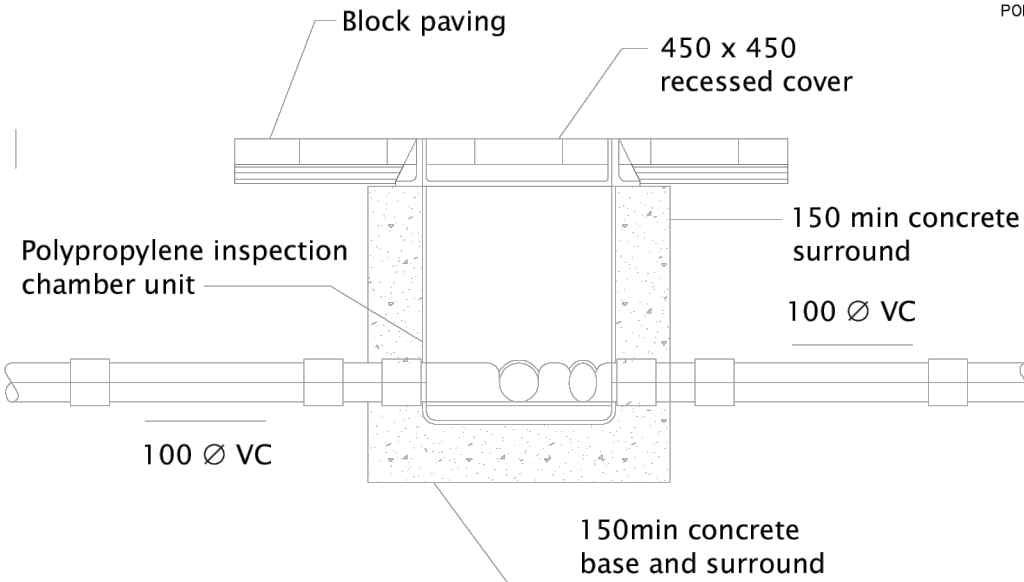
Stub Stack/Soil & Vent Pipe Through Floor Slab Detail
Type 2- Suspended Floor Slab



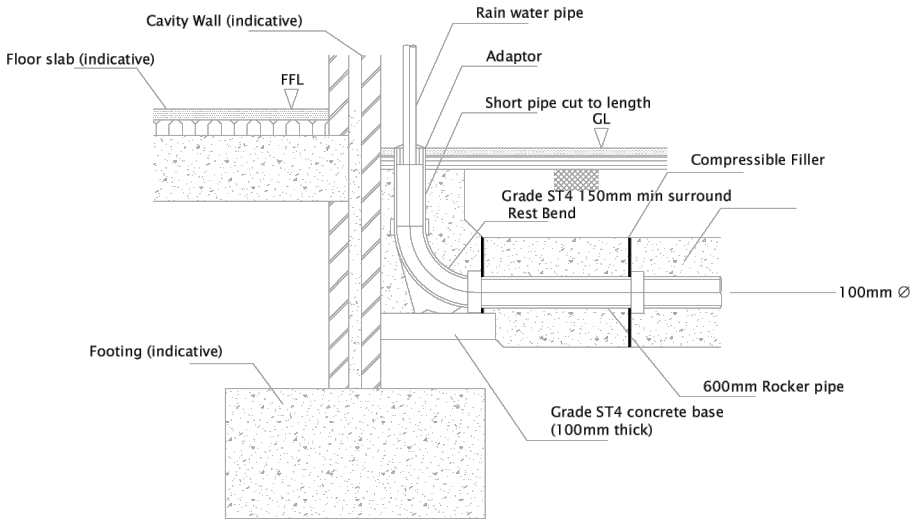
LINEAR DRAINAGE CHANNEL IN TO DRIVEWAY
N.T.S.



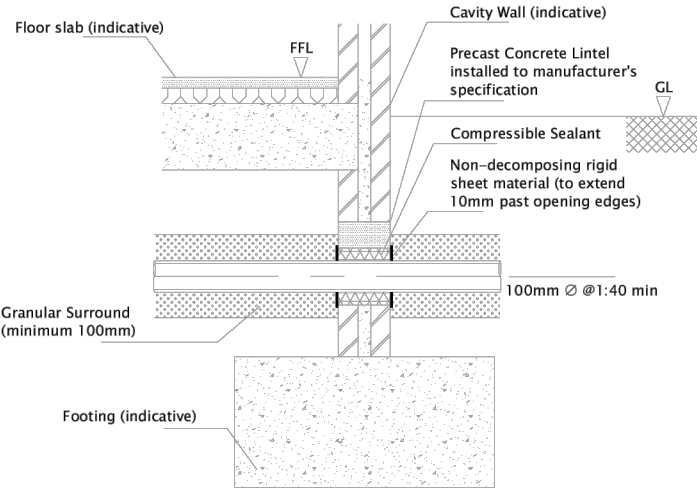
Sectional Plan
Polypropylene Inspection Chamber
(100mm Ø pipes)



