



SuDS Strategy

Project: Chippenham Pit Stop, Chippenham, SN15 5LH

Reference: 078

Prepared for: Nicola Sully, Pearce Planning

9 August 2026

Project number: 078



EXECUTIVE SUMMARY

This SuDS Strategy has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. It has been produced on behalf of Pearce Planning in support of a planning application for a proposed change of use at Chippenham Pit Stop, Chippenham, SN15 5LH.

The site is located within Flood Zone 1, as identified on the Environment Agency's Flood Map for Planning. It is also assessed to be the following flood sources:

- River and sea (Fluvial) - Low risk
- Surface Water (Pluvial) - Low risk

Surface water at the site is managed through a treatment train designed to control both runoff rate and water quality. Runoff from the hardstanding first passes through a grassed filter strip, which provides initial filtration and removes suspended solids. From there, surface water is conveyed to a bypass oil separator, which intercepts hydrocarbons and any residual contamination before discharge. Treated flows are then directed to a 120m³ cellular soakaway, where surface water is disposed of by infiltration into the underlying Cornbrash Limestone in line with the SuDS drainage hierarchy. The proposed surface water network is to be designed to the 1 in 100 year storm event with an allowance of 40% for Climate Change.

In line with the NPPF requirements the proposed development can proceed without being subject to flood risk. Furthermore, through the implementation of suitable surface water management techniques, the development will not increase flood risk to the surrounding area.



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INTRODUCTION

Background

The purpose of this Flood Risk Assessment (FRA) is to evaluate the flood risks associated with the proposed development at Chippenham Pit Stop, Chippenham, SN15 5LH. The FRA seeks to ensure that future occupants of the development will remain safe throughout the lifetime of the development, that the proposals will not increase flood risk either on-site or elsewhere, and, where practicable, that opportunities to reduce overall flood risk are incorporated. This assessment addresses flood risk in accordance with the requirements set out in national and local planning policies, and includes recommendations for appropriate mitigation measures where necessary.

Site Proposals

The proposed development consists of the change of use to a lorry parking. A copy of the proposed development plans is included within Appendix A.

National and Local Planning Policy

The National Planning Policy Framework (NPPF) outlines the Government's national approach to land use planning in England, specifically in relation to flood risk. It requires that flood risk be taken into account at all stages of the planning process. The accompanying Planning Practice Guidance (PPG) provides detailed technical direction and is available online.

The PPG classifies the vulnerability of different land uses to flooding and guides planning decisions accordingly. It promotes the siting of development in areas of lowest flood risk wherever feasible and emphasises the need to avoid any increase in flood risk beyond the site boundary, ensuring that flood risk to the wider catchment is not exacerbated.

The National Planning Policy Framework (NPPF) outlines the requirements for site-specific Flood Risk Assessments. A FRA is required for proposals that:

- A. Are greater than 1 hectare in area within Flood Zone 1;
- B. Involve new development (including minor development and changes of use) within Flood Zones 2 and 3;
- C. Are located in an area within Flood Zone 1 that has been identified as having critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding;
- D. Are located in an area in Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at increased future flood risk or subject to other sources of flooding.
- E. In an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

This FRA has been prepared to provide sufficient information to demonstrate compliance with the requirements of the NPPF, Planning Practice Guidance (PPG), and relevant regional and local government policies.



The assessment evaluates the risk of flooding from all sources, including tidal, fluvial, surface water, groundwater, sewer, and artificial sources. It also proposes mitigation measures to ensure that flood risk to the site is minimised and that flood risk elsewhere is not increased as a result of the proposed development.

Sources of Information

This FRA has been based on the following sources of information:

- NPPF
- Flood Risk and Coastal Change Planning Practice Guidance (PPG)
- Site Layout Plan
- Ordnance Survey mapping
- Site Topographical Survey
- DEFRA Magic mapping
- DEFRA National standards for sustainable drainage systems (SuDS)
- Environment Agency mapping, consultation and model information
- Web Based Soil Mapping
- British Geological Survey Drift & Geology Maps
- Wiltshire Core Strategy (2015)



EXISTING SITE & HYDROLOGY CHARACTERISTICS

Site Location

The site is located at Chippenham Pit Stop, Chippenham, SN15 5LH, within the Wiltshire Council. It lies within a predominantly highway area.

The site comprises previously greenfield land with a top layer removed and laid with grade 1 aggregate in 1980's, since then has been unofficially used as a parking for vehicles and lorries based on the anecdotal evidence. It is bounded by existing track shop and parking.

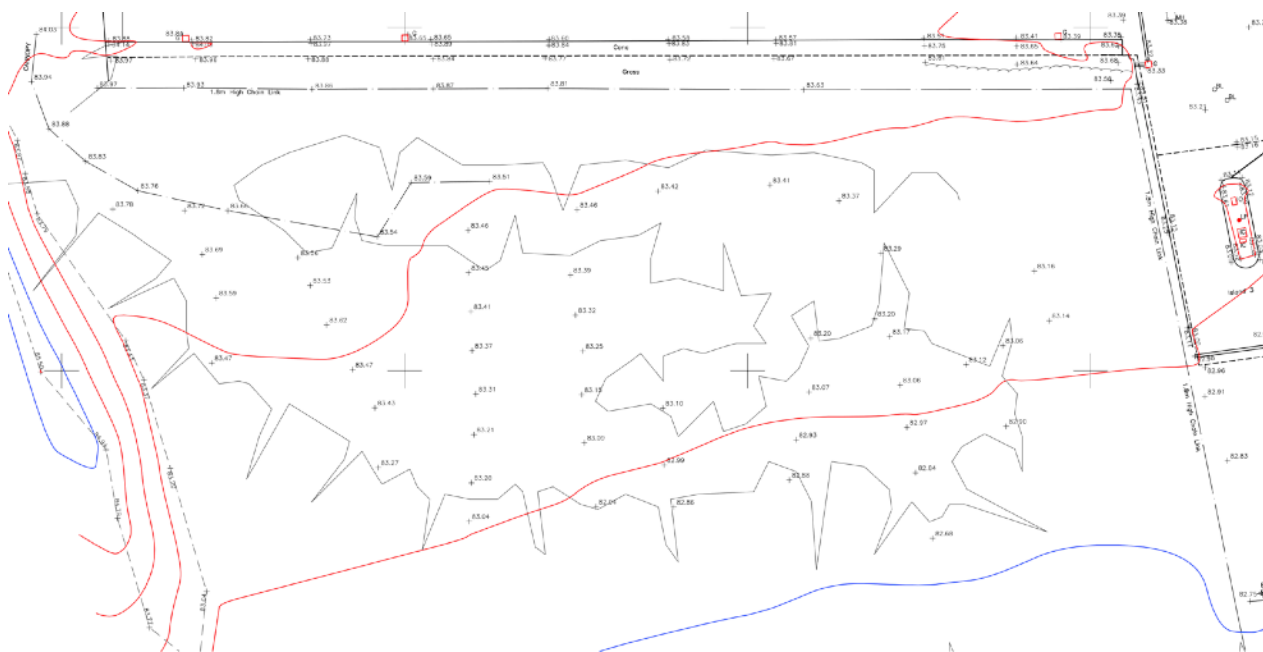
The site location is approximately shown outlined in red in Figure below. The approximate central grid reference for the site is E: 392443; N: 179322.





