



1874GE – Muanditts Park Farm

DRAINAGE STATEMENT

July 2026

Document

Project name	Maunditts Park Farm
Project ref	1874GE
Project address	Maunditts Park Farm, B4042, Malmsbury, SN16 9NE
Client	Sebastian Marsh
Document name	Drainage Statement
Document ref	1874GE-001
Document author	Joe Williams MEng (Hons) CEng MStructE
Approved by	Joe Williams MEng (Hons) CEng MStructE

Version Control

Version	Date	Author	Description
1	17/07/26	Joe Williams	Draft issue.
2	28/07/26	Joe Williams	Updated for comments
3	30/07/26	Joe Williams	Updated for comments

Contents

1	Introduction	4
1.1	Reference documents	4
2	Site details.....	4
2.1	Site location and existing condition.....	4
2.2	Topographic condition.....	5
2.3	Existing drainage and exceedance.....	6
3	Proposed development.....	6
4	Flood risk.....	6
5	Surface drainage strategy	8
5.1	Discharge	8
5.1.1	Runoff Rates.....	8
5.2	Flow and volume control provision	9
5.3	Water quality.....	10
5.4	Exceedance routes	10
6	Foul water	11
6.1	Discharge.....	11
6.2	Conveyance and storage	11
7	Maintenance	11
8	Summary.....	11
9	Appendix.....	12

1 Introduction

This report provides a Surface Water Management Plan (SWMP) and foul water drainage strategy for the proposed residential property at Maunditts Park Farm.

The site is currently agricultural, with a barn at the western edge, being converted for residential use.

The proposals will broadly retain the existing roof footprint while reducing the residual hard surfacing across the site. Domestic foul effluent will be produced as a result of the use change and resultantly new foul and surface water drainage systems are proposed respectively.

This report has been prepared to comply with Local Authority policies, National Planning Policy Framework (NPPF) requirements plus planning guidance and local plus national requirements.

1.1 Reference documents

- The National Planning Policy Framework (NPPF) plus the Technical Guidance to the NPPF;
- The CIRIA SuDS Manual C753 and Council SuDS Guidance;
- The published Flood Map for Planning and Long-Term Flood Risk Maps;
- Wiltshire Council - Drainage and Betterment Strategy (June 2024);
- Site topographic survey;
- Site proposal drawings;

2 Site details

2.1 Site location and existing condition

The location of the proposed development site is shown in Figure 1 on the west-southeast periphery of Malmsbury, Wiltshire.

In total, the site is 0.19ha in size. Set within fields on all sides save the northeast where it is bordered by the B4042 that provides access. Within the site currently is a roughly square agricultural barn and accompanying fenced yard space to the northwest. The ground immediately around the barn is a soft to three sides while the large entrance yard space directly before the barn is mostly concrete blinded.



Figure 1 Google maps satellite image of site with indicative outline shown

2.2 Topographic condition

Generally, the site slopes from east to west towards the River Avon. The main yard area and barn slab have been levelled.

British geological survey (BGS) records indicate the site has a bedrock geology of CLAY with no superficial deposits. Intrusive investigation confirmed a general makeup of 0.2m made ground / topsoil, overlying a stiff grey brown CLAY.

As part of the intrusive ground works, soakaway tests were undertaken in two locations. One test was undertaken in the clay head deposit at 1.1m while the other was into the upper strata at 0.6m to inform possible drainage field design, results are as follows:

Test reference	Strata	Depth	No	F
TP1	Clay (Head)	1.1m	1	Not calculable, insufficient infiltration
TP2	Topsoil	0.6m	3	4.3×10^{-4} m/s

Figure 2 Soakaway test results

The deeper soakaway test confirmed the underlying clay strata to be impermeable with the test abandoned after 2h having recorded 10mm head drop.

The higher level soakaway returned a result of 4.3×10^{-4} . The significant difference between the upper and lower strata is believed to be on account of the very dry nature of the ground during testing with significant cracking of the near surface noticeable. This would provide a pathway for water to flow horizontally with the natural gradient of the land that may not be present in more typical conditions.

The results of the test are given in the appendix.

2.3 Existing drainage and exceedance

There is no current drainage on site:

- Water incident on roofs and other hard areas is discharged to adjacent soft landscaping to run off or soak away.
- No foul water is currently generated by the current use with no provision of foul drainage conveyance or treatment.
- There is an existing ditch along the site boundary and B4042 that serves as an ordinary watercourse to drain the road

Exceedance flows will flow across the site from the east and will be diverted around the existing building.

3 Proposed development

The new development will be a renovation of the existing barn broadly retaining the original roof form with a small flat roof extension. The surrounding areas will be landscaped to provide parking provision and stable / garage outbuilding will be constructed in the northern corner.

