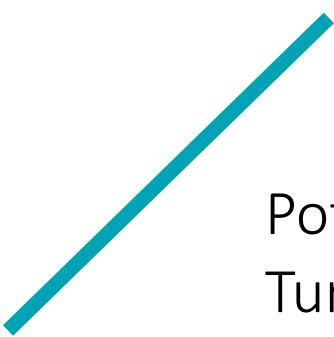




Pots and Pithoi, The Barns, East Street,
Turners Hill, Crawley

**Flood Risk Assessment &
Drainage Strategy**

January 2026

Potts and Pithoi Limited



**COMMERCIAL
POTS AND PITHOI
THE BARNs, EAST STREET, TURNERS HILL, CRAWLEY**

Flood Risk Assessment & Drainage Strategy

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Flood Risk Assessment & Drainage Strategy

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1. EXECUTIVE SUMMARY

- 1.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Paul Basham Associates on behalf of Pots and Pithoi Limited to support a FULL planning application for a store building and parking area. The land is located to the north of East Street. The site postcode is RH10 4QA.
- 1.2 This FRA has been prepared by review of site details such as location, topography, geology, hydrology, existing drainage, potential sources of flood risk and climate change effects.
- 1.3 This FRA has been prepared in accordance with the NPPF and Planning Practice Guidance, as well as the local planning policies set out by Mid Sussex District Council and West Sussex County Council.
- 1.4 The development is in Flood Zone 1 and has been categorised as "less vulnerable"; therefore, in accordance with NPPF, the proposals are acceptable, and the site will not require an exception test.
- 1.5 The proposed single-storey store has a design lifetime of 75 years. As such, flood risk has been assessed up to 2100.
- 1.6 Residual flood risk from all sources is summarised to be:
 - Fluvial and tidal flooding is considered to be **Very Low**
 - Reservoir flooding is considered to be **Very Low**
 - Surface water flooding is considered to be **Very Low**
 - Groundwater flooding is considered to be **Very Low**
 - Public sewer flooding is considered to be **Very Low**
- 1.7 The proposed development will utilise SuDS planters in order to reduce the runoff rates from the proposed single-storey store building as well as providing a sustainable drainage feature enhancement.
- 1.8 The existing overflow parking area will remain as a permeable surface allowing for infiltration and providing a level of treatment for rainfall whilst ensuring no increase in runoff rates or volumes from the site.

2. INTRODUCTION

- 2.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Paul Basham Associates on behalf of Pots and Pithoi Limited to support a FULL planning application for a store building and parking area. The land is located to the north of East Street. The nearest postcode is RH10 4QA. See site location in **Figure 1** below.
- 2.2 The plot size is approximately 0.27ha and the land is currently parking area.
- 2.3 The development aspirations are for a single storey store. The full illustrative masterplan can be found in **Appendix A**

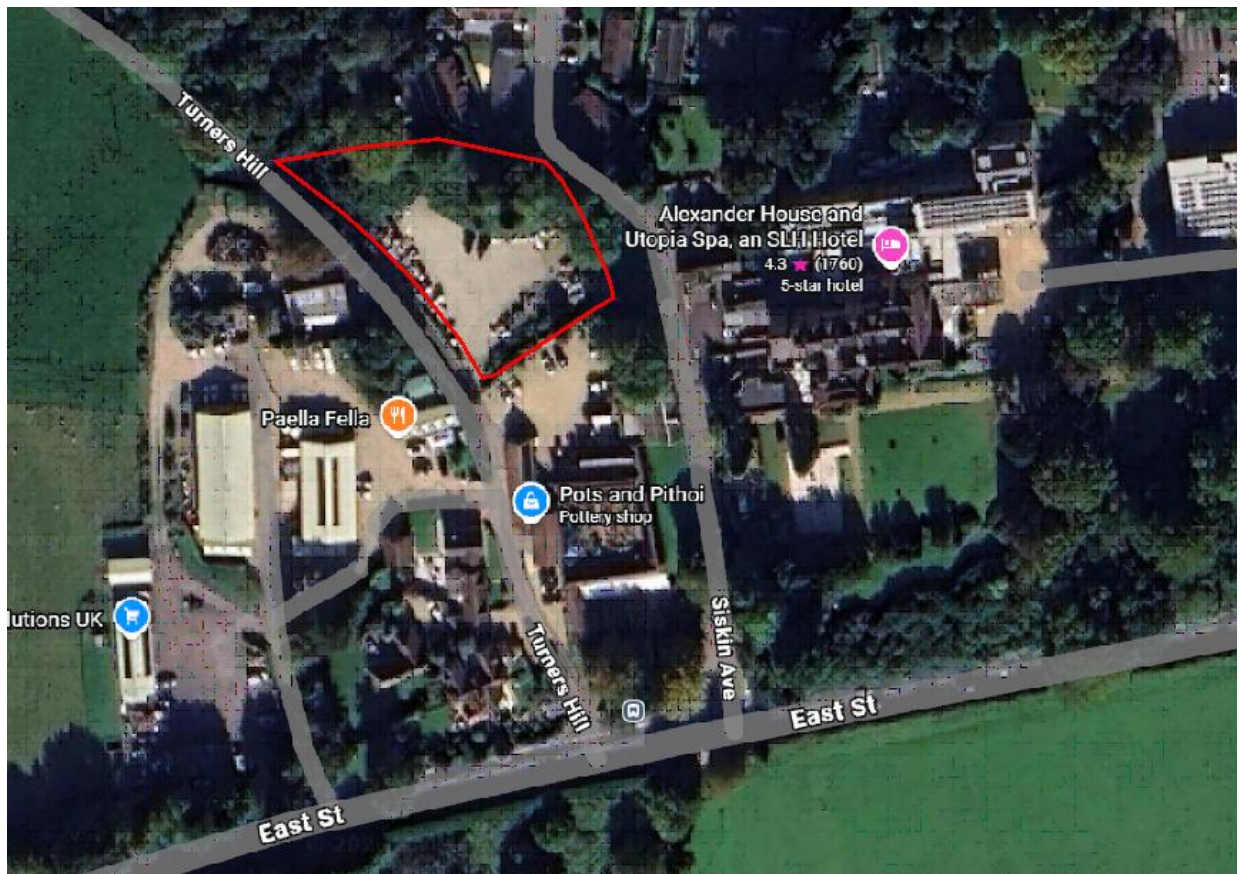


Figure 1: Site Location Plan

3. SITE DESCRIPTION

Topography

3.1 The proposed block plan with the topographical survey overlaid has been reviewed and shows that the site exhibits a slope from South to North, with the highest point in the southwest corner of approximately 136.25m AOD and the lowest point located in the northeast corner of approximately 131.75m AOD. The survey overlaid on the site layout can be found in **Appendix A**.

Geology

3.2 A review of the British Geological Survey (BGS) mapping indicates that the bedrock geology beneath the site is “Lower Tunbridge Wells Sand - Sandstone, siltstone and mudstone. Sedimentary bedrock formed between 139.4 and 133.9 million years ago during the Cretaceous period.” The BGS Mapping showed that no superficial geology was present on the site. See **Figure 2** for the BGS map extract.

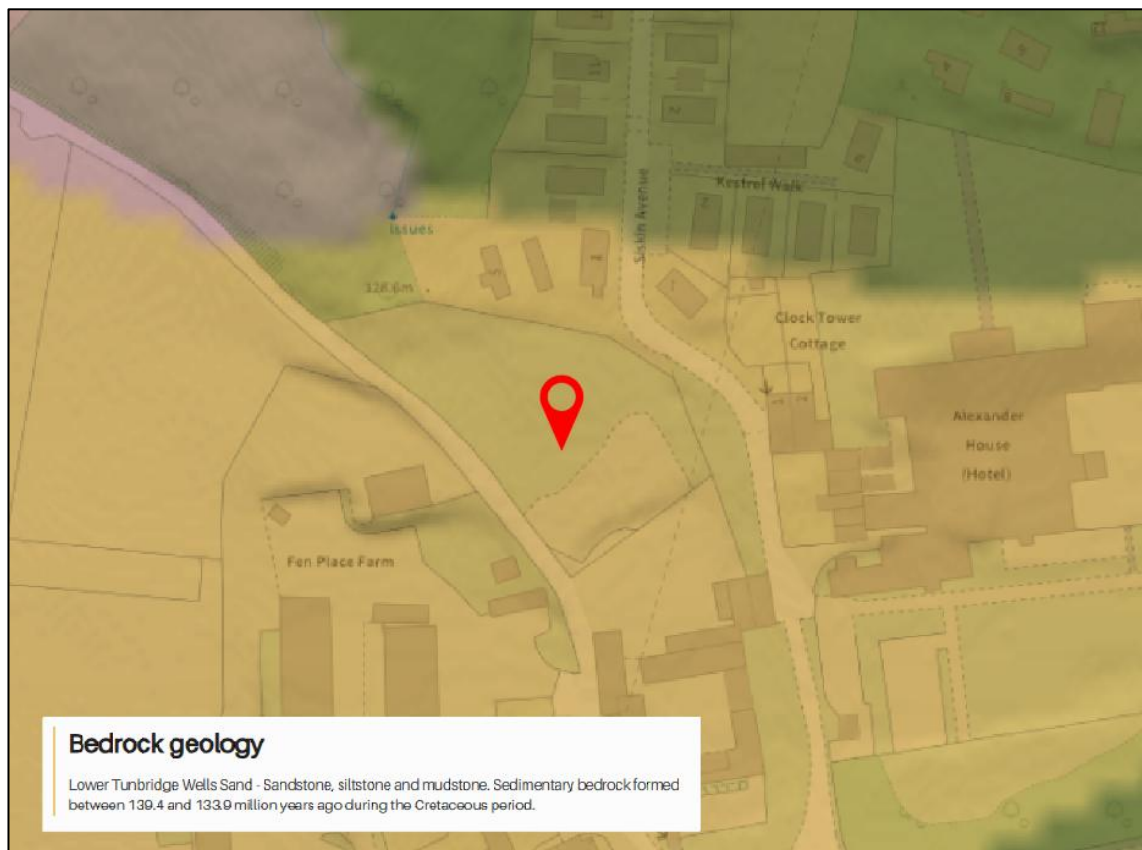


Figure 2: BGS bedrock mapping

3.3 A BGS 'Infiltration SuDS GeoReport' has been obtained and shows that the site is "probably compatible for infiltration SuDS. The subsurface is probably suitable although the design may be influenced by the ground conditions". This is shown below in **Figure 3**. The full SuDS GeoReport can be found in **Appendix B**.

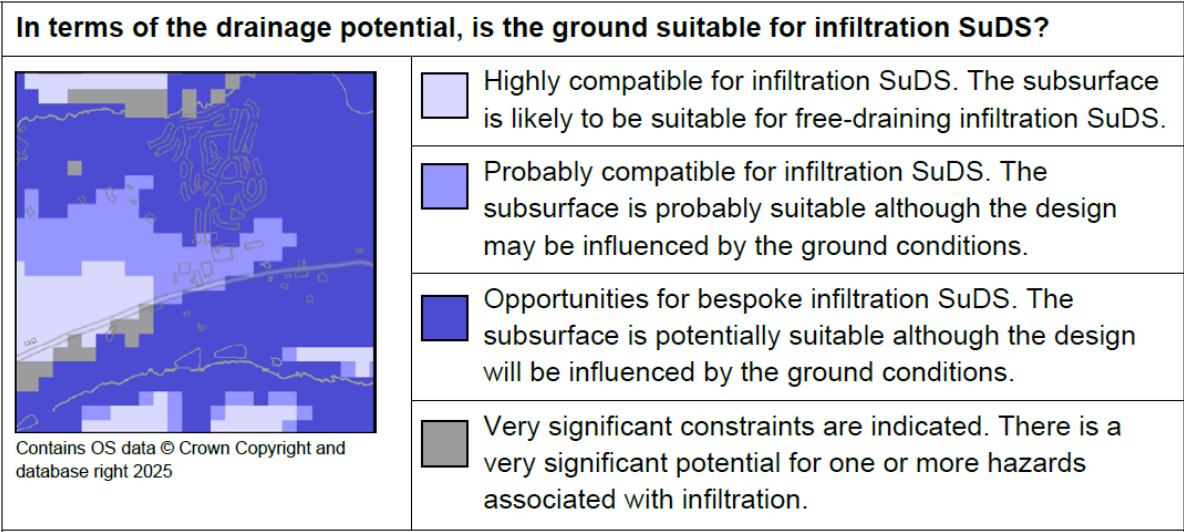


Figure 3: BGS infiltration SuDS GeoReport – infiltration potential

Hydrology

3.4 There is an existing watercourse located approximately 330m to the south of the development which appears to be a tributary for the River Medway. The River Medway is also located 570m to the north of site, these are shown by blue pins below in **Figure 4**. These watercourses are not shown on the Environment Agency Asset Management website so it is determined they are ordinary watercourses that are the responsibility of the Lead Local Flood Authority (LLFA), West Sussex County Council.

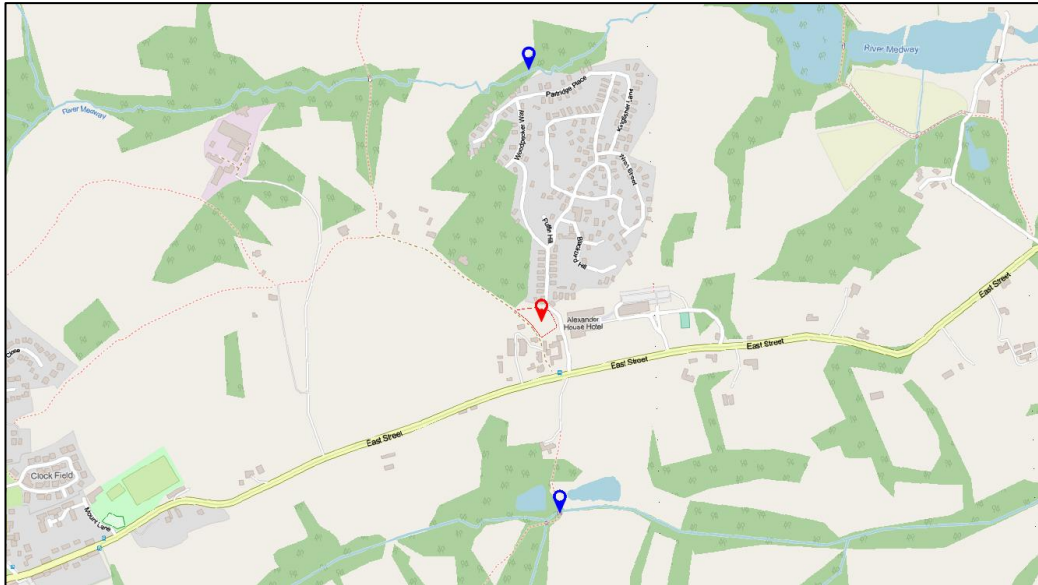


Figure 4: Watercourse map

Hydrogeology

- 3.5 The Department for Environment, Food & Rural Affairs (DEFRA) Magic Map identifies area that lie within source protection zones. The site does not fall within a source protection zone shown in *Figure 5* below.