Topography

Topography survey indicates that ground level is sloping south east (see Figure below). Ground level of site is consistent with the surrounding landscape and does not indicate any notable low-lying areas that may be prone to surface water accumulation.



Ground Conditions

Geological mapping from the British Geological Survey ([BGS](#)) indicates that the site is underlain by the Cornbrash Formation-Limestone, a bedrock geology. No superficial deposit information is reported. Nearby [borehole data](#)—sourced from approximately 220 metres north of the site (reference ST97NW10)—suggests clay, limestone and silty clay with occasional rock fragments. However, located close to mudstone bedrock mapping.

[Soilscapes mapping](#) indicates that the site is characterised by freely draining shallow lime-rich soils over chalk or limestone. These characteristics suggest that surface water infiltration may be possible.

Existing Drainage & Hydrology

The site at Chippenham Pit Stop lies within the Wiltshire Council administrative area, approximately 0.5km east of M4 Junction 17, in a predominantly semi-rural setting bounded by the B4122 to the north and surrounding agricultural land. While there are no watercourses immediately adjacent to the site, an unnamed tributary of the River Avon flows in an easterly direction approximately 100m to the south, joining the River Avon (approximately 1.5km east of the site) near Christian Malford. Runoff from the existing Chippenham Pit Stop is currently conveyed to this tributary via a private piped drainage system. The lorry park has a 360m³ cellular soakaway.



Wessex Water sewer records confirm that a 300mm diameter public foul sewer flows from west to east beneath the B4122, to the north of the site. There are no public surface water sewers recorded in the immediate vicinity.

DEFRA's Magic Map (England and Wales) confirms there are no nearby designated sites of hydrological significance (e.g. SSSIs or flood storage reservoirs) in close proximity to the site. As such, the development is not anticipated to impact any environmentally sensitive receptors in terms of hydrological connectivity.



DEVELOPMENT VULNERABILITY & FLOOD ZONE CLASSIFICATION

National Planning Policy Framework

Local Planning Authorities (LPAs) have a statutory duty to consult the Environment Agency (EA) on relevant planning applications where flood risk may be a concern. The EA will review such applications in line with the National Planning Policy Framework (NPPF).

NPPF requires that, as part of the planning process:

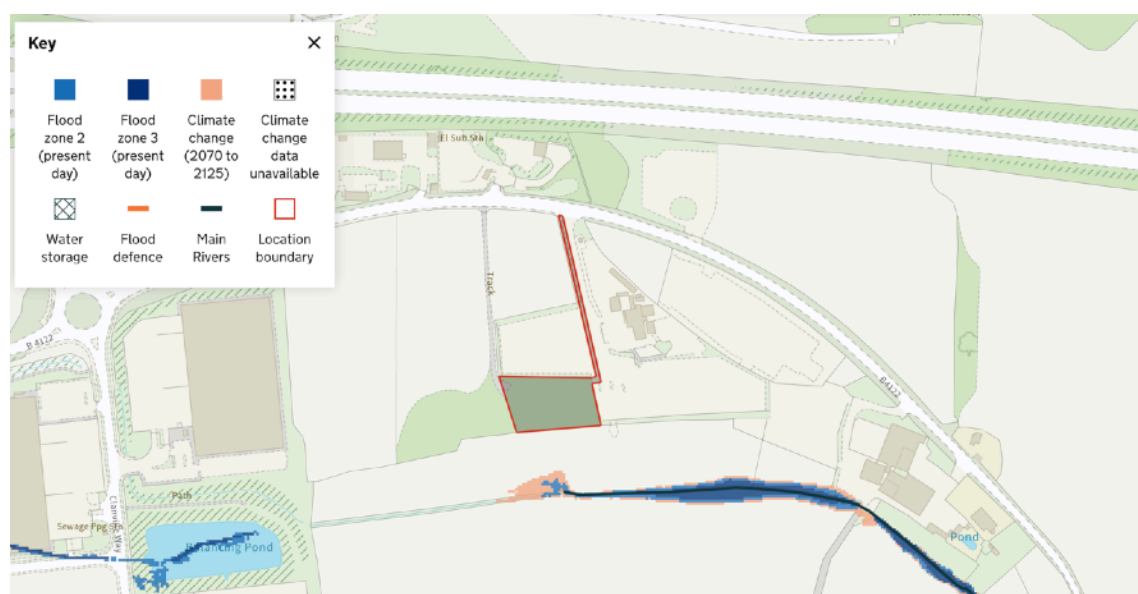
- A. A 'site specific' Flood Risk Assessment will be undertaken for any site that has a flood risk potential.
- B. Flood risk potential is minimised by applying a 'sequential approach' to locating 'vulnerable' land uses.
- C. Sustainable drainage systems are used for surface water disposal where practical.
- D. Flood risk is managed through the use of flood resilient and resistant techniques.
- E. Residual risk is identified and safely managed.

Table 1 of NPPF, categorises flood zones into:

- Zone 1- Low risk, less than 0.1% Annual Event Probability (AEP) (< 1 in 1000 years)
- Zone 2- Medium risk, 0.1% AEP (1 in 1000 - 1 in 100 years)
- Zone 3a- High risk, 1% AEP (> 1 in 100 years)
- Zone 3b- High risk - Functional Floodplain, 3.33% AEP (>1 in 30 years)

Environment Agency Flood Map for Planning

The Environment Agency's Flood Map for Planning provides the most up-to-date representation of flood risk from rivers and the sea, assuming the absence of existing flood defences. These maps serve as a planning tool to determine whether sites fall within designated flood risk zones and inform the need for further assessment.





