

Engineers Comments Regarding Surface Water Drainage

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| Application Reference: | WA/109/24/OUT | Reviewer Reference: | ADC/PC |
| Planning Officer: | Hannah Kersley | Date of Review: | 27/08/2025 & 14/01/2026 |
| Site Name: | Sussex Business Village Lake Lane Barnham PO22 0AL | | |
| Application Description: | Outline planning permission for 3 No. attached dwellings with associated gardens, access and parking. This application is in CIL zone 3 (CIL liable as new dwellings) and is a dual parish application with Yapton Parish Council. | | |
| Assessment Number: | 1 of 1 | | |

Policy and Guidance Information

Arun District Council Surface Water Drainage Guidance - <https://www.arun.gov.uk/surfacewater>

Land Drainage Consent – <https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/flooding/flood-risk-management/ordinary-watercourse-land-drainage-consent/> and
<https://www.arun.gov.uk/land-drainage-consent/>

Arun District Council surface water pre-commencement conditions -
<https://www.arun.gov.uk/planning-pre-commencement-conditions>

National Standards for Sustainable Drainage Systems (SuDS) -
<https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds>

The SuDS Manual [C753] by CIRIA

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| Response | Objection (in relation to presence of trees) |
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Critical Items for Surface Water Drainage Design Conditions

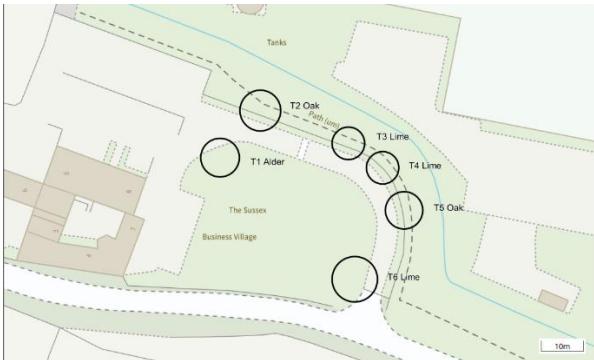
The failure to adequately address the following items will result in an objection to a surface water drainage design.

If any of these items are inadequately addressed by the submission, then their correction may result in a redesign of the surface water drainage scheme. A redesign is likely to have site wide implications such as the potential for storage structures to increase in volume or plan area.

| Critical Item | Reason | Status |
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| Winter groundwater monitoring data. | Adequate winter groundwater monitoring data must be supplied to evidence that infiltration designs have sufficient freeboard from the base of structures and the peak groundwater level. | Insufficient-but to be provided via condition. |

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| | <p>The same data is necessary to ensure that the potential for buoyancy has been adequately considered in attenuation designs.</p> | |
| Winter infiltration testing data. | <p>Adequate winter infiltration testing must be supplied to justify the proposed discharge method and design infiltration rates.</p> <p>Infiltration tests must be completed strictly in accordance with BRE DG 365, CIRIA R156 or a similar approved method. Testing depths must account for peak groundwater levels and correspond with the location and depth of proposed infiltration features.</p> <p>Designs must be based upon the <u>slowest</u> infiltration rate evidenced closest to a proposed infiltration feature. Average design rates will not be accepted.</p> <p>The results of incomplete tests should not be extrapolated to obtain design values for infiltration rates.</p> | Insufficient-but to be investigated via condition. |
| The hierarchy for sustainable drainage. | <p>The proposed discharge method must accord with the SuDS hierarchy as given below. Evidence must be supplied to justify the proposed discharge method.</p> <ol style="list-style-type: none"> 1. Rainwater reuse where possible. 2. Complete discharge into the ground (infiltration). 3. Hybrid infiltration and restricted discharge to an appropriate water body or surface water sewer. 4. Restricted discharge to an appropriate water body. 5. Restricted discharge to a surface water sewer. 6. Restricted discharge to a combined sewer. <p>A water body may be defined as a river, watercourse, ditch, culverted watercourse, reservoir, wetland or the sea.</p> <p>Engineers cannot support any proposed connection of surface water to the foul sewer.</p> | Compliant but currently unproven. |
| Calculations | <p>Calculations for pre-development run off rates must be based upon the positively drained area only.</p> | Sufficient |