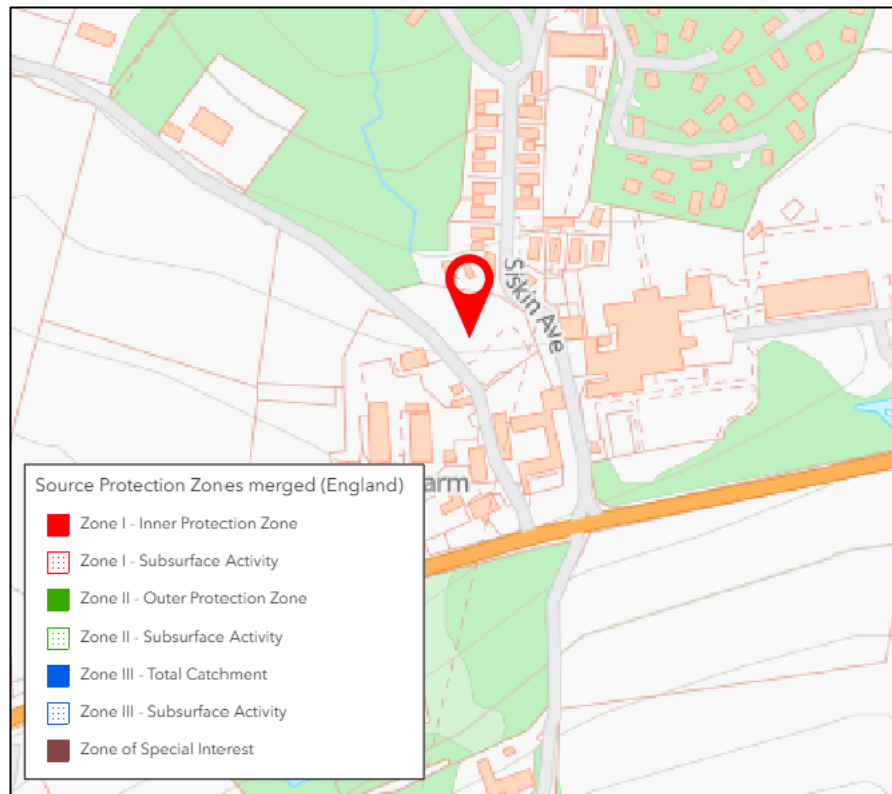


Figure 5: Source Protection Zones (Source: Magic Map)

- 3.6 The Magic Map has identified the site as being within an area of groundwater vulnerability, which is how susceptible groundwater is to contamination. The map extract below in **Figure 6** shows that the site is considered to have high groundwater vulnerability.

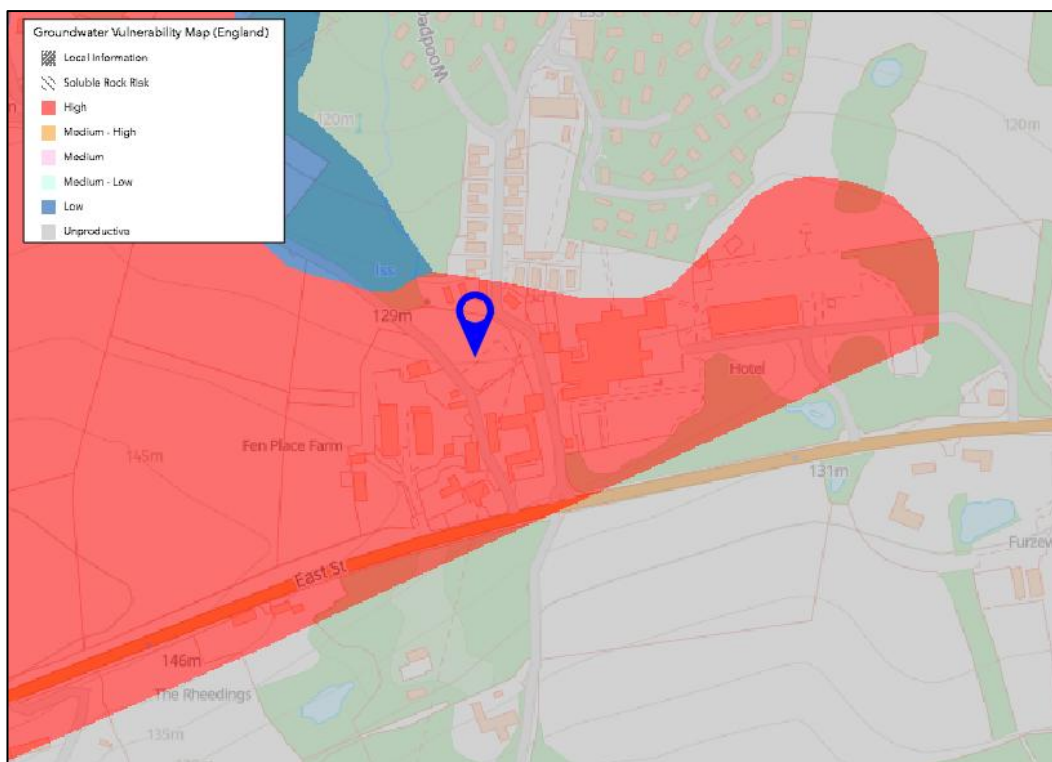


Figure 6: Groundwater Vulnerability (Source: Magic Map)

- 3.7 The BGS Infiltration SuDS GeoReport has identified that percolation of the site will occur through fractures which has little potential for contaminant removal and breakdown.

Predominant flow mechanism	
 Contains OS data © Crown Copyright and database right 2025	Water is likely to percolate through the unsaturated zone to the groundwater through either the pore space in granular media or through porespace and fractures; these processes have some potential for contaminant removal and breakdown.
	Water is likely to percolate through the unsaturated zone to the groundwater through fractures, a process which has little potential for contaminant removal and breakdown.

Pre-development drainage, greenfield rates and volumes

- 3.8 Based on the topography and the BGS SuDS infiltration GeoReport. The existing surface water drainage appears to infiltrate through the existing gravel overflow parking area or runoff into the forest north of the development and eventually into the River Medway.
- 3.9 The greenfield run-off rates for the existing site have been estimated using the HR Wallingford online calculator on the UK SuDS website. The median greenfield runoff rate for (Q_{Med}) for the site 0.27ha site is 1.8l/s and shown in **Table 1** below. The full Greenfield runoff rates are shown in **Appendix C**.

Return Period	Flow Rate (l/s)
Q_{Med}	1.8
Q_{Bar}	2.1
1 in 2 year	1.8
1 in 30 years	4.8
1 in 100 years	6.6

Table 1: Greenfield runoff rates

4. PLANNING POLICY

4.1 The planning policies and guidance that are relevant to the proposed Development with regard to flood risk and surface water management are outlined below.

National Planning policy

4.2 2025 updated National Planning Policy Framework (NPPF) and the associated 2025 updated Planning Practice Guidance (PPG) by the Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government.

- 2022 updated EA Standing Advice
- EA National Strategy for Flood and Coastal Erosion Risk Management 2020
- DEFRA Sustainable Drainage System: Non-Statutory Technical Standards 2015
- CIRIA C753 The SuDS Manual 2015
- Flood and Water Management Act 2010
- Flood Risk Regulations 2009
- Flood risk assessments: climate change allowances 2016 (updated in 2025).

Regional and local Planning Policy

- West Sussex County Council Local Risk Management Strategy 2021-2023
- West Sussex Local Flood Risk Management Strategy (2013-2018)
- West Sussex's LLFA Policy for Management of Surface Water. *Figure 7* below shows a summary of West Sussex LLFA Suds Policies

Table 5.1: West Sussex LLFA SuDS Policies	
Policy	Summary
SuDS Policy 1	Follow the drainage hierarchy
SuDS Policy 2	Manage Flood Risk Through Design
SuDS Policy 3	Mimic Natural Flows and Drainage Flow Paths
SuDS Policy 4	Seek to Reduce Existing Flood Risk
SuDS Policy 5	Maximise Resilience
SuDS Policy 6	Design to be Maintainable
SuDS Policy 7	Safeguard Water Quality
SuDS Policy 8	Design for Amenity and Multi-Functionality
SuDS Policy 9	Enhance Biodiversity
SuDS Policy 10	Link to Wider Landscape Objectives

Figure 7: Extract from WSCC SuDS Policies

- Mid Sussex Level 1 Strategic Flood Risk Assessment 2024
- Mid Sussex Level 2 Strategic Flood Risk Assessment Appendix A 2024

Mid Sussex District plan 2014 - 2031 contains the following policies relating to flooding, drainage and surface water:

- DP41 Flood Risk and Drainage

DP41: Flood Risk and Drainage

Strategic Objectives: 1) To promote development that makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change; and 12) To support sustainable communities which are safe, healthy and inclusive.

Evidence Base: Gatwick Sub Region Water Cycle Study; Strategic Flood Risk Assessment; Water. People. Places SuDS guidance.

Proposals for development will need to follow a sequential risk-based approach, ensure development is safe across its lifetime and not increase the risk of flooding elsewhere. The District Council's Strategic Flood Risk Assessment (SFRA) should be used to identify areas at present and future flood risk from a range of sources including fluvial (rivers and streams), surface water (pluvial), groundwater, infrastructure and reservoirs.

Particular attention will be paid to those areas of the District that have experienced flooding in the past and proposals for development should seek to reduce the risk of flooding by achieving a reduction from existing run-off rates.

Sustainable Drainage Systems (SuDS) should be implemented in all new developments of 10 dwellings or more, or equivalent non-residential or mixed development²² unless demonstrated to be inappropriate, to avoid any increase in flood risk and protect surface and ground water quality. Arrangements for the long term maintenance and management of SuDS should also be identified.

For the redevelopment of brownfield sites, any surface water draining to the foul sewer must be disconnected and managed through SuDS following the remediation of any previously contaminated land.

SuDS should be sensitively designed and located to promote improved biodiversity, an enhanced landscape and good quality spaces that improve public amenities in the area, where possible.

The preferred hierarchy of managing surface water drainage from any development is:

- 1. Infiltration Measures**
- 2. Attenuation and discharge to watercourses; and if these cannot be met,**
- 3. Discharge to surface water only sewers.**

Land that is considered to be required for current and future flood management will be safeguarded from development and proposals will have regard to relevant flood risk plans and strategies.

4.3 Based on the above policies, the key requirements in relation to the surface water management and flood risk for the proposed Development are considered as to be follows:

- National Planning Policy Framework (2024): “A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.”
- Environment Agency Standing Advice: “The surface water management needs to meet requirements set out in either your local authority’s Surface Water Management Plan (SWMP), Strategic Flood Risk Assessment (SFRA) and Building Regulations Part H. Emergency escape plans for any parts of a building that are below the estimated flood level are required”
- CIRIA C753 The SuDS manual 2015: “Control the quantity of runoff to support the management of flood risk and maintain and protect the natural water cycle. To ensure that the surface water runoff from a developed site does not have a detrimental impact on people, property, and the environment, it is important to control how fast runoff is discharged from the site (i.e., the peak runoff rate) and how much runoff is discharged from the site (i.e., the runoff volume). Suds that are designed to manage water quantity in this way reduce the likelihood of flooding caused by the development. They can help protect natural water cycles by promoting the recharge of soil moisture levels, by maintaining stream and river baseflows and by replenishing groundwater”.
- SuDS Policy 2 of WSCC LLFA Policy for management of surface water states: “The drainage system must be designed to operate without any flooding occurring during any rainfall event up to (and including) the critical 1 in 30-year storm (3.33% AEP). The system must also be able to accommodate the rainfall generated by events of varying durations and intensities up to (and including) the critical, climate change adjusted 1 in 100-year storm (1% AEP) without any on-site property flooding and without exacerbating the off-site flood-risk. Sufficient steps are to be taken to ensure that any surface flows between the 1 in 30 and 1 in 100-year events are retained on site. Storage should be based upon analyses of a range of winter and summer storm profiles to determine a critical storm event.”

5. CLIMATE CHANGE

Peak Rainfall Intensity Allowance

- 5.1 The “Flood Risk Assessments: Climate Change Allowances Guidance” 2016 (updated in 2022) published by the EA indicates that climate change is currently expected to result in increased peak rainfall and rising sea levels.
- 5.2 Table 2 and Table 3 shows anticipated changes in peak rainfall intensity in small and urban catchments within England. The development is classed as less vulnerable, and the design life is approximately 75 years.
- 5.3 The peak rainfall intensity allowance for a 3.3% AEP event based on the upper end allowance is 35%. The peak rainfall intensity allowance for a 1% AEP event based on the upper end allowance is 45%. In some locations the allowance for the 2050s epoch is higher than that for the 2070s epoch, and if the development has a lifetime beyond 2061, the higher of the two allowances must be applied.

Epoch	Central Allowance	Upper End Allowance
2050s	20%	35%
2070s	20%	35%

Table 2: Peak Rainfall Intensity allowance in small and urban catchments. 3.3%AEP Events

Epoch	Central Allowance	Upper End Allowance
2050s	20%	45%
2070s	20%	40%

Table 3: Peak Rainfall Intensity allowance in small and urban catchments. 1%AEP Events

Source: <https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall>

- 5.4 Peak river flow allowances are not assessed in this report, as per para **Error! Reference source not found.** the site is considered to be at very low risk from river flooding now and in the future.

National Planning Policy Framework (NPPF)

5.5 This report has been prepared considering the National Planning Policy Framework (NPPF) Technical Guidance and the Environment Agency's (EA) flood risk standing advice.

5.6 Table 2 from the Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government Flood risk and coastal change guidance has been included as **Figure 8** below. This provides the classes of development (based on flood risk vulnerability) that are permitted within each of the flood zones. The Flood Risk Vulnerability Classification for the site is 'Less Vulnerable' as it is a store building, which is defined in Annexxe 3 of the NPPF.

5.7 The development is in Flood Zone 1 and the surface water flood risk is consider to be low; therefore no exception test is required.

Flood Zones	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Table 2 - Flood risk vulnerability and flood zone 'compatibility'

Key: ✓ Exception test not required X Development should not be permitted.

