

# Flood Risk and Drainage Proof of Evidence

**Town and Country Planning Act 1990  
Section 78 appeal against refusal of planning permission**

**Witness:** Paul Bacchus MEng

**Subject of Evidence:** Flood risk and drainage

**Appeal:** APP/W0340/W/24/3356688

**Site:** Land south of Sandhill, Hermitage, Thatcham

**Proposal:** Part retrospective. Change of use of land for the formation of 5 Gypsy/Traveller pitches comprising of 1 mobile home, 1 touring caravan, and 1 utility building per pitch

**Date:** April 2025

**Council Reference:** 23/00815/FUL

## Proof of Evidence

Name: Paul Bacchus MEng

Month : April 2025

Council Reference: 23/00815/FUL

Revision: A

Issued: April 2025

**West Berkshire Council**  
**Development and Planning**  
Market Street  
Newbury  
Berkshire  
RG14 5LD

T: 01635 519111

E: [appeals@westberks.gov.uk](mailto:appeals@westberks.gov.uk)

[www.westberks.gov.uk/planning](http://www.westberks.gov.uk/planning)

# Contents

<b>1. SUMMARY .....</b>	<b>4</b>
<b>2. INTRODUCTION .....</b>	<b>5</b>
QUALIFICATIONS AND EXPERIENCE.....	5
PURPOSE AND SCOPE OF EVIDENCE .....	6
REASONS FOR REFUSAL .....	7
<b>3. ERRORS IN THE JAXX ENGINEERING FACTUAL REPORT.....</b>	<b>8</b>
<b>4. ISSUES WITH THE DRAINAGE STRATEGY PRODUCED BY FLUME CONSULTING ENGINEERS.....</b>	<b>9</b>
<b>5. CONCLUDING REMARKS.....</b>	<b>11</b>

# 1. Summary

- 1.1 The applicant has submitted a drainage strategy produced by Flume Consulting Engineers with associated ground investigations information including infiltration testing from Jaxx Engineering Consultancy (CD1.24). Unfortunately, the supporting information contains errors and there are concerns over the validity of the information used in the drainage strategy.
- 1.2 Whilst I do not suggest that the design presented is unviable, WBC requires evidence to substantiate the strategy and to ensure the approach taken for discharging surface water of site is compliant with best practice and national standards. We need to ensure that the chosen means of discharging surface water (infiltration) is acceptable as alternative means of discharge under the discharge hierarchy and WBC's local policies may not be possible.
- 1.3 As the site would be predominantly replacing grass/vegetated area (assuming pre-development conditions) with permeable surfaces it is not likely to noticeably increase/worsen flood risk. However, the proposed measures have not been developed in accordance with best practice and have not been designed correctly to manage runoff in accordance with national guidelines which is a requirement under local policy CS16 and planning practice guidance/the NPPF.

## 2. Introduction

### Qualifications and Experience

- 2.1 My name is Paul Bacchus. I am the Principal Engineer for flood risk and drainage at West Berkshire Council (WBC). I have over 9 years of experience working as a civil engineer in the flood risk and drainage sector following completion of my master's degree in civil engineering specialising in flood risk. Over the last 3 years I have acted as WBC's statutory consultee representing the LLFA/SuDS team. I oversee the flood risk and drainage team at WBC who are responsible for executing wider flood risk works in the region under the Flood and Water Management Act 2010, Land Drainage Act 1991 and Highways Act 1980.
- 2.2 The LLFA/SuDS team was consulted on this application in April 2023 and provided a response in May 2023. The initial response from the LLFA/SuDS in May 2023 requesting further details to substantiate the proposals put forward in the initial submission.
- 2.3 Cheryl Willet the case officer at the time forwarded a query from the agent regarding the SuDS response in May 2023. Unfortunately, due to resourcing constraints a response was not provided. The query cited cases against the use of package treatment plants/sought to justify the use of cesspits and requested confirmation that the applicant would need to submit standard information relating to the drainage such as drawings, testing information and calculations.
- 2.4 In August 2024 the new case officer Michael Butler requested an update on this application. Having reviewed the submission at that stage, it was apparent no further flood risk/drainage details had been submitted in support of the application since May 23.
- 2.5 On August 30<sup>th</sup> 2024 the applicant submitted further details including a drainage strategy and evidence of infiltration testing for the site (CD1.25). A response was provided to the officer in October 2024. The response detailed that the concept of the drainage strategy was reasonable and if executed correctly, would not increase flood risk to the surrounding area. Unfortunately, there were concerns about the validity of the testing and errors in the associated calculations which needed to be resolved prior to approval.

