



Land North West of Junipers | Land at Harbolets Road

SuDS Assessment

Job Number: 1553

Date	Version	Notes/Amendments
March 2026	1	Issued for Information

Contents**Page**

Executive Summary	3
Introduction	5
Site Description and Location	7
Development Proposal	9
Flood Risk Assessment	10
Surface Water Management Strategy	12
Existing Surface Water Run-Off Rates	12
Infiltration Testing	13
Proposed Surface Water Discharge Options	14
SuDS Suitability Assessment	17
Permeable Paving	18
Water Quality	19
Surface Water Exceedance Flow Paths	21
Existing Flow Paths	21
Proposed Flow Paths	22
Surface Water Maintenance Strategy	23
Compliance with National SuDS Standards	25
Foul Water Assessment	27
Conclusions	29
Appendix A – Proposed Development Plans	31
Appendix B - Southern Water Asset Location Plans	32
Appendix C - Greenfield Run-off Rates	33
Appendix D – Infiltration Testing	34
Appendix E – Proposed Hydraulic Calculations	35
Appendix F - Proposed Drainage Strategy	36
Figure 1. Environment Agency Flood Risk from Rivers or Sea Map (gov.uk, 2026)	6
Figure 2. Site Location	7
Figure 3. Proposed Site Layout	9
Figure 4. Environment Agency Flood Risk From Surface Water (GOv.UK, 2026)	11
Figure 5. Watercourse in Vicinity of Proposed Site	15
Figure 6. Environment Agency Peak Rainfall Climate change allowance	16
Figure 7. SuDS Site Suitability	17
Figure 8. Pollution Hazard Indices	19
Figure 9. Surface Water Pollution Mitigation Indices, taken from Table 26.3 of The SuDS Manual	19
Figure 10: Evaluation of Pollution Indices	19
Figure 11. Existing Surface Water Flow Paths	21
Figure 12. Proposed Surface Water Flow Paths	22
Figure 13. Southern Water Asset Location Plan	27

Acronym	Definition
AOD	Above Ordnance Datum
BRE	Building Research Establishment
CBR	California Bearing Ratio
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
FEH	Flood Estimation Handbook
GI	Ground Investigation
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
NPPF	National Planning Policy Framework
NSS	National Standards for Sustainable Drainage Systems (Defra, 2025)
PPG	Planning Practice Guidance
SuDS	Sustainable Drainage Systems

Executive Summary

This report presents a Surface Water and Foul Drainage Strategy for the proposed development at Land North West of Junipers, West Chiltington, RH20 2LG (also known as Land at Harbolets Road). The development comprises the change of use of land to a two pitch Gypsy and Traveller site, including associated hardstanding, access and dayroom accommodation.

The site is located within Flood Zone 1 and is therefore at low risk of flooding from rivers and the sea. The proposed development is appropriate in flood risk terms and will not increase flood risk on-site or elsewhere.

Surface water runoff will be managed using a permeable paving system across the developed areas. The system will provide distributed attenuation within the underlying sub-base, allowing runoff to be stored and gradually discharged to ground. Infiltration testing undertaken in accordance with BRE365 has confirmed that infiltration is viable at the site, with consistent results obtained across multiple test cycles.

The drainage system has been designed to accommodate the 1 in 100 year rainfall event including a 40% climate change allowance. Surface water will be managed entirely within the site boundary, with exceedance flows directed safely away from built development in accordance with the existing site topography.

In the absence of any available connection to a public sewer or viable off-site outfall, infiltration represents the preferred and most appropriate method of surface water disposal in accordance with the drainage hierarchy. The permeable paving system also provides an appropriate level of water quality treatment in line with CIRIA C753.

Foul drainage will be managed via a sealed cesspool. This approach has been adopted due to the absence of a public sewer connection and the constrained nature of the site, which prevents the provision of a compliant drainage field. The system will be maintained by the site owner and emptied periodically by a licensed contractor.

The proposed drainage strategy provides a suitable, sustainable and policy-compliant solution for the site.

Drainage Strategy Compliance Summary

Item	Summary
Development Type	Two pitch Gypsy and Traveller site with associated hardstanding, access and dayroom accommodation
Site Area	Approx. 2,315m ² (0.232ha)
Flood Zone	Flood Zone 1 (low risk)
Surface Water Strategy	Permeable paving providing distributed attenuation within sub-base with infiltration to ground
Discharge Destination	Infiltration to ground (no off-site discharge)
Infiltration	Confirmed viable through BRE365 testing with consistent results across multiple cycles
Design Standard	1:100 year rainfall event +40% climate change
Attenuation Method	Storage within permeable paving sub-base
Exceedance Routing	Managed on-site following existing topography, directed away from buildings
Water Quality	Treatment via permeable paving filtration in accordance with CIRIA C753
Drainage Hierarchy	Infiltration selected as preferred and only feasible option; no sewer or watercourse connection available
Foul Drainage	Sealed cesspool due to absence of sewer and constrained site conditions
Maintenance	Private management with routine inspection and maintenance of permeable paving system
Policy Compliance	NPPF, PPG, Non-Statutory SuDS Standards (2025), CIRIA C753, West Sussex LLFA Policy (2018), Horsham Policy 38

Introduction

Flume Consulting Engineers have been appointed to undertake a Sustainable Drainage Systems (SuDS) Assessment for the proposed development at Land North West of Junipers, West Chiltington, RH20 2LG.

This report has been prepared in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change' (PPG). It also incorporates relevant guidance from the Environment Agency (EA), the West Sussex County Council Strategic Flood Risk Assessment (SFRA), the West Sussex LLFA Policy for the Management of Surface Water (2018), Horsham District Council guidance, and CIRIA C753 – The SuDS Manual.

This report has been compiled in response to the planning authority's latest comments requiring confirmation that the proposed drainage strategy accords with the NPPF, PPG, the Non-Statutory Technical Standards for SuDS (March 2015), the West Sussex LLFA Policy for the Management of Surface Water (2018), and Policy 38 of the Horsham District Planning Framework (2015).

The EA Flood Map for Planning indicates that the site is located within Flood Zone 1 and is therefore at low risk of fluvial flooding. Notwithstanding this, a SuDS assessment has been undertaken to identify an appropriate and sustainable drainage strategy for the proposed development.

In the absence of a viable connection to a public sewer or off-site surface water outfall, the drainage strategy has been developed to manage surface water within the site boundary. The approach is based on permeable paving providing distributed attenuation within the sub-base, with discharge occurring via infiltration in accordance with site-specific ground investigation.



FIGURE 1. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2026)

Site Description and Location

The site occupies an area of approximately 2,315m² (0.232ha) and currently comprises an undeveloped parcel of land which was historically Greenfield and is more recently surfaced with compacted gravel. The site is bounded by Harbolets Road to the east, residential dwellings to the north and south, and open Greenfield land to the west.

The nearest watercourse is located at the junction of Broadford Bridge Road and Harbolets Road, approximately 200m from the site, and flows in a south west to north east direction. This feature does not influence flood risk at the site, which is located within Flood Zone 1 (less than 0.1% annual probability of fluvial or tidal flooding) in accordance with the Environment Agency Flood Map for Planning. Development within this flood zone is considered appropriate subject to ensuring that surface water runoff is managed without increasing flood risk on-site or elsewhere.

Topographically, the site is broadly level with a gentle fall across the site. Levels range from approximately 26.6mAOD in the north-western part of the site to approximately 26.0mAOD towards the south-east, with a localised fall directing surface water towards Harbolets Road. The proposed drainage strategy has been developed to respond to this existing topography and to manage runoff within the site boundary.

The site is located at postcode RH20 2LG and is centred at approximately OS Grid Reference 509777, 121417.



FIGURE 2. SITE LOCATION

Existing Drainage

Southern Water asset location records have been reviewed to identify existing drainage infrastructure in the vicinity of the site. These records, included in Appendix A, confirm that there are no surface water or foul sewers available within or adjacent to the site.

In the absence of any available sewer connections or viable off-site discharge points, surface water and foul drainage must be managed on-site. The drainage strategy has therefore been developed accordingly, with a SuDS-based approach to surface water management and an independent on-site solution for foul drainage.

Development Proposal

The proposed development comprises the change of use of land to form a two pitch Gypsy and Traveller site, including the siting of one mobile home, one touring caravan and one dayroom per pitch. The development also includes associated access arrangements, parking and areas of hardstanding.

The layout has been designed to provide functional access and circulation within the site, with areas of hardstanding serving each pitch and forming the primary impermeable surfaces requiring drainage. The remaining areas of the site will comprise soft landscaping and amenity space.

For the purposes of the drainage design, surface water runoff will arise predominantly from the proposed hardstanding areas and roof surfaces associated with the mobile homes and dayroom buildings. These areas will be managed using a permeable paving system, which will provide both surface drainage and sub-surface attenuation within the underlying granular sub-base.

The proposed development has been designed to work with the existing site levels, allowing surface water runoff to be managed within the site boundary in accordance with the natural topographic fall. The drainage strategy has been integrated into the site layout to ensure that runoff is controlled at source and does not increase flood risk on-site or to surrounding land.

Foul drainage arising from the development will be managed independently via an on-site system, with details provided in the relevant section of this report.