Notes to table 2:

- This table does not show the application of the [Sequential Test](#) which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and [Exception Tests](#) do not need to be applied to [minor developments](#) and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* "In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Figure 8: NPPF Planning Practice Guidance Table – Flood Risk Vulnerability and Flood Zone Compatibility

6. FLOOD RISK

6.1 In line with the EA Standing Advice, the estimated flood level is considered to be the higher of:

- A river flood level with a 1 in 100 or greater annual probability plus an allowance for climate change; and
- A tidal flood level with a 1 in 200 or greater annual probability plus an allowance for climate change.

6.2 The following Flood Zone definitions ignoring flood defence, are set out in the Planning Practice Guidance:

- Zone 1 Low Probability - Land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%);
- Zone 2 Medium Probability - Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5%–0.1%) in any year; and
- Zone 3 High Probability - Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Fluvial / Tidal Flood Risk

6.3 Flood mapping obtained from the government's 'flood map for planning' website has identified that the site falls within Flood Zone 1. Shown below in **Figure 9**.

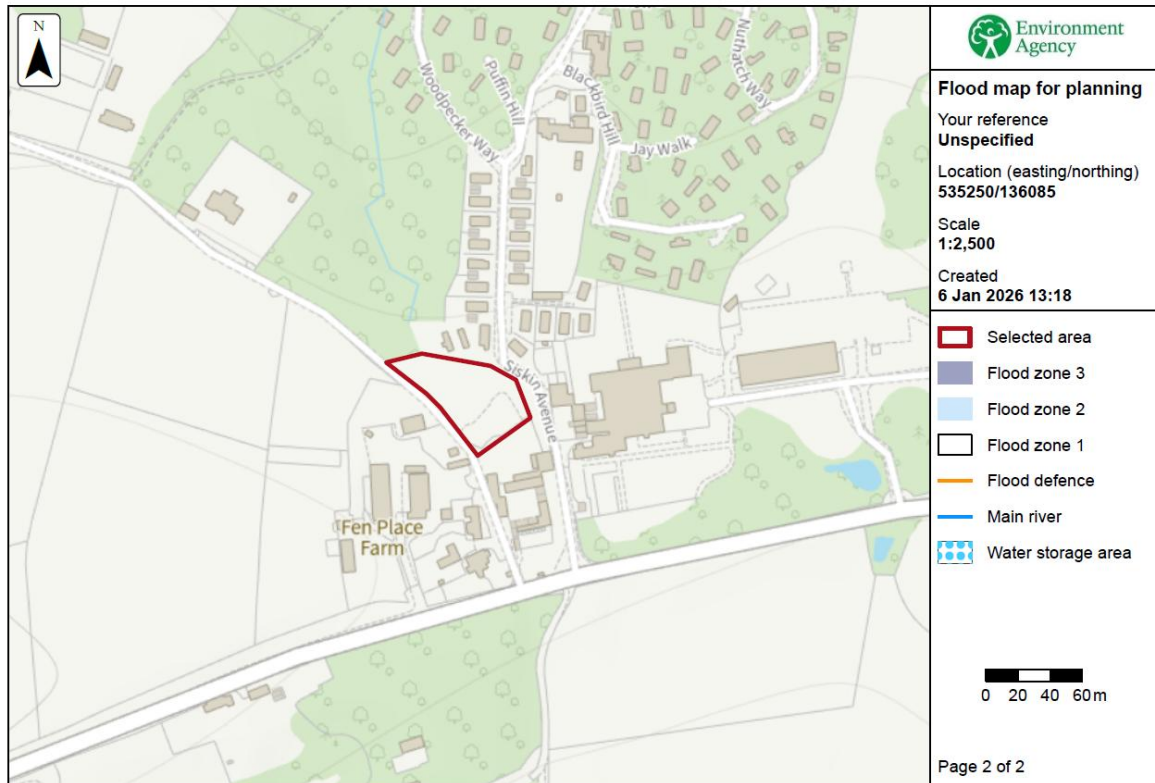


Figure 9: Flood Map for planning

6.4 The EA long-term flood risk and from rivers and seas (Yearly chance between 2036 and 2069) mapping shows that the site is considered to be very low risk of flooding from rivers and seas.



Figure 10: Long-term flood risk from rivers and seas map

Fluvial/tidal flooding – Residual Risk

6.5 Based on the above information the site is considered to be very low risk of flooding from rivers and seas.

Reservoirs Flood Risk

6.6 The EA long-term flood risk from reservoirs mapping shows the site is considered to be very low risk of flooding from reservoirs in a dry event and a wet event.



Figure 11: Long term flood risk from reservoirs map

Reservoirs – Residual Risk

6.7 Based on the above information the site is considered to be very low risk of flooding from reservoirs.

Surface Water Flood Risk

- 6.8 Surface water or 'pluvial' flooding results from rainfall running over ground before eventually entering a watercourse or sewer. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is already saturated, frozen, developed (for example in an urban setting), or otherwise has low permeability.
- 6.9 The surface water flood risk map is shown in Figure 12 and indicates that there is a small portion of the site in the northwest corner that is considered to be at low risk of flooding from surface water.

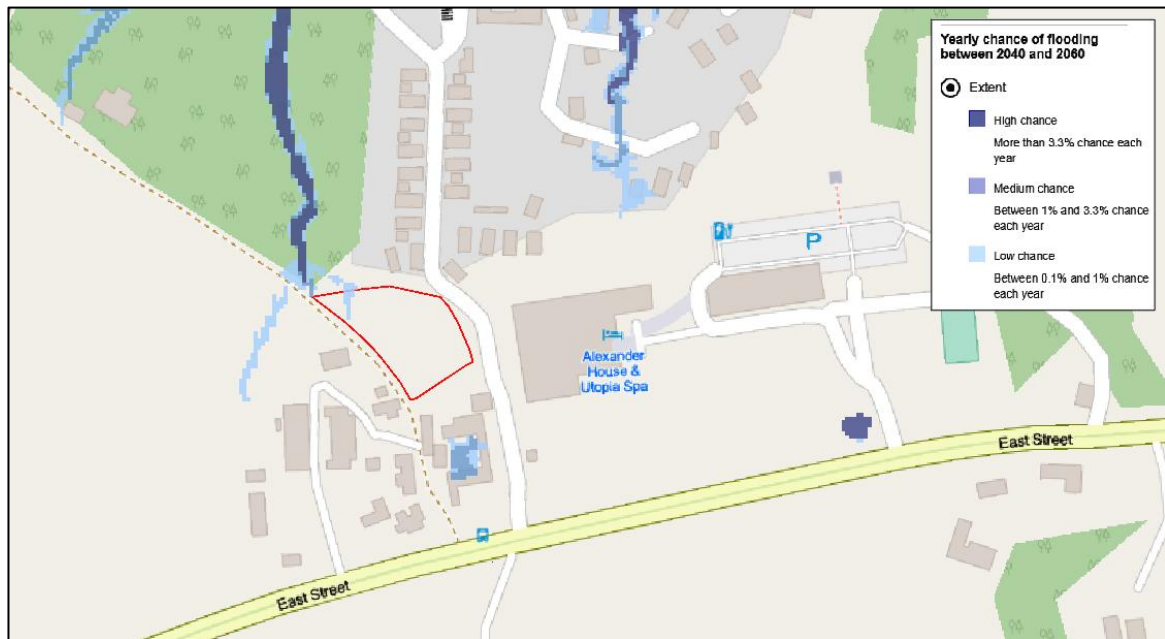


Figure 12: Long term flood risk from surface water

Surface Water – Mitigation Measures and Considerations

- 6.10 The area of low flood risk is situated within the site boundary but outside of the area of development.

Surface Water – Residual Risk

- 6.11 Based on the above information the site is considered to be very low risk of flooding from surface water.

Groundwater Flood Risk

- 6.12 Groundwater flooding occurs when groundwater levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys and in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels.
- 6.13 The Mid Sussex District Council Level 2 SFRA identifies that the “Mid Sussex area is considered to have low potential for groundwater flooding as a result of underlying geology. Groundwater concerns are most prevalent in high south of the district where permeable chalk geology can be found, and consequently a high risk of groundwater flooding is identified”
- 6.14 The BGS SuDS Infiltration GeoReport shows that the groundwater table for the majority of the site is more than 5m below the ground surface throughout the year. Shown in *Figure 13*.

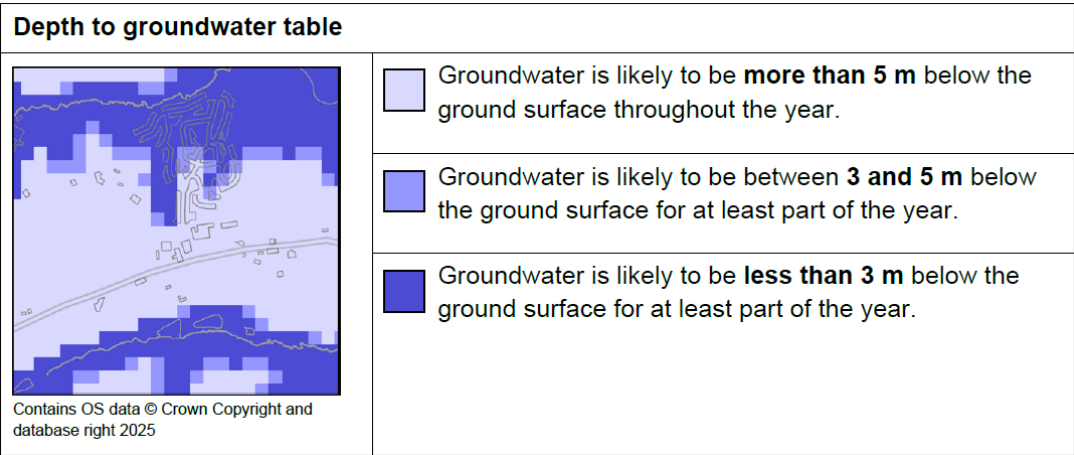


Figure 13: BGS Depth to Groundwater Table

Groundwater – Residual Risk

- 6.15 Based on the above information the site is considered to be very low risk of flooding from groundwater.

7. RESIDUAL FLOOD RISK

7.1 Table 4 outlines the initial qualitative assessment of risk posed by the potential sources of flooding, the mechanisms for flooding and the likely consequences. It also includes a review of possible mitigation measures and the effect that the proposed mitigation measures are likely to have on the residual risk posed by the potential flood source.

Flood Risk	Flood Mechanism and Possible Consequences	Existing Assessment of Risk	Mitigation Measures	Residual Risk
Fluvial / Tidal	Local rivers exceeding their capacity.	Very Low	N/A	Very Low
Reservoirs	Reservoir Failure	Very Low	N/A	Very Low
Surface Water (Pluvial)	Localised flooding caused by poor infiltration or blocked drainage systems	Low	The area of low flood risk is situated within the site boundary but outside of the area of development	Very Low
Groundwater	Flooding Caused by a high groundwater table	Very Low	N/A	Very Low

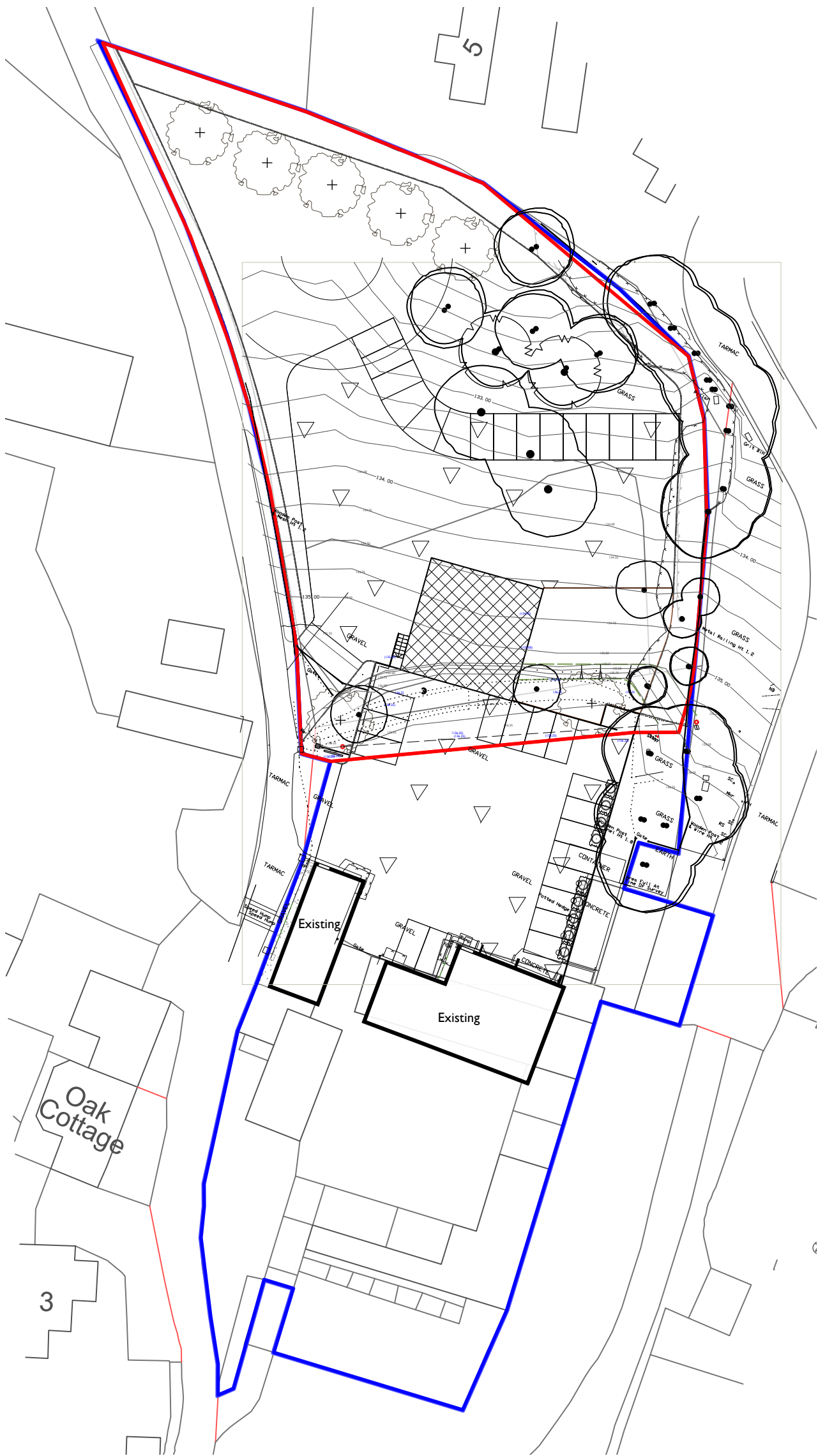
Table 4: Summary of Existing and Residual Flood Risk

8. DRAINAGE STRATEGY

- 8.1 The existing site is currently a car parking area. The proposed development will introduce a single-storey store building which will drain into SuDS planters to store and reuse rainfall to reduce runoff rates and provide practicable sustainable drainage. This will discharge at a controlled rate and make reuse of the existing drainage provision.
- 8.2 The proposed store building has a square footprint of 144m², this will discharge into two large SuDS planters which have been sized to accommodate the roof runoff. The brochure for the planters and performance of the large SuDS planter can be found in **Appendix D**.
- 8.3 The existing overflow parking area will remain as a permeable surface allowing for infiltration and providing a level of treatment for rainfall. The Proposed drainage strategy can be found in **Appendix E**.

