

Ellingham Consulting Ltd

Tim Ellingham, Director

tim@ellinghamconsulting.co.uk

Introduction

This note has been prepared to support a Planning Application for a series of storage and starter units at Spalding Drove, Clay Lake, Spalding, PE12 6BL. This note sets out the proposal for sustainable drainage at the site.

A site inspection was undertaken on 5 February 2025 and the proposals are based upon the observations made during the site inspection.

The existing site has had an industrial use and includes storage buildings and containers. The site area is 0.336ha.

The online British Geological Survey maps indicate that the site is likely to be underlain by Oxford Clay Formation mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

Existing Drainage Arrangements

The existing site includes areas of hardstanding, areas of gravel and also grassed areas. Surface water landing on the gravel and landscaped areas will infiltrate into the ground.

The impermeable area is 2,640m². The majority of the site runs off as sheet run off to surrounding areas of gravel or landscaped areas.

The majority of the eastern part of the site has a formal drainage system. Through a series of gullies, surface water is discharged to sump close to the northern boundary of the site. The sump is emptied as required. It is understood that this arrangement was in place to manage the risk of pollutants within the runoff from this part of the site.

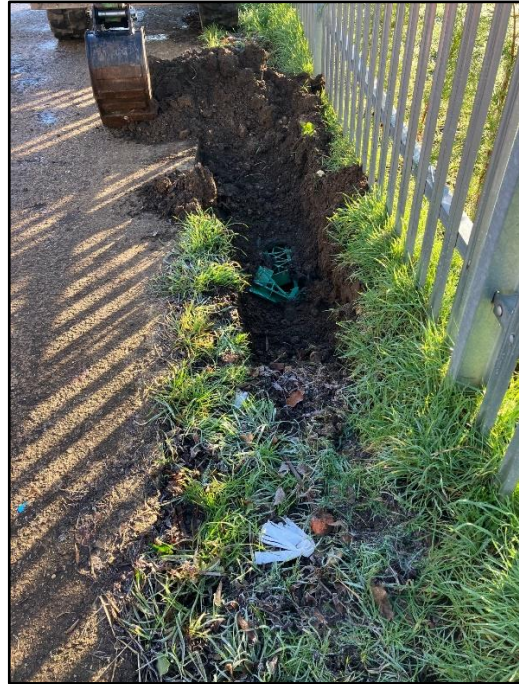
There is a soakaway in the south west corner of the site. There are no record drawings or details of the capacity of this soakaway and it is uncertain the total area draining to this feature.

Two photographs of the soakaway that consists of a geocellular tank are shown below.

Ellingham Consulting Ltd

Tim Ellingham, Director

tim@ellinghamconsulting.co.uk



Existing Soakaway alongside Site Access

SuDS Hierarchy

The SuDS Manual states that where not collected for re-use, surface water runoff should be as discharged as high up the hierarchy of discharge solutions as is practicable:

- into the ground;
- to a surface water body;
- to a surface water sewer, highway drain or another drainage system; and
- to a combined sewer.

The existing crates and runoff arrangements indicate that the site is suitable for a surface water management scheme based upon infiltration. It is therefore proposed that surface water runoff is discharged to soakaways.

Proposed Surface Water Management

Within Figure 1 below, three potential areas for soakaways have been identified. As with the existing site it is anticipated that specific areas of the site will be gravel enabling infiltration at source.