The site at Chippenham Pit Stop is located within Flood Zone 1, as identified on the Environment Agency's Flood Map for Planning (see Figure above). Flood Zone 1 is defined as land at low probability of fluvial or tidal flooding, with an annual probability of flooding of less than 0.1%.

As such, the Sequential and Exception Tests are not required for this development.



FLOOD RISK

National Planning Policy Framework (NPPF)

In line with the NPPF, this Flood Risk Assessment (FRA) considers all potential sources of flooding, including:

- A. Tidal flooding – from the sea;
- B. Fluvial flooding – from rivers and streams;
- C. Pluvial flooding – from surface water runoff and exceedance flows;
- D. Groundwater flooding – from elevated groundwater tables or springs;
- E. Flooding from sewers – including surcharge from combined or surface water systems;
- F. Artificial sources – such as reservoirs, canals or infrastructure failure.

Tidal Flooding

Tidal flooding typically results from extreme sea levels due to high tides, storm surges or wind-driven wave action, and affects areas that are hydraulically connected to a tidal river. The site is located at an elevation well above tidal influence and is not situated near a tidal floodplain. There are no tidal waterbodies in the immediate area that present a risk to the site.

The risk of tidal flooding at this location is therefore negligible.

Fluvial Flooding

Fluvial flooding occurs when watercourses exceed their capacity and overflow into adjacent land. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

The site is located within Flood Zone 1. This classification identifies the land as being at low risk of fluvial or tidal flooding, with an annual probability of flooding from rivers or the sea of less than 0.1%.

The Environment Agency flood mapping (see Appendix B) confirms that the site does not benefit from any formal flood defences providing protection up to a 1 in 100-year (1%) annual probability event. However, the site lies well outside the areas expected to be impacted by such events.

Figure demonstrates that the site lies outside the design flood extent for the 1 in 100-year plus climate change event. As a result, the development will not encroach upon or reduce the floodplain storage associated with any modelled design event and will not lead to increased flood risk elsewhere.

Given that the site is located entirely within Flood Zone 1, as defined by the Environment Agency's Flood Map for Planning, the fluvial flood risk is considered to be low.

Pluvial Flooding

Pluvial flooding arises when intense or prolonged rainfall events exceed the infiltration capacity of the ground or overwhelm the local drainage infrastructure, leading to the accumulation of surface water and the formation of overland flow paths.



Surface water flood risk mapping from the Environment Agency (Figure above) shows the modelled extent of potential surface water flooding for 1 in 30-year, 1 in 100-year, and 1 in 1000-year events. The mapping indicates that the site lies outside any identified areas of elevated surface water flood risk.

While some localised surface water risk is indicated in the wider area, including adjacent roads and footways, these risks are not directly affecting the site at Chippenham Pit Stop. This is supported by the fact that the site occupies relatively flat ground and is bordered by road gullies and established drainage infrastructure which will intercept surface flows.

The site is to be situated on land that remains outside the modelled extents of pluvial flood risk. As such, the risk of pluvial flooding to the proposed development is considered to be low.



SUDS STRATEGY

Introduction

Sustainable Drainage Systems (SuDS) are designed to replicate the natural drainage processes of a site prior to development. By managing rainfall close to where it falls, SuDS reduce both the quantity and rate of surface water runoff and, in doing so, lower the risk of flooding. Additionally, they enhance water quality and provide wider environmental benefits including amenity and biodiversity gains.

The SuDS management train considers three core objectives: flood risk reduction, pollution control, and landscape/ecosystem enhancement. Disposal of surface water should follow the SuDS hierarchy, in decreasing order of preference:

- Discharge to ground (infiltration and re-use);
- Discharge to a surface water body;
- Discharge to a surface water sewer;
- Discharge to a combined sewer (as a last resort).

The philosophy of SuDS is to manage runoff as close to source as possible, while also improving water quality prior to discharge. The benefits of this approach include:

- Reduction of runoff rates, thereby reducing downstream flood risk;
- Reduction in pollutant loading to watercourses;
- Support for groundwater recharge where appropriate;
- Improved visual and recreational amenity;
- Creation of ecological niches for biodiversity in developed areas.

Existing Drainage

The site currently comprises a **greenfield site unofficially used for vehicle and lorry parking. The wider plot includes areas served by surface water drains and grassed filter strips with a cellular soakaway and bypass separator.**

Proposed Drainage

In accordance with the National Planning Policy Framework (NPPF) and best practice guidance, the proposed development at Chippenham Pit Stop will incorporate a Sustainable Drainage System (SuDS). This system has been designed to manage rainfall on-site, reduce surface water runoff, and ensure that flood risk is not increased on or off-site.

The strategy is based on infiltration where feasible, supplemented by SuDS features such as permeable surfacing, soakaways, and deep bore soakaways, all tailored to the site's geological and spatial constraints. Drawings illustrating the proposed drainage layout and features are provided in Appendix D.



Site Specific SUDS

The selection of SuDS features for the development at Chippenham Pit Stop has been guided by site-specific opportunities and constraints, as well as the principles outlined in the CIRIA SuDS Manual (C753). The objective is to apply the SuDS management hierarchy as far up the hierarchy as possible, while acknowledging feasibility based on site layout, geology, and drainage requirements.

SuDS measures aim to replicate natural drainage processes by managing rainfall at or near the point where it falls. The most effective SuDS features are those that provide source control — intercepting and managing runoff as close to its origin as possible.

As outlined in the CIRIA SuDS Manual (C753), open surface SuDS are generally preferred to subsurface or end-of-pipe solutions because:

- They offer greater visibility, allowing for easier inspection and maintenance;
- Malfunctions can be more readily identified and rectified;
- They often provide added biodiversity, amenity, and aesthetic value to developments.

However, SuDS selection must also account for practical constraints such as site layout, geology, levels, and urban design. The table below provides a high-level assessment of the key SuDS features considered for this development, outlining their description, suitability, and justification based on the site-specific conditions.