Refer to the Architects' drawings for details of the building and site layout, see appendix.

The buildings and hard surfaces will be served by a sustainable drainage system to collect, treat convey and discharge the incident surface water.

A new private drainage system will be provided to collect, treat and discharge effluent created by the building. This will be collected and pumped to the nearest public sewer circa 125m to the southeast.

4 Flood risk

The site is under 1ha and outside of any flood zones and therefore does not require a flood risk assessment although a cursory assessment is provided as follows:

Flood risk for planning map indicate the site is not considered to be at risk from sea, river or surface water flooding although some surface water flooding potential is noted in proximity to the northern edge of the site assumed to result from the raised level of the highway forming a barrier, Figure 3.

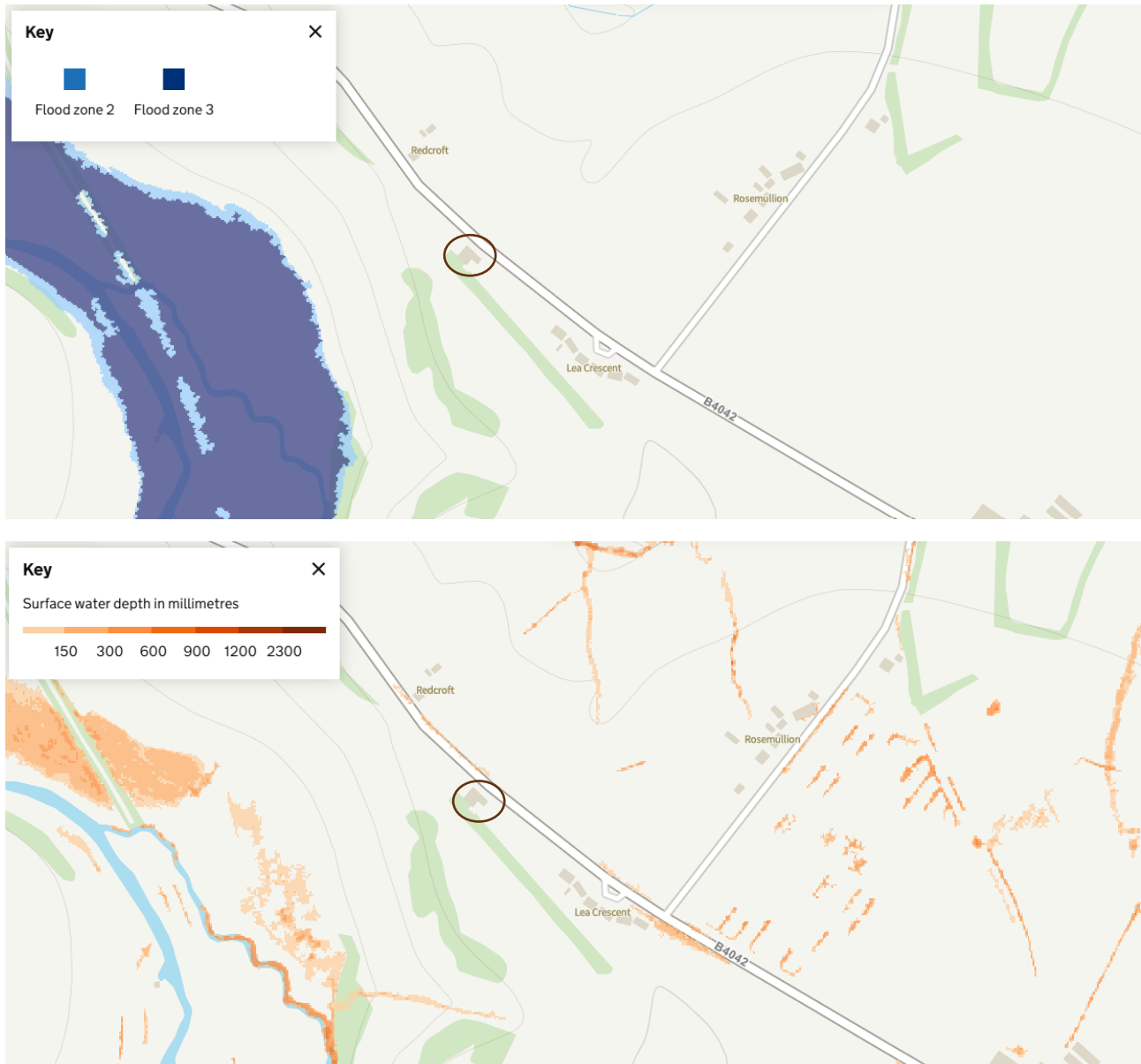


Figure 3 Flood risk mapping indicating flood zones top and surface water flooding (bottom) respectively

5 Surface drainage strategy

5.1 Discharge

Following the hierarchy of discharge:

- To ground – not possible on site due to low infiltration values, some blanket infiltration of water may be possible as supplementary but should not be relied upon
- To a watercourse – ordinary watercourse at site boundary
- To a sewer – no sewers on site, discharge to watercourse taken as priority
- To a combined sewer – no sewers on site, discharge to watercourse taken as priority

The strategy is therefore to discharge surface water from the site to the ordinary watercourse to the northeast with a controlled discharge rate to protect against downstream flooding.