It was noted that if the applicant could address the multiple issues the LLFA/SuDS team would not object to the proposal and conditional approval could be provided.

- 2.5.1 I reviewed this application in more detail as it was evident that there were anomalies based on the expected underlying geology and recorded infiltration test results. During the review I phoned a representative of the company that carried out the infiltration test calculations and they confirmed verbally that the results appeared to be incorrect. .
- 2.6 It is understood that following the comments on the application the applicant did not provide further SuDS details and wished to resolve outstanding matters via condition. The LLFA/SuDS team responded to the planning officer on 23<sup>rd</sup> October 24 explaining that we could not recommend condition applications which are based on incorrect information and where there is a risk of substantial change to the application that cannot be reasonably accounted for via condition.
- 2.7 As part of this appeal I have submitted a statement of case and provide a draft for the statement of common ground in respect to flood risk and drainage matters.
- 2.8 I confirm that the evidence which I have prepared and provided for this appeal is true to the best of my knowledge and belief. I confirm that the opinions expressed are my true and professional opinions.
- 2.9 We are still open to resolving the outstanding drainage matters via submission of further information but will maintain our objection to the application until this is provided.

### **Purpose and Scope of Evidence**

- 2.10 This proof of evidence has been prepared in relation to a section 78 appeal against refusal of planning permission for *“Part retrospective. Change of use of land for the formation of 5 Gypsy/Traveller pitches comprising of 1 mobile home, 1 touring caravan, and 1 utility building per pitch”*.
- 2.11 This proof of evidence covers the refused scheme. Initial information regarding drainage was provided in May 2023, but additional information was required at the time by the SuDS team. Further information (Drainage Strategy produced by Flume in August 2024 and supporting Factual Report produced by Jaxx Engineering dated August 2021) was

submitted in August 2024 in support of the application. Unfortunately the additional information contained errors and multiple issues as detailed below.

- 2.12 This evidence sets out to explain the Council's concerns and in particular to expand upon the Reasons for Refusal of the Application.

### **Reasons for Refusal**

- 2.13 Relevant to this proof of evidence, the application was refused for the following reasons:

*“The development of this site for 5 gypsy and traveller site pitches has caused increased hardstanding and non-permeable material to be placed across the application site, with associated works/ stationing of sanitary units. The local planning authority on behalf of the lead local flood authority is not satisfied with the details and quality of the suds information submitted with the application to date . Accordingly, in taking the precautionary approach , it is considered that the development/ change of use proposed is contrary to the advice in policy CS16 in the WBCS of 2006 to 2026 and the advice in bullet points 1 and 7 in policy TS3 in the HSADPD of 2017.”*

- 2.14 To clarify policy CS16 requires all applications to incorporate SuDS in accordance with best practice and relevant national standards. In this instance this includes (but is not limited to):

- Non-statutory technical standards for sustainable drainage: Practice Guidance; LASOO, 2016
- Non-statutory technical standards for sustainable drainage systems; DEFRA, 2015
- BRE365 Digest; BRE, 2016
- Building Regulations Part H: Drainage and waste disposal, HM Government, 2010
- C753 The SuDS Manual; CIRIA, 2015
- West Berkshire Sustainable Drainage Systems Supplementary Planning Document (SPD); West Berkshire, 2018
- National Planning Policy Framework and associated Planning Practice Guidance; Department for Levelling Up, Housing and Communities, 2021 Planning practice guidance, Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government, 2021