9. SUMMARY AND CONCLUSION

- 9.1 This Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Paul Basham Associates on behalf of Pots and Pithoi Limited to support a FULL planning application for a store building and parking area. The land is located to the north of East Street. The site postcode is RH10 4QA.
- 9.2 This FRA has been prepared by review of site details such as location, topography, geology, hydrology, existing drainage, potential sources of flood risk and climate change effects.
- 9.3 This FRA has been prepared in accordance with the NPPF and Planning Practice Guidance, as well as the local planning policies set out by Mid Sussex District Council and West Sussex County Council.
- 9.4 The development is in Flood Zone 1 and has been categorised as "less vulnerable"; therefore, in accordance with NPPF, the proposals are acceptable, and the site will not require an exception test.
- 9.5 The proposed single-storey store has a design lifetime of 75 years. As such, flood risk has been assessed up to 2100.
- 9.6 Residual flood risk from all sources is summarised to be:
- Fluvial and tidal flooding is considered to be **Very Low**
 - Reservoir flooding is considered to be **Very Low**
 - Surface water flooding is considered to be **Very Low**
 - Groundwater flooding is considered to be **Very Low**
 - Public sewer flooding is considered to be **Very Low**
- 9.7 The proposed development will utilise SuDS planters in order to reduce the runoff rates from the proposed single-storey store building as well as providing a sustainable drainage feature enhancement.
- 9.8 The existing overflow parking area will remain as a permeable surface allowing for infiltration and providing a level of treatment for rainfall whilst ensuring no increase in runoff rates or volumes from the site.



KEY



Application site



Main site



Existing Removed



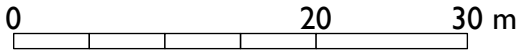
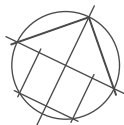
Overhead Utility



Proposed Storage Barn



Permeable Gravel Surface



A 13/10/2025 RCR Landscape Changes

Client Pots and Pithoi	Address The Barn, East Street, Turners Hill, West Sussex, RH10 4QA
Scale 1:500@A3	Sheet Title PROPOSED BLOCK PLAN with survey
Date MARCH 2025	Sheet No. 05_005
Drawn By RCR	
Project ID	
CAD File Name Planning Application with block plan.vwx	
Issue Notes	
Do not scale from this drawing. Contractors are advised to check all measurements on site	

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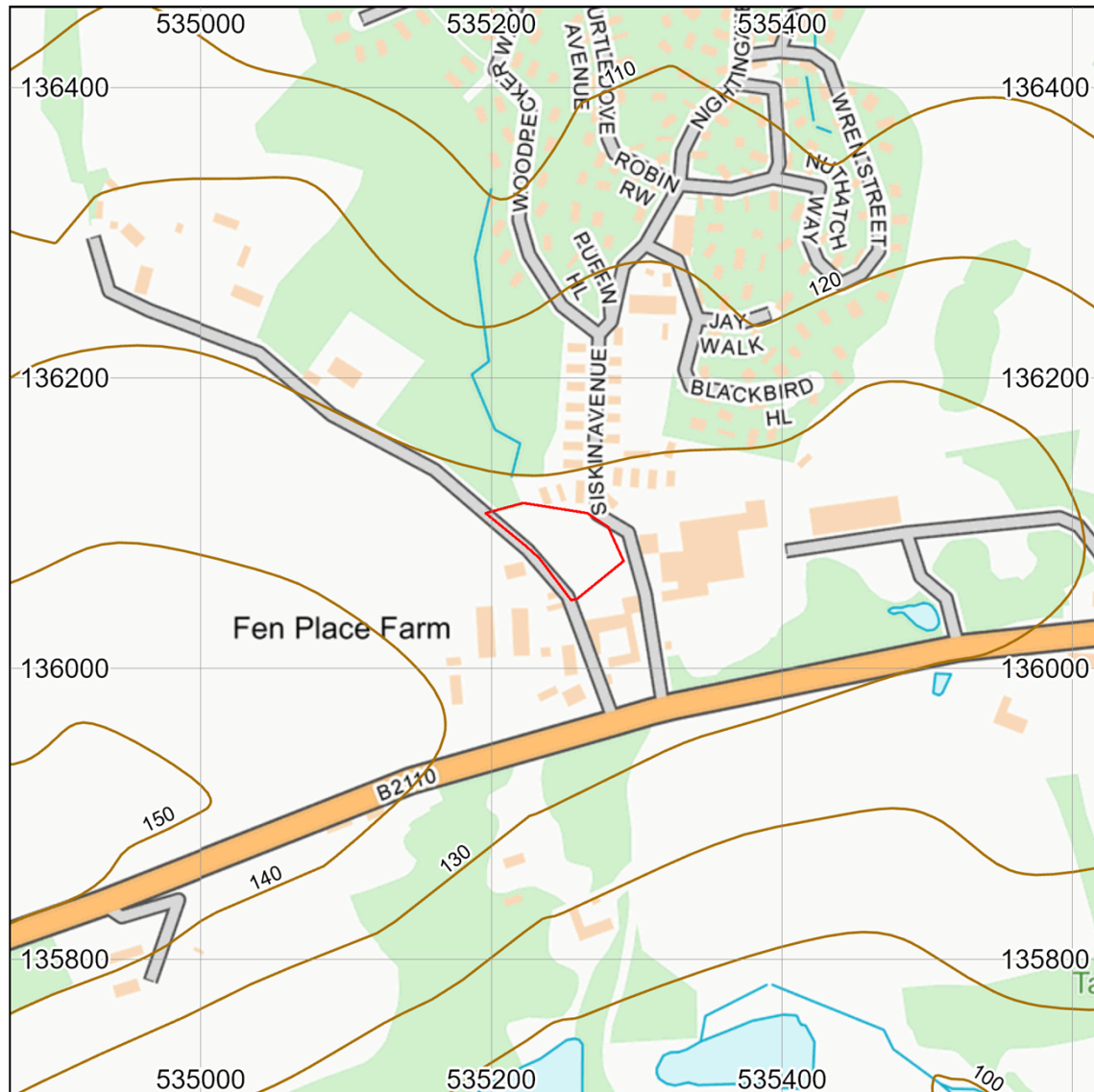
Infiltration SuDS GeoReport:

This report provides information on the suitability of the subsurface for the installation of infiltration sustainable drainage systems (SuDS). It provides information on the properties of the subsurface with respect to significant constraints, drainage, ground stability and groundwater quality protection.

Report Id: *BGS_346168/64797*

Client reference: PO12518

Search location



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Search location indicated in red

This report describes a site located at National Grid Reference 535244, 136080. Note that for sites of irregular shape, this point may lie outside the site boundary. Where the client has submitted a site plan the assessment will be based on the area given.

Assessment for an infiltration sustainable drainage system

Introduction

Sustainable drainage systems (SuDS) are drainage solutions that manage the volume and quality of surface water close to where it falls as rain. They aim to reduce flow rates to rivers, increase local water storage capacity and reduce the transport of pollutants to the water environment. There are four main types of SuDS, which are often designed to be used in sequence. They comprise:

- **source control:** systems that control the rate of runoff
- **pre-treatment:** systems that remove sediments and pollutants
- **retention:** systems that delay the discharge of water by providing surface storage
- **infiltration:** systems that mimic natural recharge to the ground.

This report focuses on infiltration SuDS. It provides subsurface information on the properties of the ground with respect to drainage, ground stability and groundwater quality protection. It is intended principally for those involved in the preliminary assessment of the suitability of the ground for infiltration SuDS, and those involved in assessing proposals from others for sustainable drainage, but it may also be useful to help house-holders judge whether or not further professional advice should be sought. If in doubt, users should consult a suitably-qualified professional about the results in this report before making any decisions based upon it.

This GeoReport is structured in two parts:

- **Part 1. Summary data.**

Comprises three maps that summarise the data contained within Part 2.

- **Part 2. Detailed data.**

Comprises a further 24 maps in four thematic sections:

- **Very significant constraints.** Maps highlight areas where infiltration may result in adverse impacts due to factors including: ground instability (soluble rocks, non-coal shallow mining and landslide hazards); persistent shallow groundwater, or the presence of made ground, which may represent a ground stability or contamination hazard.
- **Drainage potential.** Maps indicate the drainage potential of the ground, by considering subsurface permeability, depth to groundwater and the presence of floodplain deposits.
- **Ground stability.** Maps indicate the presence of hazards that have the potential to cause ground instability resulting in damage to some buildings and structures, if water is infiltrated to the ground.
- **Groundwater protection.** Maps provide key indicators to help determine whether the groundwater may be susceptible to deterioration in quality as a result of infiltration.

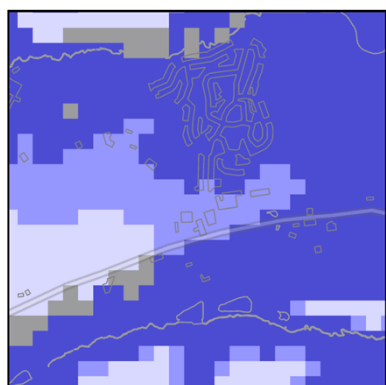
This report considers the suitability of the subsurface for the installation of infiltration SuDS, such as soakaways, infiltration basins or permeable pavements. It provides subsurface data to indicate whether, and which type of infiltration system may be appropriate. It does not state that infiltration SuDS are, or are not, appropriate as this is highly dependent on the design of the individual system. This report therefore describes the subsurface conditions at the site, allowing the reader to determine the suitability of the site for infiltration SuDS.

The map and text data in this report is similar to that provided in the '*Infiltration SuDS Map: Detailed*' national map product. For further information about the data, consult the '*User Guide for the Infiltration SuDS Map: Detailed*', available from <http://nora.nerc.ac.uk/16618/>.

PART 1: SUMMARY DATA

This section provides a summary of the data.

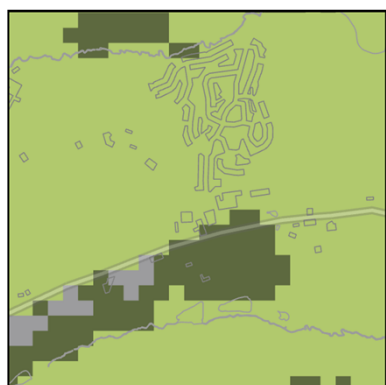
In terms of the drainage potential, is the ground suitable for infiltration SuDS?



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-  Highly compatible for infiltration SuDS. The subsurface is likely to be suitable for free-draining infiltration SuDS.
-  Probably compatible for infiltration SuDS. The subsurface is probably suitable although the design may be influenced by the ground conditions.
-  Opportunities for bespoke infiltration SuDS. The subsurface is potentially suitable although the design will be influenced by the ground conditions.
-  Very significant constraints are indicated. There is a very significant potential for one or more hazards associated with infiltration.

Is ground instability likely to be a problem?



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-  Increased infiltration is very unlikely to result in ground instability.
-  Ground instability problems may be present or anticipated, but increased infiltration is unlikely to result in ground instability.
-  Ground instability problems are probably present. Increased infiltration may result in ground instability.
-  There is a very significant potential for one or more geohazards associated with infiltration.

Is the groundwater susceptible to deterioration in quality?



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-  The groundwater is not expected to be especially vulnerable to contamination.
-  The groundwater may be vulnerable to contamination.
-  The groundwater is likely to be vulnerable to contaminants.
-  Made ground is present at the surface. Infiltration may increase the possibility of remobilising pollutants.

PART 2: DETAILED DATA

This section provides further information about the properties of the ground and will help assess the suitability of the ground for infiltration SuDS.

Section 1. Very significant constraints

Where maps are overlain by grey polygons, geological or hydrogeological hazards may exist that could be made worse by infiltration. The following hazards are considered:

- soluble rocks
- landslides
- shallow mining (not including coal)
- shallow groundwater
- made ground

For more information read 'Explanation of terms' at the end of this report.

Soluble rock hazard	
 Contains OS data © Crown Copyright and database right 2025	☒ Very significant soluble rock hazard. Soluble rocks are present with a very significant possibility of localised subsidence that could be initiated or made worse by infiltration. The site investigation should consider whether the potential for or the consequences of subsidence as a result of infiltration are significant.
	☐ Very significant soluble rock hazards are not present; however this hazard may still need to be considered. See Part 3.
Landslide hazard	
 Contains OS data © Crown Copyright and database right 2025	☒ Very significant landslide hazard. Slope instability problems are almost certainly present and may be active. An increase in moisture content as a result of infiltration may cause the slope to fail. The site investigation should consider whether the potential for or the consequences of landslide as a result of infiltration are significant.
	☐ Very significant landslide hazards are not present; however this hazard may still need to be considered. See Part 3.

Shallow mining hazard (not including coal)



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- ☒ Very significant mining hazard.
Shallow mining is likely to be present with a very significant possibility of localised subsidence that could be initiated or made worse by increased infiltration. Also, infiltration may increase the possibility of remobilising pollutants. The site investigation should consider whether the potential for or consequences of subsidence and/or remobilisation of pollutants as a result of infiltration are significant.
- ☐ Very significant mining hazards are not present; however this hazard may still need to be considered. See Part 3.

Persistent shallow groundwater



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- ☒ Very high likelihood of persistent or seasonally shallow groundwater.
Persistent or seasonally shallow groundwater is likely to be present. Infiltration may increase the likelihood of soakaway inundation, or groundwater emergence at the surface. The site investigation should consider whether the potential for or the consequences of groundwater level rise as a result of infiltration are significant.
- ☐ See Part 2 for the likely depth to water table.