5.1.1 Runoff Rates

The existing site has a significant area of hard surfacing from the roof and blinded yard area calculated as 0.07ha. As there is no know current drainage provision on the site the greenfield runoff rate has been calculated to benchmark the proposed design.

The greenfield runoff rate has been calculated using the FEH statistical method using the HR Wallingford calculator and the following parameters:

Site area:	0.19ha
SARR:	827mm
BFIHOST19SCALED	0.388

The calculated rates are found as follows for the differing return periods:

1 in 1	0.9l/s
1 in 2	1.1l/s
1 in 10	1.8l/s
1 in 30	2.3l/s
1 in 100	2.9/s
Qbar	1.2l/s

In line with Wiltshire council drainage and betterment strategy, proposed flow rates for brownfield sites should be as close as practical to greenfield rates and achieve no less than 30% betterment over the existing brownfield rate. The proposals will therefore be designed to not exceed the greenfield rates with an applied relaxation factor of 2 in an equivalent storm condition to reflect the current brownfield condition and current best practice.

A design flow rate for the orifice plate is therefore proposed at 1.8lt/s to provide equivalent or better than greenfield rates in all return periods greater than 1:10 year and no more than two times greenfield in shorter return periods. In all cases this will be a significant improvement over the current brownfield rates.

5.2 Flow and volume control provision

The proposed layout will collect water from roofs while all other surfaces will be soft or permeable with allowable infiltration to facilitate them functioning as greenfield for incident water. The total proposed hard area actively drained is:

Main house: 230m²
Stable: 130m²

For the collected water, flow control at outfall will be provided by an orifice plate manhole that will restrict outfall flow at or below the greenfield rates. Due to the control, attenuation will be required upstream to store excess water on a temporary basis.

As the outfall is shallow, a near surface attenuation system is required to avoid the need for pumping. Permeable subbase or a subbase replacement system is therefore proposed below the entrance drive and parking areas.

The total volume of attenuation needed for roofs has been calculated based on a single square sided tank with a maximum water depth of 150mm using FEH22 rainfall data for the site and the following parameters based on building lifespan, location and local policy:

Climate change allowance	45%
Urban creep	10%

A total storage provision of circa 15.3m³ is required to attenuate the flows from the buildings within the permeable subbase, either as 105m² of subbase replacement or 315m² of permeable stone. As incident water on the permeable subbase area will also be captured, an iterative approach has been taken to determine a surface area of permeable subbase able to provide attenuation for both the roof and incident water. On this basis 170m² of subbase replacement is required.

The resultant strategy therefore is to provide 170m² of subbase replacement to attenuate directly incident water and the roofs, while other hard standing areas will have a traditional permeable stone subbase to act as soft surfaces in respect of incident water only. The subbase replacement tank will be untanked in order to allow partial infiltration, minimising volume discharge, but has been conservatively ignored for sizing the tank.

The resultant proposal is shown in 1874GE SK002 – Drainage plan within the appendix. The attenuation calculations are also provided within the appendix.

To control discharge volume from the site, it is recommended that water is retained and used on site where possible and any additional volumes are then released at a restricted rate to mitigate downstream flooding risks.

Rainwater harvesting for the building for irrigation via the use of local water butts on down pipes will be utilised. In addition, the use of soft SuDS storage and conveyance features in the form of rain garden planters will be employed to encourage evaporative losses, slow conveyance and further improve water quality.

The layout of these features is given indicatively on 1874GE SK002 – Drainage plan although the final arrangement and design will be determined following detailed design of the roof guttering system. An overview of the features considered for the scheme, their application within the scheme, and benefits, is given as follows:

Feature	Description	Benefits
Rain planters	Local raised planters adjacent to the building receiving water directly from the guttering and discharging through an underdrain and overflow into the below ground network.	Provides first stage filtration to water, increase evaporative losses, slow conveyance through the system, provide amenity planting.
Permeable paving	A permeable surface treatment used to drain hardstandings. Incident rainfall is collected and filtered at source by passing through the permeable layers. Designed in this case assuming no infiltration conservatively but will be detailed to allow infiltration.	Provides internal attenuation storage, allows infiltration to reduce runoff volume, provides first stage filtration to water, increase evaporative losses, slow conveyance through the system,

5.3 Water quality

Water quality has been ensured by using the index approach as outlined in the Ciria SuDS Manual.