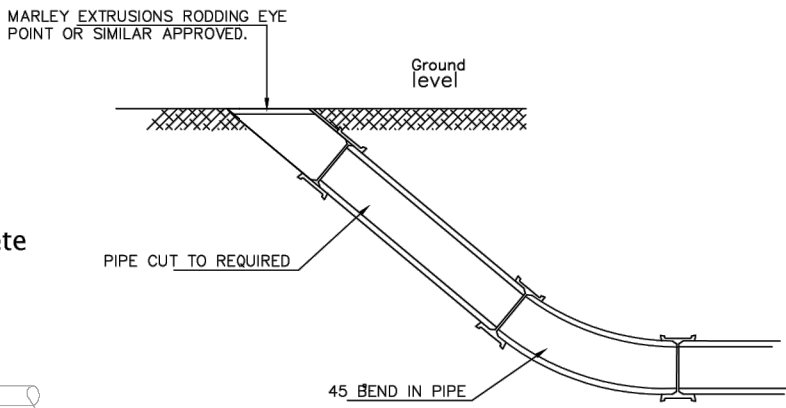
Section A-A
(Block Paving)



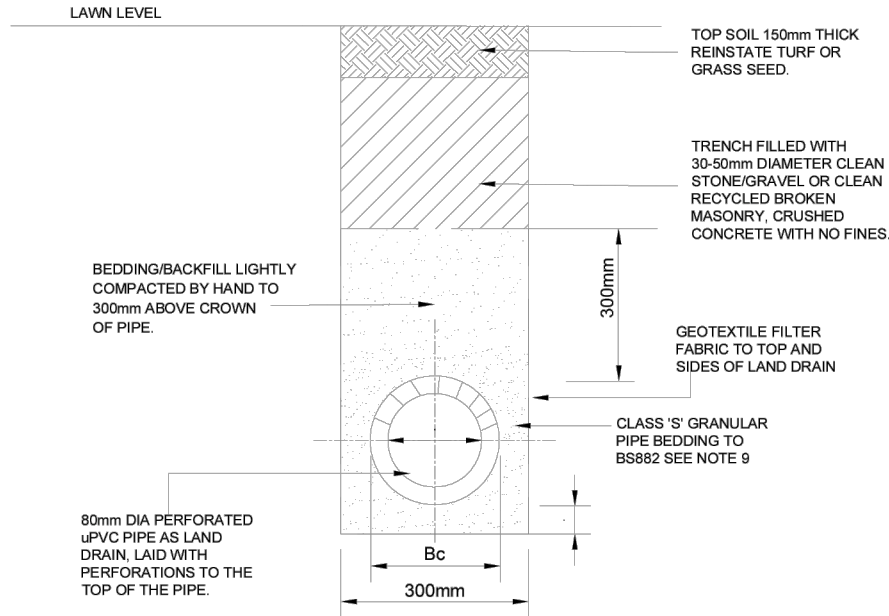
External Rainwater Pipe Connection Detail



Detail of Drain Passing Through Internal/External Wall
Formed with Lintel



RODDING EYE DETAIL



Where D is less than 1m, concrete fill
to level of foundation bottom
PIPE RUNS NEAR BUILDING

General Notes
1. This drawing is to be used in conjunction with all relevant drawings, specifications and details.
2. All dimensions are in metres unless noted otherwise.
3. Do not scale from this drawing.
4. Footway edgings (Type EF) to be provided to all driveways/parking areas unless noted otherwise.

Health, safety & the environment
In accordance with the Construction (Design and Management) Regulations 2015, the designs and details on this drawing have been the subject of a Designers Risk Assessment, to identify risks in the construction, use, or demolition of the scheme. It is not considered necessary for Designers to highlight obvious and/or common risks (such as deep excavations, manual handling and working around heavy plant) which Contractors should be familiar with, and be able to control by good management and site practice. So far as is reasonably practicable, the risks inherent in the design have been eliminated. Where it has been considered that elimination of a risk (or part of a risk) is not reasonably practicable, it has been reduced.