Made ground



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- ☒ Made ground present.
Made ground is present at the surface. Infiltration may affect ground stability or increase the possibility of remobilising pollutants. The site investigation should consider whether the potential for or consequences of ground instability and/or pollutant leaching as a result of infiltration are significant.
- ☐ None recorded

Section 2. Drainage potential

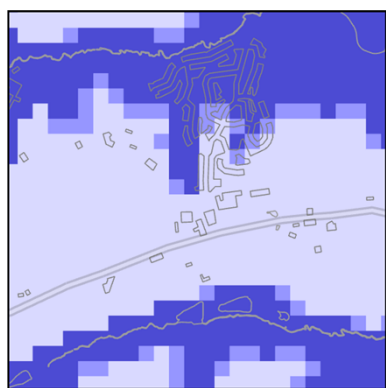
The following pages contain maps that will help you assess the drainage potential of the ground by considering the:

- depth to water table
- permeability of the superficial deposits
- thickness of the superficial deposits
- permeability of the bedrock
- presence of floodplains

Superficial deposits are not present everywhere and therefore some areas of the *superficial deposit permeability* map may not be coloured. Where this is the case, the *bedrock permeability* map shows the likely permeability of the ground. Superficial deposits in some places are very thin and hence in these places you may wish to consider both the permeability of the superficial deposits and the permeability of the bedrock. The *superficial thickness* map will tell you whether the superficial deposits are thin (< 3 m thick) or thick (>3 m). Where they are over 3 m thick, the permeability of the bedrock may not be relevant.

For more information read 'Explanation of terms' at the end of this report.

Depth to groundwater table



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- | | |
|---|--|
|  | Groundwater is likely to be more than 5 m below the ground surface throughout the year. |
|  | Groundwater is likely to be between 3 and 5 m below the ground surface for at least part of the year. |
|  | Groundwater is likely to be less than 3 m below the ground surface for at least part of the year. |

Superficial deposit permeability



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Superficial deposits are likely to be **free-draining**.



The superficial deposit permeability is **spatially variable**, but likely to permit moderate infiltration.



Superficial deposits are likely to be **poorly draining**.

These maps show the permeability range that is summarised above.

-  Very Low
-  Low
-  Moderate
-  High
-  Very High

Minimum



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Maximum



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Superficial deposit thickness



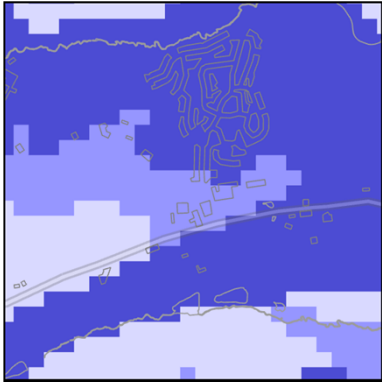
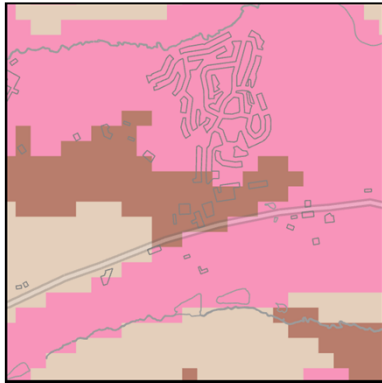
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The thickness of superficial deposits is **< 3 m** and hence the permeability of the ground may be dependent on both the superficial deposits (where present) and underlying bedrock (see below).



The thickness of superficial deposits is **> 3 m** and hence the permeability of the superficial deposits is likely to determine the permeability of the ground.

Bedrock permeability		
 Contains OS data © Crown Copyright and database right 2025	 Bedrock deposits are likely to be free-draining .	
	 The bedrock permeability is spatially variable , but likely to permit moderate infiltration.	
	 Bedrock deposits are likely to be poorly draining .	
These maps show the permeability range that is summarised above. Key  Very Low  Low  Moderate  High  Very High	Minimum  Contains OS data © Crown Copyright and database right 2025	Maximum  Contains OS data © Crown Copyright and database right 2025
Geological indicators of flooding		
 Contains OS data © Crown Copyright and database right 2025	 Superficial floodplain deposits or low-lying coastal areas have been identified. Groundwater levels may rise in response to high river or tide levels, potentially causing inundation of subsurface infiltration SuDS.	

Section 3. Ground stability

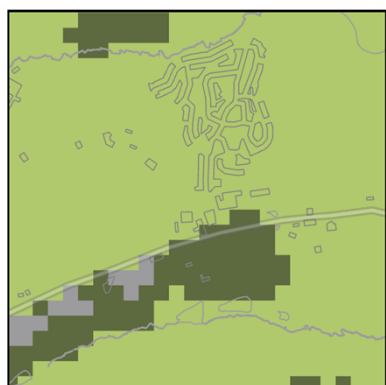
The following pages contain maps that will help you assess whether infiltration may impact the stability of the ground. They consider hazards associated with:

- soluble rocks
- landslides
- shallow mining
- running sands
- swelling clays
- compressible ground, and
- collapsible ground

In the following maps, geohazards that are identified in green are unlikely to prevent infiltration SuDS from being installed, but they should be considered during design. For more information read ‘Explanation of terms’ at the end of this report.

Soluble rocks	
 Contains OS data © Crown Copyright and database right 2025	 Increased infiltration is unlikely to result in subsidence.
	 Increased infiltration is unlikely to cause localised subsidence, but potential impacts should be considered.
	 Increased infiltration may result in localised subsidence. The potential for or the consequences of subsidence associated with soluble rocks should be considered.
	 Very significant possibility of localised subsidence that could be initiated or made worse by infiltration.

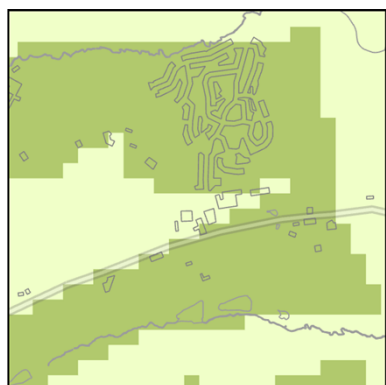
Landslides



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-  Increased infiltration is unlikely to lead to slope instability.
-  Slope instability problems may be present or anticipated, but increased infiltration is unlikely to cause instability
-  Slope instability problems are probably present or have occurred in the past, and increased infiltration may result in slope instability.
-  Slope instability problems are almost certainly present and may be active. An increase in moisture content as a result of infiltration may cause the slope to fail.

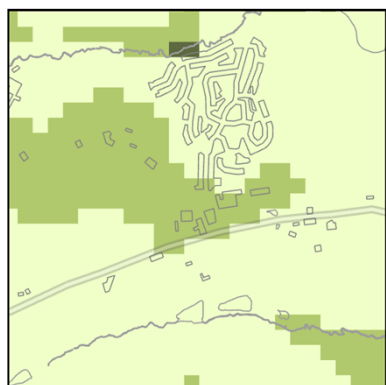
Shallow mining



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-  Increased infiltration is unlikely to lead to subsidence.
-  Shallow mining is possibly present. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
-  Shallow mining could be present with a significant possibility that localised subsidence could be initiated or made worse by increased infiltration.
-  Shallow mining is likely to be present, with a very significant possibility that localised subsidence may be initiated or made worse by increased infiltration.

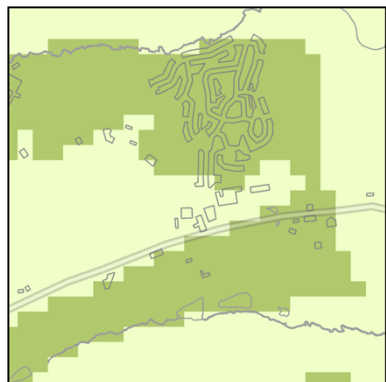
Running sand



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-  Increased infiltration is unlikely to cause ground collapse associated with running sands.
-  Running sand is possibly present. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
-  Significant possibility for running sand problems. Increased infiltration may result in a geohazard.

Swelling clays



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-  Increased infiltration is unlikely to cause shrink-swell ground movement.
-  Ground is susceptible to shrink-swell ground movement. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
-  Ground is susceptible to shrink-swell ground movement. Increased infiltration may result in a geohazard.

Compressible ground



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-  Increased infiltration is unlikely to lead to ground compression.
-  Compressibility and uneven settlement hazards are probably present. Increased infiltration may result in a geohazard.

Collapsible ground



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-  Increased infiltration is unlikely to result in subsidence.
-  Deposits with potential to collapse when loaded and saturated are possibly present in places. Increased infiltration is unlikely to cause a geohazard, but potential impacts should be considered.
-  Deposits with potential to collapse when loaded and saturated are probably present in places. Increased infiltration may result in a geohazard.

Section 4. Groundwater quality protection

The following pages contain maps showing some of the information required to ensure the protection of groundwater quality. Data presented includes:

- groundwater source protection zones (Environment Agency data)
- predominant flow mechanism
- made ground

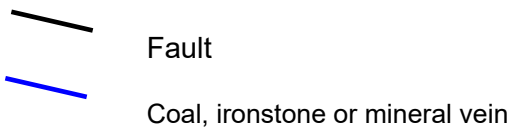
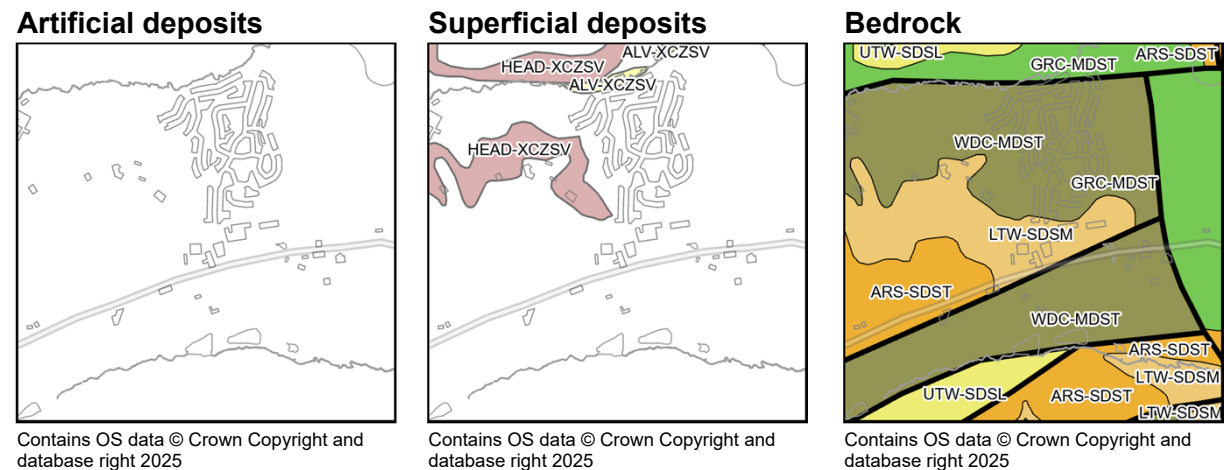
For more information read 'Explanation of terms' at the end of this report.

Groundwater source protection zones	
 Contains OS data © Crown Copyright and database right 2025 Derived in part from Source Protection Zone data provided under licence from the Environment Agency © Environment Agency 2025.	 Groundwater is not within a source protection zone.
	 Source protection zone IV
	 Source protection zone III
	 Source protection zone II
	 Source protection zone I
Predominant flow mechanism	
 Contains OS data © Crown Copyright and database right 2025	 Water is likely to percolate through the unsaturated zone to the groundwater through either the pore space in granular media or through porespace and fractures; these processes have some potential for contaminant removal and breakdown.
	 Water is likely to percolate through the unsaturated zone to the groundwater through fractures, a process which has little potential for contaminant removal and breakdown.

Made ground	
 Contains OS data © Crown Copyright and database right 2025	 Made ground is present at the surface. Infiltration may increase the possibility of remobilising pollutants.

Section 5. Geological Maps

The following maps show the artificial, superficial and bedrock geology within the area of interest.



Note: Faults and Coals, ironstone & mineral veins are shown for illustration and to aid interpretation of the map. Not all such features are shown and their absence on the map face does not necessarily mean that none are present

Key to Artificial deposits:
No deposits recorded by BGS in the search area

Key to Superficial deposits:

Map colour	Computer Code	Rock name	Rock type
	ALV-XCZSV	Alluvium	Clay, silt, sand and gravel
	HEAD-XCZSV	Head	Clay, silt, sand and gravel

Key to Bedrock geology:

Map colour	Computer Code	Rock name	Rock type
	ARS-SDST	Ardingly Sandstone Member	Sandstone
	GRC-MDST	Grinstead Clay Member	Mudstone
	LTW-SDSM	Lower Tunbridge Wells Sand	Sandstone, siltstone and mudstone
	UTW-MDST	Upper Tunbridge Wells Sand	Mudstone
	UTW-SDSL	Upper Tunbridge Wells Sand	Sandstone and siltstone, interbedded
	WDC-MDST	Wadhurst Clay Formation	Mudstone

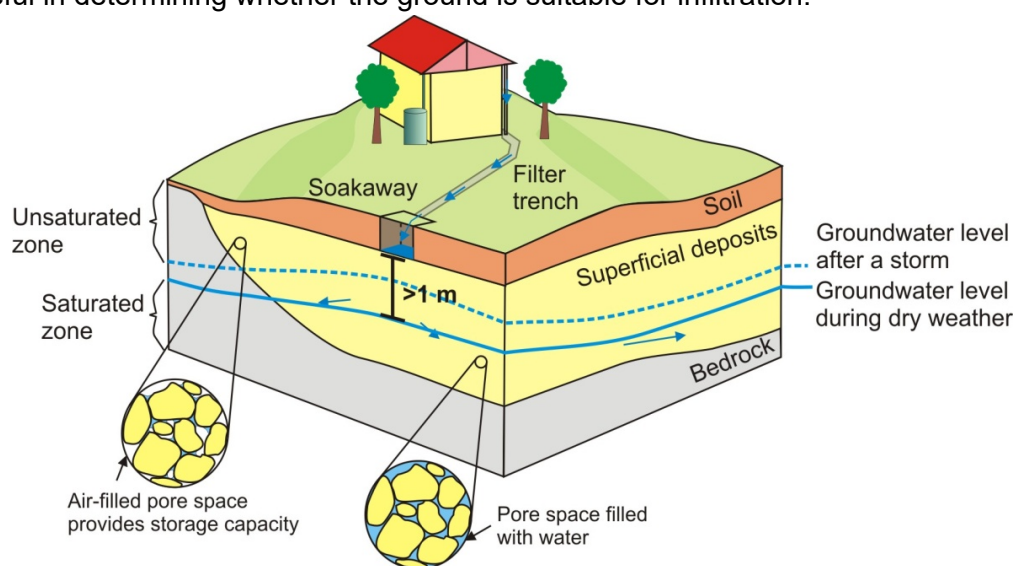
Limitations of this report:

- This report is concerned with the potential for infiltration-to-the-ground to be used as a SuDS technique at the site described. It only considers the subsurface beneath the search area and does NOT consider potential surface or subsurface impacts outside of that area.
- This report is NOT an alternative for an on-site investigation or soakaway test, which might reach a different conclusion.
- This report must NOT be used to justify disposal of foul waste or grey water.
- This report is based on and limited to an interpretation of the records held by the British Geological Survey (BGS) at the time the search is performed. The datasets used (with the exception of that showing depth to water table) are based on 1:50 000 digital geological maps and not site-specific data.
- Other more specific and detailed ground instability information for the site may be held by BGS, and an assessment of this could result in a modified assessment.
- To interpret the maps correctly, the report must be viewed and printed in colour.
- The search does NOT consider the suitability of sites with regard to:
 - previous land use,
 - potential for, or presence of contaminated land
 - presence of perched water tables
 - shallow mining hazards relating to coal mining. Searches of coal mining should be carried out via The Coal Authority Mine Reports Service: <https://www.miningremediation.co.uk/miningreports/>.
 - made ground, where not recorded
 - proximity to landfill sites (searches for landfill sites or contaminated land should be carried out through consultation with local authorities/Environment Agency)
 - zones around private water supply boreholes that are susceptible to groundwater contamination.
- This report is supplied in accordance with the GeoReports Terms & Conditions available separately, and the copyright restrictions described at the end of this report

Explanation of terms

Depth to groundwater

In the shallow subsurface, the ground is commonly unsaturated with respect to water. Air fills the spaces within the soil and the underlying superficial deposits and bedrock. At some depth below the ground surface, there is a level below which these spaces are full of water. This level is known as the groundwater level, and the water below it is termed the groundwater. When water is infiltrated, the groundwater level may rise temporarily. To ensure that there is space in the unsaturated zone to accommodate this, there should be a minimum thickness of 1 m between the base of the infiltration system and the water table. An estimate of the *depth to groundwater* is therefore useful in determining whether the ground is suitable for infiltration.