There are two land use descriptors on the site with the following pollution hazards:

Location	Suspended solids	Metals	Hydrocarbons
Parking with infrequent change	0.5	0.5	0.4
Residential roof	0.2	0.2	0.05

The SuDS features selected will act to mitigate the pollution. Where possible, a SuDS train of two features is employed to further increase the mitigation potential. The layout and various features are given on the proposed drainage plan drawing within the appendix. The individual pollution mitigation indexes are as follows:

Feature	Suspended solids	Metals	Hydrocarbons
Rain planter / garden	0.8	0.8	0.8
Permeable paving	0.7	0.8	0.7

As all the individual pollution mitigation indexes are greater than the pollution hazard indexes, the proposal is demonstrated to ensure water quality.

5.4 Exceedance routes

The overall topography of the site and existing exceedance routing will be maintained under the proposals.

Where the new surfaces are formed, these will be set to drain away from the building locally to divert water around the buildings.

6 Foul water

6.1 Discharge

There is no existing foul drainage provision on the site with the nearest public drainage circa 125m to the southeast.

On this basis a package foul pumping station is proposed with discharge of effluent to the public sewer under gravity via a private manhole placed in private land in nearer proximity to the public sewer.

Foul flows for the building have been calculated based on British Water Flows and Loads based on an occupancy level of 6P for a four bedroom house. The total foul discharge is calculated as 900l /day.

On the above basis, a package pumping station with redundant pumping and reserve capacity of 900lt minimum is proposed.

6.2 Conveyance and storage

A traditional, gravity drained, private foul network will be employed to collect foul water from the building and convey it to the pumping station. The network will be designed and detailed to Building Control Approved Document H.

The pumping station will be sized by the manufacture appropriately to accommodate this loading level in line with Building Regulations Part H and the relevant British Standards.

The foul network proposed layout is given on the proposed drainage plan drawing within the appendix.

7 Maintenance

An operation and maintenance document for the surface and foul drainage will be prepared and included within the building's wider operation and maintenance documentation. This will include all SuDS features as well as the pumping plant and will incorporate any product data sheets as required.

8 Summary

The proposal is to develop an agricultural site to an domestic residence that will involve the decrease of the current hard surfacing and production of new foul load from the site. At current there is no know drainage provision.

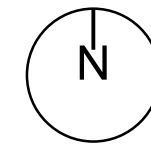
A high-level flood risk assent indicates the site is not at risk from flooding and the proposals will aim to maintain or improve upon the existing exceedance routing across the site.

A sustainable surface water drainage system has been designed to best practice to control flows and volumes of water from site to within two times green field rates for all storm events accounting for creep and climate change. SuDS features have been utilised to improve water quality and enhance the environment. Discharge will be to the nearest watercourse on account of low infiltration values established on site.

A new foul drainage network with package pumping station is proposed with discharge to the nearest public sewer.

9 Appendix

- Existing site plan
- Proposed site plan
- Infiltration results
- Greenfield runoff rate calculation
- Attenuation provision calculation
- Proposed drainage layout



