

Engineers Comments Regarding Surface Water Drainage

Application Reference:	Y/32/25/PL	Reviewer Reference:	ADC/PC
Planning Officer:	Simon Davis	Date of Review:	20/08/2025
Site Name:	Land West of Bilsham Road Yapton BN18 0LA		
Application Description:	Erection of 170 No residential dwellings (30% affordable), parking spaces, internal site roads, public open space, childrens play space, pumping station, surface water drainage features, landscaping and associated works. This application is a Departure from the Development Plan and is in CIL Zone 3 and is CIL Liable as new dwellings.		
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

Response	Objection
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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
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.	Sufficient

	<p>The same data is necessary to ensure that the potential for buoyancy has been adequately considered in attenuation designs.</p>	
<p>Winter infiltration testing data.</p>	<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>	<p>Sufficient – infiltration ruled out due to high groundwater levels.</p>
<p>The hierarchy for sustainable drainage.</p>	<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>	<p>Sufficient</p>

<p>Calculations</p>	<p>Calculations for pre-development run off rates must be based upon the positively drained area only.</p> <p>Proposed discharge rates must not increase flood risk on site or elsewhere. Discharge rates must be restricted to QBAR or 3 l/s/ha, depending on whichever is higher.</p>	<p>Insufficient</p>
	<p>Designs must be based on the most recently available rainfall data at the time of conditions being applied. FSR rainfall data will not be accepted. FEH rainfall data is based upon more recent records and continues to be updated.</p>	<p>Compliant</p>
	<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>	<p>Insufficient</p>
<p>Natural catchments design.</p>	<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>Sufficient</p>

	<p>Appropriate easements to watercourses and other services must be shown on all plans.</p> <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.	Insufficient
Water quality benefits.	An assessment of water quality is necessary to evidence that the proposed design provides adequate treatment of surface water.	Insufficient
Biodiversity and amenity benefits.	The surface water drainage design must provide biodiversity and amenity benefits.	Sufficient
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 cannot be avoided.</p>	Insufficient

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 and the National Standards for SuDS [NSfS], which supersede ‘Sustainable drainage systems: non-statutory technical standards’.

The following documents have been submitted and reviewed to inform this consultation with reference to surface water drainage:

- Flood Risk Assessment and Drainage Strategy 24-217 Rev. B June 2025 Part 1 of 3
- Flood Risk Assessment and Drainage Strategy 24-217 Rev. B June 2025 Part 2 of 3
- Flood Risk Assessment and Drainage Strategy 24-217 Rev. B June 2025 Part 3 of 3
- Drawing 701 Tree Survey Sheet 1 of 2
- Drawing 702 Tree Survey Sheet 2 of 2
- Landscape and Services Plan Sheet 1 of 2 5304-RPS-EX-XX-DR-L-9108 Rev.P06
- Landscape and Services Plan Sheet 2 of 2 5304-RPS-EX-XX-DR-L-9109 Rev.P06

Comments:

STANDARD 1: RUNOFF DISPOSAL LOCATIONS

It is recognised that due to the high groundwater levels identified on site, infiltration is deemed not to be an option and therefore the development is proposed to connect to the existing watercourse (main river) at two locations. This is acceptable in principle.

STANDARD 2: INTERCEPTION

The development must demonstrate that the first 5mm of rainfall for the majority of rainfall events does not result in any runoff from the site. This is to replicate greenfield conditions.

The failure to adequately demonstrate interception drainage conflicts with guidance, national standards and best practice, rather than representing an increase in flood risk.

A departure from national standards has not been sought and agreed to our knowledge.

No formal assessment of interception drainage has been submitted, or considered within the development layout.

Interception can only be achieved through the use of infiltration (which is not viable on this site), evapotranspiration and water reuse. The only opportunities for evapotranspiration are via the limited area of permeable paving. The lined attenuation ponds are not considered a means of interception.

In the case of rainwater harvesting systems, these can be assumed to provide interception when they are “*designed for supply purposes (ie it has a regular daily demand)*”¹.

The permeable paving could achieve interception for the rainwater that falls on its surface, but not if additional areas are drained into the permeable pavement structure. It is noted that permeable paving is very limited on the site and is only prevalent in the northern extremes.

Interception for the roofs, a majority of driveways/parking and road areas appear to achieve no interception drainage.

