Drainage
Proof of Evidence

Town and Country Planning Act 1990
Appeal under Section 78(1)(a) by

Witness:	**Paul Bacchus**
Subject of Evidence:	**Drainage**
Appeal:	**APP/W0340/W/22/3292211 - Land at Lawrences Lane, Thatcham, West Berkshire**
Site:	**Land at Lawrences Lane Thatcham West Berkshire**
Proposal:	**Change of use to 7 no. Gypsy/Traveller pitches comprising 7 no. static caravans, 7 no. day rooms, 7 no. touring caravans and associated works**
Date:	**21at November 2022**
Council Reference:	**21/02112/FUL**

Proof of Evidence

Paul Bacchus: Drainage

21st November 2022

West Berkshire COUNCIL

Council Reference: 21/02112/FUL
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1. Summary

1.1 My name is Paul Bacchus. I am a Senior Engineer (Land Drainage) for West Berkshire Council.

1.2 In my main proof I discuss Surface Water Drainage matters, identifying how the information provided to date does not provide evidence of a well-designed surface water drainage solution that takes into account local, or national policy and guidance. Information relating to surface water drainage includes the Drainage Review report (Core document 6.12) and the Outline Sustainable Drainage Strategy produced by SLR (Core document 10.6).

1.3 Paragraph 134 of the National Planning Policy Framework states the requirement for development that is not well designed to be refused especially where it fails to reflect local design policies and government guidance on design.

1.4 Policy CS16 of the West Berkshire Local Plan (West Berkshire, 2012) states “On all development sites, surface water will be managed in a sustainable manner through the implementation of Sustainable Drainage Methods (SuDS) in accordance with best practice and the proposed national standards and to provide attenuation to greenfield run-off rates and volumes, for all new development and re-development and provide other benefits where possible such as water quality, biodiversity and amenity”.

1.5 The Non-statutory technical standards for sustainable drainage systems (DEFRA, 2015) provide a breakdown of the requirements associated with peak flow control, volume control and flood risk within and outside the development. The principles of the standards are elaborated on in Non-statutory technical standards for sustainable drainage (LASOO, 2016) (Appendix A).

1.6 The Appeal proposals as refused are unacceptable and contrary to policies CS16, of the West Berkshire Core Strategy Development Plan Document, the design principles contained in the WBC SuDS SPD (Core document 7.10), Para 134 of the NPPF, Non-statutory technical standards for sustainable drainage (included in Appendix A and C) and C753 The SuDS Manual (included in Appendix B).

1.7 For the reasons set out in my main proof, I continue to object to the proposals.

2. Introduction

Qualifications and Experience

2.1 My name is Paul Bacchus.

2.2 I have over 7 years of experience working in civil engineering disciplines related to Flood Risk and Drainage. My background includes specialist knowledge of SuDS and surface water drainage design. In the last year I have acted as a statutory Consultee to the Local Planning Authority (LPA) as a representative of the Lead Local Flood Authority (LLFA) at West Berkshire Council.

2.3 The application was first commented on by my predecessor Jon Bowden who has now retired (as of July 2022). Jon Bowden's initial comments submitted in an email to Bob Dray on the 15th October 2021 highlighted the lack of any information or details relating to surface water drainage. Jon requested further information in relation to surface water drainage and provided draft conditions should the planning officer seek to approve the application. Jon also provided re-application advice on the 16th March 2022.

2.4 I first provided comments to Matthew Shepherd regarding Flooding and Surface Water/ SuDS matters as part of the Appeal Application on the 13th July 2022 in response to the SLR Drainage Review dated 17th May 2022. In my comments I expressed concern that a viable surface water drainage strategy had not been confirmed based on the information provided.

2.5 Subsequently I have reviewed the SLR Outline Surface Water Drainage Strategy submitted on the 04th November 2022. Whilst accepting that the drainage strategy contains a more substantial detailed account of the surface water drainage provisions for the site I still have significant concerns which are expressed as part of this report.

2.6 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.

Purpose and Scope of Evidence

2.7 This proof of evidence has been prepared in response to the Appeal under Section 78(1)(a) by Ruston Planning Ltd acting on behalf of the appellant.

2.8 This proof of evidence covers the refused scheme. Initial information regarding drainage was provided on the 17th May 2022 as a response to the LLFA's initial comments drafter by Jon Bowden, and a further document was submitted on the 4th November 2022 in support of the application (the Outline Sustainable Drainage Strategy).