Groundwater flooding

Groundwater flooding occurs when a rise in groundwater level results in very shallow groundwater or the emergence of groundwater at the surface. If infiltration systems are installed in areas that are susceptible to groundwater flooding, it is possible that the system could become inundated. The susceptibility map seeks to identify areas where the geological conditions and water tables indicate that groundwater level rise could occur under certain circumstances. A high susceptibility to groundwater flooding classification does not mean that groundwater flooding has ever occurred in the past, or will do so in the future as the susceptibility maps do not contain information on how often flooding may occur. The susceptibility maps are designed for planning; identifying areas where groundwater flooding might be an issue that needs to be taken into account.

Geological indicators of flooding

In floodplain deposits, groundwater level can be influenced by the water level in the adjacent river. Groundwater level may increase during periods of fluvial flood and therefore this should be taken into account when designing infiltration systems on such deposits. The *geological indicators of flooding* dataset shows where there is geological evidence (floodplain deposits) that flooding has occurred in the past.

For further information on flood-risk, the likely frequency of its recurrence in relation to any proposed development of the site, and the status of any flood prevention measures in place, you are advised to contact the local office of the Environment Agency (England and Wales) at www.environment-agency.gov.uk/ or the Scottish Environment Protection Agency (Scotland) at www.sepa.org.uk.

Artificial ground

Artificial ground comprises deposits and excavations that have been created or modified by human activity. It includes ground that is worked (quarries and road cuttings), infilled (back-filled quarries), landscaped (surface re-shaping), disturbed (near surface mineral workings) or classified as made ground (embankments and spoil heaps). The composition and properties of artificial ground are often unknown. In particular, the permeability and chemical composition of the artificial ground should be determined to ensure that the ground will drain and that any contaminants present will not be remobilised.

Superficial permeability

Superficial deposits are those geological deposits that were formed during the most recent period of geological time (as old as 2.6 million years before present). They generally comprise relatively thin deposits of gravel, sand, silt and clay and are present beneath the pedological soil in patches or larger spreads over much of Britain. The ease with which water can percolate through these deposits is controlled by their permeability and varies widely depending on their composition. Those deposits comprising clays and silts are less permeable and thus infiltration is likely to be slow, such that water may pool on the surface. In comparison, deposits comprising sands and gravels are more permeable allowing water to percolate freely.

Bedrock permeability

Bedrock forms the main mass of rock forming the Earth. It is present everywhere, commonly beneath superficial deposits. Where the superficial deposits are thin or absent, the ease with which water will percolate into the ground depends on the permeability of the bedrock.

Natural ground instability

Natural ground instability refers to the propensity for upward, lateral or downward movement of the ground that can be caused by a number of natural geological hazards (e.g. ground dissolution/compressible ground). Some movements associated with particular hazards may be gradual and of millimetre or centimetre scale, whilst others may be sudden and of metre or tens of metres scale. Significant natural ground instability has the potential to cause damage to buildings and structures, especially when the drainage characteristics of a site are altered. It should be noted, however, that many buildings, particularly more modern ones, are built to such a standard that they can remain unaffected in areas of significant ground movement.

Shrink-swell

A shrinking and swelling clay changes volume significantly according to how much water it contains. All clay deposits change volume as their water content varies, typically swelling in winter and shrinking in summer, but some do so to a greater extent than others. Contributory circumstances could include drought, leaking service pipes, tree roots drying-out the ground or changes to local drainage patterns, such as the creation of soakaways. Shrinkage may remove support from the foundations of buildings and structures, whereas clay expansion may lead to uplift (heave) or lateral stress on part or all of a structure; any such movements may cause cracking and distortion.

Landslides (slope stability)

A landslide is a relatively rapid outward and downward movement of a mass of ground on a slope, due to the force of gravity. A slope is under stress from gravity but will not move if its strength is greater than this stress. If the balance is altered so that the stress exceeds the strength, then movement will occur. The stability of a slope can be reduced by removing ground at the base of the slope, by placing material on the slope, especially at the top, or by increasing the water content of the materials forming the slope. Increase in subsurface water content beneath a soakaway could increase susceptibility to landslide hazards. The assessment of landslide hazard refers to the stability of the present land surface. It does not encompass a consideration of the stability of excavations.

Soluble rocks (dissolution)

Some rocks are soluble in water and can be progressively removed by the flow of water through the ground. This process tends to create cavities, potentially leading to the collapse of overlying materials and possibly subsidence at the surface. The release of water into the subsurface from infiltration systems may increase the dissolution of rock or destabilise material above or within a cavity. Dissolution cavities may create a pathway for rapid transport of contaminated water to an aquifer or water course.

Compressible ground

Many ground materials contain water-filled pores (the spaces between solid particles). Ground is compressible if a building (or other load) can cause the water in the pore space to be squeezed out, causing the ground to decrease in thickness. If ground is extremely compressible the building may sink. If the ground is not uniformly compressible, different parts of the building may sink by different amounts, possibly causing tilting, cracking or distortion. The compressibility of the ground may alter as a result of changes in subsurface water content caused by the release of water from soakaways.

Collapsible deposits

Collapsible ground comprises certain fine-grained materials with large pore spaces (the spaces between solid particles). It can collapse when it becomes saturated by water and/or a building (or other structure) places too great a load on it. If the material below a building collapses it may cause the building to sink. If the collapsible ground is variable in thickness or distribution, different parts of the building may sink by different amounts, possibly causing tilting, cracking or distortion. The subsurface underlying a soakaway will experience an increase in water content that may affect the stability of the ground. This hazard is most likely to be encountered only in parts of southern England.

Running sand

Running sand conditions occur when loosely-packed sand, saturated with water, flows into an excavation, borehole or other type of void. The pressure of the water filling the spaces between the sand grains reduces the contact between the grains and they are carried along by the flow. This can lead to subsidence of the surrounding ground. Running sand is potentially hazardous during the drainage system installation. During installation, excavation of the ground may create a space into which sand can flow, potentially causing subsidence of surrounding ground.

Shallow mining hazards (non coal)

Current or past underground mining for coal or for other commodities can give rise to cavities at shallow or intermediate depths, which may cause fracturing, general settlement, or the formation of crown-holes in the ground above. Spoil from mineral workings may also present a pollution hazard. The release of water into the subsurface from soakaways may destabilise material above or within a cavity. Cavities arising as a consequence of mining may also create a pathway for rapid transport of contaminated water to an aquifer or watercourse. The mining hazards map is derived from the geological map and considers the potential for subsidence associated with mining on the basis of geology type. Therefore if mining is known to occur within a certain rock, the map will highlight the potential for a hazard within the area covered by that geology.

For more information regarding underground and opencast **coal mining**, the location of mine entries (shafts and adits) and matters relating to subsidence or other ground movement induced by **coal mining** please contact the Coal Authority, Mining Reports, 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG; telephone 0845 762 6848 or at www.coal.gov.uk. For more information regarding other types of mining (i.e. non-coal), please contact the British Geological Survey.

Groundwater source protection zones

In England and Wales, the Environment Agency has defined areas around wells, boreholes and springs that are used for the abstraction of public drinking water as source protection zones. In conjunction with Groundwater Protection Policy the zones are used to restrict activities that may impact groundwater quality, thereby preventing pollution of underlying aquifers, such that drinking water quality is upheld. The Environment Agency can provide advice on the location and implications of source protection zones in your area (www.environment-agency.gov.uk/)

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Important notes about this Report

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- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
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- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
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**Report issued by
BGS Enquiry Service**

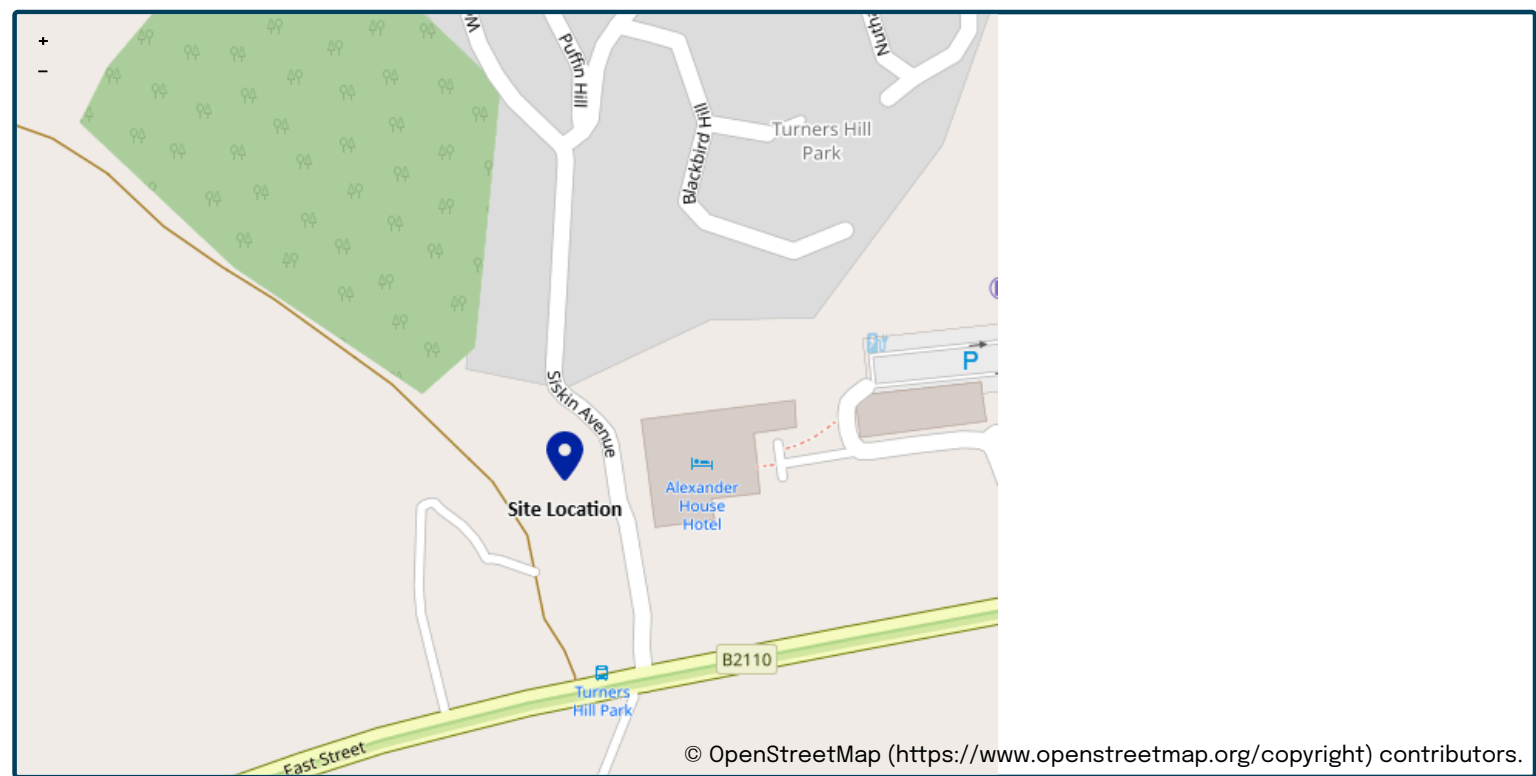
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	12/12/2025
Calculated by	Samuel Flesher
Reference	279.5002
Model version	2.2.2

Location

Site name	Pots and Pithoi
Site location	Turners Hill



Site easting (British National Grid)	535278
Site northing (British National Grid)	136056

Site details

Total site area (ha)	0.27	ha
----------------------	------	----

Greenfield runoff

Method

Method	FEH statistical (2025)
--------	------------------------

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	881	mm
BFIHOST19scaled	0.365	
QMed-QBar conversion	1.136	1.136
QMed (l/s)	1.8	l/s
QBar (FEH statistical 2025) (l/s)	2.1	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	7	7
1 year growth factor	0.85	
2 year growth factor	0.88	
10 year growth factor	1.62	
30 year growth factor	2.3	
100 year growth factor	3.19	
200 year growth factor	3.74	

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	1.8
Flow rate 2 year (l/s)	1.8
Flow rate 10 years (l/s)	3.4
Flow rate 30 years (l/s)	4.8
Flow rate 100 years (l/s)	6.6
Flow rate 200 years (l/s)	7.7

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at uksuds.com (<https://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 uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate 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, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.



SuDSPlanter[®]

A cleaner, greener way to manage
surface water sustainably.



**Loss of permeable
landscape has meant
higher peak flows, serious
flooding, pollution, damage
to property and habitats,
and contamination of
groundwater sources.**



Our changing climate

Today's climate means we face increasingly uncertain weather patterns, higher frequency flooding and a stressed environment. Our issues with more extreme weather have been exacerbated by the loss of permeable landscapes in towns and cities, replaced by paved areas, roads, roofs, so increasing our amount of surface water run-off. This is rainwater 'looking' for somewhere to go...

