

**From:** [Whittaker, Roberta \(EXT\)](#)  
**To:** [Johnston, Christopher](#)  
**Cc:** [Planning \(SMDC\)](#)  
**Subject:** RE: SMD/2021/0491 - Land off Tenford Lane - LLFA Response (Rev 9)  
**Date:** 19 December 2022 15:30:00  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image001.png](#)  
[image005.png](#)

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Good Afternoon Chris,

Thank you for reconsulting us on the RM application SMD/2021/0491 – Land off Tenford Lane.

### **Staffordshire County Council Flood Risk Management Position**

We have reviewed the submitted information and there is further information required on to demonstrate an acceptable drainage strategy, listed below. Where relevant for context I have included LLFA Rev 9, [Developer Response](#), [LLFA Rev 10](#).

### **Drainage Strategy**

- Full calculations have not been provided, we have only been provided with some partial designs, we need to see the outputs as well.
  - These calculations have gone backwards on what we discussed again, the infiltration rates should be  $1.99 \times 10^{-5}$  m/s and the basins should have a safety factor of 10.
  - The manholes numbers in the supplied calculations don't match with what is on the drainage plan so we can't cross reference.

- Can you resupply the source control outputs for the permeable paving as the configuration has been changed.

Could you provide a plan showing the m<sup>2</sup> area figures of the permeable paving just so we can confirm these with the calcs provided.

- Please provide an updated SIA for the site.

Is this not the same as the GI already provided, or is this something else that is required?

CIRIA Simple Index Approach for the assessment of water quality treatment.

[https://url6.mailanyone.net/scanner?m=1p7I3i-0008O1-3n&d=4%7Cmail%2F90%2F1671463200%2F1p7I3i-0008O1-3n%7Cin6c%7C57e1b682%7C10609168%7C13286642%7C63A08306627F16850AF29EDDA189222E&o=%2Fphtw%3A%2Fwtsauw.ndrisslg.osfier%2Fcs%2FrsureeoD%2FSu\\_mnuSuoal%2Ftpt\\_ul\\_sidoo\\_at\\_trao26lf\\_ldc kx.xse\\_&s=zmM61i\\_C-BbdC-TVjT14Si97a-Q](https://url6.mailanyone.net/scanner?m=1p7I3i-0008O1-3n&d=4%7Cmail%2F90%2F1671463200%2F1p7I3i-0008O1-3n%7Cin6c%7C57e1b682%7C10609168%7C13286642%7C63A08306627F16850AF29EDDA189222E&o=%2Fphtw%3A%2Fwtsauw.ndrisslg.osfier%2Fcs%2FrsureeoD%2FSu_mnuSuoal%2Ftpt_ul_sidoo_at_trao26lf_ldc kx.xse_&s=zmM61i_C-BbdC-TVjT14Si97a-Q)

### **Swales**

Please provide further detail on the proposed swales:

- We assume they are conveyance swales?

Yes they are conveyance swales but do incorporate an allowance for infiltration.

What rate of infiltration will be used? And how have the swales been modelled in the microdrainage?

- Material for the swales (e.g. grass).

This has been provided on drawing no K22-001-002 Rev C

The swales have not been included on the landscaping plan. As per infiltration basins, we just need to see design in line with the recommendations in the SuDS Handbook to prevent operation and to ensure the material is appropriate for successful long term operation of the swale.

- Can we see detailed swale design and cross sections.

This has been provided on drawing no K22-001-002 Rev C

What we're asking to see here is the detailed designs of the swales showing dimensions and cross sections through the swale including the modelled water levels as you have provided for the infiltration basins.

## Design of the Infiltration Basins

- The GI report is still outstanding. While you have provided summer testing results, it was the GI report relating to the winter testing (November 2021) that we need. – we need to see this to determine if groundwater is sufficiently below the base of the infiltration features to allow them to operate correctly and to look at contamination, risk of collapse / other things in the SuDS manual listed below.

The following issues should be assessed as part of the design process for infiltration systems:

- risk of ground instability, subsidence or heave due to infiltration

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Part D: Technical detail

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CIRIA SuDS Manual 2015

- risk of slope instability or solifluction due to infiltration
- risk of groundwater pollution from mobilising existing contaminants on the site
- risk of pollution from infiltrating polluted surface water runoff from the site
- risk of groundwater flooding due to infiltration
- risk of groundwater leakage into the sewers, basements, tunnels or other structures due to promoting infiltration on the site.

All site investigation has been supplied. Please see attached '00019\_TEN\_DOC\_01\_E Design Commentary Part 2' for the November 2021 report.

This attachment was not included.

- How will erosion be prevented in Basin 3 and how will pre-treatment be provided given there is no corresponding swale associated with this basin?

Slopes are limited to a max gradient of 1/3 to reduce the potential of landslips/ suitable vegetation to be provided to improve structural stability.

While we accept that some of the water from the private network will be filtered through the porous paving, the remaining roof water, requires (as per the SUDS Manual) a minimum of catch pits for pre-treatment.