2.9 This evidence reviews the SLR Drainage Review dated 17th May 2022 and proposed Outline Sustainable Drainage Strategy submitted 4th November associated with the scheme as provided by the Appellant. It sets out to explain the Council's concerns and in particular to expand upon the Reasons for Refusal of the Application and to determine to what extent those concerns may have been met by the additional information.

Reasons for Refusal

2.10 Relevant to this proof of evidence, the application was refused inter alia for the following reason:

> *"The site is located within Flood Zone 1, which indicates a low risk of fluvial (river) flooding. It is also not within any critical drainage area identified by the Strategic Flood Risk Assessment for the district. As minor development, a Flood Risk Assessment (FRA) is not required by Policy CS16, and there are no fundamental policy objections to the development on grounds of flood risk.*
>
> *However, Policy CS16 states that on all development sites, surface water will be managed in a sustainable manner through the implementation of Sustainable Drainage Methods (SuDS) in accordance with best practice and the proposed national standards and to provide attenuation to greenfield run-off rates and volumes, for all new development and re-development and provide other benefits where possible such as water quality, biodiversity and amenity. The application is not accompanied by any drainage strategy to indicate how the development could comply with Policy CS16. Whilst detailed specifications may be reserved for consideration by condition, the key principles of a drainage strategy are required before any planning permission can be granted. The application is contrary to Policy CS16, the Council's adopted SustainableDrainage SPD, and the National Planning Policy Framework."*

2.11 Best practice and national standards includes, but is not limited to:

Non-statutory technical standards for sustainable drainage: Practice Guidance; LASOO, 2016 (Appendix A)

Non-statutory technical standards for sustainable drainage systems; DEFRA. 2015 (Appendix C)

C753 The SuDS Manual; CIRIA, 2015 (Appendix B)

West Berkshire Sustainable Drainage Systems Supplementary Planning Document (SPD); West Berkshire, 2018

National Planning Policy Framework; 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

2.12 Subsequently WBC received information described in section 2.7 above. Further concerns have arisen upon receipt of the Outline Sustainable Drainage Strategy on the 4th November.

3. Surface Water Discharge Location

3.1 There is concern that the applicant has not done enough to understand the constraints associated with the proposed discharge location for surface water.

3.2 The current proposal (as shown in the "Drawings" section of the Outline Sustainable Drainage Strategy (Core document 10.6) suggests discharging into the Thames Water owned public sewer along Acorn Close. The applicant has corresponded with Thames Water and received confirmation in principle that the sewer has sufficient capacity to accommodate the runoff. However the same confirmation in Appendix 03 of the Outline Sustainable Drainage Strategy states:

"Where connection to the public sewerage network is still required to manage surface water flows, we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval."

3.3 There is insufficient evidence to suggest that the applicant has followed CIRIA's best practice guidelines or adhered to advice provided by Jon Bowden with respect to discharge rates. Please see section 4 for further information on this matter.

3.4 The surface water drainage plan in the drawings section of the Outline Sustainable Drainage Strategy shows a connection from a proposed filter drain (cut off drain) from the site into a ditch. This is discussed briefly in section 5.7 of the Outline Sustainable Drainage Strategy, but in section 5.2 it is acknowledged that there is insufficient information to confirm the suitability of the ditch as a discharge location at this stage. Discharge to a surface water body will require consent of the land owner, may be subject to approval for discharge and will require consideration of the existing water body condition as per section 3.11 of the Non-statutory technical standards for sustainable drainage: Practice Guidance (LASOO, 2016) (included in appendix A) which has not been done.

3.5 The applicant does not acknowledge or discuss any constraints associated with a connection which would run along Lawrence's Lane and Acorn Close. Notably, there are no utility clash checks and no highways advice sought or permissions discussed. As the connection passes under the highway, consent of the highways authority should be sought (or at least approval in principle). This is covered in section 3.12 of the Non-statutory technical standards for sustainable drainage: Practice Guidance (LASOO, 2016) (included in appendix A).

3.6 The applicant states in section 5.6 of the Outline Sustainable Drainage Strategy that they do not know the level of the surface water sewer chamber they are proposing to connect into (though it is accepted that given the height discrepancy between the road and highway a gravity connection should theoretically be feasible).

4. Greenfield Discharge Rate

4.1 The applicant has still not provided Greenfield discharge rate calculations as required by Section S2 of the Non-statutory technical standards for sustainable drainage systems and Policy C16 of the West Berkshire Core Strategy Development Plan.