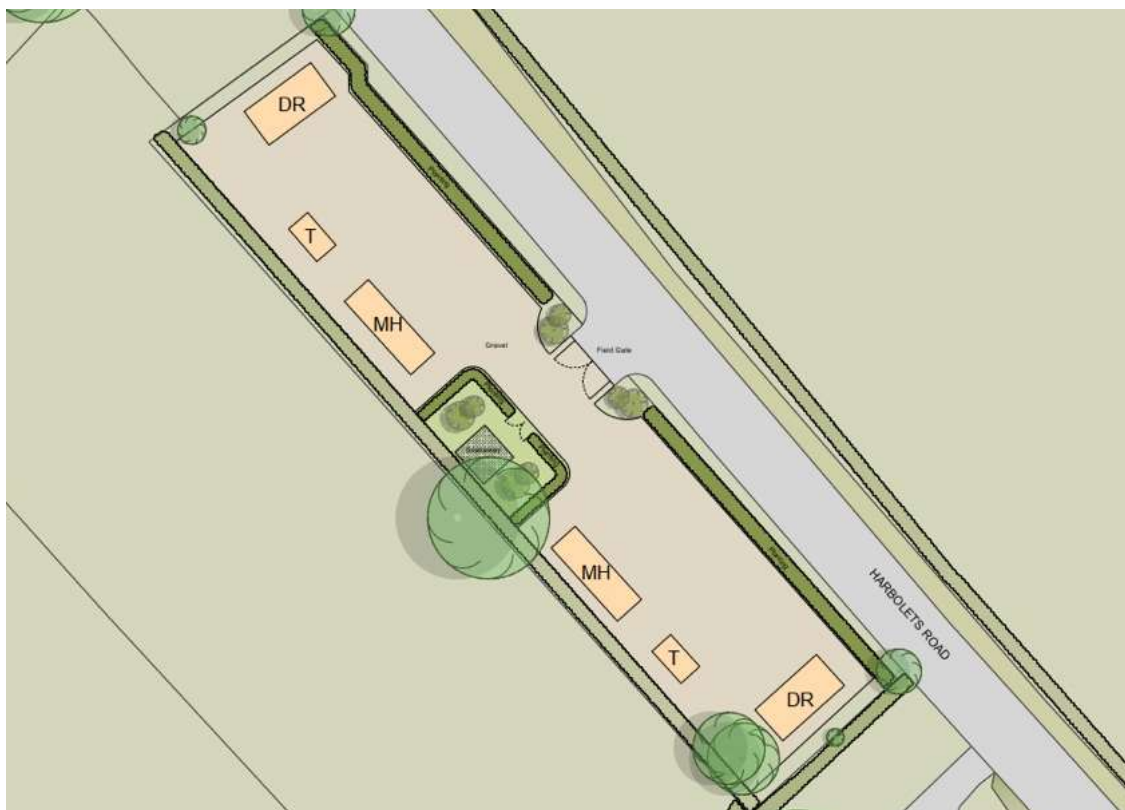


FIGURE 3. PROPOSED SITE LAYOUT

Flood Risk Assessment

The Environment Agency Flood Map for Planning confirms that the site is located within Flood Zone 1, defined as land having a less than 0.1% annual probability of fluvial or tidal flooding. The site is therefore considered to be at low risk from rivers and the sea and is suitable for all development types.

There are no watercourses within or immediately adjacent to the site that would present a risk of flooding. The nearest watercourse is located approximately 200m from the site and does not influence flood risk at this location.

The site is not located within an area identified to be at risk from reservoir flooding or other artificial sources of flooding.

In terms of surface water flood risk, the site is not identified as being at significant risk of ponding or overland flow in the Environment Agency's Risk of Flooding from Surface Water mapping. The site is relatively level and currently drains via informal overland flow across the gravelled surface.

The proposed development will not increase flood risk on-site or elsewhere. Surface water runoff will be managed using a permeable paving system providing on-site attenuation within the sub-base layer, with discharge occurring via infiltration to ground. This approach ensures that runoff is controlled at source and that the post-development drainage regime reflects the existing Greenfield behaviour of the site.

Groundwater was encountered during site investigation at shallow depths, which is consistent with the underlying clay geology. The drainage strategy has therefore been developed to operate under low infiltration conditions, with storage provided within the permeable sub-base and gradual drain-down to ground. This ensures that the system remains effective without reliance on rapid infiltration or off-site discharge.

On this basis, the site is considered to be at low risk of flooding from all sources, and the proposed development can be delivered without increasing flood risk on-site or to surrounding land.

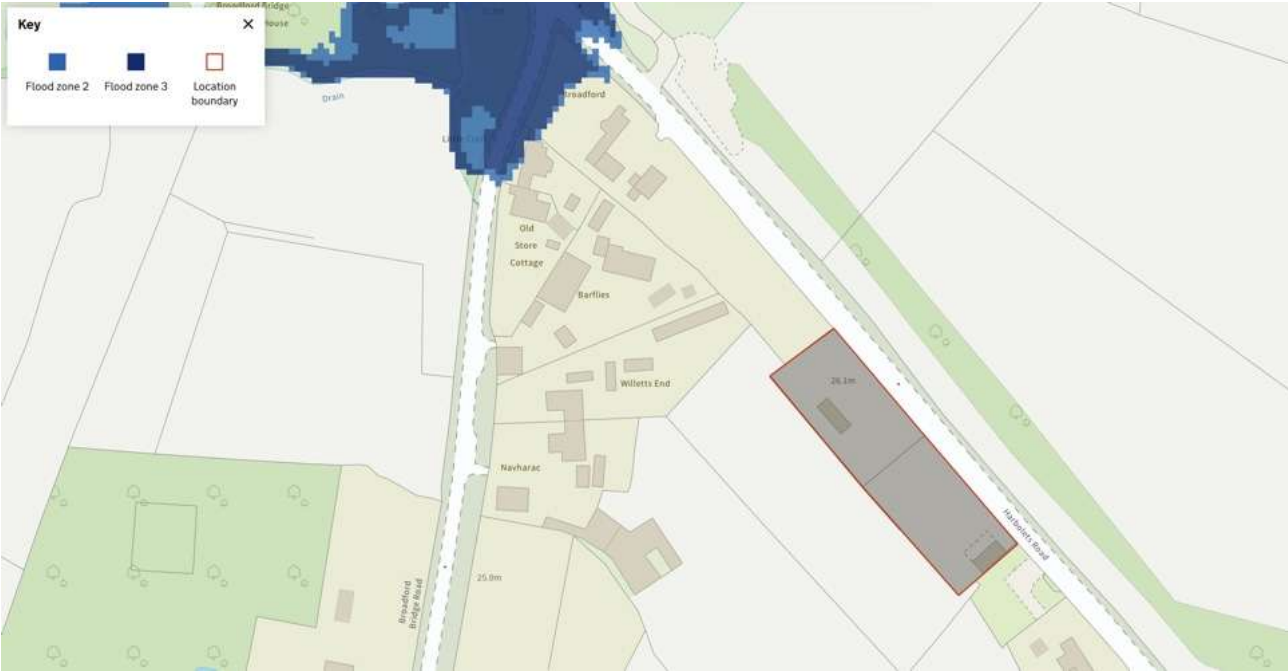


FIGURE 4. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER (GOV.UK, 2026)

Surface Water Management Strategy

Existing Surface Water Run-Off Rates

Brownfield Run-off Rate

The total site area is approximately 2,315m² (0.2315ha), which is currently surfaced with compacted gravel and is therefore assumed to behave as impermeable hardstanding for the purposes of runoff estimation.

The existing peak runoff rates for the 1 in 1, 1 in 30 and 1 in 100 year rainfall events have been estimated using the Modified Rational Method (Wallingford Procedure), as follows:

$$Q = 2.78 \times i \times A$$

Where:

A = catchment area (ha)

i = rainfall intensity (mm/hr)

$$Q_{1ex} = 2.78 \times 17.41 \times 0.2315 = 11.20\text{l/s}$$

$$Q_{30ex} = 2.78 \times 40.99 \times 0.2315 = 26.38\text{l/s}$$

$$Q_{100ex} = 2.78 \times 51.86 \times 0.2315 = 33.38\text{l/s}$$

These values represent the current runoff response of the site under its existing condition.

Greenfield Run-off Rate

The site was historically Greenfield and baseline runoff rates have therefore also been estimated using the UK SuDS Greenfield Runoff Estimation Tool. Supporting outputs are provided in Appendix C.

$$Q_{bar} = 1.34\text{l/s}$$

$$Q_1 = 1.14\text{l/s}$$

$$Q_{30} = 3.08\text{l/s}$$

$$Q_{100} = 4.28\text{l/s}$$

Infiltration Testing

Infiltration testing has been undertaken in accordance with BRE365 to assess the suitability of the site for infiltration-based drainage.

Testing at location SA01, recorded infiltration rates of:

- $1.7 \times 10^{-6} \text{m/s}$ (Cycle 1)
- $1.3 \times 10^{-6} \text{m/s}$ (Cycle 2)
- $1.5 \times 10^{-6} \text{m/s}$ (Cycle 3)

The test achieved three consecutive successful cycles with full drainage between each test, demonstrating that infiltration is viable at this location and that the results are compliant with BRE365 requirements.

SA01 is located within the primary area of proposed permeable paving, and is therefore considered representative of the ground conditions governing the performance of the surface water drainage system.

For the purposes of design, a conservative infiltration rate of **$1.3 \times 10^{-6} \text{m/s}$** has been adopted.

While the measured rates are relatively low and reflect the underlying clay geology, they are sufficient to allow gradual exfiltration of stored runoff from the permeable sub-base. The drainage strategy has therefore been developed on an attenuation-led basis, with infiltration providing long-term drain-down rather than primary event control.

Proposed Surface Water Discharge Options

According to Planning Practice Guidance (PPG), “generally the aim should be discharge surface runoff as high up the following hierarchy of drainage options as reasonably practicable: 1. Into the ground (infiltration) 2. To a surface water body; 3. To a surface water sewer, highway drain or another drainage system; 4. To a combined sewer”, whilst ensuring that surface water run-off is managed as close to its source as possible.

Infiltration

Infiltration testing has been undertaken in accordance with BRE365 and confirms that infiltration is feasible at the site. Testing within the Weald Clay Formation recorded infiltration rates in the order of 1.3×10^{-6} m/s to 1.7×10^{-6} m/s, with three consecutive successful test cycles achieved at the principal test location.

While the measured rates are relatively low, they are sufficient to allow gradual exfiltration of surface water to ground. On this basis, infiltration is considered to be a viable method of surface water disposal.

The proposed drainage strategy therefore utilises permeable paving across the site, providing distributed attenuation within the sub-base layer and allowing runoff to infiltrate to ground over time. The system is designed to operate under low infiltration conditions, with storage provided within the sub-base to accommodate the design rainfall event and infiltration providing long-term drain-down.

Infiltration to ground is therefore considered both feasible and appropriate for the site and represents the preferred drainage solution in accordance with the drainage hierarchy.

To Surface Water Body

The nearest watercourse is located approximately 200m from the site. Given the separation distance, third-party land constraints and the absence of a practical gravity connection, discharge to a surface water body is not considered to be a feasible option for the proposed development.

This option has therefore been discounted.