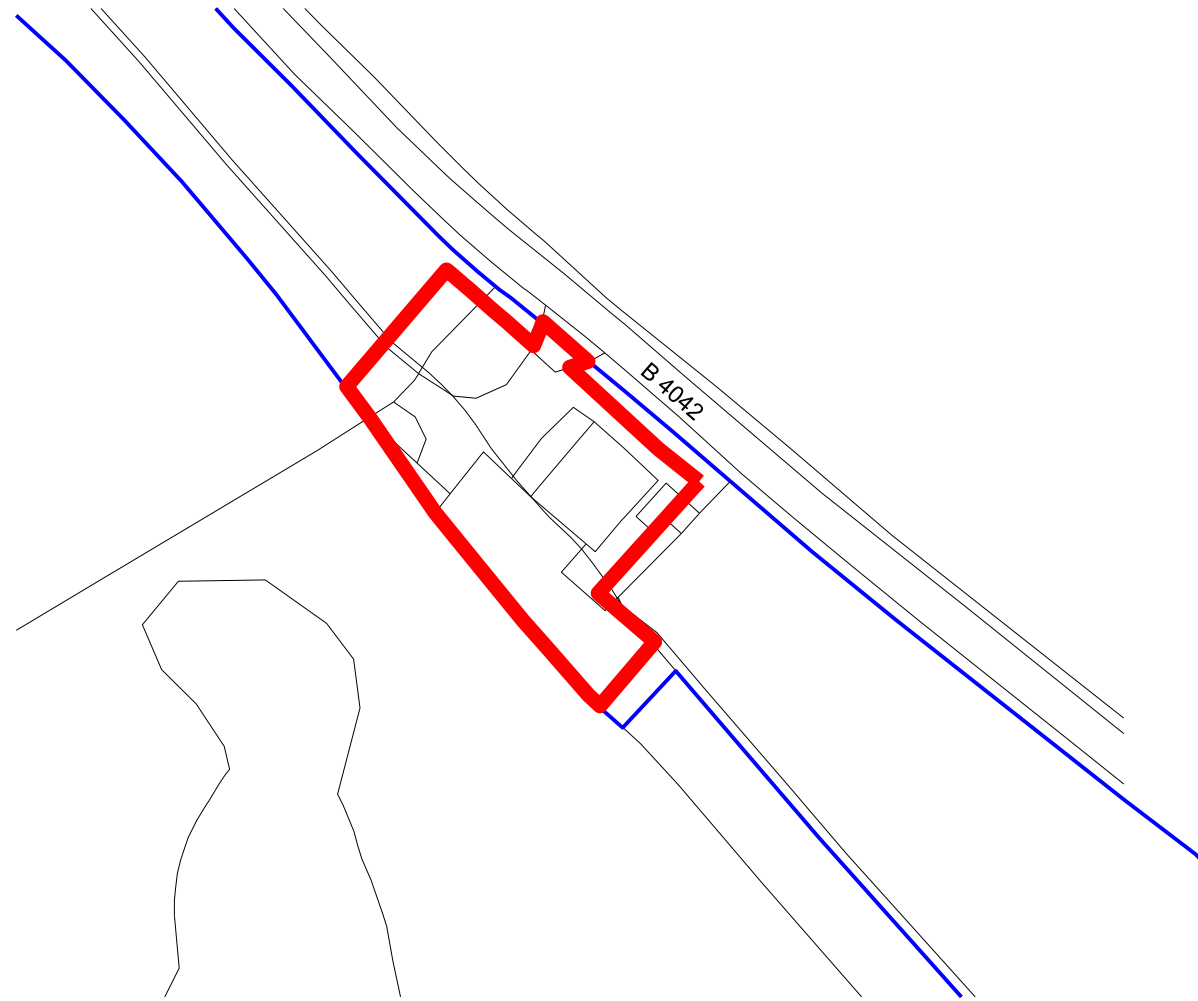
SCALE BAR 1:1250

KEY

- Site Boundary
- Ownership Boundary

AREAS:

Area of Site (Red Line) : 0.19 ha
GIA of Existing Barn : 216 sqm



Ordnance Survey, (c) Crown Copyright 2026. All rights reserved. Licence number 100022432

L 24.07.26 Minor amendment following client comment
K 21.07.26 Minor amendment
J 20.07.26 Planning Issue