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| | <p>Proposed discharge rates must not increase flood risk on site or elsewhere. Discharge rates must be restricted to QBAR or 2 l/s/ha, depending on whichever is higher.</p> | |
| | <p>Designs must be based on the most recently available rainfall data at the time of conditions being applied. <u>FSR rainfall data will not be accepted.</u> FEH rainfall data is based upon more recent records and continues to be updated.</p> | Compliant |
| | <p>Designs must use the correct climate change allowances at the time of determination of the outline or full planning application.</p> <p>CV values for all events must be set to 1. This includes summer, winter, design, and simulation events.</p> <p>The correct allowance for urban creep must be applied.</p> <p>Additional storage must be set to zero unless it can be evidenced where this is provided.</p> <p>Infiltration half-drain times must be less than 24 hours.</p> <p>Infiltration design rates must be applied to the sides of soakaways, or to the base of infiltration blankets. Design rates must not be applied to both the base and sides of infiltration structures.</p> <p>A surcharged outfall must be modelled.</p> | Insufficient – full hydraulic modelling to be addressed via condition |
| Natural catchments design. | <p>The submission must define the natural drainage characteristics within, and hydraulically linked to, the site and demonstrate that the drainage proposals will integrate with and not compromise the function of the natural and existing drainage systems.</p> <p>The condition, performance (including capacity where appropriate) and ownership of any existing site surface water drainage infrastructure must be accurately reported.</p> <p>Appropriate easements to watercourses and other services must be shown on all plans.</p> | Sufficient Interception drainage in accordance with National Standards to be fully investigated and specified – to be addressed via condition. |

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| | <p>Where there are areas of flood risk from any source on the site, it must be shown how a sustainable surface water drainage design can be accommodated on the site without conflicting with those areas of flood risk.</p> <p>Designs must replicate the natural drainage catchments of the site. All surface water drainage designs must therefore drain via gravity to corresponding points of discharge.</p> <p>The use of pumps for surface water drainage is not sustainable and will only be considered where the designer has fully demonstrated that they are proposed as a last resort.</p> | |
| Plans | Plan areas, depths and levels of drainage infrastructure must accurately correspond with the supporting calculations. | Sufficient – to be further considered via condition |
| Water quality benefits. | An assessment of water quality is necessary to evidence that the proposed design provides adequate treatment of surface water. | Insufficient – to be addressed via condition |
| Biodiversity and amenity benefits. | The surface water drainage design must provide biodiversity and amenity benefits. | Insufficient – to be addressed via condition |
| Trees and planting | <p>There should be no conflict between surface water drainage infrastructure and existing or proposed trees or planting.</p> <p>The design must consider the potential growth of proposed trees and adequate mitigation must be provided to protect drainage infrastructure where conflict <u>cannot</u> be avoided.</p> | Insufficient – the Planning Officer is advised not to approve the landscaping proposals due to potential conflict with the drainage proposals. <p>The Planning Officer has advised that two trees within the development parcel (see adjacent plan) are subject to TPO's (T1 and T6). The retention of these trees will result in conflict with the proposed drainage design and could increase flood risk due to the potential impact of roots on the associated</p>  |

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| | | <p>infrastructure. T1 is also noted to be very close to the plot 3 dwelling. The root protection zones (RPZ'S) for these trees are unknown and therefore their impact cannot be fully assessed. It is also unclear as to whether the drainage scheme can be altered sufficiently to avoid infrastructure being located within the RPZ's.</p> |
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Drainage Impact on Other Planning Matters

This application has been assessed with regards to surface water drainage design only.

Other planning matters occasionally effect the surface water drainage design. If plans relating to other matters have been assessed for their impact on the proposed drainage, then it must not be assumed that they have been assessed for any other purpose. The planning officer is advised to check for conflicts with any existing approved plans and to consult any relevant consultees as appropriate.

It has been identified that the following consultees may have comments about the plans that have been submitted and reviewed for this application:

- Landscaping officer (proposed trees and landscaping)
- Tree officer (existing trees)
- Environment Agency (main rivers and fluvial/tidal flood risk, groundwater source protection zones)
- Southern Water (foul drainage and surface water disposal to public sewer network)
- Portsmouth Water (groundwater source protection zones)
- Lead local flood authority (all other sources of flooding and ordinary watercourses)
- Other:
- None

Additional comments to the planning officer

The NPPF states that when determining any planning application, local planning authorities should ensure that flood risk is not increased elsewhere (paragraph 181, 182 and 187e). The PPG guides local planning authorities to refer to 'Sustainable drainage systems: non-statutory technical standards' and detailed industry guidance like The SuDS Manual [C753] by CIRIA to guide decisions about the design, maintenance, and operation of sustainable drainage systems for non-major development.