4.2 The applicant has stated that the Greenfield discharge rate is used in communication with Thames Water (Appendix 03, email dated 01.02.22, subject: Land at Lawrences Lane Pre-planning enquiry, Outline Surface Water Drainage Strategy (Core document 10.6)) and in section 3 of the SLR Drainage Review document (Core document 6.12), but has not discussed it in the main content of the Outline Sustainable Drainage Strategy. The discharge/attenuation rate submitted in the pre-application form for

connection into the Thames Water sewer was 3.3l/s (Appendix 03, Outline Surface Water Drainage Strategy). The email in appendix 03 specifically references this form and section when stating:

> *"Please note that there is an error in the form as it will not retain the responses to Section D (ii). For the avoidance of doubt both the proposed foul and surface water connections will be by gravity and Sustainable Drainage Systems are proposed on the site to attenuate the runoff to the pre-development (greenfield) rate as shown by the enclosed preliminary drainage strategy plan."*

From the evidence it would be right to conclude that the Greenfield runoff rate is 3.3l/s.

4.3 In section 5.8.2 the Outline Sustainable Drainage Strategy the discharge rate is referred to as the rate agreed with Thames Water. If the rate in question was the Greenfield runoff rate it would normally be referred to as such. The discharge rate was never agreed with the LLFA and since evidence has not been forthcoming regarding the calculation it cannot be confirmed to be appropriate. 3.3l/s is quite a high Greenfield discharge rate for a site of this size, so evidence should be provided. Section S2 of the Non-statutory technical standards for sustainable drainage systems (DEFRA., 2015) (included in appendix C) states that for greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event This is also covered in section 3 of CIRIA C753 The SuDS Manual (included in Appendix B) and is addressed in Policy C16 of the WBC Core Strategy Development Plan which makes specific reference to the need for all developments to provide attenuation to greenfield runoff rates and volumes.

4.4 If the rate agreed with Thames Water of 3.3l/s is not the Greenfield runoff rate, then the applicant may not have given accurate information to Thames Water. The LLFA will not accept surface water discharge at rates other than the Greenfield discharge rate in accordance with Policy CS16 of the WBC Core Strategy Development Plan. The Greenfield Discharge Rate will impact the need for storage and therefore the site layout and size of drainage features.

5. Storage Calculations

5.1 Initial concerns with the storage requirements outlined in comments regarding the the SLR Drainage Review dated 17th May 2022 have been partially addressed in the later submitted SLR Outline Surface Water Drainage Strategy dated 04th November, but there are still outstanding issues.

5.2 It should be noted that in section 5.6 of the Outline Surface Water Drainage Strategy the applicant acknowledges that their original detention bond proposed as part of the SLR Drainage Review was not sufficiently sized to accommodate runoff from the site.

5.3 Without confirmation of the suitability Greenfield runoff rates (see section **Error! Reference source not found.**) it is not possible to verify that the storage has been sized appropriately.

5.4 It does not appear as though urban creep (the conversion of permeable surfaces to impermeable over time e.g. impermeable surfacing of front gardens to provide additional parking spaces, extensions to existing buildings, creation of large patio areas) has been considered as stated in section 5.7. This means the site area and subsequently storage has been underestimated. It is important that the appropriate allowance for urban creep is included in the design of the drainage system over the lifetime of the proposed development. Inclusion of Urban Creep is specified on page 33 of the West Berkshire SPD as being required for outline planning applications and is discussed in further detail in Section 5.1.5.

5.5 The applicant has submitted inadequately presented calculations in section 5.8 to explain long term storage calculations. FEH data is referenced as having been used, but not provided. When limiting all discharge back to the 1 in 1-year greenfield rate, or even the benefit of the reduction is discharge rates for larger events will offset the negative impact that this increase in volume may have, so it’s not clear why the applicant has done this if, as stated in their communication to Thames Water, they are planning to discharge at greenfield rates. Long term storage design is complex and often requires the design of a storage system which only comes into effect above a storm size threshold (effectively an off-line design) which captures the required volume and discharges at the appropriate rate as suggested in Rainfall runoff management for

developments (EA/DEFRA, 2009) (included in Appendix D). This has not been demonstrated in the information provided.

6. Permeable Paving

6.1 There appears to be no analysis of the suitability of permeable paving on the sloped site. Generally the effectiveness of permeable paving might be compromised where sites have a steep slope. I cannot see any evidence that the slope of the site has been considered. Section 20.5.1 b), of C753 The SuDS Manual (included in Appendix B) states that the volume of available storage within the sub-base will be reduced when compared to a flat surface…where slopes are 3% or greater, designers should consider terracing or internal check dams in the sub-base to provide a series of compartments. It also states that research into the potential impact of surface slope on infiltration rates into the pavement surface has demonstrated that below slopes of approximately 20%, this should not be a significant issue. However within a clear understanding of the site gradients it may be found that permeable paving is not suitable on this site.