Our piped drainage systems receive flows quicker than ever before, and in larger volumes than they are designed to cope with. To add to this we have an increasing pollution risk from highway runoff carrying sediments and debris into local streams and rivers. In extreme events our combined sewer overflows surge into these watercourses too, all adding to the rising levels of pharmaceuticals, phosphorus and nitrates arriving in our waterways.

Pollution entering our rivers reduces oxygen levels making it difficult for aquatic plants and fish to survive. For humans this can affect water quality in the towns and countryside, impacting on drinking water for wildlife, livestock and ourselves.

We want to help change this.



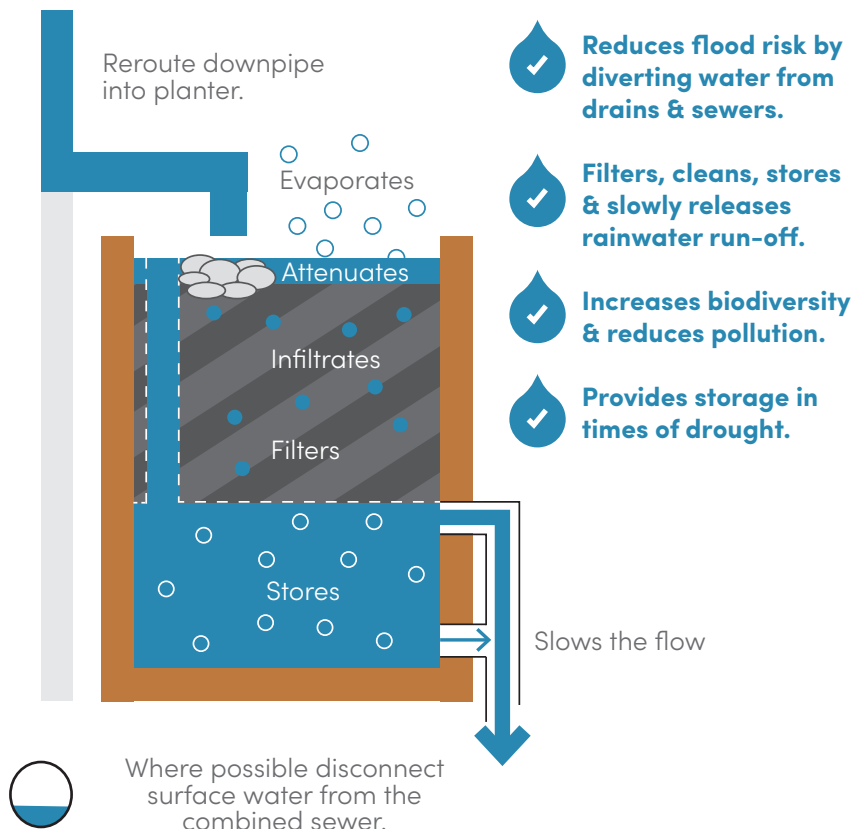
Meet SuDSPlanter®



SuDSPlanter® is a uniquely designed rain garden which captures rainwater runoff from roofs, rather than leaving it to flow into the drains and sewers, potentially overloading the system. It's a cleaner, greener more sustainable way to guard against today's increasing risk of flooding and contamination.

SuDSPlanter® units provide water storage in dry or drought conditions, as well as storm storage designed to cope in wet environments. This makes the planter ideal for our changing weather patterns, combatting the increasing flood risk and water scarcity which we face.

How it works



SuDSPlanter® is designed to capture rainwater run-off from roofs by rerouting the downpipe into the planter instead of directly into the drains. The planter is made up of a series of layers, acting as both a sponge and a natural filter, attenuating flow and removing sediment and bird poo as the water soaks through to the reservoir below.

Our specially designed growing media provides the perfect environment for plants to thrive; nutrient and water retention, filtration and soil volume to sustain plant growth in both wet and dry conditions.

Environmental ethos

Our commitment to sustainability



Recycling

100%

Recycled / recyclable materials used in the production of each SuDSPlanter®.



Sustainability projects

5 years

SuDSPlanter collaboratively works with education facilities to provide research and learning for children and adults involved in Science, Technology, Engineering, Art and Maths.



Circular economy

100%

Of all packaging and waste material is recycled to provide second life materials for future SuDSPlanter units.



Every tonne of polythene we recycle

Saves 1.8 tonnes of crude oil, reduces energy usage by two thirds, entails 90% less water & cuts sulphur dioxide emissions by 33%



Closed loop recycling

Working with our partners SuDSPlanter® provides an award winning closed loop recycling service entirely within the United Kingdom.

'Sustainability underscores everything that we do - both the products that we manufacture and the way they work with our environment'

Educational ethos

What does water mean to you?



Potable water

The average UK resident uses 150 litres of water per day, that is the equivalent of 2 bath tubs per person.



Waste water

The Sewage industry processes over 16 billion litres of wastewater each day through more than 625,000 kilometres of sewerage pipes.



Environmental water

There are around 15,000 storm overflows in England and approximately 13,350 of those discharge to inland rivers.



STEM

SuDSPlanter® provides a method to demonstrate all 4 STEM topics through its design and the environment it is placed in. Monitoring provides data on flows received and discharged to give a live feed to the SuDSPlanter® behaviours, so making it more interactive.



Environmental ethos

SuDSPlanter® aims to provide an educational tool which reduces surface water volumes into the sewer, increases biodiversity in the landscape and reduces flood risk and sewage spills into the environment.

“An understanding of the natural world is a source of not only great curiosity, but great fulfilment” – Sir David Attenborough

Options

Recycled lumber



These are manufactured using a plastic coated metal frame with recycled plastic lumber infills. All materials are 100% recycled or recyclable.

Sizes

XS: 800mm x 600mm x 950mm

S: 1200mm x 600mm x 950mm

M: 1600mm x 600mm x 950mm

L: 2000mm x 600mm x 950mm

XL: 2000mm x 1000mm x 950mm

Infill colours



100% recycled materials.



No treatment required prior to use.



Minimum 15 year life expectancy.



Fully recyclable at the end of its use.



Graffiti resistant.

Frames

Powder coated frames provided in virtually any colour.

Installation

For DIY installations, we provide an instruction manual with your planter, which has handy maintenance tips too. If you would like us to install your SuDSPlanter®, simply ask us when you place your order.



Timber infill

These are manufactured using a plastic coated metal frame with natural timber infills using either finest quality oak or painted FSC accredited timber.

Sizes

XS: 800mm x 600mm x 950mm

S: 1200mm x 600mm x 950mm

M: 1600mm x 600mm x 950mm

L: 2000mm x 600mm x 950mm

XL: 2000mm x 1000mm x 950mm

Colours



Frames

Powder coated frames provided in virtually any colour.



UK sourced, FSC accredited wood.



No treatment required prior to use.



Minimum 15 year life expectancy.



Fully recyclable at the end of its use.

Planting

Your SuDSplanter® is a great way to increase biodiversity, as it works best with as wide a variety of plants as possible. For the best results, choose from our list of suitable plants, or we can supply you with a selection of young plants for establishing: simply ask when you place your order.

Sizing

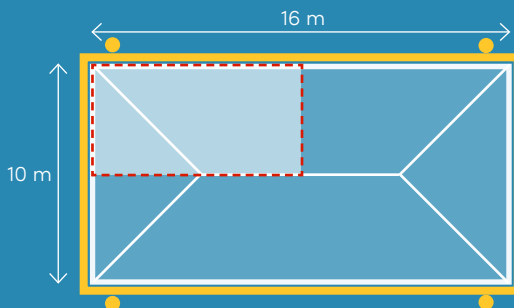
SuDSPlanter® sizing

Selecting the size of the SuDSPlanter® required is predominantly driven by the area of roof that will drain into it. It can sometimes be difficult to calculate the exact area as rainwater gutters can be very long and fall in different directions. An estimation may need to be made of the location of the highest points of the gutter and the falls.

Knowing the calculated plan roof area of each downpipe needs to be used for initial selection of suitable SuDSPlanter® sizes. These figures can vary depending on geographic location and various other factors but will provide a good starting point for evaluating feasibility.

Planter Size:	Storage: (litres)	Receiving area (m ²):
Extra small	150	Up to 30
Small	300	Up to 40
Medium	400	Up to 70
Large	500	Up to 100
Extra large	900	Up to 150

SuDSPlanter® - How to measure your roof area;



Roof area drained by each RWP = 40 sq.m.



Features

Seating

These are manufactured using a plastic coated metal frame with recycled plastic lumber infills. All materials are 100% recycled or recyclable.

Items

Childrens step

Seat

Table

Bespoke branding features



✓ **100% recycled materials.**

✓ **Ready assembled on delivery**

✓ **Designed to BS Standard heights**

✓ **Minimum 15 year life expectancy**

✓ **Fully recyclable at the end of its use.**

✓ **Bespoke colours on request**





Cloud disconnects

Disconnection features provide a method of directing flow into the planter in an engaging manner.

Items

Small cloud feature

Large cloud feature

Splitter cloud feature

(to suit 1 downpipe into 2 planters)

Rain chain feature

Artwork options:

Printed

Lazercut



Powder coated aluminium / stainless steel fittings



Easy to install



Minimum 15 year life expectancy.



Fully recyclable at the end of its use.



Engagement features

Bespoke features designed to provide colour and movement of rain water prior to discharging into the SuDSplanter®.

Funnel feature

Rain chain feature

Bespoke design feature



100% recycled materials.



Durable design, ideal for primary



Minimum 15 year life expectancy.



Fully recyclable at the end of its use.



Signage

Bespoke signage features designed to provide an engagement feature within the SuDSPlanter® scheme. This can provide interpretation of the SuDS features installed and their function to alleviate flood risk and water stress.

Sizes

Bespoke sizes on request



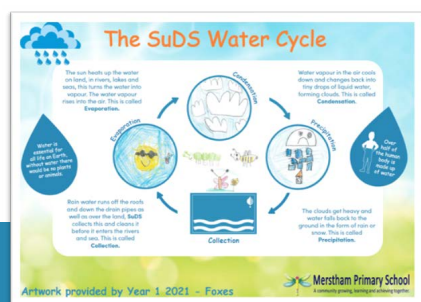
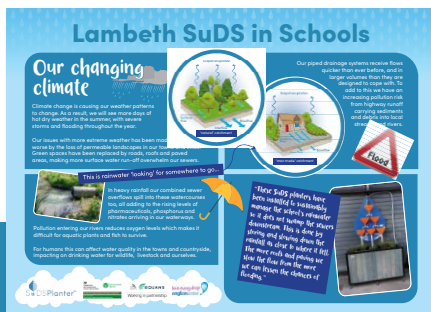
Can be mounted on the wall or the planter face



Laminated aluminium board



Bespoke shapes can be provided



Your SuDSPlanter® is a great way to provide opportunities to engage with and illustrate the value of the water by interpreting it with bespoke signage. We provide graphics support and interpretation of artwork on all of our projects.

Engagement

Educational support



SuDSPlanter® knowledge on Sustainable water management and use at a global scale enables us to provide opportunities to engage with our clients messaging and educational needs.

To ensure SuDSPlanter® delivers the best possible support to educating on climate change and the benefits water management can deliver we have developed an education pack. This is currently focused at key stage 1 – 3 children and includes online and face to face teaching to support schools in the value of having SuDSPlanter® units on site. We have developed a number of extras to meet the clients needs;

- SuDS Intro presentation
- (online / in person on request)
- SuDSPlanter planting day
- Education pack / presentations
- Signage & Integral logos



Supports STEM objectives



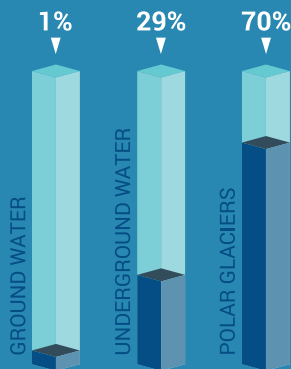
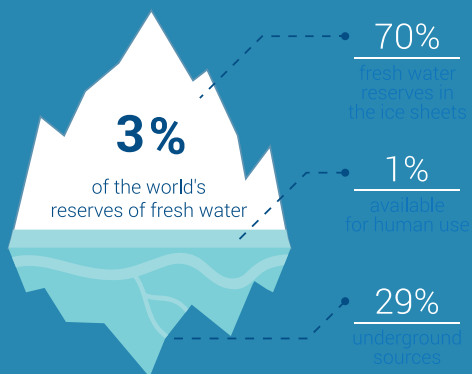
Demonstrates the value of SuDS



Outlines social / environmental and economic benefits of SuDS



Provides teaching aids to staff on the water cycle



Our aim

When we set out to create SuDSPlanter® our aim was to produce an environmentally sound flood mitigation device which would improve home owners' lives through urban greening and flood defence. This has developed into a product range which delivers a simple, retrofit solution to surface water for a variety of roof sizes to match any residential, commercial or educational environment. SuDSPlanter® is brought to you by:

Lorna Davis

Specialist consultant in sustainable drainage for the engineering and water industry.

Alex Stephenson

Over 40 years of experience in drainage engineering and waste water solutions.

Proudly made in the UK

We pride ourselves in sourcing and assembling all SuDSPlanter® materials within the UK. Our manufacturing facility is based in Mid Wales, with fabricators crafting each product from scratch.



Contact us @ sudsplanter.com

Lead times on ordering are required, so please do get in touch to discuss your requirements:

✉ enquiries@sudsplanter.com

🐦 @SuDSPlanter



Data Sheet

Roof Area (m ²)	100
SuDSPlanter	Large
Dimensions (m)	2.0 x 0.6 x 0.95
Storage Volume (m ³)	0.54

Designed By	GW
Date	26.05.25

Introduction

The SuDSPlanter is an above-ground bioretention unit specifically designed to manage and attenuate high-intensity, short-duration rainfall events, particularly those up to 15 minutes in duration.

These events typically pose the greatest risk of immediate surface water runoff from small, impermeable areas such as individual roofs or courtyards. Longer duration storms (e.g. >30 minutes to several hours) are typically managed at the wider site level; the SuDSPlanter operates as an effective source control measure

Performance Snapshot

- ☑ Peak Flow Reduction: **>89%**
- 💧 Volume Reduction: **up to 75%**
- 🕒 Time-to-Peak Delay: **up to 56 minutes**
- 🌿 Potential overtopping in **M100:15**
- ☑ Meets all **SuDS 4 Pillars**



The following tables demonstrate the impact of the SuDSPlanter on a roof area of 100m² of 100% impermeability based on FSR rainfall data for a site in Cardiff, South Wales.