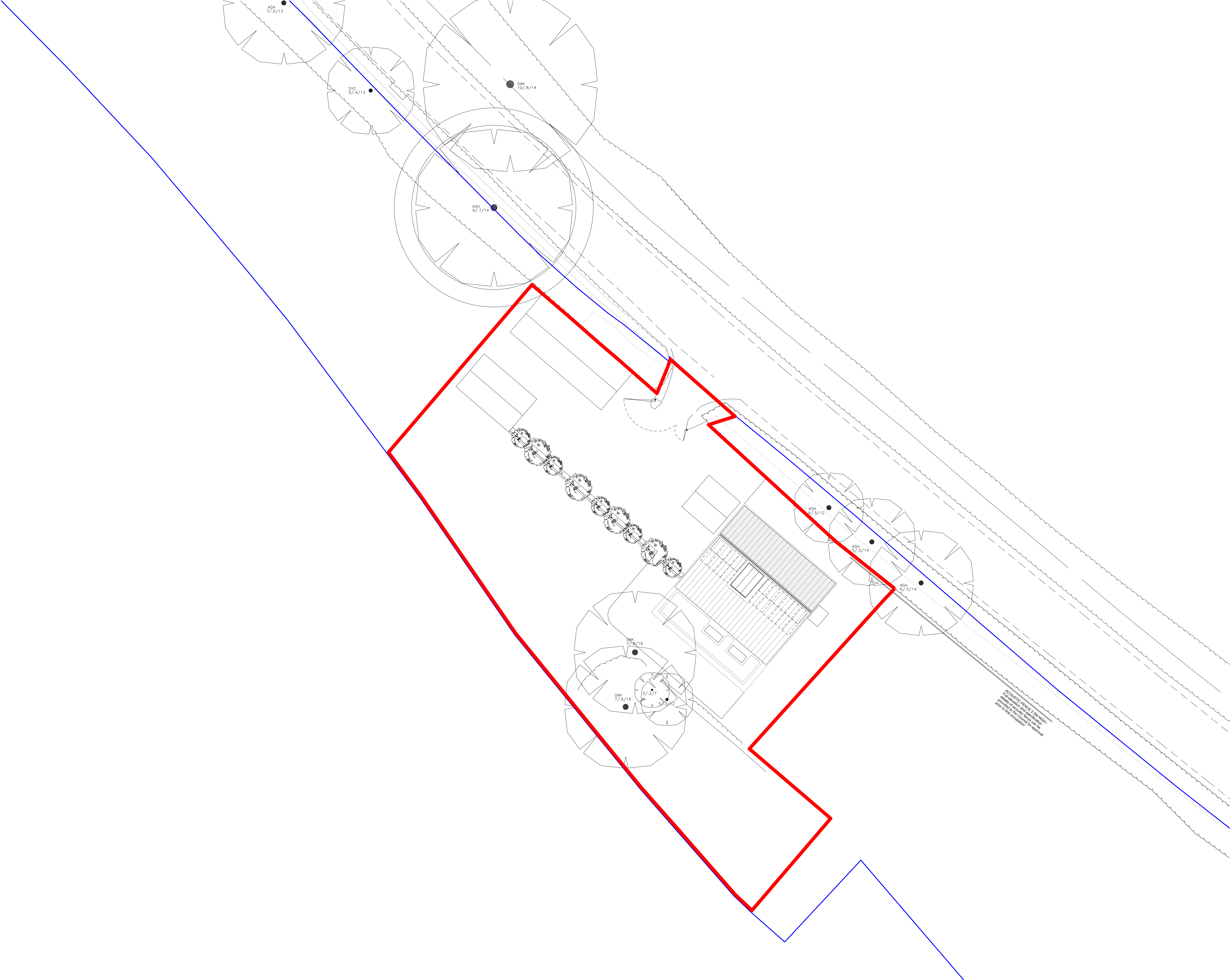
REV DATE DETAILS

MITCHELL ELEY GOULD

PR & KM Marsh Trust Settlement
Maunditts Park Farm
Maunditts Park Farm, Little Somerford, Chippenham
Site Location Plan

Planning FEB 2025 1:1250@A3 IK KE
2401 AP(0)01 L

© MITCHELL ELEY GOULD ARCHITECTS 01225 789033
THE ICE HOUSE G/F NORTH OFFICE 124-126 WALCOT STREET BATH BA15BG



K	24.07.26	Minor amendments following client comments
J	20.07.26	Planning Issue
REV	DATE	DETAILS

MITCHELL
ELEY
GOULD

PR & KM Marsh Trust Settlement
Maunditts Park Farm
Maunditts Park Farm, Little Somerford, Chippenham
Proposed Site Plan

Planning May 26 1:200@ISO A1 AM KE

2401 AP(0)10 K

	PROJECT	PROJECT No.	DATE
	SECTION	Calc ref	ENGINEER
	Maunditts Park Farm	1874GE	28/07/2026
	Infiltration test TP1	C001	JW

Soakaway test undertaken 13/10/20

Test hole size:

Length L	1.1 m
Width W	0.3 m
Depth D	1.2 m

Soakaway test results:

Test 1		Test 2		Test 3	
Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)
0.66	0				
0.655	5				
0.655	10				
0.655	20				
0.65	30				
0.65	60				
0.65	120				

75% depth	0.495 m	0 m	0 m
25% depth	0.165 m	0 m	0 m

Time at 75% depth	1330 mins		
Time at 25% depth	4025 mins		

(25% depth value may be extrapolated beyond given test results)

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

where:

V_{p75-25} = the effective storage volume of water in the trial pit between 75% and 25% effective depth;

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

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

$t_{(75-25)}$	2695 mins	0 mins	0 mins
V_{p75-25}	0.198 m ³	0.198 m ³	0.198 m ³
a_{p50}	2.01 m ²	2.01 m ²	2.01 m ²
f	3.7E-05 m/min 6.1E-07 m/s	NA m/min NA m/s	NA m/min NA m/s

$f_{\min}$ 6.1E-07 m/s

BRE Digest 365

	PROJECT	PROJECT No.	DATE
	SECTION	Calc ref	ENGINEER
	Maunditts Park Farm	1874GE	28/07/2026
	Infiltration test TP2	C001	JW

Soakaway test undertaken 15/07/26

Test hole size:

Length L	0.9 m
Width W	0.3 m
Depth D	0.65 m

Soakaway test results:

Test 1	
Depth (m)	Time (mins)
0.1	0
0	1.25

Test 2	
Depth (m)	Time (mins)
0.26	0
0	4.75

Test 3	
Depth (m)	Time (mins)
0.3	0
0	6.5

75% depth	0.075 m
25% depth	0.025 m

0.195 m
0.065 m

0.225 m
0.075 m

Time at 75% depth	0.3125 mins
Time at 25% depth	0.9375 mins

1.1875 mins
3.5625 mins

1.625 mins
4.875 mins

(25% depth value may be extrapolated beyond given test results)

$$\text{Soil infiltration rate, } f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$$

where:

V_{p75-25} = the effective storage volume of water in the trial pit between 75% and 25% effective depth;

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

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

$t_{(75-25)}$	0.625 mins
V_{p75-25}	0.08775 m ³
a_{p50}	1.05 m ²

2.375 mins
0.08775 m ³
1.05 m ²

3.25 mins
0.08775 m ³
1.05 m ²

f	1.3E-01 m/min
	2.2E-03 m/s

3.5E-02 m/min
5.9E-04 m/s

2.6E-02 m/min
4.3E-04 m/s

$f_{\min}$	4.3E-04 m/s
------------	-------------

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	30/07/2026
Calculated by	JW
Reference	Maunditts Park Farm
Model version	2.2.3

Location

Site name	Maunditts Park Farm
Site location	



Site easting (British National Grid)	394998
Site northing (British National Grid)	185752

Site details

Total site area (ha)	0.19	ha
----------------------	-----------------------------------	----

Greenfield runoff

Method

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

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	827	mm
BFIHOST19scaled	0.388	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	1.1	l/s
QBar (FEH statistical 2025) (l/s)	1.1	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	FEH statistical (2025)	
Flow rate 1 year (l/s)	0.9	l/s
Flow rate 2 year (l/s)	1.1	l/s
Flow rate 10 years (l/s)	1.7	l/s
Flow rate 30 years (l/s)	2.2	l/s
Flow rate 100 years (l/s)	2.8	l/s
Flow rate 200 years (l/s)	3.2	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/>). 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 by third parties or for any characteristics of any drainage scheme.

We use cookies on this site to enhance your user experience
We apologise for the inconvenience.
Please try again later.
By clicking the Accept button, you agree to us doing so.

	PROJECT	PROJECT No.	DATE
	Maunditts Park Farm	1874GE	28/07/2026
	SECTION	Calc ref.	ENGINEER
	Attenuation tank design - C753	C002	JW

Attenuation Design to CIRIA SuDS Manual C753 V4

Design in accordance with CIRIA report R156, 1996, restated in CIRIA SuDS Manual C753 V5.
FEH rainfall intensity data.

Soakaway to south west of building.

Site:

Drained area of site, A =	530	m ²
Discharge rate =	1.80	l/sec
Discharge rate, q =	6.48	m ³ /h

Attenuation types:

- Attenuation types available:
- 1 Cellular tank
 - 2 Basin

Attenuation type: 1

Cellular tank:

Buried cellular crate storage

Length =	17	m
Width =	10	m
Depth =	0.15	m
Voids ratio:	95%	

Volume, V =	24.23
Max depth, d =	0.15

Design Rainfall:

Urban creep allowance	10%	
Climate change allowance	45%	
Inflow from upstream cascaded catchment	0.00	m ³ /h

Storm Duration (mins)	Rainfall (mm)						
	2 year + CC	5 year + CC	10 year + CC	20 year + CC	30 year + CC	50 year + CC	100 year + CC
15	10.79	16.72	21.11	25.23	27.67	30.80	35.32
30	13.76	21.61	27.11	32.66	35.93	40.15	46.27
60	17.17	26.66	33.56	40.47	44.62	49.97	57.71
120	23.84	34.55	42.05	49.62	54.25	60.34	69.18
240	31.62	43.66	52.20	60.93	66.28	73.44	84.23
360	36.70	49.63	58.87	68.56	74.57	82.75	95.20
600	43.23	57.63	68.01	79.21	86.40	96.29	111.54
1440	55.26	72.37	85.31	99.70	109.07	122.16	141.56

	PROJECT	PROJECT No.	DATE
	Maunditts Park Farm	1874GE	28/07/2026
	SECTION	Calc ref.	ENGINEER
	Attenuation tank design - C753	C002	JW