2.15 The appellant has not provided acceptable evidence that there is a viable surface water drainage solution on site. The main issues are regarding submitted evidence and associated calculations in support of ground investigations, and concerns regarding the drainage strategy including issues with calculations and alternative discharge locations. The LLFA do not believe the applicant has provided a suitable analysis of ground conditions to support the surface water drainage strategy in accordance with best practice/national standards contravening policy CS16 of WBC's Core Strategy.

### 3. Errors in the Jaxx Engineering Factual Report

3.1 As highlighted in the response to the LPA on 08/10/2024 the Factual Report submitted by Jaxx Engineering used to support the Drainage Strategy does not adhere to best practice and contains errors. The LLFA does not consider the test results to be valid without further information and testing.

3.1.1 Infiltration testing was carried out in summer (21/08/2024). The details of the trial pit locations were not provided and no pictures or evidence of the trial pits were provided. Ground investigations should be carried out in winter or early spring to account for the performance of underlying soils subject to infiltration during seasonally wet periods and to establish groundwater levels. This is stated in section 3.2.3 of BRE365 2016 (appendix A). Evidence of testing should include the location of trial pits dug to ensure that the appropriateness of the results can be assessed.

3.1.2 The underlying strata was identified as being comprised of clay underlain by sand with made ground in the upper surface layer. According to the report "sandy CLAY" is encountered between roughly 150-170mm below ground level (bgl) to depths of around 1800mm bgl. The infiltration rates in the Jaxx report were not representative of clay like materials which is classified as being poor or very poor infiltration media. C753 The SuDS Manual (appendix B) Table 25.1 suggests clay has infiltration rates in the region of ( $<3 \times 10^{-8} \text{m/s}$ ). Whilst betterment on these rates is not unexpected with the presence of other sediments, the range of values from testing still does not reflect clay like materials.

3.1.3 The infiltration rates calculated in the Jaxx Engineering report are incorrect. Testing in accordance with BRE365 requires repeat filling of trial pits with water and timing the time it takes to empty. Typically, the tester would expect the rate of emptying

(infiltration rate) to slow with each test as the ground becomes more saturated. In the two trial pits that were used (referred to by letters as A and B) the rates increased. In the tests 'BRE TP1 – B' and 'BRE TP2 – B' the rate increased from  $1.05 \times 10^{-5} \text{m/s}$  to  $9.18 \times 10^{-4} \text{m/s}$  (over 87 faster on the second test). This is not believed to be possible under normal circumstances and warranted further scrutiny.

- 3.1.4 A spot check on 'BRE TP1 – A' was carried out by the LLFA to check the validity of the results. The rate of 'BRE TP1 – A' of  $1.48 \times 10^{-4} \text{m/s}$  is more than 5x greater than the actual rate using the raw values with the used equation in section 3.2.3 of BRE365 2016 (the LLFA determined that the actual rate would be  $2.78 \times 10^{-5} \text{m/s}$ ). Further checks demonstrated similar differing results. Prior to the planning decision the LLFA called Jaxx Engineering Consultancy to discuss the results, the representative confirmed they were likely incorrect and would provide revised information (this was not received prior to determination).
- 3.1.5 Groundwater hasn't been assessed but isn't anticipated to be an issue in this area (due to high elevation and no groundwater flood risk being anticipated in the WBC SFRA).
- 3.1.6 Unfortunately, whilst the information submitted does not rule out the use of infiltration devices, the calculation errors, failure to carry out testing during a seasonally wet period and failure to provide evidence or record the location of trial pits renders the submitted information unacceptable in its current state.