Table below provides a summary of the SuDS options considered, along with their suitability for this development:

SuDS Feature	Description	Suitability / Comment
Green roofs	Vegetated roofs that reduce discharge rates and provide ecological benefits.	Not suitable for site layout.
Blue roofs	Temporary roof-level stormwater attenuation.	Not suitable for site layout.
Rainwater harvesting	Re-use of rainwater for non-potable use.	Not suitable for site layout.
Trees	Intercept rainfall and promote infiltration via soft landscaping.	No additional trees are proposed.
Infiltration systems	Soakaways and boreholes allow runoff to percolate into the ground.	Soakaway is proposed.
Pervious pavements	Permeable surfacing to allow water to infiltrate through construction layers.	Not suitable due to site layout. Grassed filter strips are proposed.
Bioretention systems	Vegetated depressions (e.g., rain gardens) to store and treat runoff.	Not suitable due to site layout and limited available landscaping area. Grassed filter strips are proposed.
Swales	Grass channels to convey and treat surface water.	Not suitable due to site topography and density. Grassed filter strips are proposed.



Filter drains	Gravel-filled trenches to convey or infiltrate surface water.	Not suitable due to site topography and density. Grassed filter strips are proposed.
Detention basins	Temporary storage basins for runoff during storm events.	Not suitable due to limited space and topographical constraints.
Ponds & wetlands	Permanent open water features for amenity and biodiversity.	Not suitable due to health and safety risks and limited green space.
Filter strips	Grass strips that slow runoff, encourage sedimentation.	Grassed filter strips are proposed.
Attenuation storage tanks	Below-ground tanks to hold back runoff.	Cellular soakaway is proposed.
Proprietary treatment systems	Prefabricated treatment devices (e.g., catchpits, silt traps).	Catchpits and bypass separator will be used.

SuDS Strategy

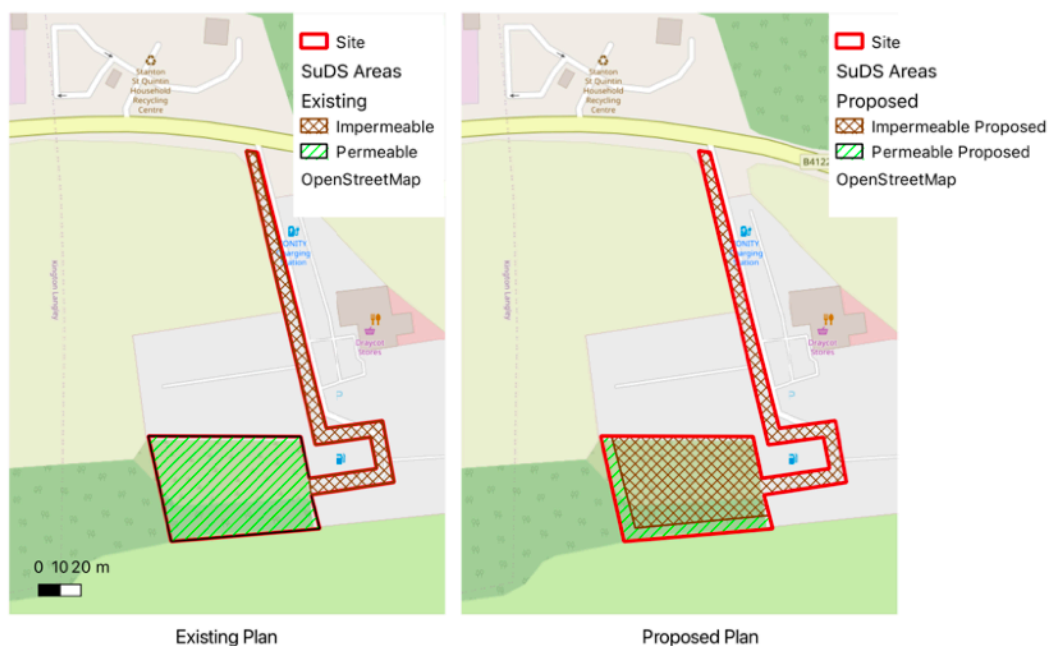
The site presents some constraints for the implementation of vegetated SuDS features such as swales and rain gardens, instead grassed filter strips are proposed. This is primarily due to the site's topography and the limited space available for soft landscaping within the development layout.

Grassed filter strips and soakaway are proposed as main SuDS features in managing surface water.

Surface Water Drainage Strategy

The proposed drainage layout is presented in Appendix D, which includes a detailed plan showing:

- Grassed filter strips;
- Soakaway with bypass separator;
- Associated SuDS features designed for source control and pollution mitigation.





To prevent sedimentation and maintain system performance, all SuDS elements and associated drainage infrastructure will be protected through the inclusion of catchpits and silt traps, incorporated into inspection chambers, gullies, and connecting pipework.

The runoff risk from hardstanding surfaces is considered low due to the scale and the planned interception systems.

Runoff Calculations

- Total site area: Approx. 3,550m²
- Existing impermeable area: Approx. 630m²
- Proposed impermeable area: Approx. 2,960m²
- Proposed permeable area: 590m²

Table below compares pre- and post-development runoff rates and volumes, including greenfield runoff baseline. However, given that infiltration SuDS will be implemented, the runoff impact is expected to be negligible.

Pre- and Post-Development Surface Water Runoff

Return Period	Existing Peak Runoff Rate [l/s]	Greenfield Runoff Rate [l/s]	Proposed Peak Runoff Rate [l/s]	Betterment from existing (%)
1 in 1 year	6.47	1.5	0	100%
1 in 30 years	25.38	3.7	3.49	86%
1 in 100 years	33.37	4.6	4.69	85%
1 in 100 years (+40%)	n/a	n/a	6.37	n/a

- Q_{Bar} (l/s) = 1.9 l/s
- Existing and Proposed peak runoff rates were calculated using SuDS performance evaluation tool that was built by HR Wallingford as part of the EC StopUP project.
- Greenfield rates are derived using IH124 methodology and UKSUDS Greenfield runoff rate estimation tool.

Water Disposal Hierarchy

The water disposal hierarchy recommended by the Lead Local Flood Authority (LLFA), Thames Water, the SuDS Manual (CIRIA C753), and national planning guidance follows the order:

- Re-use at source
- Infiltration to ground
- Discharge to watercourse
- Discharge to surface water sewer
- Discharge to combined sewer (only if no alternatives are available)



This hierarchy ensures surface water runoff is managed as close to its source as possible, mimicking the site's natural (predevelopment) hydrological response.