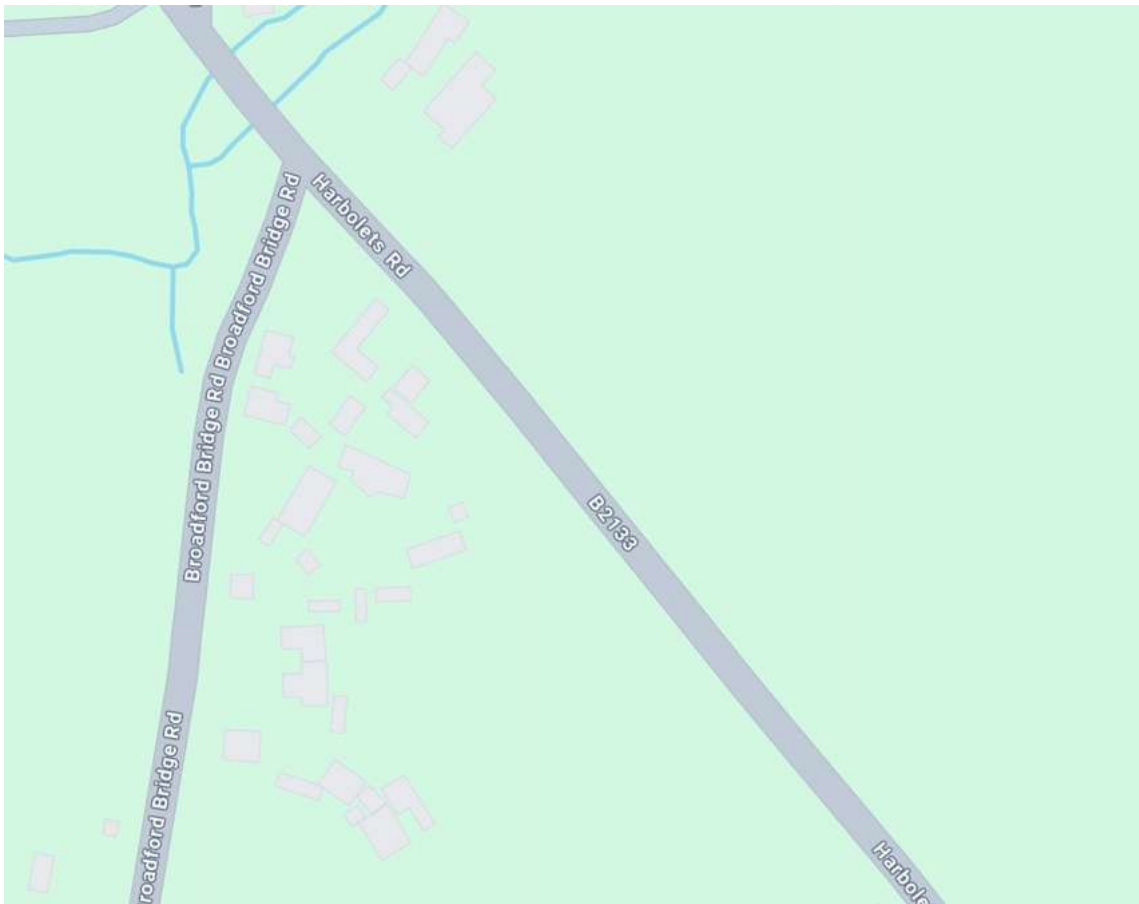


FIGURE 5. WATERCOURSE IN VICINITY OF PROPOSED SITE

Discharge to a Surface Water Sewer or Highway Drain

Southern Water records confirm that there are no surface water sewers or highway drainage systems available within the vicinity of the site.

This option is therefore not feasible.

Discharge to a Combined Sewer

No combined sewer infrastructure is present within the vicinity of the site and this option is not applicable.

Drainage Hierarchy Conclusion

Based on the above assessment, infiltration to ground represents the only feasible and policy-compliant method of surface water disposal for the site. The proposed permeable paving system has therefore been designed to manage surface water entirely within the site boundary in accordance with the drainage hierarchy and SuDS principles.

Climate Change Allowance

In accordance with Environment Agency guidance, the drainage system has been designed to accommodate the 1 in 100 year rainfall event including an appropriate allowance for climate change. A precautionary uplift of 40% has been applied to rainfall intensities to reflect current national guidance for residential development.

Epoch	Central allowance	Upper end allowance
2050s	20%	45%
2070s	25%	45%

FIGURE 6. ENVIRONMENT AGENCY PEAK RAINFALL CLIMATE CHANGE ALLOWANCE

SuDS Suitability Assessment

The following SuDS assessment has been carried out in accordance with the West Sussex LLFA Policy for the Management of Surface Water (2018), Horsham District Planning Framework (2015) Policy 38 and CIRIA C753.

SuDS Component	Description	Site Suitability	Comments
Green Roofs & Rainwater Reuse	Roof-based systems to attenuate, store or reuse rainfall at source	X	Limited building footprint and scale of development means these measures are not necessary to achieve compliance
Soakaways	Subsurface structures designed to store and infiltrate runoff locally	X	Low infiltration rates and shallow groundwater make traditional discrete soakaways less suitable than distributed systems
Filter Strips	Vegetated strips providing overland flow treatment and infiltration	X	Limited space and site layout constraints reduce effectiveness compared to permeable paving
Infiltration Trenches	Linear subsurface infiltration features for runoff storage and discharge	X	Less efficient than distributed permeable paving given site layout and drainage requirements
Swales	Shallow vegetated channels for conveyance, attenuation and treatment	X	Site layout and limited available space do not allow effective integration
Bioretention Areas	Planted depressions providing filtration, attenuation and infiltration	X	Not practical given site scale and layout constraints
Porous / Permeable Paving	Surface layer allowing runoff to pass into sub-base for storage and infiltration	✓	Primary drainage solution. Provides distributed attenuation with gradual discharge to ground via infiltration across the site
Infiltration Basins	Surface depressions storing water for infiltration over larger areas	X	Not compatible with proposed layout or operational use of the site
Detention Basins	Surface storage areas providing temporary attenuation before discharge	X	Not required as attenuation is provided within permeable paving sub-base
Ponds	Permanent water bodies providing storage and treatment	X	Not appropriate for scale or nature of development
Stormwater Wetlands	Large vegetated systems providing treatment and storage	X	Not suitable due to scale and land take requirements
Geocellular Attenuation Tanks	Underground storage structures for controlled discharge	X	Not required as attenuation is achieved within permeable paving and no off-site discharge is proposed

FIGURE 7. SUDS SITE SUITABILITY

The proposed drainage strategy adopts permeable paving as a distributed SuDS solution, providing both attenuation and infiltration across the site, and representing the most appropriate and deliverable approach given the site constraints.

Permeable Paving

Surface water runoff from the proposed development will be managed using permeable paving, which will provide both attenuation and treatment of runoff at source. The permeable paving system will allow rainfall and runoff from hardstanding areas and roof drainage to pass through the surface into the underlying granular sub-base, where temporary storage will be provided.

The system will be constructed with a permeable geotextile layer to allow infiltration into the underlying ground. Based on site-specific infiltration testing, runoff will gradually exfiltrate from the sub-base to ground in accordance with the measured infiltration rates.

The drainage system has been designed on an attenuation-led basis, with the sub-base sized to accommodate the 1 in 100 year rainfall event including a 40% climate change allowance. Infiltration will occur progressively following storm events, providing long-term drain-down rather than primary control during peak rainfall.

No off-site discharge is proposed, and the system will operate entirely within the site boundary. Surface water will be retained within the permeable paving structure and discharged to ground via infiltration.

Permeable paving also provides an effective level of water quality treatment. As runoff passes through the surface and underlying aggregate layers, sediment and associated pollutants are filtered and retained within the structure, in accordance with CIRIA C753 guidance for low pollution hazard sites.

The depth of the permeable paving sub-base will be confirmed at detailed design stage, taking into account ground conditions and structural requirements including California Bearing Ratio (CBR). For the purposes of attenuation storage, the sub-base will be designed to provide sufficient void space to accommodate the design event, typically in the order of 400–500mm thickness or as required by the hydraulic design.

Water Quality

CIRIA C753 The SuDS Manual, Chapter 26, sets out the 'simple index approach' to water quality risk management. The proposed development comprises roof areas and hardstanding associated with a low intensity residential use. Step 1 of the simple index approach is to identify the pollution hazard indices for the proposed land use.

The proposed development is classified as having a low pollution hazard level. The associated pollution hazard indices, taken from Table 26.2 of the SuDS Manual, are set out below.

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Residential driveways, access roads and low traffic areas	Low	0.5	0.5	0.4

FIGURE 8. POLLUTION HAZARD INDICES

Step 2 of the simple index approach is to select SuDS components that provide a pollution mitigation index equal to or greater than the hazard index.

The proposed drainage strategy utilises permeable paving as the primary SuDS component. Permeable paving provides treatment through filtration, sedimentation and adsorption within the surface and underlying granular sub-base layers. The relevant mitigation indices, taken from Table 26.3 of the SuDS Manual, are set out below.

Type of SuDS Component	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Permeable paving	0.7	0.6	0.7

FIGURE 9. SURFACE WATER POLLUTION MITIGATION INDICES, TAKEN FROM TABLE 26.3 OF THE SUDS MANUAL

A comparison of the pollution hazard indices and mitigation indices is provided below.

Parameter	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Total Pollution Hazard Indices	0.7	0.6	0.45
Total Pollution Mitigation Indices	0.7	0.6	0.7
Sufficiency of Mitigation	Sufficient	Sufficient	Sufficient

FIGURE 10: EVALUATION OF POLLUTION INDICES

The results demonstrate that the mitigation indices provided by the permeable paving system meet or exceed the pollution hazard indices associated with the proposed development.

Surface water runoff will be treated within the permeable paving structure prior to infiltration to ground. As runoff passes through the surface and sub-base layers, suspended solids and associated pollutants are removed through filtration and settlement processes, providing an appropriate level of treatment for the proposed land use.

Given the low pollution hazard of the development and the treatment provided by the permeable paving system, the proposed drainage strategy accords with CIRIA C753 and will not result in deterioration of water quality.

Surface Water Exceedance Flow Paths

Existing Flow Paths

Surface water runoff at the site currently drains via a combination of infiltration and informal overland flow. Based on LiDAR data, runoff generally flows towards the eastern and northern boundaries, following the existing site topography.