## 4. Issues with the Drainage Strategy produced by Flume Consulting Engineers

- 4.1 As highlighted in the response to the LPA on 08/10/2024 the Drainage Strategy submitted by Flume Consulting Engineers is flawed and contains outstanding issues which were not resolved prior to the decision. The LLFA does not consider the surface water Drainage Strategy to be valid without further information and resolution of outstanding issues.
  - 4.1.1 Figure 4 of the report confusingly refers to infiltration rates being determined at a later stage despite being established by supporting evidence and discussed in the report. The rate used in the calculations from the Flow Drainage Strategy Appendix B is 0.03780m/hr which corresponds to  $1.04 \times 10^{-5} \text{m/s}$  (equivalent to the slowest rate from

the Jaxx Engineering report). Whilst the Jaxx Engineering report values are incorrect, in this instance the value is slower than the rate the LLFA calculates to be correct  $2.0202 \times 10^{-5} \text{m/s}$ . Unfortunately, as previously established in clause 3.1.6 the Jaxx Engineering Consultancy evidence is not considered to be valid.

4.1.2 An exceedance plan has not been provided. A single arrow on the SuDS scheme drawing shows exceedance leaving the site towards the northwest and B4009. Exceedance needs to be substantiated with levels assessment across the site and evidence of how the site shed runoff prior to development. This is relevant to understand the consequences of failure of the system and to inform calculations. Providing the applicant can provide storage of water up to the 1 in 100 years plus climate change storm event within the site boundary, exceedance onto the highway is not necessarily prohibited, however alternative potential exceedance arrangements might be preferable. Any increase or residual flood risk to the highway below the 1 in 100-year event plus climate change is not acceptable. Water on the highway creates an immediate skidding risk, results in potential for ice on the road which is a significant health risk to the public, and rapid deterioration of the highway. Inadequate drainage provision would be considered a nuisance problem.

4.1.3 There are issues with the calculations for the surface water drainage system.

4.1.3.1 The rainfall data that has been used should be FEH rainfall data not FSR.

4.1.3.2 CV values should be revised to 0.9-1.0 where 100% rainfall capture is anticipated.

4.1.3.3 The infiltration rate is not valid.

4.1.3.4 Only the base should be considered as being viable for infiltration when designing permeable paving.

4.1.3.5 Based on the limited exceedance information submitted the safety factor should be raised to 10 (see table 25.2 of C753 The SuDS Manual).

## 5. Concluding remarks

- 5.1.1 In the unlikely circumstance that revised ground investigation data suggests that the proposal to infiltrate is not viable, the applicant would need to provide an alternative discharge location for surface water. There are no public surface water systems within 30m of the site and no watercourses. The applicants only potential alternative would be a private system to the east of the site (as marked on Thames Water asset data), and it is highly likely that this is a WBC owned highway drainage asset which would preclude any connection under WBC's SuDS SPD section 5.1.2. As a result, infiltration testing must show that a valid surface water drainage solution can be provided on site.
- 5.2 Whilst the LLFA does not dispute that a drainage strategy broadly in accordance with the submitted plan is likely to be possible, the submitted information contains too many errors and fundamental issues to substantiate this.
- 5.3 Further ground investigations taken during winter with clear evidence of the testing, location of the testing and correctly calculated infiltration rates (with any encountered groundwater noted clearly) needs to be provided in addition to amending the calculations in the drainage strategy to account for the issues highlighted including the calculations and general design information.
- 5.4 The consequences of permitting the development in its current state includes the potential to incorporate faulty or non-compliant drainage measures on site. Whilst the use of infiltrating permeable paving throughout the site is unlikely to increase flood risk to the surrounding area (including the B4009 which is a WBC highway), it may not be sufficient to drain the site to a satisfactory standard in accordance with S7-S19 of the non-statutory technical standards for sustainable drainage systems for SuDS (DEFRA, 2015) and does not conform with best practice as required by CS16 of WBC's Core Strategy.
- 5.5 I understand that the appellant intends to submit revised technical information to deal with the above matters. This should have been submitted with the appeal. If necessary, WBC will submit a rebuttal proof of evidence.