The proposed development complies with this hierarchy, as summarised below:

Discharge Method	Comment
Re-use at source	Not used for this development.
Infiltration	Infiltration via filter strips and 120m ³ soakaway.
Watercourse	No discharge to nearby watercourses.
Surface water sewer	Not used for this development.
Combined sewer	Not used for this development.

Peak Flow and Volume Control

This achieves full compliance with national and local policies requiring post-development runoff volumes and peak flows to be equal to or less than pre-development values.

Water Quality

The SuDS strategy incorporates robust source control features to manage and treat water quality. All surfaces will be treated through filtration, infiltration or sediment control structures (e.g. , bypass separator, catchpits and silt traps).

The first 5 mm of rainfall — which contains the highest concentration of pollutants — will be fully retained and treated on-site, ensuring that water leaving the site (if ever) meets acceptable quality standards.

In accordance with SuDS Manual guidance, the following levels of treatment have been applied based on surface types:

- A. Filter strip – 1 level of treatment (e.g. infiltration, filtration through permeable surfaces).
- B. Bypass separator – 2 levels of treatment.
- C. Soakaway – 3 levels of treatment (e.g. permeable paving, catchpits, soakaways).

The proposed development includes grassed filter strips and a soakaway.

Surface runoff from these areas will receive:

- Primary treatment via grassed filter strips, allowing infiltration and filtration of surface water;
- Secondary treatment through trapped gullies catchpits positioned throughout the surface water network to intercept sediment and debris before entering bypass separator and finally soakaway.

Design and Modelling Criteria

The drainage system has been designed to accommodate a 1 in 100-year storm event with a 40% climate change allowance, in line with current DEFRA guidance (upper-end uplift).



Supporting calculations, presented in Appendix C, confirm that the proposed SuDS infrastructure is sufficient to manage all runoff volumes generated by the critical design storm.

Hydraulic modelling assumptions include:

- PAF (Proportion of Area Flowing):
 - 1.0 for impermeable areas;
 - 0.25 for permeable areas (reflecting infiltration loss);
- Catchment runoff coefficient (Cv): 1.0 applied for both winter and summer conditions;
- Urban creep: No additional allowance made, due to application of maximum PAF.

Exceedance Flow Management

In the event that storm intensity exceeds the design capacity of the drainage system exceedance flows will be safely retained within the site boundary.

Maintenance Strategy

All proposed SuDS elements and drainage infrastructure will be maintained for the full lifecycle of the development by the appointed management entity.

A detailed maintenance schedule, in accordance with the CIRIA SuDS Manual (C753), is provided in Appendix E.



CONCLUSIONS

The site is located within Flood Zone 1, as identified on the Environment Agency's Flood Map for Planning. It is also assessed to be the following flood sources:

- River and sea (Fluvial) - Low risk
- Surface Water (Pluvial) - Low risk

Flood risk at the site and surrounding sites is not considered to increase as a result of the development.

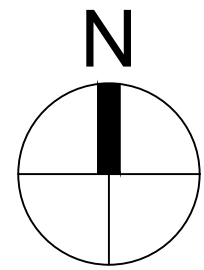
Surface water at the site is managed through a treatment train designed to control both runoff rate and water quality. Runoff from the hardstanding first passes through a grassed filter strip, which provides initial filtration and removes suspended solids. From there, surface water is conveyed to a bypass oil separator, which intercepts hydrocarbons and any residual contamination before discharge. Treated flows are then directed to a 120m³ cellular soakaway, where surface water is disposed of by infiltration into the underlying Cornbrash Limestone in line with the SuDS drainage hierarchy. The proposed surface water network is to be designed to the 1 in 100 year storm event with an allowance of 40% for Climate Change.



APPENDIX A – PROPOSED DEVELOPMENT DRAWINGS



PLANNING



Project Title
Chippenham Pit Stop Lorry Park
Chippenham
Drawing Title
Site Plan
As Proposed

Date
May 2026

Drawn
DM
Checked
MT

Scale
1:500 @ A1

03/08/26 Updated following comments DM MT c
29/07/26 Updated following ecology comments DM MT B
18/05/26 Boundary updated DM MT A
Date Description Drawn Checked Rev.

**ANGUS MEEK
ARCHITECTS**

Cedar Yard, 290A Gloucester Road, Bristol, BS7 8PD
T 0117 942 82 86 E architecture@angusmeek.co.uk

Project No. Drawing No. Rev.
2890 P01 C



APPENDIX B – FLOOD DATA

Flood map for planning

Your reference
Unspecified

Location (easting/northing)
392447/179334

Created
20 May 2026 20:31

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2026 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Flood map for planning

Your reference

Unspecified

Location (easting/northing)