With Large SuDSPlanter

Event	Maximum Inflow	Maximum Outflow	Total Discharge Volume	Time to Peak Inflow	Time to Peak Outflow
	(l/s)	(l/s)	(m ³)	(min)	(min)
M1:2	1.67	0.04	0.30	4	61
M10:15	2.95	0.06	0.32	10	35
M30:15	3.72	0.08	0.41	10	47
M100:15	6.73	0.76	1.03	10	17

Without SuDSPlanter (direct discharge to sewer)

Event	Maximum Inflow	Maximum Outflow	Total Discharge Volume	Time to Peak Inflow	Time to Peak Outflow
	(l/s)	(l/s)	(m ³)	(min)	(min)
M1:2	1.67	1.62	0.50	4	5
M10:15	2.95	2.93	1.28	10	11
M30:15	3.72	3.70	1.61	10	11
M100:15	6.73	6.69	2.91	10	11

Impact of SudsPlanter

Event	Reduction in Peak Outflow	Reduction in Peak Volume	Increase in Time to Peak	Overflow Activated	SuDSPlanter Overtopping
	(%)	(%)	(min)		
M1:2	97.66%	39.88%	56	Yes	No
M10:15	97.95%	74.71%	24	Yes	No
M30:15	97.92%	74.86%	36	Yes	No
M100:15	88.67%	64.54%	6	Yes	Yes

The SuDSPlanter has been tested under a range of design storms (M1:2 to M100:15) and demonstrates exceptional performance in managing roof runoff within a compact footprint.

Designed for attenuation, infiltration, and filtration, it aligns fully with the SuDS hierarchy and provides quantifiable benefits to both flood risk and water quality.

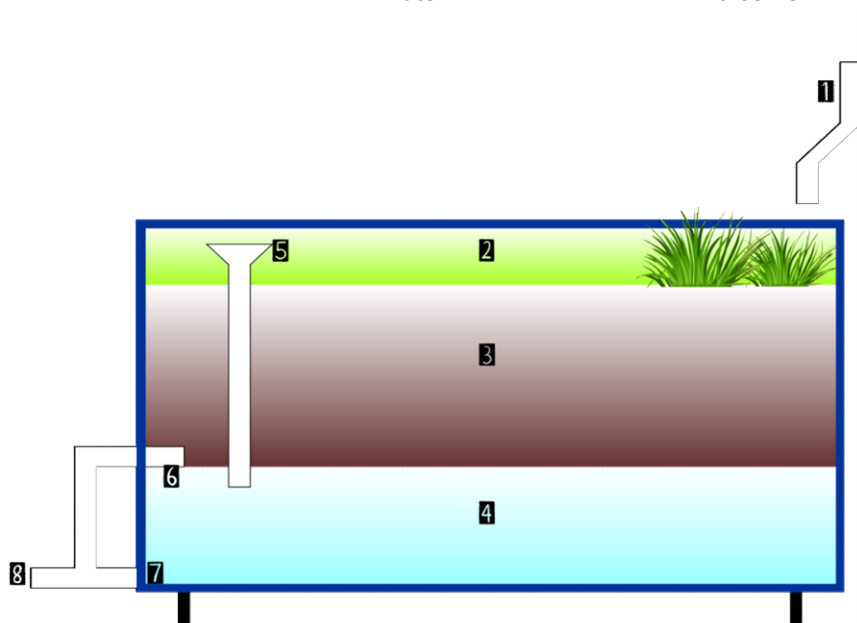
Data Sheet

Roof Area (m ²)	100
SuDSPlanter	Large
Dimensions (m)	2.0 x 0.6 x 0.95
Storage Volume (m ³)	0.54

Designed By	GW
Date	26.05.25

Schematic layout of the SuDSPlanter

- 1 - DISCONNECTION FROM RAINWATER DOWNPIPE
- 2 - PONDING & PLANTING ZONE 150mm DEEP
- 3 - SOIL ZONE 450mm DEEP
- 4 - STORAGE ZONE 300mm DEEP
- 5 - BYPASS OVERFLOW SET 100mm ABOVE BASE OF PONDING ZONE
- 6 - 32mm DIAMETER OVERFLOW SET 300mm ABOVE BASE OF SuDSPLANTER (ONLY ACTIVATED WHEN STORAGE ZONE IS FULL)
- 7 - 9mm DIAMETER ORIFICE OUTLET AT BASE OF SuDSPLANTER
- 8 - CONNECTION ONTO MAIN DRAINAGE SYSTEM



How the SuDSPlanter Meets the Four Pillars of SuDS Design

Water Quantity	By attenuating peak flows and reducing total runoff volume, the SuDSPlanter helps to prevent downstream flooding and overloading of drainage systems.
Water Quality	The soil and vegetation layers filter out sediments, nutrients, and pollutants, improving the quality of water before it enters the drainage network.
Amenity	As a green landscape feature, the SuDSPlanter enhances the visual environment, contributing to attractive, liveable spaces in both residential and commercial settings.
Biodiversity	The inclusion of vegetation and varied planting supports pollinators and urban wildlife, creating microhabitats that promote ecological value even in constrained spaces.

Simple Index Approach for Water Quality Mitigation within the SuDSPlanter

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydro-carbons
Residential Roofs	Very Low	0.2	0.2	0.05
SuDS Component & Mitigation Indices				
SuDSPlanter Bioretention System		0.8	0.8	0.8
Mitigation Indices > Pollutants		Yes	Yes	Yes

Basic Maintenance Schedule for SuDSPlanter

Maintenance Item	Frequency
Check for debris, litter, and leaf accumulation on the surface	Monthly or after major storms
Remove weeds and manage vegetation	Monthly during growing season
Inspect inlet and overflow structures for blockages or damage	3 monthly, 48 hours after large storms in first 6 months
Check for erosion, ponding issues, or soil displacement	3 monthly or after heavy rainfall
Inspect filter media for clogging or compaction	Annually
Replace or top up mulch/soil layer as needed	Every 2–5 years, or as required
Jet/flush underdrain or outlet control (if present) to ensure functionality	Annually or as required



SuDSPlanter® Roof Rainwater Management System

Product Name: SuDSPlanter®

System type: Packaged Rainwater Planter

Functions: Stormwater treatment, Stormwater attenuation, Biodiversity provision

Materials: Thermoplastic powder coated **stainless steel** frame with 100% recycled plastic lumber infill or natural timber infill.

Unit dimensions (mm):	Extra Large – 2000 wide x 1000 deep x c. 950 high Large – 2000 wide x 600 deep x c.950 high Medium – 1600 wide x 600 deep x c.950 high Small – 1200 wide x 600 deep x c.950 high Extra Small – 800 wide x 600 deep x c.950 high Bespoke sizes also available Height can vary depending on degree of levelling required
Storage Capacity (m ³):	Extra Large – 0.9m ³ Large – 0.5m ³ Medium – 0.4m ³ Small – 0.3m ³ Extra Small – 0.2m ³
Weights (no soil):	Extra Large – 205 Kg Large – 175 Kg Medium – 150 Kg Small – 115 Kg Extra Small – 100 Kg
Key Components:	Integral high strength stainless steel adj. feet for levelling Outlet with integral flow control Overflow outlet Integral, vertical high-level emergency overflow High volume storage compartment High quality, guaranteed watertight liner Special pre-mixed growing media/soil

Sudsplanter Ltd., 7 Folly Field, Bradford on Avon, Wiltshire, BA15 1XA

Tel: 07712 842392 Email: enquiries@sudsplanter.com Web: www.sudsplanter.com

Registered in Eng & Wales No. 11095109 Registered Office: Central Chambers, Lion Street, Abergavenny, Wales, NP7 5PE



Description

SuDSPlanter® is a packaged roof rainwater management system designed to provide stormwater treatment, retention and attenuation for roof runoff prior to discharge to downstream SuDS measures or surface water drainage systems.

Each SuDSPlanter® unit is supplied ready assembled with all internal components in place, and all required growing media/soil and required connection pipework and fittings for controlled outlet and overflow outlet.

The system consists of high-strength, thermoplastic powder coated stainless steel frame, 100% recycled plastic lumber or natural timber infill, high volume storage zone, guaranteed waterproof liner, outlet with integral flow control, overflow outlet, internal emergency high level overflow and all required specially mixed growing media/soil.

Each SuDSPlanter® unit is supplied with integral stainless steel adjustable feet to facilitate quick and easy levelling once in position

Outlets

Standard SuDSPlanter® units are supplied with a low level outlet with an integral flow control to restrict the flow to a maximum of 0.1 l/s which is achieved when the high volume storage zone in the base is full.

The discharge rate from this lower outlet is linear from 0 l/s when empty, up to 0.1 l/s when full.

There is also an overflow outlet from the top of the storage zone which discharges freely and only discharges when this zone is full. This outlet discharges at up to 4l/s intermittently in syphonic mode.

Key Features

Made from recycled and recyclable materials.

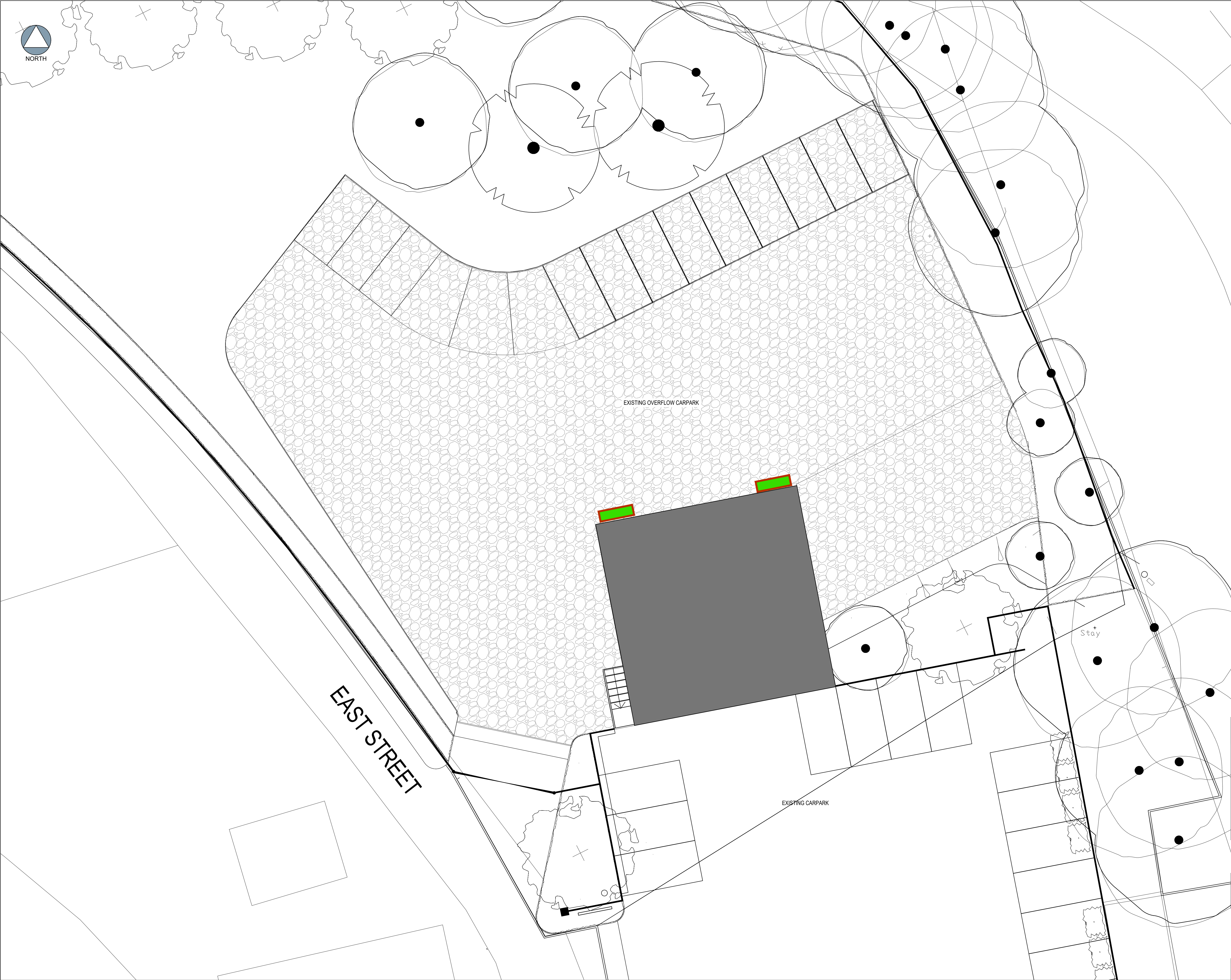
Requires no construction or assembly.

All internal components, special growing media/soil and outlet pipework supplied

Quick to install and commission

Sudsplanter Ltd., 7 Folly Field, Bradford on Avon, Wiltshire, BA15 1XA
Tel: 07712 842392 Email: enquiries@sudsplanter.com Web: www.sudsplanter.com

Registered in Eng & Wales No. 11095109 Registered Office: Central Chambers, Lion Street, Abergavenny, Wales, NP7 5PE



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General Notes

1. This drawing is intended to be read in conjunction with all relevant architects, engineers, services and specialist drawings, details and specifications.
2. Any variations or discrepancies between these drawings in terms of dimensions or details should be drawn to the attention of the architect and/or the engineer for clarification.
3. All figured dimensions to be taken in preference to scaled dimensions. Do not scale this drawing.
4. Paul Basham Associates accepts no responsibility for the accuracy of background information produced by third parties – this must be treated as indicative only. Third party plans are included as per the following:
 - 4.1. Proposed Block Plan Ref: 05_005 Dated: 13/10/2025
5. This drawing should only be used for construction if the project phase in the title frame below is shown as "construction". Paul Basham Associates take no responsibility for construction works undertaken to drawings which are not marked under this phase.

LEGEND

-  EXISTING PERMEABLE GRAVEL SURFACE
-  PROPOSED LARGE SuDS PLANTER
-  PROPOSED SINGLE STORY STORE BUILDING

1:100 0m 5m

PRELIMINARY

DRAWING/DESIGN IS STILL 'IN DEVELOPMENT'
YOU ARE ADVISED TO MAKE DUE ALLOWANCE

Rev	Description	Date	By	App'd
P01	FIRST ISSUE	23.01.2026	SJF	JFS

 Paul Basham Associates Ltd The Botley, Cams Hall Estate, Fareham, PO16 8UT info@paulbashamassociates.com www.paulbashamassociates.com	
Client	
POTS AND PITHOI LIMITED	
Project Name	
POTS AND PITHOI, TURNERS HILL	
Title	
DRAINAGE STRATEGY	
Project Phase	
PRELIMINARY	
Date Created	26.01.2025
Drawn By	SJF
Approved By	JFS
Suitability Code	S4
PBA Project Number	279.5002
Scale	1:100 (AT A1)
PBA Drawing No.	279.5002.0501
Revision	P01