Rev.	Description	Drawn	Date
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Arbtech,
Unit 3,
Well House Barns,
Chester,
CH4 0DH

Tel: 0330 127 3101

Email: email@arbtech.co.uk

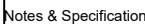
Project Title
The Old Piggery, Fryern Road, Storrington, West
Sussex RH20 4BJ

Drawing Title
Construction Details

Scale	Drawn By	Designer	Check	Engineer	Check
NTS	AR	AR			
	Date 06.07.26	Date 06.07.26	Date		

Job No.	Drawing No.	Revision
44028094	_1002	—

Original Sheet Size A2



Notes & Specification

Notes & Specification

SECTION A-A

General Notes

1. This drawing is to be used in conjunction with all relevant drawings, specifications and details.
2. All dimensions are in metres unless noted otherwise.
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Project Title

The Old Piggery, Fryern Road, Storrington, West
Sussex RH20 4BJ

Drawing Title

Construction Details

Job No.	Drawing No.	Revision
44028094	_1003	—

Original Sheet Size A2

Appendix C – BRE Digest 365 Soakaway Test Results

SOAKAWAY ASSESSMENT

Project Number:	PT1791	Site Address:	The Old Piggery, Fryern Road, Storrington, West Sussex, RH20 4BJ
Weather:	Dry	Date of Testing:	2026-06-25
Client:	Arbtech Consulting Ltd	Engineer:	Brian Smith