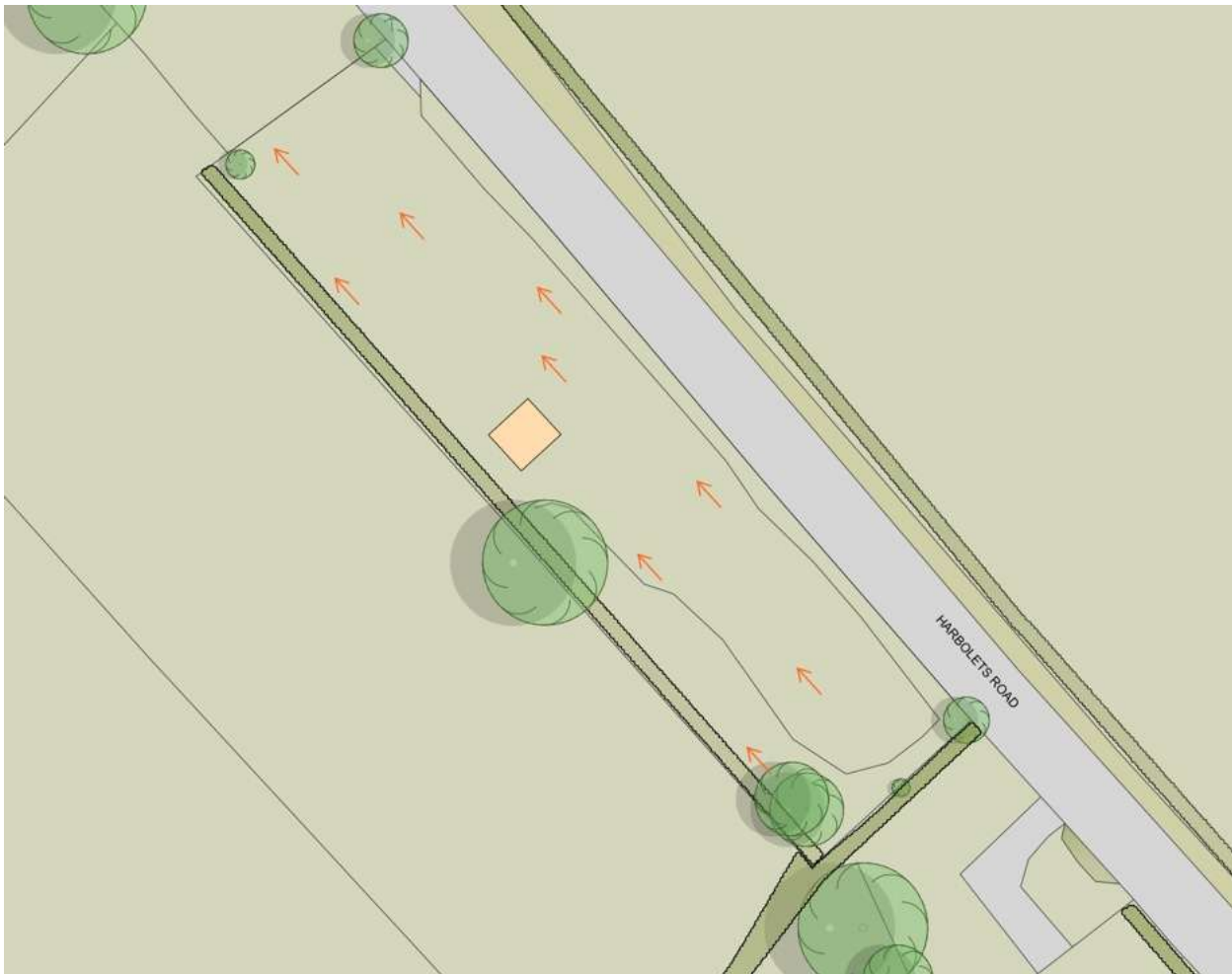


FIGURE 11. EXISTING SURFACE WATER FLOW PATHS

The Environment Agency's Risk of Flooding from Surface Water mapping indicates a localised medium risk of surface water flooding within the site. This is likely attributable to the absence of any formal drainage system and the presence of compacted gravel surfacing, which limits effective infiltration and promotes shallow surface ponding during intense rainfall events.

Proposed Flow Paths

The proposed development introduces a formal surface water management system based on permeable paving, which will intercept and manage runoff at source. Surface water will drain into the permeable paving and be stored temporarily within the underlying granular sub-base.

The system has been designed to accommodate all rainfall events up to and including the 1 in 100 year return period with a 40% allowance for climate change. Runoff will be retained within the permeable paving structure and will gradually discharge to ground via infiltration in accordance with the measured infiltration rates.

Finished levels will be designed to broadly reflect the existing site topography, ensuring that any exceedance flows arising from events greater than the design standard follow natural flow routes. In exceedance conditions, flows will be directed away from built development and will remain contained within the site, draining towards the lower northern and eastern parts of the site.

Vegetated boundary areas will provide additional interception and shallow storage of exceedance flows, ensuring that runoff is managed safely without increasing flood risk on-site or to surrounding land.



FIGURE 12. PROPOSED SURFACE WATER FLOW PATHS

Surface Water Maintenance Strategy

The drainage system has been designed to be simple, robust and maintainable in accordance with Building Regulations and CIRIA C753 – The SuDS Manual.

Responsibility for the operation and maintenance of the surface water drainage system will rest with the site owner or an appointed management company. All SuDS components will remain accessible for inspection and maintenance throughout the lifetime of the development.

The strategy is based primarily on permeable paving, which provides both attenuation and treatment of runoff at source. Routine inspection and maintenance will ensure that the system continues to function effectively and that infiltration and storage capacity are maintained.

Permeable Paving Surface

The permeable paving surface forms the primary drainage component and requires routine inspection to ensure continued permeability and structural performance.

An initial inspection will be undertaken following installation to confirm correct operation. Thereafter, the surface will be inspected periodically for evidence of sediment build-up, clogging, weed growth or surface deterioration.

Maintenance will include removal of litter and debris as required, together with periodic sweeping or vacuum cleaning to prevent clogging of the surface. This is typically undertaken annually, particularly following autumn leaf fall.

Localised repairs will be carried out where necessary to address rutting or settlement. Periodic rejuvenation of the surface through specialist cleaning may be required at intervals of approximately 10–15 years, depending on usage and observed performance.

Sub-base Storage Layer

The underlying granular sub-base provides attenuation storage and facilitates gradual infiltration to ground.

Direct access to the sub-base is not typically required; however, its performance will be monitored indirectly through inspection of the surface condition and drainage behaviour. Any signs of prolonged ponding or reduced infiltration performance will be investigated and addressed as necessary.

Inlets and Diffuser Points

Where runoff enters the permeable paving system via localised inlets or diffuser points, these will be subject to periodic inspection to ensure that they remain free from obstruction.

Any debris, sediment or blockage will be removed to maintain effective drainage into the permeable paving structure. Inspections will typically be undertaken on a six-monthly basis and following significant rainfall events.

Exceedance Flow Routes

The site layout has been designed to direct exceedance flows away from built development and along natural flow paths within the site.

These exceedance routes will be inspected periodically to ensure that they remain unobstructed and free-draining. Any build-up of debris, vegetation or other obstructions that could impede flow will be removed as required.

General Maintenance Responsibility

All maintenance activities will be undertaken by the site owner or a suitably appointed management company. Routine inspection and maintenance will ensure that the drainage system continues to operate effectively for the lifetime of the development without increasing flood risk on-site or elsewhere.

Compliance with National SuDS Standards

The proposed drainage strategy accords with the National Standards for Sustainable Drainage Systems (Defra, 2025). The approach is proportionate to the scale and context of the development and reflects the site layout, ground conditions and receiving environment.

Hierarchy and Runoff Destination (Standard 1)

The drainage hierarchy has been applied by prioritising infiltration through permeable paving and open-graded sub-base storage.

Infiltration testing undertaken in accordance with BRE365 has confirmed that discharge to ground is viable at the site. In the absence of any available connection to a public sewer or feasible off-site outfall, surface water will be managed entirely within the site boundary via infiltration.

No discharge to public sewer infrastructure or watercourses is proposed.

Interception and Everyday Rainfall (Standard 2)

Source control is provided through permeable paving across the development. Runoff from roof areas and hardstanding is directed into the permeable system, where it is intercepted and stored within the sub-base.

This ensures that small and moderate rainfall events are managed close to source, with rainfall either infiltrating directly or being temporarily stored and subsequently discharged to ground.

Management of Extreme Rainfall (Standard 3)

The permeable sub-base storage has been designed to accommodate the 1 in 100 year rainfall event including a 40% climate change allowance.

Exceedance flows arising from events greater than the design standard, or from partial system blockage, will be routed across the site in accordance with existing topography. Flows will be directed away from buildings and retained within the site boundary, ensuring that flood risk to property and surrounding land is avoided.

Water Quality (Standard 4)

Water quality treatment is achieved through the permeable paving system. Runoff from roofs and hardstanding is filtered through the permeable surface and underlying granular sub-base prior to infiltration.

This provides an appropriate level of treatment for the low pollution hazard associated with the proposed development, in accordance with CIRIA C753.

Amenity and Biodiversity (Standards 5 and 6)

The SuDS measures are integrated within the site layout through permeable hardstanding and surrounding landscaped areas.

These features maintain the usability and visual character of the site while allowing for soft landscaping and potential habitat enhancement along site boundaries.

Maintenance and Structural Integrity (Standard 7)

The drainage system comprises simple, passive components including permeable paving and granular sub-base storage. The system operates via gravity and infiltration, avoiding reliance on complex mechanical or control structures.

All elements are accessible for inspection and maintenance, and the system is suitable for long-term operation under routine maintenance regimes.

Conclusion

On this basis, the proposed drainage strategy meets the requirements of the National SuDS Standards and provides a practical and deliverable approach to managing surface water runoff from the development.

Foul Water Assessment

The proposed foul drainage strategy has been developed in response to Condition 2 of the planning permission and confirms that a sealed cesspool will be installed to serve the development. In the absence of a public sewer connection and given the constrained nature of the site, this represents the only feasible and appropriate solution.