Need to see landscaping plans for the swale to ensure infiltration potential is optimised with planting and to show how erosion will be prevented.

Landscaping scheme has already been provided with planting scheme, but please see this attached again.

We're looking for something like this example in the SuDS Manual:

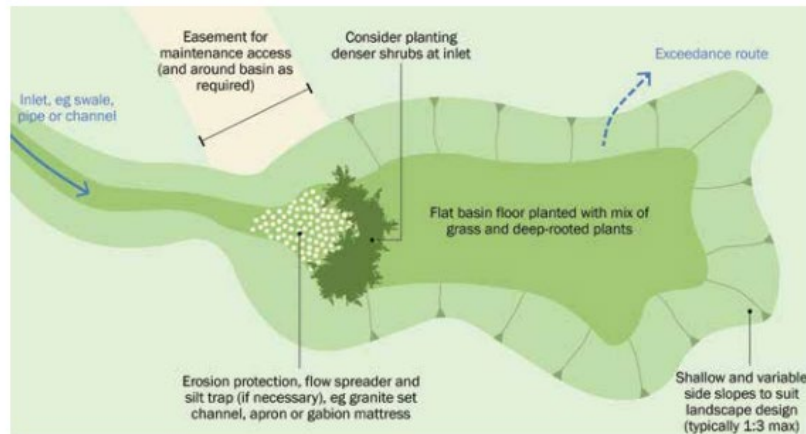


Figure 13.4 Plan view of infiltration basin

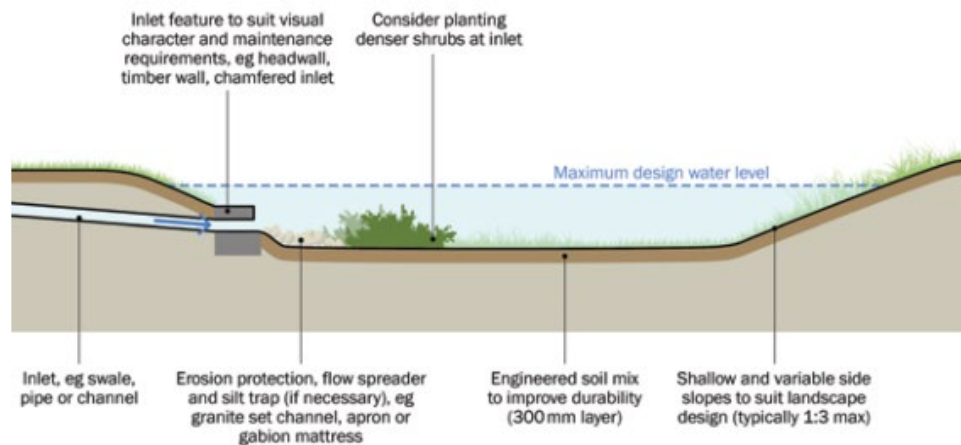


Figure 13.5 Elevation of infiltration basin

## Exceedance

- We need to see further details on the landscape bund or fencing on the Tenford Lane boundary and the exceedance arrangements as per the discussions at outline stage

## 7.0 Flood Routing and Exceedance

Due to the topography of the site the natural failure route should the system become inundated would be towards the southern boundary.

Initially it would be proposed to try and contain as much of the runoff within the carriageway which would direct it towards the undeveloped area to the west. A cut off drain should also be positioned along the southern boundary to capture and residual runoff, preventing it running into Tenford Lane, and directing it towards the infiltration basins to the west.

A bund should be positioned around the area of the infiltration basins to provide extra volume and allow water to be temporarily stored and infiltrate at a controlled rate.

As a test for how the system would perform during an extreme event, a simulation was run for the 1 in 1000 year event with no climate change. It was found that the system generally performed well with only a small amount of flooding, 6.179m<sup>3</sup> being present at within Pipe 2.006 and 4.807m<sup>3</sup> in pipe 2.007. It is anticipated that this could be temporarily stored within the grassed area to the east or designed out at detailed design stage through an adequately sized collection system.

A plan showing exceedance routes is included in Appendix N and this will need to be visited once the proposed level strategy has been finalised.

As per landscaping scheme attached.

- Still no details provided showing the cut off drain along the southern site boundary.
- Still no details provided on the bund around the infiltration basins.
- We also need to see FFLs on the plan  
FFLs should be at least 150mm above surrounding ground level as per Condition 14 of the outline permission SMD/2016/0811 and surrounding land should be profiled to direct any residual runoff away from properties.

Please note that this list is not necessarily exhaustive and that new revisions of documents often raise further questions.

Please re-consult us at [flood.team@staffordshire.gov.uk](mailto:flood.team@staffordshire.gov.uk) when amended details are received. If you are minded to approve the application contrary to this advice, we request that you contact us again to allow further discussion.

Kind Regards  
Roberta

**Christmas leave between 21/12/22 – 03/01/23**

*Please note my working days are Monday to Wednesday.*



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