6.2 It appears as though day rooms and structures are proposed above the permeable paving which will make it difficult to maintain. Permeable paving is prone to blockage and siltation which can massively impact its effectiveness, as the sole means of collecting runoff this may cause problems with the drainage of the site.

6.3 The tank is specified as being modelled with an appropriate porosity of 30% and a depth of 0.3m, but this isn't evident in the supporting calculation. There may need to be further explanation as to how this has been represented.

6.4 The suitability of the permeable paving solution needs to be confirmed as an alternative means of storage may be required.

7. Basin and Swale

7.1 Typically swales and basins require a strip of land adjacent to them to permit access and maintenance which is not shown on the Surface Water Drainage Plan in the SLR Outline Surface Water Drainage Strategy. Given that there is an embankment on side of the swale/basin and a hedgerow on the other, it may be difficult to clear any blockages

or maintain the SuDS features. Section 22.2 of C753 The SuDS Manual states “There should always be appropriate access to the detention basin for maintenance activities such as grass cutting and sediment removal to be undertaken, and to all inlets, outlets and control structures”. Given that this is a potential spatial constraint this needs to be made clear at this stage.

7.2 The proposal appears to show that in order to provide a 0.5m freeboard a berm (small embankment) has been provided. This seems to be supported in section 5.11 of the Outline Surface Water Drainage Strategy. The risk of impounding flows needs to be discussed in the report as does the potential impact on the highway below should the structure fail. Section 22.2 of C753 The SuDS Manual states that even if the impounded basin does not come within the thresholds of the Reservoirs Act, owners still have statutory duties for the safety of others under legislation such as the Health and Safety at Work (etc) Act 1974 and the Building Act 1984. Consideration should be given to the safe routing of floodwater when the design event is exceeded, and to mitigating the risks of potential embankment failure.

7.3 Appendix 5 which supports the design of the surface water drainage system contains limited information. It’s not clear how the storage systems within the network have been represented/what their capacity is.

8. Concluding Remarks

8.1 In conclusion, the applicant has not provided sufficient evidence of an appropriate drainage solution in accordance with best practice and national standards and it is therefore not possible to conclude that a compliant drainage solution is possible. Of primary concern is the lack of consideration for constraints associated with the proposed discharge location (including both the connection into Acorn Close surface water sewers and the ditch), the omission of greenfield discharge rate calculations, the surface water storage/attenuation calculations, the viability of implementing a permeable paving solution and design considerations for the proposed basin and swale.

8.2 The Appellant’s later submission of an Outline Sustainable Drainage Strategy marks an improvement in the approach to deal with SuDS matters, but unfortunately also raises fresh concerns. The language used with regards to greenfield volume suggests the applicant has changed their drainage strategy (i.e. using long term storage and agreed

discharge rates as opposed to greenfield runoff rates), but has not made it clear. The incorporation of the permeable paving solution is not necessarily unwelcome, but a basic assessment of site levels and the suitability of the solution should have been provided. Site spatial constraints validate previous concerns with the information submitted and the lack of storage space provided.

8.3 The Appeal proposals as refused are unacceptable and contrary to policies CS16, of the West Berkshire Core Strategy Development Plan Document, the design principles contained in the WBC SuDS SPD, Section 134 of the NPPF, Non-statutory technical standards for sustainable drainage and C753 The SuDS Manual.

8.4 Whilst the Council does not accept that conditions would be capable of resolving the objections outlined above, were the appeal allowed then, without prejudice, the Council would respectfully request to have specific drainage Conditions attached to any Approval which would need to be drafted in light of the latest information.

9. References

CIRIA. (2015). *C753 The SuDS Manual.* London.
DEFRA. (2015). *Non-statutory technical standards for sustainable drainage systems.*
Environment Agency. (2013). *Rainfall runoff management for developments.*
LASOO. (2016). *Non-statutory technical standards for sustainable drainage: Practice Guidance;.* LASOO.
Ministry of Housing, Communities & Local Government. (2012). *National Planning Policy Framework.* London: OGL.
West Berkshire Council. (2012). *West Berkshire Core Strategy (2006 - 2026).*
West Berkshire Council. (2018). *SuDS Supplementary Planning Document.*