The cesspool will be installed, operated and maintained in accordance with relevant guidance and will be retained for the lifetime of the development.

Foul drainage arising from the proposed development will be managed independently of the surface water drainage system.

The application site is located in a rural area where no public foul sewer network is available within the vicinity of the development, as confirmed by statutory undertaker records. Connection to a public sewer is therefore not feasible.



FIGURE 13. SOUTHERN WATER ASSET LOCATION PLAN

Alternative on-site treatment options, including septic tanks and package treatment plants with drainage fields, have been considered. However, due to the confined nature of the site, limited available land and the proposed layout, there is insufficient space to accommodate a compliant drainage field. In addition, the

underlying clay geology and shallow groundwater conditions would further constrain the performance of infiltration-based foul drainage systems.

On this basis, a sealed cesspool is proposed as the most appropriate and deliverable foul drainage solution for the development.

The proposed development comprises two Gypsy and Traveller pitches, each with associated accommodation. For the purposes of foul drainage design, a conservative occupancy assumption will be applied to ensure adequate storage capacity within the cesspool.

The cesspool will be constructed as a watertight tank in accordance with relevant standards and will receive all foul flows from the development via a gravity drainage network. The tank will be fitted with a high-level alarm to alert the site owner when emptying is required.

The cesspool will be emptied periodically by a licensed waste contractor, with access provided for tanker vehicles to undertake routine maintenance. Responsibility for maintenance and operation will rest with the site owner. The foul drainage system will be entirely separate from the surface water drainage system.

Foul Drainage Summary

Item	Summary
Foul Drainage Strategy	Sealed cesspool serving both pitches
Discharge Destination	Off-site removal by licensed contractor (no discharge to ground or watercourse)
Public Sewer Connection	Not available within vicinity of site
Alternative Options	Septic tank / package treatment plant not feasible due to limited site area and lack of space for compliant drainage field
Ground Conditions	Clay soils and shallow groundwater unsuitable for infiltration-based foul drainage systems
Design Basis	Conservative occupancy applied for sizing and storage capacity
Storage Capacity	Sized to provide appropriate storage between emptying cycles
Emptying Regime	Periodic tanker emptying by licensed waste contractor
Access	Tanker access provided via site access for maintenance
System Type	Watertight tank with high-level alarm
Separation	Foul drainage system entirely separate from surface water drainage
Maintenance Responsibility	Site owner or management company
Policy Compliance	NPPF, PPG, Building Regulations Part H, Horsham Policy 38

Conclusions

A surface water and foul drainage strategy has been developed for the proposed development at Land North West of Junipers, West Chiltonington.

The site is located within Flood Zone 1 and is therefore at low risk of flooding from rivers and the sea. The proposed development will not increase flood risk on-site or elsewhere.

Surface water runoff will be managed using a permeable paving system, providing distributed attenuation within the sub-base layer. Infiltration testing undertaken in accordance with BRE365 has confirmed that infiltration is viable at the site, with consistent results obtained across multiple test cycles. Runoff will be managed entirely within the site boundary via gradual infiltration to ground.

The system has been designed to accommodate the 1 in 100 year rainfall event including a 40% climate change allowance, with exceedance flows directed safely across the site away from built development.

The proposed drainage strategy accords with the drainage hierarchy, with infiltration representing the preferred and most appropriate method of surface water disposal given the absence of any available sewer connection or viable off-site outfall. The use of permeable paving also provides an appropriate level of water quality treatment in accordance with CIRIA C753.

Foul drainage will be managed via a sealed cesspool. This approach has been adopted due to the absence of a public sewer connection and the constrained nature of the site, which prevents the provision of a compliant drainage field. The system will be maintained by the site owner and emptied periodically by a licensed contractor.

Overall, the proposed drainage strategy provides a suitable and sustainable solution for the site, ensuring that both surface water and foul drainage are managed effectively without increasing flood risk.

Note:

This report has been prepared for the purposes of reviewing the possibility of incorporating SuDS into the proposed development and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should only be reproduced with our permission.

	Prepared By	Checked By	Approved for issue
Name	Tom Quigg BSc MSc CEng MICE	Magaly Sedeño BA	Tom Quigg BSc MSc CEng MICE
Signature	TQ	MST	TQ
Date	30 March 2026	30 March 2026	30 March 2026

Appendix A – Proposed Development Plans



New	Date	Description
 WS PLANNING & ARCHITECTURE		
Company Office 10000 14th Avenue SE Suite 100 Everett, WA 98203 (425) 335-1100 www.wsplanning.com	Project Office 12414 Midway Road SE Suite 200 Everett, WA 98203 (425) 335-1100 www.wsplanning.com	Project No. 10-0008 10-0008-01 10-0008-01-01
Date	August 2024	Drawn By
Scale		SS
1:500@A3		Checked
Client	Mr M Casey	
Project	Land at Harboles Road, West Chiltoning RH20 2LG	
Type	As Proposed Site Plan	
Drawing No.	J004997-DD-03	Rev.

Appendix B - Southern Water Asset Location Plans

Appendix C - Greenfield Run-off Rates

Calculated by:	Billie Bonham
Site name:	Land North West of Juniper
Site location:	Horsham

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	50.98161° N
Longitude:	0.43739° W
Reference:	3819947522
Date:	

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	0.2315
-----------------------	--------

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

Hydrological characteristics

	Default	Edited
SAAR (mm):	818	818
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

Default

Edited

Q_{BAR} (l/s):	1.34	1.34
1 in 1 year (l/s):	1.14	1.14
1 in 30 years (l/s):	3.08	3.08
1 in 100 year (l/s):	4.28	4.28
1 in 200 years (l/s):	5.02	5.02

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Appendix D – Infiltration Testing



23/02/2026

Our ref: ICE0593/LD01/260223

Mr. Michael Casey

Dear Michael,

RE: Land at Harbolets Road, West Chiltington, RH20 2LG– BRE 365 Soakage Testing

We are pleased to present the results of the soakage testing undertaken at the above site. The soakage tests were undertaken in general accordance with BRE Digest 365 'Soakaway Design' BRE, 2016.

The intrusive investigation was undertaken between 20th and 22nd February 2026, with the works supervised by an IBEX Engineer.

Background

Published geological records indicate that the ground conditions are likely to comprise the Weald Clay Formation. A thickness of Made Ground is also anticipated over the natural deposits.

Scope of Site Works

Two machine excavated trial pits were excavated to a maximum depth of 0.90m bgl and two soakage tests in general accordance with BRE Digest 365 were undertaken within the trial pits SA01 and SA02.

Ground Conditions

The ground conditions encountered were broadly consistent with those anticipated, namely a thickness of Made Ground overlying the Weald Clay Formation.

For further details of the ground conditions, reference should be made to the exploratory hole logs presented in Appendix A.

Groundwater

Groundwater was encountered within both trial pits (SA01 and SA02) at depths of between 0.80m and 0.90m bgl during the investigation.

Soakaways

Table 1 summarises the soakage rates, which were calculated and extrapolated based on the results of the soakage testing:

Reference	Geology	Calculated Infiltration Rates (m/s)		
		1 st Cycle	2 nd Cycle	3 rd Cycle*
SA01	Weald Clay Formation	1.7X10 ⁻⁶	1.3X10 ⁻⁶	1.5X10 ⁻⁶
SA02	Weald Clay Formation	N/D	N/D	N/D

Table 1 Summary of Soakage Test Results

IBEX Consulting Engineers Limited

Abbey House, 25 Clarendon Road, Redhill, Surrey, RH1 1QZ

T: 01737 457622 (ext 2622)

W: www.ibexconsultant.com

E: info@ibexconsultant.com

Geotechnical and Environmental Specialists | Site Investigations

IBEX Consulting Engineers Limited registered in England and Wales under the company registration number: 13585544



Closure

We trust that we have interpreted your instructions correctly; please do not hesitate to contact us should you have any queries.

Yours sincerely

For and on Behalf of IBEX Consulting Engineers Limited



Levent Dogan BSc, MSc, PGDip, CEng MCIT, AMICE, AMIEnvSc
Director

levent.dogan@ibexconsultant.com

- Enc. Figure 1 Site Location Plan
 Figure 2 Exploratory Hole Logs Location Plan
 Appendix A Exploratory Hole Logs
 Appendix B BRE 365 Soakage Testing Results