392447/179334

Scale

1:2,500

Created

20 May 2026 20:31

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area



0 20 40 60m



APPENDIX C – DRAINAGE CALCULATIONS

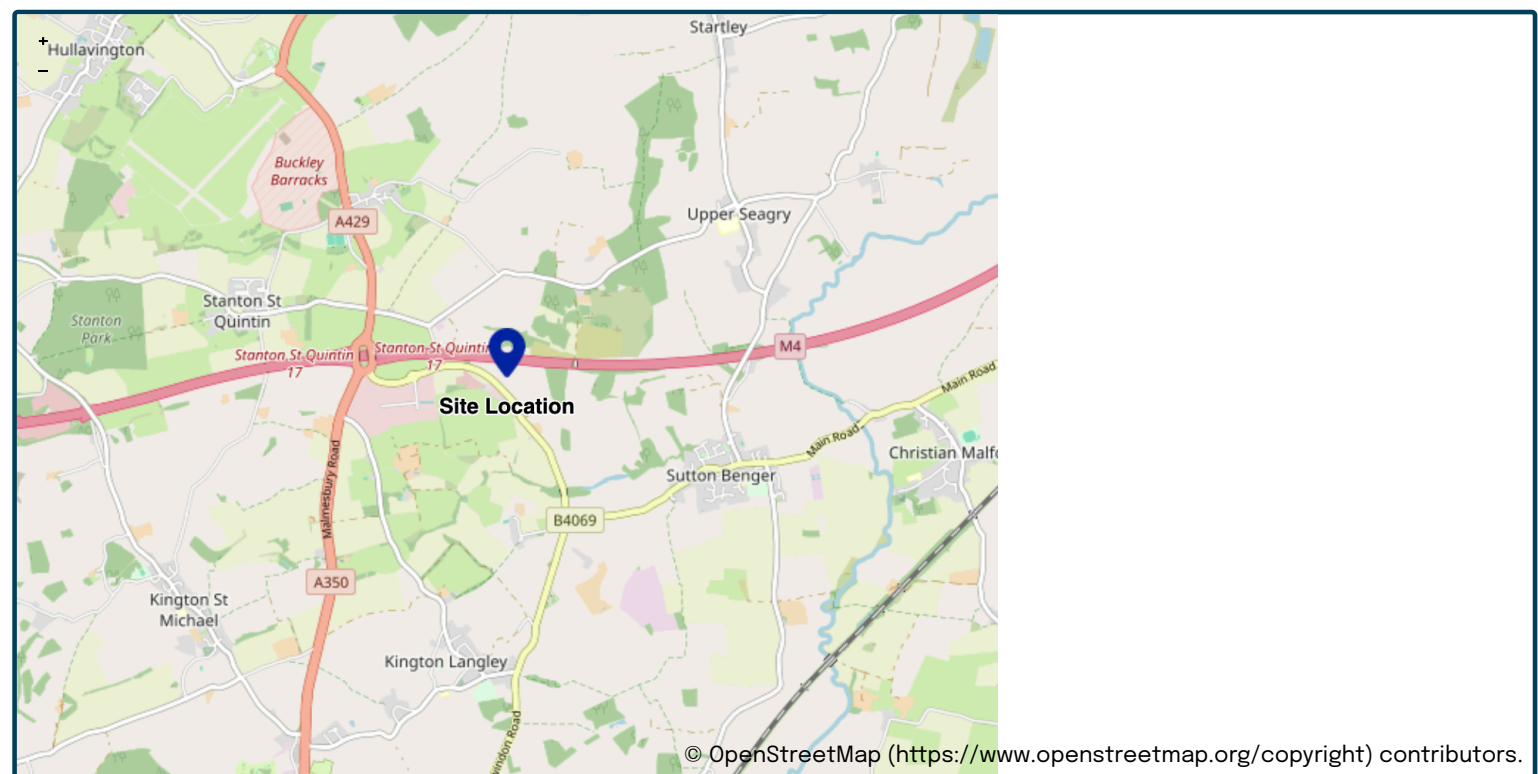
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). 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	19/05/2026
Calculated by	Air & Flood Consultants
Reference	078
Model version	2.2.3

Location

Site name	Chippenham Pit Stop, Chippenham, SN15 5LH
Site location	Chippenham Pit Stop, Chippenham, SN15 5LH



Site easting (British National Grid)	392810
Site northing (British National Grid)	179222

Site details

Total site area (ha)	0.355	ha
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Greenfield runoff

Method

Method	IH124
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IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	757	mm	757
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		
QBar (IH124) (l/s)	1.9	l/s	

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	8		8
1 year growth factor	0.78		
2 year growth factor	0.93		
10 year growth factor	1.49		
30 year growth factor	1.95		
100 year growth factor	2.43		
200 year growth factor	2.78		

Results

Method	IH124	
Flow rate 1 year (l/s)	1.5	l/s
Flow rate 2 year (l/s)	1.7	l/s
Flow rate 10 years (l/s)	2.8	l/s
Flow rate 30 years (l/s)	3.7	l/s
Flow rate 100 years (l/s)	4.6	l/s
Flow rate 200 years (l/s)	5.2	l/s

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 (2.2.3) developed by HR Wallingford and available at [uksuds.com](https://www.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) (<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.