Ellingham Consulting Ltd

Tim Ellingham, Director

tim@ellinghamconsulting.co.uk

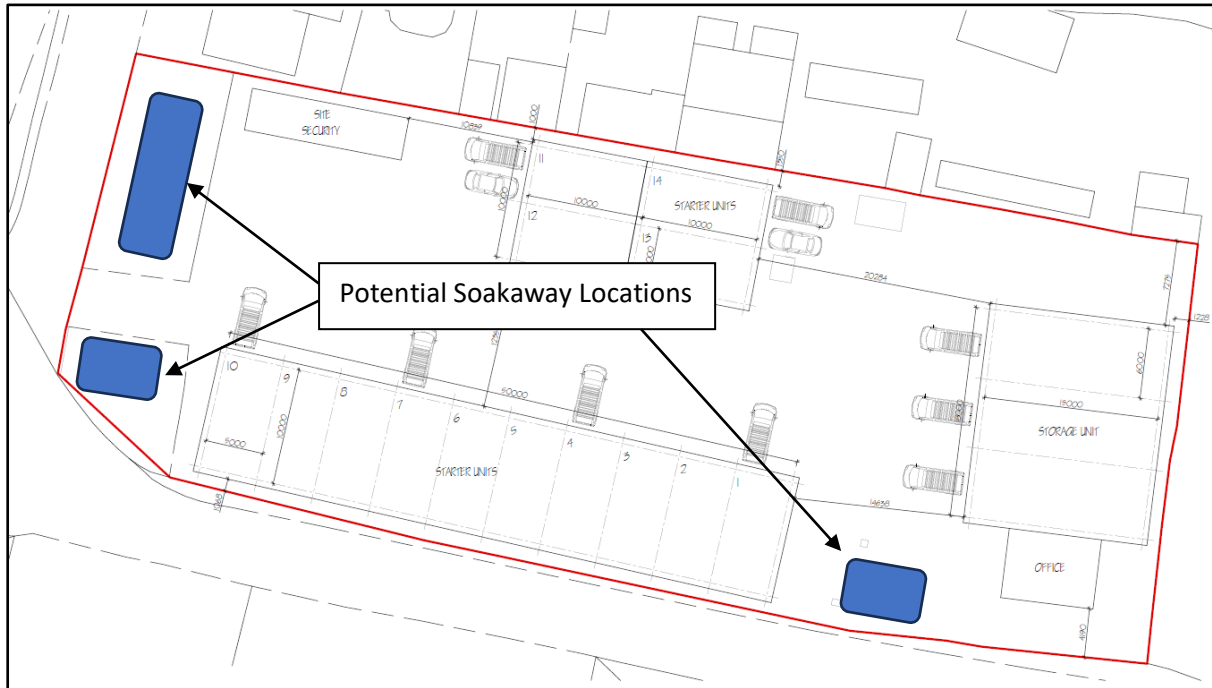


Figure 1 – Potential Soakaway Locations

Infiltration Requirements

Using HR Wallingford's tool for the design and evaluation of SuDS the infiltration volume for the soakaways was estimated. Within the tool:

- an impermeable area of 2,640m² was used;
- it is assumed that the geocellular crates will have 95% voids;
- the return period applied is the 100-year return period; and
- an infiltration coefficient of 1×10^{-5} m/s (a typical low capacity rate) has been used.

The calculation of soakaway size is Attached. Based upon the calculation and 0.8m deep soakaways the total plan area of soakaways required is 160m².

Management and Maintenance

The managing agent of the site will be responsible for the management and maintenance regime of the drainage infrastructure.

Summary

This note has been prepared to support a Planning Application for a series of storage and starter units at Spalding Drove, Clay Lake, Spalding, PE12 6BL. This note sets out the proposal for sustainable drainage at the site.

Ellingham Consulting Ltd

Tim Ellingham, Director

tim@ellinghamconsulting.co.uk

Based upon the arrangements within the existing site it is proposed that surface water is discharged to soakaways. It is recommended that:

- percolation testing is undertaken at the site to determine the infiltration rate; and
- the specific size and location of each soakaway is confirmed.

It is proposed that these requirements become a Condition of the approval.

Tim Ellingham
17 February 2025
Ref: ECL1387

[< Back](#)[Clear](#)

INFILTRATION SYSTEMS DESIGN Comparison

GEOMETRY

Rectangular soakaway 1				
Width (m)	10			
Length (m)	16			
Diameter (m)				
Soakaway base area (m2)	160			

PARAMETERS

Porosity	0.95			
Effective porosity				
Infiltration coefficient (m/h)	0.036			
Factor of safety	1			

AREA TO BE DRAINED

Contributing area				
Total Impermeable Area	2640			
Total area (m2)	2640			

DESIGN RAINFALL

M5-60 rainfall depth (mm)	20			
Rainfall ratio r	0.45			
Climate change factor	1			
FEH factor	1			
Return period (years)	100			

Rainfall Duration (h)	Intensity (mm/h)			
0.083333333	178.776			
0.166666667	123.768			
0.25	103.48			
0.5	65.272			
1	40.6			
2	23.919			
4	13.593			
6	9.916			
10	6.619			
24	3.197			

RESULTS

Maximum water depth (m)	0.78			
Time for half-emptying (h)	8.66			