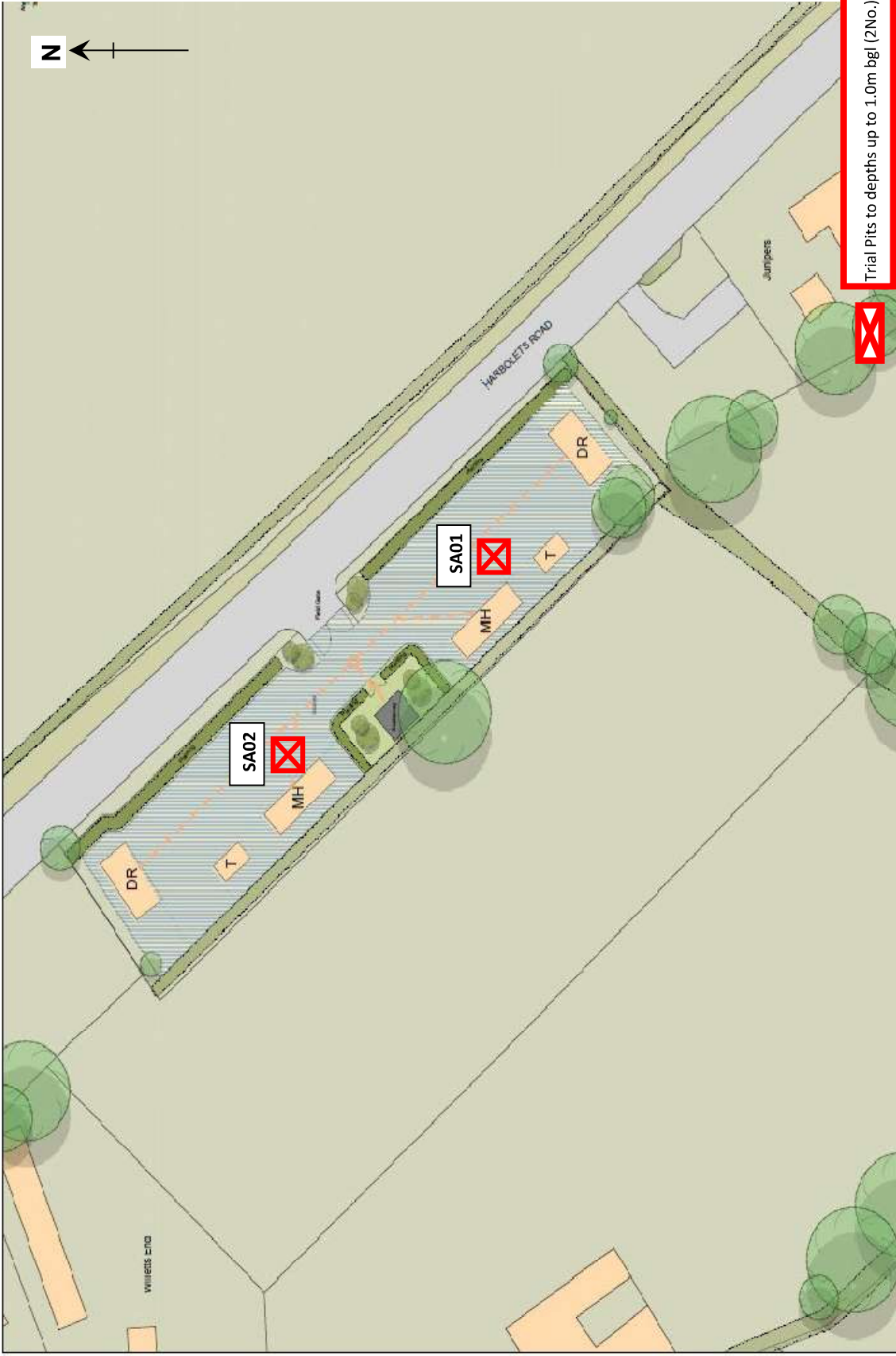


Figures





Project:		Land at Harbolets Road, West Chiltington, RH20 2LG		Title	Site Location Plan
Client:		Mr. Michael Casey		IBEX Consulting Engineers Limited	
Ref No:	ICE0593	Revision:	0	Abbey House, 25 Clarendon Road	
Drawn:	LD	Date:	23/02/2026	Redhill, Surrey. RH1 1QZ	
Figure:	1	Scale:	Not To Scale	+44(0)1737 452622 www.ibexconsultant.com	
					



Project:	Land at Harbolets Road, West Chiltington, RH20 2LG			Title	Exploratory Hole Logs Location Plan
Client:	Mr. Michael Casey			IBEX Consulting Engineers Limited Abbey House, 25 Clarendon Road Redhill, Surrey. RH1 1QZ +44(0)1737 452622 www.ibexconsultant.com 	
Ref No:	ICE0593	Revision:	0		
Drawn:	LD	Date:	23/02/2026		
Figure:	2	Scale:	Not To Scale		

Appendix A

Exploratory Hole Logs





Key to exploratory hole symbols and abbreviations

SAMPLE TYPES

ACM - Asbestos sample	AMAL - Amalgamated sample	B - Bulk disturbed sample
BLK - Block sample	G - Core sample	CBR - CBR test sample
D - Disturbed sample	ES - Environmental sample	EW - Environmental water sample
G - Gas sample	J - Jar sample	L - Liner sample
TW - Pushed thin wall sample	U - Undisturbed sample	UT - Undisturbed thin wall sample
W - Water sample		

IN-SITU TESTS

	HV - Hand shear vane	HV(r) - Hand shear vane residual	PID - Photo ionisation detector		
	PP - Hand penetrometer	SPT - Standard penetration test	SPT(C) - SPT using cone		

GROUNDWATER

Groundwater strike Groundwater rest level

ROTARY CORE DETAILS

TCR - Total core recovery (%)	SCR - Solid core recovery (%)	RQD - Rock quality designation (%)
FI - Fracture index	NI - Non-intact core	AZCL - Assumed zone of core loss

LEGEND

Topsoil	Clay	Chalk	Sand backfill
Peat	Silt	Breccia	Gravel backfill
Made ground [cohesive]	Sand	Conglomerate	Arisings
Concrete	Gravel	Metamorphic	Bentonite
Wood	Cobbles	Igneous	Concrete
Brick	Boulders		Grout
Bituminous material	Mudstone		Plain pipe
Gypsum	Siltstone		
Coal	Sandstone		Slotted pipe
Void	Limestone		



Trial Pit

SA01

Sheet 1 of 1

[illegible]



Trial Pit

SA02

Sheet 1 of 1

[illegible]

Appendix B

BRE 365 Soakage Testing Results





Soakaway Test Results (after BRE Digest 365)

IBEX Consulting Engineers Limited
Abbey House, 25 Clarendon Road,
Redhill, Surrey, RH1 1QZ
+44(0)1737 452622 www.ibexconsultant.com

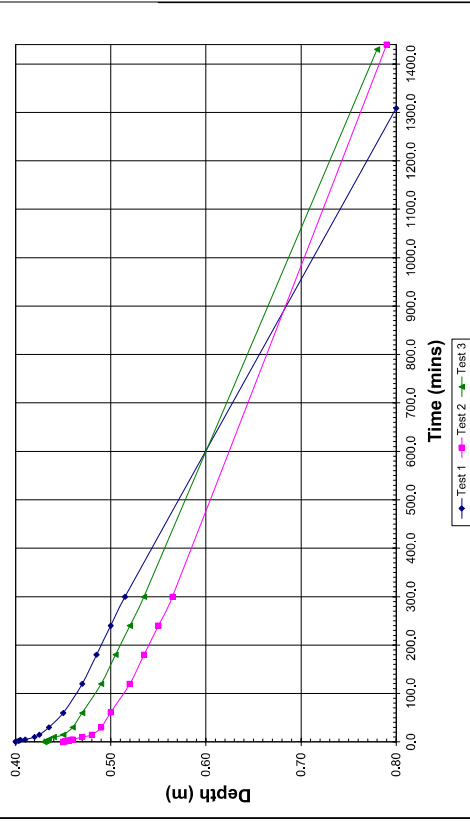
Project Name :	Land at Harbours Road, West Chillington, RH20 2LG	Job No. :	ICE0593
Client :	Mr. Michael Casey	Date :	23/02/2026

Pit reference	SA01
Pit depth (m)	0.80
Pit width (m)	0.25
Pit length (m)	2.00
Depth to standing water (m)	

Test 1	Time (min)	Depth (m)
	0.0	0.40
	1.0	0.40
	2.0	0.40
	3.0	0.40
	4.0	0.41
	5.0	0.41
	10.0	0.42
	15.0	0.43
	30.0	0.44
	60.0	0.45
	120.0	0.47
	180.0	0.49
	240.0	0.50
	300.0	0.52
	1309.0	0.80

Test 2	Time (min)	Depth (m)
	0.0	0.045
	1.0	0.045
	2.0	0.045
	3.0	0.046
	4.0	0.046
	5.0	0.046
	10.0	0.047
	15.0	0.048
	30.0	0.049
	61.0	0.50
	120.0	0.52
	180.0	0.54
	240.0	0.55
	300.0	0.57
	1440.0	0.79

Test 3 (extrapolated)	
Time (min)	Depth (m)
0.0	0.43
1.0	0.43
2.0	0.43
3.0	0.43
4.0	0.43
5.0	0.44
10.0	0.44
15.0	0.45
30.0	0.46
60.0	0.47
120.0	0.49
180.0	0.51
240.0	0.52
300.0	0.54
1430.0	0.78



	Max. depth (m)	0.80	0.79	
Effective depth (m)		0.34		0.35
75% effective depth (m)		0.50		0.52
50% effective depth (m)		0.60		0.61
25% effective depth (m)		0.70		0.69
175 (mm)	240.00		180.00	240.00
150 (mm)				
125 (mm)	958.00		1034.00	1013.00
Vn 75-25	0.10	0.09		0.09
ap 50	1.4	1.2875		1.2875
tp 75-25	718.00	854.00		773.00

Soil infiltration rate (ml/s)	1.7E-06	1.3E-06	1.5E-06
Soil infiltration rate (mm/hr)	5.97E+00	4.72E+00	5.28E+00

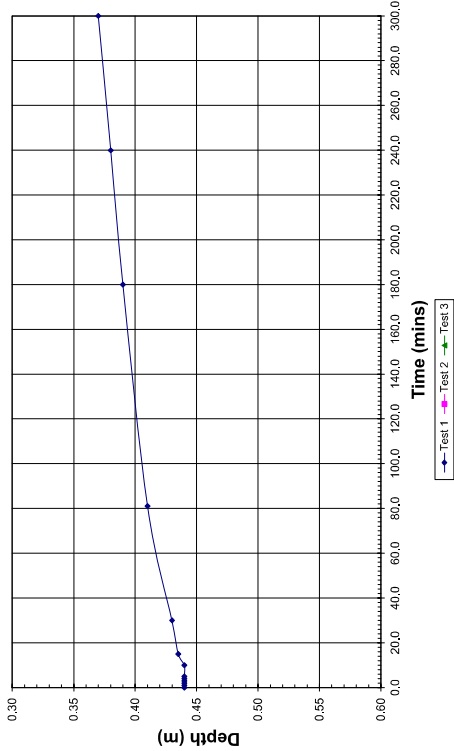
Notes:

Orange cells require input data
Infiltration calculated to method in 'BRE Digest 365 (1991)' - 'Soakaway Design'
First line of table must be depth at time = 0



IBEX Consulting Engineers Limited
Abbey House, 25 Clarendon Road,
Redhill, Surrey, RH1 1QZ

Job No.:	ICE0593
Date:	23/02/2026

[illegible][illegible]

	Max. depth (m)	0.90	0.90	0.90
Effective depth (m)	0.46	0.46	0.90	0.90
75% effective depth (m)	0.56	0.56	0.23	0.23
50% effective depth (m)	0.67	0.67	0.45	0.45
25% effective depth (m)	0.79	0.79	0.68	0.68
175 (mm)				
150 (mm)				
125 (mm)				
V ₇₅ 75-25	0.07	0.14	0.14	0.14
ap 50	0.967	1.605	1.605	1.605
ap 75-25	0.00	0.00	0.00	0.00

Soil infiltration rate (m/s)	#DIV/0!	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	#DIV/0!	#DIV/0!	#DIV/0!