Interception Model

Wed May 20 2026 20:11

Hydraulics

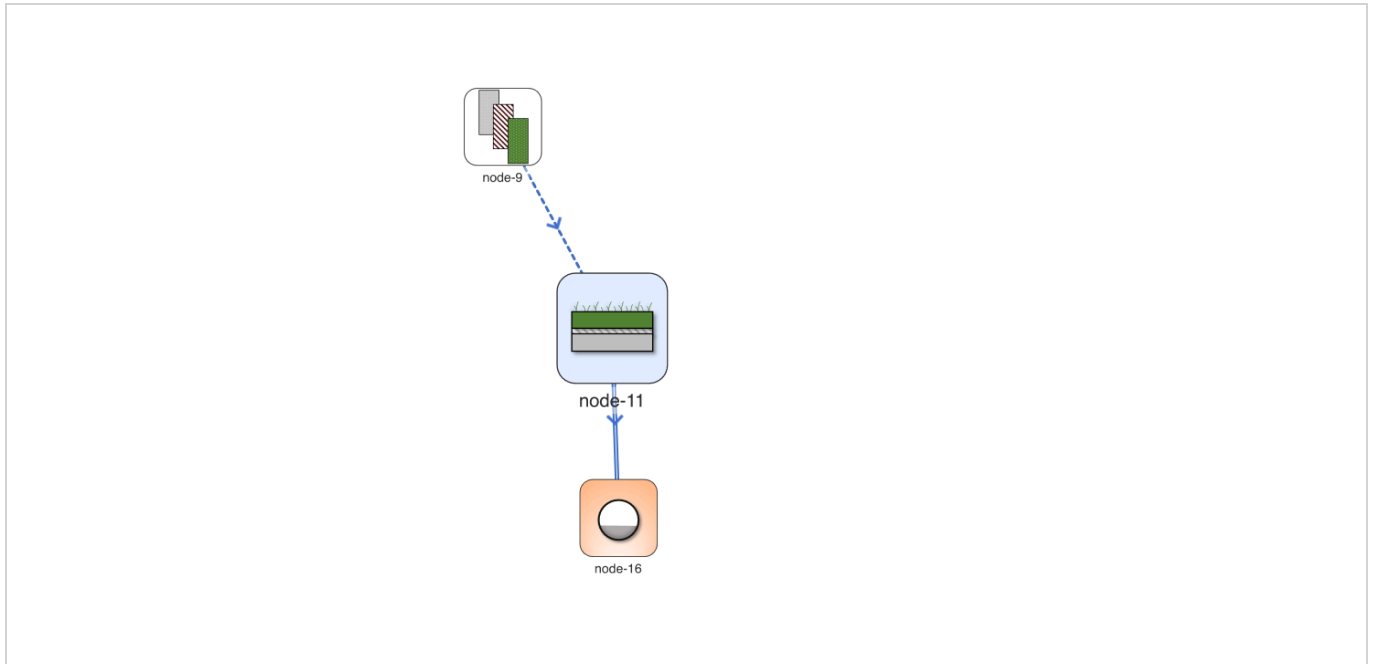
Proposed Site Information

Modeller	Air & Flood Consultants			
Organisation	Air & Flood Consultants			
Site Name	Chippenham Pit Stop			
Site Description	Chippenham Pit Stop, Chippenham, SN15 5LH			
Planning Reference	Chippenham Pit Stop, Chippenham, SN15 5LH			
Postcode	SN15 5LH			
Total Site Area (ha)	0.36			
Total Drained Areas (ha)	Paved	Roof	Grass / vegetated	Open SuDS
	0.296	0	0	0
Areas not served by the drainage network (ha)	0.064			
SuDS types	Type		Count	
	Soakaway or Infiltration Trench		1	
	Sewer Outfall		1	
Model Signatures	Model Version		Signature	Model Run
	1.2.5		35d8dfe1	2026-05-20T19:11:07.459Z

Proposed SuDS Network

Node name	Node type	Downstream node	Contributing area - paved	Contributing area - roof	Contributing area - grass / vegetated
node-9	contributing_area	node-11	2960	0	0
node-11	soakaway	node-16	0	0	0
node-16	outfall_sewer		0	0	0

Proposed SuDS Layout



Rainfall & Runoff input data

Rainfall type	Design storm																																							
Design storm data source	FEH22																																							
Design storm data location																																								
Climate change factor (%)	0																																							
Design storm events	<table> <tr> <th>Name</th> <th>Return period (years)</th> <th>Duration (min)</th> <th>Depth (mm)</th> <th>Depth inc CC (mm)</th> </tr> <tr> <td>1 year, 1440 minutes</td> <td>1</td> <td>1440</td> <td>30.77</td> <td>30.77</td> </tr> <tr> <td>1 year, 60 minutes</td> <td>1</td> <td>60</td> <td>8.83</td> <td>8.83</td> </tr> <tr> <td>30 year, 1440 minutes</td> <td>30</td> <td>1440</td> <td>70.37</td> <td>70.37</td> </tr> <tr> <td>30 year, 60 minutes</td> <td>30</td> <td>60</td> <td>33.37</td> <td>33.37</td> </tr> <tr> <td>100 year, 1440 minutes</td> <td>100</td> <td>1440</td> <td>90.91</td> <td>90.91</td> </tr> <tr> <td>100 year, 60 minutes</td> <td>100</td> <td>60</td> <td>43.37</td> <td>43.37</td> </tr> </table>					Name	Return period (years)	Duration (min)	Depth (mm)	Depth inc CC (mm)	1 year, 1440 minutes	1	1440	30.77	30.77	1 year, 60 minutes	1	60	8.83	8.83	30 year, 1440 minutes	30	1440	70.37	70.37	30 year, 60 minutes	30	60	33.37	33.37	100 year, 1440 minutes	100	1440	90.91	90.91	100 year, 60 minutes	100	60	43.37	43.37
Name	Return period (years)	Duration (min)	Depth (mm)	Depth inc CC (mm)																																				
1 year, 1440 minutes	1	1440	30.77	30.77																																				
1 year, 60 minutes	1	60	8.83	8.83																																				
30 year, 1440 minutes	30	1440	70.37	70.37																																				
30 year, 60 minutes	30	60	33.37	33.37																																				
100 year, 1440 minutes	100	1440	90.91	90.91																																				
100 year, 60 minutes	100	60	43.37	43.37																																				
Grass / vegetated runoff method	Variable percentage runoff																																							
Soil type	Relatively impermeable soils																																							
Standard Percentage Runoff (%)	37.0																																							
Fixed percentage runoff (%)	Paved 100		Roof 100																																					
Depression storage (mm)	Paved 1		Roof 0.2																																					
			Grass / vegetated 5																																					
Range of infiltration rates given for the site (m/s)	Minimum 8.14e-5		Maximum 8.14e-5																																					

What is the peak flow rate at the site outfall for extreme events?

	1 year	30 year	100 year
Storm durations run (minutes)	60, 1440	60, 1440	60, 1440
Critical duration (minutes)	60	60	60
Peak drainage flow rate at site outfall for the critical duration storm (l/s)	0	3.49	4.69

	Rainfall depth (mm)	Peak drainage flow rate at site outfall (l/s)
100 year 60 minutes	43.37	4.69
30 year 60 minutes	33.37	3.49
1 year 60 minutes	8.83	0
1 year 1440 minutes	30.77	0
30 year 1440 minutes	70.37	0
100 year 1440 minutes	90.91	0

How much flooding occurs from the drainage system for extreme events?

	1 year	30 year	100 year
Storm durations run (minutes)	60, 1440	60, 1440	60, 1440
Critical duration (minutes)	60	60	60
Total volume of flooding from the site drainage system for the critical duration storm (m ³)	0	0	0

	Rainfall depth (mm)	Flooding volume (m ³)
100 year 60 minutes	43.37	0
30 year 60 minutes	33.37	0
1 year 60 minutes	8.83	0
1 year 1440 minutes	30.77	0
30 year 1440 minutes	70.37	0
100 year 1440 minutes	90.91	0

Evaluation

Runoff Destination

Rainwater Harvesting	NaN% of roof areas drain to rainwater harvesting systems. Consider whether any additional rainwater harvesting would be appropriate for this site.
Infiltration	Some or all of the proposed SuDS components allow for infiltration. To ensure the designs of these components are robust you need to confirm that: • The infiltration component is protected from sediment buildup by putting adequate pre-treatment measures in place • The highest likely groundwater level is more than 1m below the base of the infiltration system, or appropriate design risk management has been undertaken • Any underlying aquifer is adequately protected from infiltration of potentially contaminated runoff • Infiltration will not exacerbate any groundwater flooding risk • Infiltration will not cause geotechnical or structural instability • Infiltration will not mobilise any soil contamination.
Discharge to a sewer	Some of the proposed discharge points are to sewers. Wherever possible, discharges should be to a watercourse or other surface water body to help protect the capacity of subsurface pipework. If the discharge has to be to a sewer, then surface water sewers should always be preferred. Discharges to combined sewers should only be used in exceptional circumstances, with the approval of the organisation responsible for that sewer.
Discharge to a surface water body	-