This consultation has been primarily informed by The SuDS Manual. However, since our last consultation, the National Standards for Sustainable Drainage Systems SuDS has been published (19.6.25) and enacted. The applicants attention is drawn to this document and the need to ensure future compliance with it.

The drainage strategy comprises two options, 1) Infiltration into the ground 2) Discharge to existing culverted watercourse.

Option 1 has been based upon insufficient groundwater monitoring and infiltration testing. This fact is recognised by the applicants designer. Winter groundwater monitoring is required and this will determine if winter infiltration testing is viable, as one metre freeboard needs to be achieved between the base of infiltration structures and peak groundwater levels.

Groundwater monitoring and infiltration testing must be undertaken at the location of the infiltration structures. This has not been achieved with the monitoring and testing undertaken to date. Infiltration into made ground should not be considered due to its variability.

Option 2 consider a discharge to an adjacent culverted watercourse, on the assumption that infiltration proves unviable.

Qbar calculations have been based upon a larger impermeable/drained area than what is proposed and will need to be corrected. However, it is recognised that flow rates are low and the designer has proposed a restricted flow rate of 0.7 l/s. This rate achieves a lower rate than 2 l/s/ha so is deemed acceptable in principle.

The applicant should incorporate permeable paving and rain gardens with any future proposal. This will help achieve the required water treatment requirements, and the preference for open features (ie. rain gardens). Only option 1 considered such measures but option 2 didn't.

All structures must achieve a minimum distance of 3 metres from the edge of the culverted watercourse. This includes boundary fencing.

Overcoming our objection

As this is not a holding objection or a request for further information, requested conditions are not listed. If you are minded to approve this application, please reconsult engineers for a list of suggested conditions to ensure that the development is adequately drained and does not increase flood risk elsewhere.

The imposition of conditions at this stage rather than overcoming the objection could result in a circumstance where the condition cannot be discharged. In the event of attaching a condition that cannot be discharged, permission may be invalid.

If the planning officer is minded to allow the applicant additional time to submit further documents to support this application, then the following evidence may overcome the objection. Please do not submit further documents without prior discussion with the planning officer as to whether it will be possible for these to be assessed or influence their determination.

The two items below need to be resolved and agreed, in order for us to consider withdrawing our objection;

1. The existing culverted watercourse has now been investigated via CCTV and sonde survey determine its location, depth and condition. The proposed point of connection to the existing culvert would appear to be upstream of the known pipework identified in the CCTV survey ie. connecting to the gravel filled ditch. This would not be acceptable without remedial works, which have not been specified. It is envisaged that a new sump manhole would be constructed on the culvert at the point of connection and additional pipework provided to ensure a positive connection to the pipework downstream. This will need to be detailed on the drawings. **Proposals revised. Detailed design to be agreed via condition.**

It is also likely that the gravel filled ditch will also need to be remediated to ensure the future integrity of the system (ie. potential failure of mesh screen holding back gravel is a particular concern), but will require discussion with ourselves and the Lead Local Flood Authority. The existing culvert will require jet cleaning and the third party ditch downstream is likely to require clearance/desilting. These aspects can be addressed at a later date, via condition.

In terms of the proposed connection level to the culvert, it is unclear as to whether a soffit to soffit connection is being achieved. The short length of 100mm diameter pipe downstream of flow control chamber SW 1 requires a positive gradient (currently laid flat). The existing culvert is shown as 225mm diameter on the plan but the CCTV survey indicates it as 300mm diameter. Which is correct needs to be verified and the plan adjusted if necessary. The specified overall depth of manhole SW 1 is incorrect (should be 1.3 metres as opposed to 2 metres) and should be corrected. Based upon the estimated culvert invert level of 10.000 downstream of the proposed connection , it appears that a soffit to soffit connection is not being achieved. It will need to be clearly demonstrated that it is possible. The applicant may wish to consider utilising a pipe diameter equal to the culvert diameter, for the short length of pipe downstream of chamber SW 1 to help achieve the requirement. **Resolved – proposed pipe diameter between chambers SW1 & SWA confirmed as 300mm in email dated 9.10.25.**

The hydraulic modelling calculations for the storage tanks specifies an orifice flow control as opposed to a hydrobrake (as detailed on the drawings). Please correct the calculations. A hydrobrake will also provide improved performance over an orifice and may impact the output. Spare volume within the crate structures is approx. 10m3. The pipework and manholes will provide additional storage volume, together with further storage as a result of addressing water treatment requirements (ie. permeable paving, etc). Therefore, the storage proposed currently and to be increased at a later date, would seem reasonable. **Explanation in respect to orifice/hydrobrake flow control included in email dated 9.10.25.**

It is noted that full hydraulic modelling has not been provided for the piped network. This will be a requirement during detailed design and addressed via condition. The applicant should note that a CV value of 1 will be a requirement and the system designed against a surcharged outfall (surcharge level to be circa 10.800).