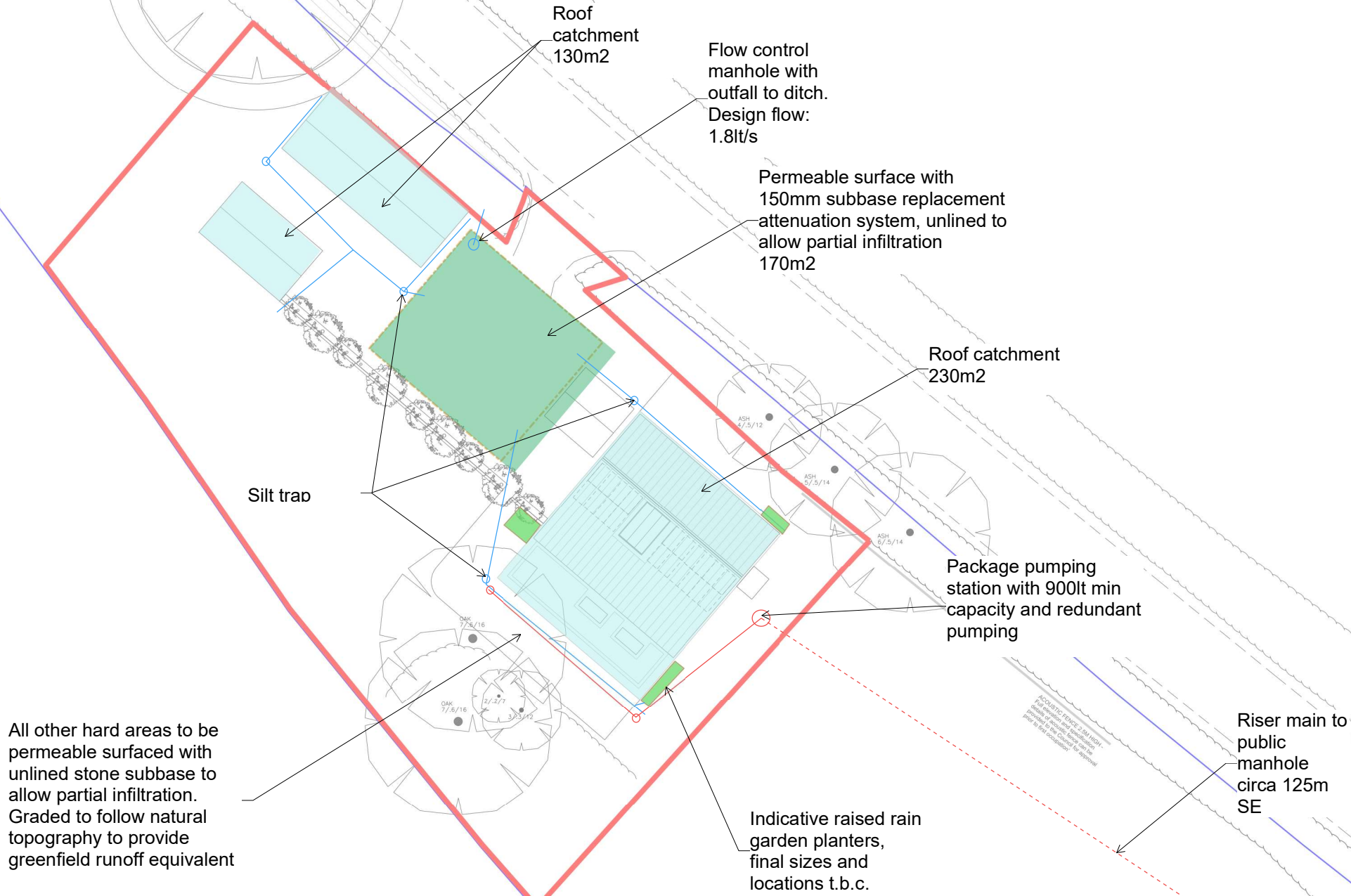
Attenuation design

Storm Duration (min)	h _{max} (m)						
	2 year + CC	5 year + CC	10 year + CC	20 year + CC	30 year + CC	50 year + CC	100 year + CC
15	0.03	0.04	0.06	0.07	0.08	0.09	0.11
30	0.03	0.05	0.07	0.09	0.10	0.11	0.13
60	0.02	0.05	0.07	0.09	0.11	0.12	0.15
120	0.00	0.03	0.06	0.08	0.10	0.12	0.15
240	0.00	0.00	0.01	0.04	0.06	0.08	0.12
360	0.00	0.00	0.00	0.00	0.00	0.03	0.07
600	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1440	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Storage Volume:

Maximum water level, h _{max} =	0.15	m
Provisioned depth, d =	0.15	m
	PASS	
	100%	

Note
Network arrangement
indicative.
Final layout t.b.c. following
conformation of down pipe
and soil stack locations.



	WWW.GIRAFFEENGINEERING.COM INFO@GIRAFFEENGINEERING.COM 01249 704524	PROJECT NAME Maunditts Park Farm	PROJECT No. 1874GE	DATE 28-07-26
	5 UNION ROAD, CHIPPENHAM WILTSHIRE SN15 1HW	DRAWING NAME Drainage Plan	DRAWING No. SK002	REVISION C