Flow Control

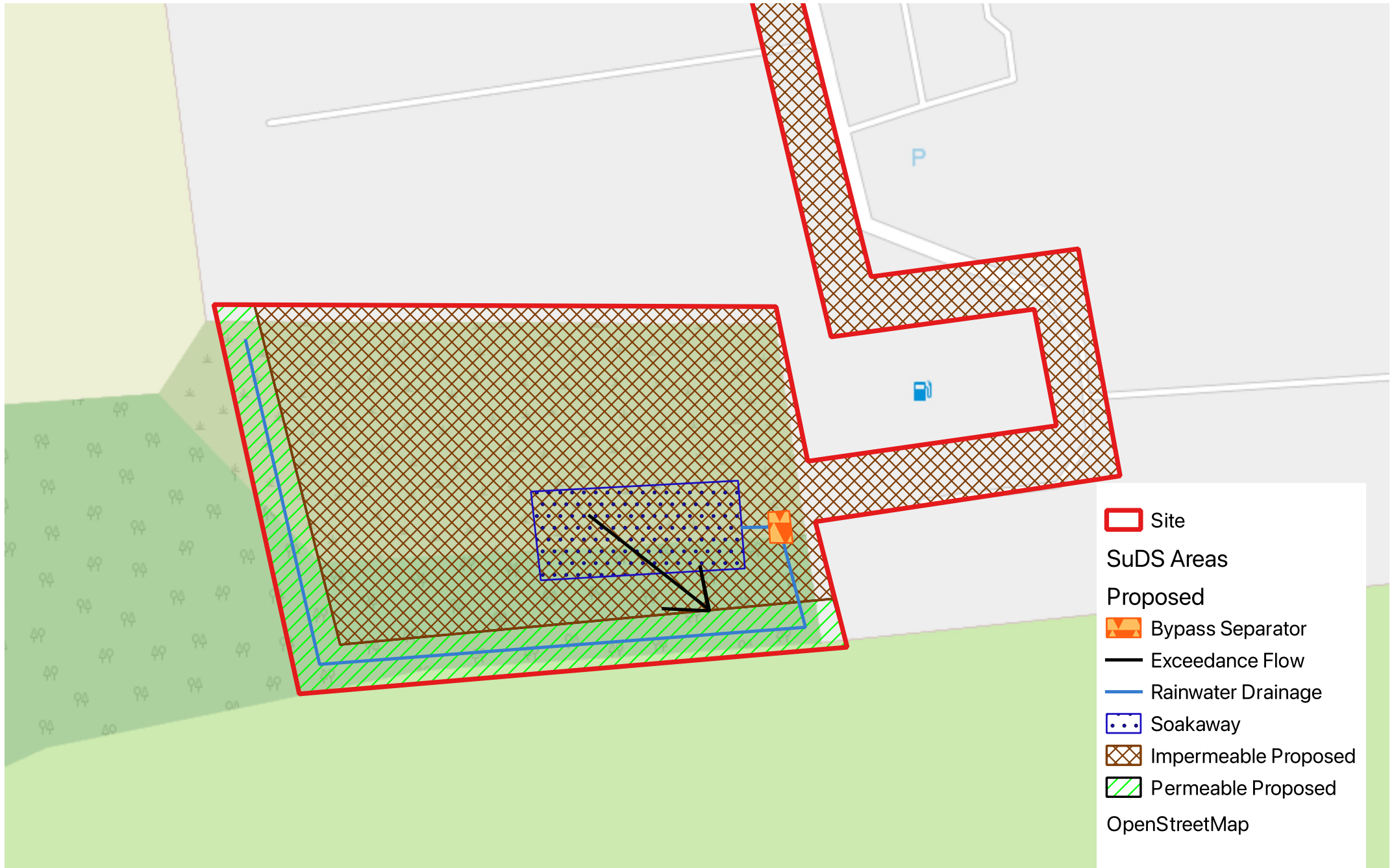
Peak flow rate at the site outfall for extreme events	No criteria have been set for peak flow rate from the site. This a key design criteria that should be agreed with the authorities responsible for the receiving system and planning.
Critical duration for the 1 year return period event	For the 1 year return period event, 2 storm durations have been run. The storm duration rainfall event causing the worst (outfall peak flow rate/system flooding) may not have been run. Check whether any other storm durations may result in greater peak flow rates at the outfall or flooding from the drainage system.
Critical duration for the 30 year return period event	For the 30 year return period event, 2 storm durations have been run. The storm duration rainfall event causing the worst (outfall peak flow rate/system flooding) may not have been run. Check whether any other storm durations may result in greater peak flow rates at the outfall or flooding from the drainage system.
Critical duration for the 100 year return period event	For the 100 year return period event, 2 storm durations have been run. The storm duration rainfall event causing the worst (outfall peak flow rate/system flooding) may not have been run. Check whether any other storm durations may result in greater peak flow rates at the outfall or flooding from the drainage system.

Amenity and Biodiversity

Amenity and Biodiversity	The proportion of impervious area drained using blue-green vegetated SuDS is 0%. Check whether amenity and biodiversity benefits of the system could be improved by draining a greater proportion of impervious area using well designed blue-green vegetated SuDS.
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APPENDIX D – DRAINAGE STRATEGY





APPENDIX E – SUDS MAINTENANCE PLAN

Operation and Maintenance Requirements for Soakaways

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

Operation and Maintenance Requirements for a Proprietary Treatment System

Maintenance Schedule	Required Action	Typical Frequency
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months



Operation and Maintenance Requirements for Filter Strips

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect filter strip surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination (e.g. oils)	Monthly (at start, then half yearly)
	Check flow spreader and filter strip surface for even gradients	Monthly (at start, then half yearly)
	Inspect gravel flow spreader upstream of filter strip for clogging	Monthly (at start, then half yearly)
	Inspect silt accumulation rates and establish appropriate removal frequencies	Monthly (at start, then half yearly)
Occasional maintenance	Reseed areas of poor vegetation growth; alter plant types to better suit conditions, if required	As required or if bare soil is exposed over >10% of area
Remedial actions	Repair erosion or other damage by re-turfing or reseed	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required