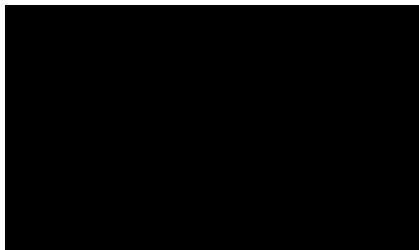
2. A revised plan showing that a minimum 3 metres distance is achieved between the edge of the existing culvert and any structure/boundary fencing. This currently measures less than 3 metres. **Plan adjusted.**

If this information can be submitted, then we would request that a pre-commencement drainage design condition was applied to the decision notice. It would be expected that infiltration was fully investigated with winter groundwater monitoring and winter infiltration testing. This would be assessed via an application to discharge the condition. It must not be assumed that if a connection to the watercourse can be achieved and evidenced, that we will not expect infiltration to be investigated and prioritised in accordance with the sustainable drainage hierarchy.

Checklist

A full surface water drainage design checklist is provided on our website <https://www.arun.gov.uk/surfacewater/>. The applicant should consult this to ensure that all information required is submitted with any revised design.

PL-Consultation- Engineers response



Arun District Council, Civic Centre, Maltravers Rd
Littlehampton, West Sussex, BN17 5LF
www.arun.gov.uk

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<https://www1.arun.gov.uk/planning-application-finder>

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From: Paul Cann <Paul.Cann@arun.gov.uk>

Sent: 14 January 2026 14:50

To: Planning.Responses <Planning.Responses@arun.gov.uk>

Cc: Land Drainage <Land.Drainage@arun.gov.uk>; Hannah Kersley <Hannah.Kersley@arun.gov.uk>; Mark Warwick <Mark.Warwick@arun.gov.uk>

Subject: RE: Planning Consultation on: WA/109/24/OUT

Please find enclosed my consultation response (additional comments in red).

The detailed design of the surface water drainage scheme can be dealt with via appropriate conditions. However, it has come to light that existing trees (subject to TPO's) are in direct conflict with the proposed drainage scheme (see commentary in my enclosed consultation).

Therefore, on this basis I have no option but to object until such time that the conflict is resolved.

Also, as per previous comments, please do not approve the proposed landscaping scheme, due to the need to ensure no conflict with the drainage scheme.

Regards

Paul Cann
Principal Drainage Engineer, Coastal Engineers and Flood Prevention

T: 01903 737819

E: paul.cann@arun.gov.uk

Arun District Council, Civic Centre, Maltravers Rd

Littlehampton, West Sussex, BN17 5LF

www.arun.gov.uk



Our priorities...



From: Planning.Responses <Planning.Responses@arun.gov.uk>

Sent: 10 October 2025 14:19

To: Land Drainage <Land.Drainage@arun.gov.uk>

Subject: Planning Consultation on: WA/109/24/OUT

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

Application No: **WA/109/24/OUT**

Registered: 19th March 2025

Site Address: Sussex Business Village Lake Lane Barnham PO22 0AL

Grid Reference: 497227 104602

Category: Plan Applicat'n

Description of Works: Outline planning permission for 3 No. attached dwellings with associated gardens, access and parking. This application is in CIL zone 3 (CIL liable as new dwellings) and is a dual parish application with Yapton Parish Council.

I am able to inform you that I have received an amendment to the above application dated 9th October 2025 relating to:- Substitute drainage info

If you should wish to make further representations as a result of this amendment, please make any further comment by **3rd November 2025**.

[Click here to view the application, documents and make further comments](#)

Please be aware that Planning Services operate an 'open file' policy and will publish your comments including your name and address on the website. We will aim to redact signatures, telephone numbers and email addresses but please help us by not incorporating them in the body of your text. Please make sure that you only include information that you are happy will be published in this way. If you supply information belonging to a third party, you must make sure you have their permission to do so.

Yours sincerely

Hannah Kersley

Planning Case Officer- Arun District Council

Telephone: 01903 737856

Email: hannah.kersley@arun.gov.uk

PLRECON (ODB) 2018