Orange cells require input data
Infiltration calculated to method in 'BRE Digest 365 (1991) - Soakaway Design'
First line of table must be depth at time = 0

Appendix E – Proposed Hydraulic Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	14.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.200	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S01	0.053	5.00	26.200	450	16.929	80.556	1.200	25.000
S03 (FC)	0.053	5.00	26.300	1200	49.336	80.556	1.660	24.640
S02	0.053	5.00	26.600	450	84.869	80.324	1.000	25.600
S04			26.300	450	49.221	89.699	1.750	24.550

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)
1.000	S01	S03 (FC)	33.500	0.600	25.000	24.640	0.360	93.1	150	5.54	50.0
2.000	S02	S03 (FC)	33.500	0.600	25.600	24.640	0.960	34.9	150	5.33	50.0
1.001	S03 (FC)	S04	9.144	0.600	24.640	24.550	0.090	101.6	150	5.69	50.0

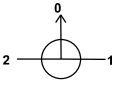
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.042	18.4	7.2	1.050	1.510	0.053	0.0	65	0.976
2.000	1.709	30.2	7.2	0.850	1.510	0.053	0.0	50	1.402
1.001	0.997	17.6	21.5	1.510	1.600	0.159	0.0	150	1.015

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)
1.000	33.500	93.1	150	Circular	26.200	25.000	1.050	26.300	24.640	1.510
2.000	33.500	34.9	150	Circular	26.600	25.600	0.850	26.300	24.640	1.510
1.001	9.144	101.6	150	Circular	26.300	24.640	1.510	26.300	24.550	1.600

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S01	450	Manhole	Adoptable	S03 (FC)	1200	Manhole	Adoptable
2.000	S02	450	Manhole	Adoptable	S03 (FC)	1200	Manhole	Adoptable
1.001	S03 (FC)	1200	Manhole	Adoptable	S04	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S01	16.929	80.556	26.200	1.200	450				
						0	1.000	25.000	150
S03 (FC)	49.336	80.556	26.300	1.660	1200		1	2.000	24.640
						2	1.000	24.640	150
						0	1.001	24.640	150
S02	84.869	80.324	26.600	1.000	450				
						0	2.000	25.600	150
S04	49.221	89.699	26.300	1.750	450		1	1.001	24.550

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	14.000	Additional Storage (m³/ha)	0.0
Ratio-R	0.200	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160
30	120	240	480	720	1440	2880

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node S03 (FC) Online Depth/Flow Control

Flap Valve	x	Invert Level (m)	24.640	Design Flow (l/s)	0.1
Replaces Downstream Link	✓	Design Depth (m)	1.500		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.010	0.000	2.000	0.000

Node S01 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00468	Invert Level (m)	25.450	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00468	Time to half empty (mins)		Depth (m)	0.500
Safety Factor	2.0	Width (m)	19.000	Inf Depth (m)	
Porosity	0.30	Length (m)	52.600		

Node S02 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	26.050	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.500
Safety Factor	2.0	Width (m)	19.000	Inf Depth (m)	
Porosity	0.30	Length (m)	52.600		

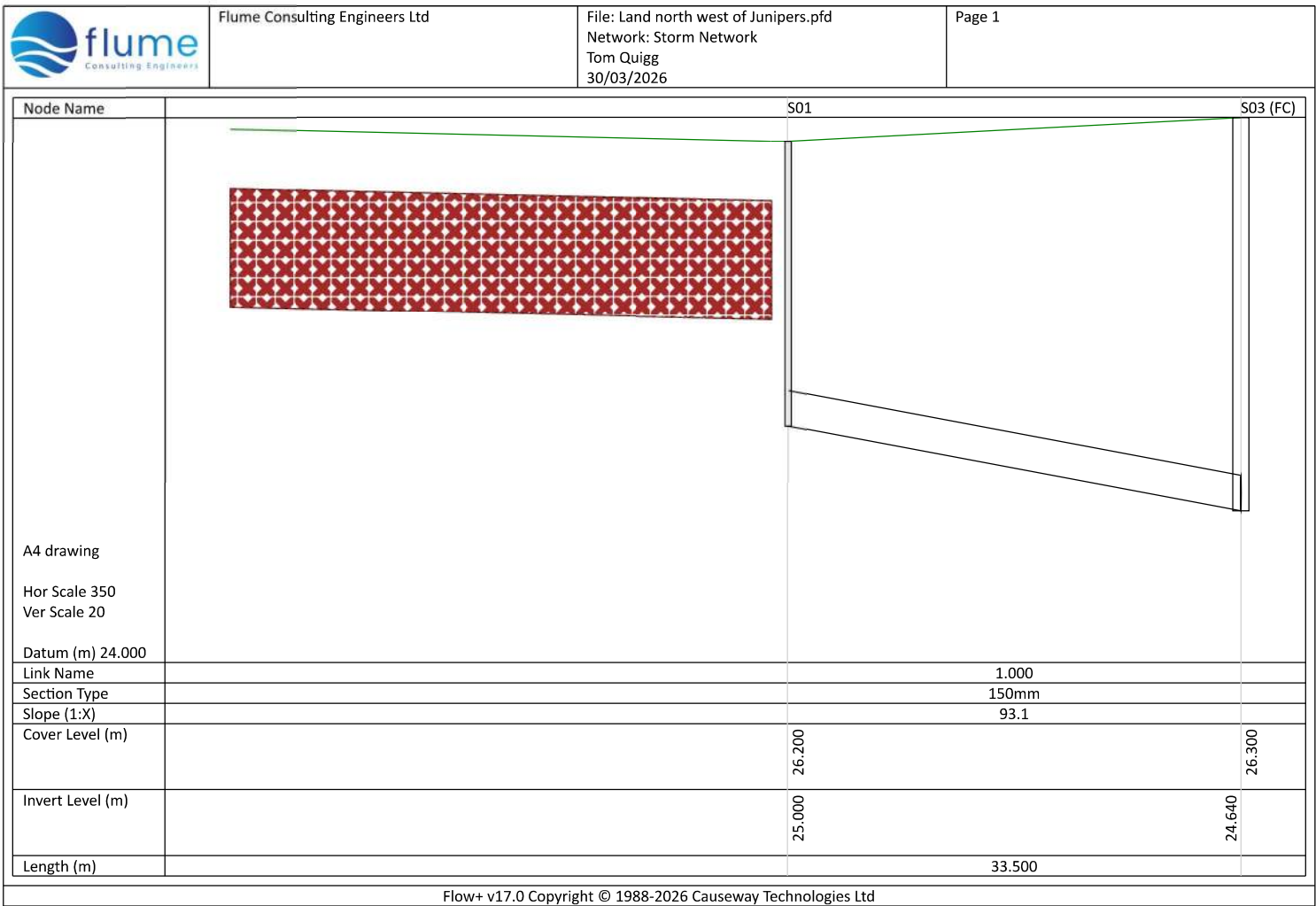
Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 15 minute summer	256.565	72.599	100 year +40% CC 480 minute summer	44.415	11.737
100 year +40% CC 15 minute winter	180.046	72.599	100 year +40% CC 480 minute winter	29.508	11.737
100 year +40% CC 30 minute summer	191.469	54.179	100 year +40% CC 600 minute summer	37.190	10.172
100 year +40% CC 30 minute winter	134.364	54.179	100 year +40% CC 600 minute winter	25.410	10.172
100 year +40% CC 60 minute summer	146.724	38.775	100 year +40% CC 720 minute summer	33.732	9.041
100 year +40% CC 60 minute winter	97.480	38.775	100 year +40% CC 720 minute winter	22.670	9.041
100 year +40% CC 120 minute summer	102.286	27.031	100 year +40% CC 960 minute summer	28.448	7.491
100 year +40% CC 120 minute winter	67.957	27.031	100 year +40% CC 960 minute winter	18.844	7.491
100 year +40% CC 180 minute summer	83.794	21.563	100 year +40% CC 1440 minute summer	21.357	5.724
100 year +40% CC 180 minute winter	54.468	21.563	100 year +40% CC 1440 minute winter	14.353	5.724
100 year +40% CC 240 minute summer	68.849	18.195	100 year +40% CC 2160 minute summer	15.749	4.352
100 year +40% CC 240 minute winter	45.742	18.195	100 year +40% CC 2160 minute winter	10.851	4.352
100 year +40% CC 360 minute summer	54.744	14.088	100 year +40% CC 2880 minute summer	13.332	3.573
100 year +40% CC 360 minute winter	35.585	14.088	100 year +40% CC 2880 minute winter	8.960	3.573