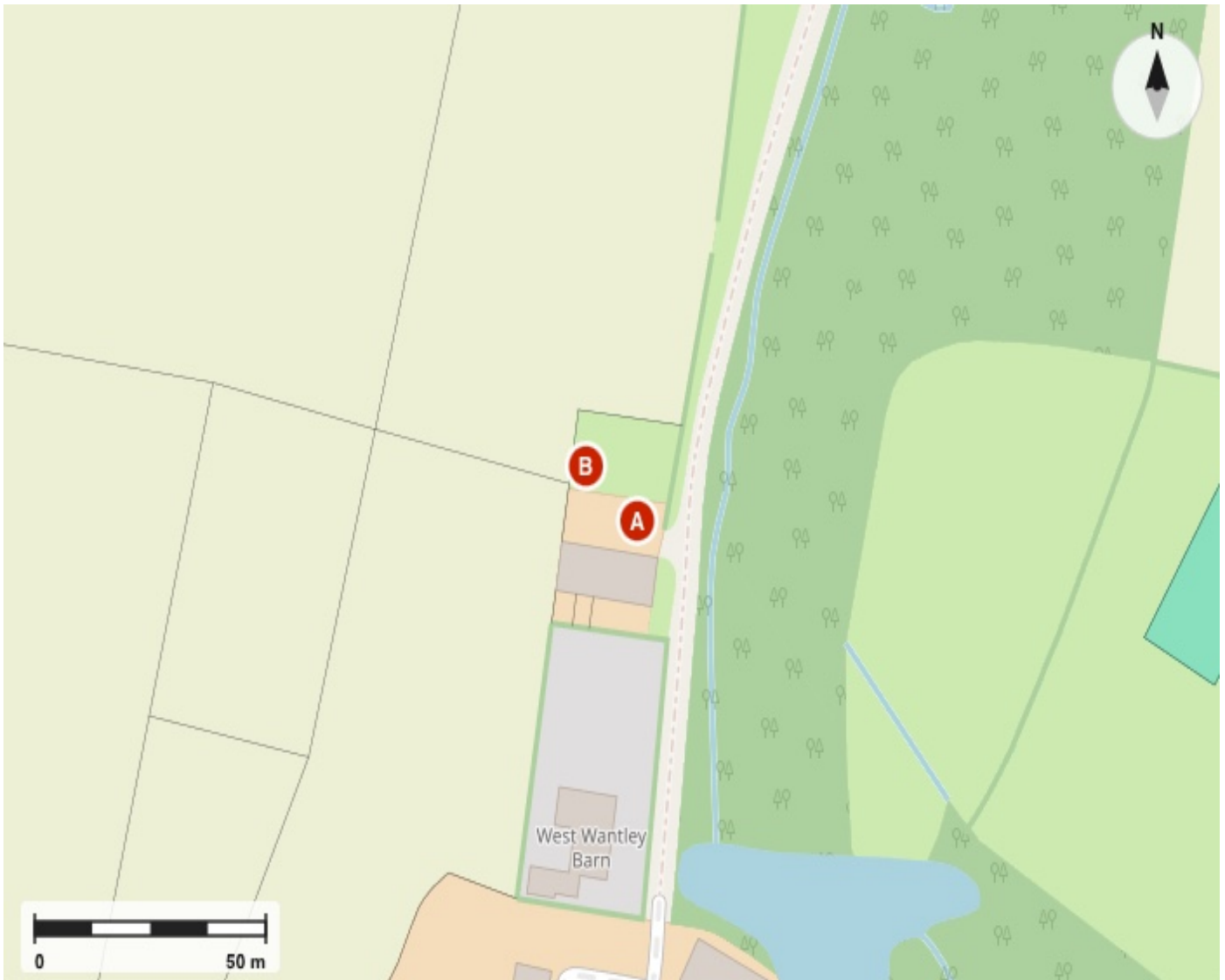
FINAL — APPROVED FOR ISSUE

SITE PHOTOGRAPH



Site Photo 1

TRIAL PIT LOCATION PLAN



Map data © OpenStreetMap contributors (openstreetmap.org/copyright)

PIT CO-ORDINATES			
Pit	Latitude (°N)	Longitude (°E/W)	Test Type
A	50.929726	-0.451123	BRE 365
B	50.929817	-0.451282	BRE 365

Co-ordinate Accuracy Disclaimer: The co-ordinates recorded above were captured using consumer-grade GNSS receivers integrated within mobile devices. Positional accuracy is subject to device hardware limitations, atmospheric conditions, and signal availability at the time of recording. Whilst every reasonable effort has been made to record representative locations, PT (West Midlands) Ltd cannot guarantee the absolute accuracy of the co-ordinates provided. The positions shown should be treated as indicative only and used for general guidance purposes. They must not be relied upon for engineering setting-out, boundary determination, or any purpose requiring survey-grade positional accuracy.

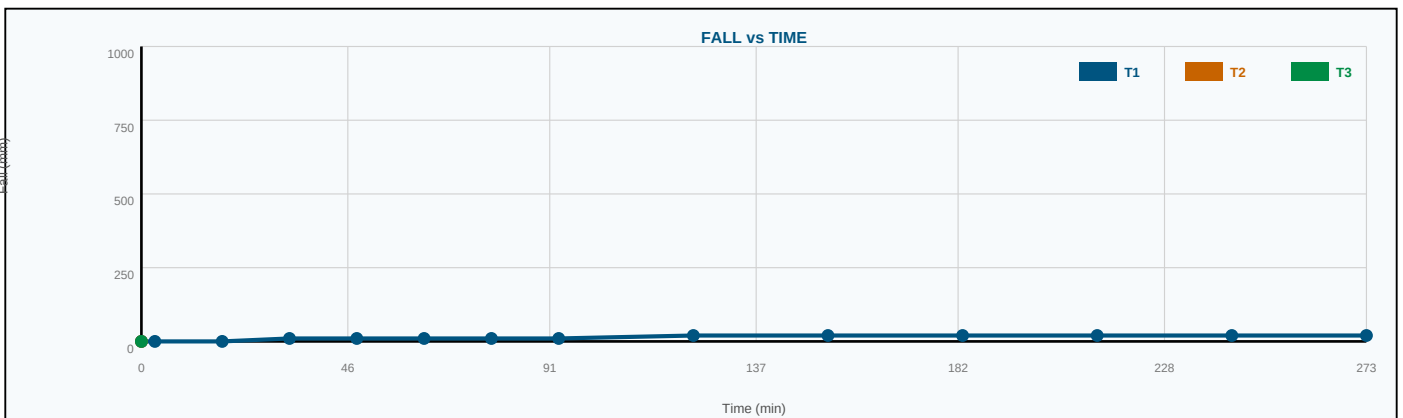
BRE 365 SOAKAWAY INFILTRATION TEST RECORD

TRIAL PIT A

TEST HOLE DIMENSIONS					
Depth of water at 100%	Depth (m)	Width (m)	Length (m)	Base Area (m²)	Vp75-25% (m³)
1.0	1.6	0.3	1.0	0.30	0.150

TEST 1		TEST 2		TEST 3	
Time (min)	Fall (mm)	Time (min)	Fall (mm)	Time (min)	Fall (mm)
0.00	0	0.00	0	0.00	0
3.00	0				
18.00	0				
33.00	10				
48.00	10				
63.00	10				
78.00	10				
93.00	10				
123.00	20				
153.00	20				
183.00	20				
213.00	20				
243.00	20				
273.00	20				
75% - 25% (min)	-	75% - 25% (min)	-	75% - 25% (min)	-
f (m/s)	-	f (m/s)	-	f (m/s)	-
f (m/hr)	-	f (m/hr)	-	f (m/hr)	-

NOTES:



WORST CASE SOIL INFILTRATION RATES		
f =	-	m/s
f =	-	m/hr