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.32%

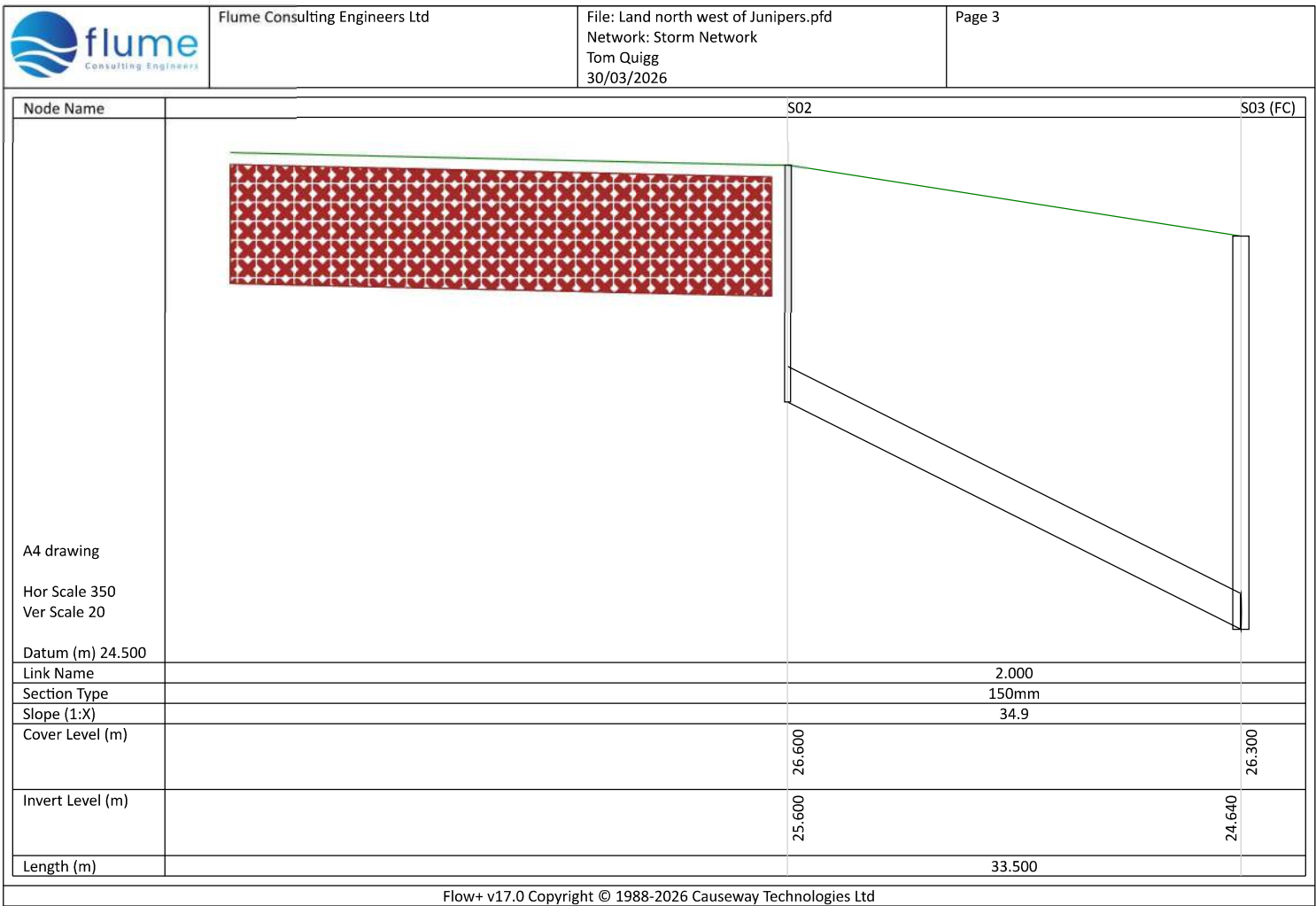
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
2160 minute winter	S01	1800	25.916	0.916	3.9	131.9207	0.0000	SURCHARGED
30 minute summer	S03 (FC)	18	26.052	1.412	22.2	1.5974	0.0000	SURCHARGED
30 minute winter	S02	22	26.083	0.483	15.4	3.1155	0.0000	SURCHARGED
15 minute summer	S04	1	24.550	0.000	0.0	0.0000	0.0000	OK

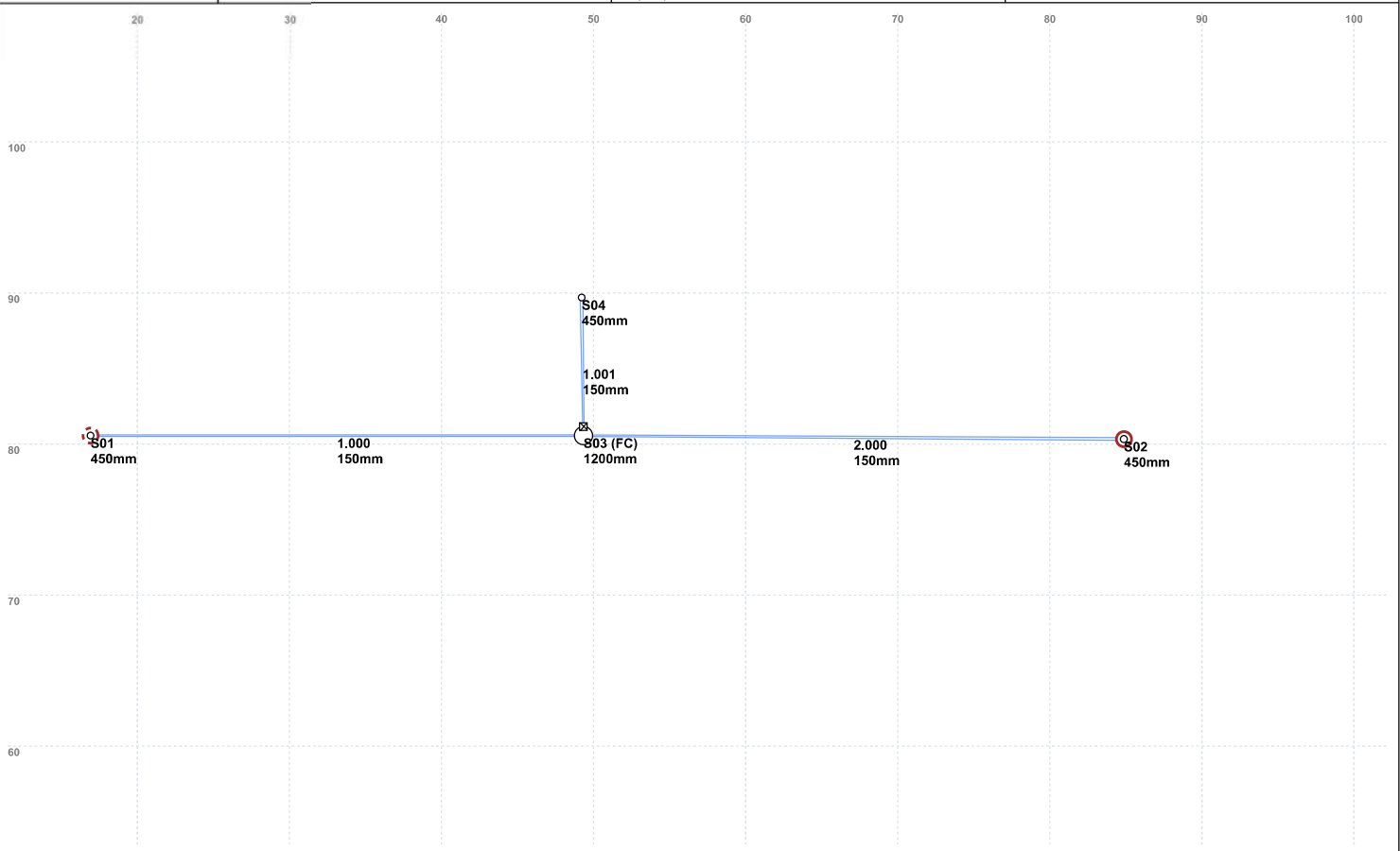
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
2160 minute winter	S01	1.000	S03 (FC)	-2.6	-0.146	-0.140	0.5898	
2160 minute winter	S01	Infiltration		0.7				
30 minute summer	S03 (FC)	Depth/Flow	S04	0.0				0.0
30 minute winter	S02	2.000	S03 (FC)	12.6	0.714	0.416	0.5898	



Node Name	S03 (FC)		S04
A4 drawing Hor Scale 350 Ver Scale 20 Datum (m) 24.000			
Link Name	1.001		
Section Type	150mm		
Slope (1:X)	101.6		
Cover Level (m)	26.300		26.300
Invert Level (m)	24.640		24.550
Length (m)	9.144		

Flow+ v17.0 Copyright © 1988-2026 Causeway Technologies Ltd





Appendix F - Proposed Drainage Strategy

Drainage Notes

General

1. All drainage works shall be carried out in accordance with the approved drainage strategy and in compliance with the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), National Standards for SuDS (2025), CIRIA C753 and Horsham District Planning Framework Policy 38.
2. The drainage scheme shall be implemented in full and retained thereafter in accordance with the approved details.
3. All levels, gradients and construction details shall be confirmed at detailed design stage and agreed with the project engineer prior to construction.

Surface Water Drainage

4. Surface water runoff from all hardstanding areas, access routes and roof drainage shall be managed using permeable paving in accordance with SuDS principles.
5. The permeable paving system shall provide source control by allowing runoff to pass through the surface into the underlying granular sub-base, which shall provide attenuation storage and facilitate infiltration to ground.
6. The system shall be designed to accommodate the 1 in 100 year rainfall event including a 40% climate change allowance without flooding of buildings.
7. Infiltration shall be provided in accordance with BRE365 testing, with the system designed to operate under low infiltration conditions and provide gradual drain-down following storm events.
8. No off-site discharge of surface water is proposed. All runoff shall be managed within the site boundary in accordance with the drainage hierarchy.
9. The extent of permeable paving shall correspond with areas of confirmed infiltration viability identified through site investigation.
10. The sub-base shall comprise open-graded granular material providing adequate void ratio for attenuation storage. Sub-base thickness shall be determined through detailed hydraulic and structural design.
11. A permeable geotextile layer shall be provided to allow infiltration while preventing migration of fine material into the sub-base.
12. Finished surface levels shall direct runoff towards permeable paving areas and prevent uncontrolled discharge from the site.
13. Exceedance flows from events exceeding the design standard shall be routed overland in accordance with site topography, directed away from buildings and retained within the site boundary.
14. Surface water treatment shall be provided through filtration and sedimentation within the permeable paving system in accordance with CIRIA C753.

Foul Water Drainage

15. Foul drainage from the development shall discharge to a sealed cesspool located within the site.
16. The cesspool shall be constructed as a watertight system in accordance with relevant standards and manufacturer specifications.
17. The cesspool shall be sized to accommodate foul flows from the development based on appropriate occupancy assumptions and storage requirements.
18. The cesspool shall be fitted with a high-level alarm to indicate when emptying is required.
19. The tank shall be emptied periodically by a licensed waste contractor, with access provided for tanker vehicles.
20. No discharge of foul water to ground, surface water or sewer is permitted.
21. The foul drainage system shall remain entirely separate from the surface water drainage system at all times.

Maintenance

22. The drainage system shall be maintained for the lifetime of the development by the site owner or appointed management company.
23. Maintenance shall include periodic inspection, cleaning and removal of debris to ensure continued permeability and performance of the permeable paving system.
24. Exceedance flow routes and drainage features shall be kept clear of obstruction at all times.
25. The foul drainage system shall be maintained in accordance with manufacturer guidance and emptied as required to ensure effective operation.

Compliance Note

26. This drainage scheme has been designed to discharge planning Conditions 2 and 3 and shall be implemented in full in accordance with the approved details.