Green roofs can be useful features to achieve interception. However, their use must be planned for at the conceptual development stage and cannot be agreed via condition when the roof plans and elevations are approved as part of the permission.

The applicant is expected to demonstrate compliance with this standard with a formal assessment in accordance with the NSfS and The SuDS Manual. When interception drainage standards are complied with, it is expected that the scale, appearance and layout of the proposed development will be impacted by changes to the surface water drainage scheme.

STANDARD 3: EXTREME RAINFALL AND FLOODING

Proposed Discharge Rates and Volumes

It is not possible to accurately assess whether the proposed discharge rates will increase flood risk. This is because the proposed discharge rates from the site have not been justified for the positively drained areas or evidenced by detailed calculation. It should be noted that neither urban creep or climate change are to be incorporated within these calculations.

It is critical to understand how the proposed discharge rates have been calculated as this will dictate which standards need to be met.

¹ Woods Ballard, B. et al, (2015) C753 The SuDS Manual, C753, CIRIA London, UK. p207.

The NSfS offer the option to demonstrate compliance on both rates and volumes by restricting discharge rates to 50% AEP greenfield run off rate (essentially QBAR) or 3l/s/ha, whichever is greater. Based upon drawing 24-217-256 Rev B, the proposed discharge rates total 12.05 l/s (4.35 + 7.70), which would appear to exceed these criteria.

The designer has purchased and used FEH 22 point data to inform their proposed design. This includes rainfall data and information about the ground conditions on the site (BFIHost19, SAAR) to input into greenfield models. This data has been submitted to us outside of the Planning process and the parameters will be checked upon receipt of the calculations discussed above.

If discharge rates need to be restricted further, then additional storage will be required to ensure that flood risk will not be increased. This may impact the scale and layout of the proposed development.

Plans and Modelling

The hydraulic model has not been fully assessed due to the fact that the design is likely to require significant changes as a result of this consultation.

The model must consider surcharged outfalls at the two points of connection to the watercourse. The surcharge levels must be set to the peak water levels predicted in the watercourse by the known fluvial model outputs.

In order to assess the revised hydraulic model, it will be necessary to include additional data on the drainage layout plan. This should include, finished levels (floor levels, manhole covers, surfaces including roads, drives, attenuation pond banks, etc). Formation levels for permeable paving should be included.

An impermeable area/catchment plan (with areas detailed in m²), including the network layout and the points at which each area discharges is also required to support the model.

It will need to be clearly shown on the drainage layout plan as to how all roads on the development are drained.

Attenuation tank 1.1 – maintenance access manhole invert level at western end appears to be lower than the outgoing pipe invert from the tank? Also the tank outlet pipe appears to have a flat gradient.

Outfalls to the watercourse should be protected with non-return flap valves to ensure no backflow from the watercourse and thus achieve no reduction of capacity in the SuDs system as a result.

Without the above information, it is not possible to confirm whether the modelling is accurate or acceptable.

STANDARD 4: WATER QUALITY

A brief water quality assessment is included within the Flood Risk Assessment (Item 7.2.6). This assumes that the permeable paving will provide water treatment for all the runoff generated by the impermeable surfaces on the site, however permeable paving is only proposed in the extreme north of the site. Also, if the permeable paving is designed to be self-draining only, then this will not be providing treatment of other flows that do not drain through it.

Essentially, this high-level assessment is inadequate. The water treatment assessment must be adjusted to accurately represent the water treatment that is provided for each sub-catchment of the

site. It must be demonstrated that all of the site is adequately treated without the layout being affected.

It is expected that the need to address the requirements of 'STANDARD 2 INTERCEPTION' above will help achieve the necessary treatment.

STANDARD 5: AMENITY

No assessment of amenity benefit has been submitted. However, the surface water drainage design has limited benefit towards placemaking and environmental enhancement (attenuation ponds being the exception). Water is not kept at or close to the surface and much of the design is of a conventional subterranean piped network with underground tanks contributing towards the storage. If further amenity benefits are provided this may impact the scale and layout of the development and is unlikely to be included via condition.

STANDARD 6: BIODIVERSITY

It is anticipated that the two no. proposed attenuation ponds will contribute to the overall site biodiversity value. The planting regime within those features will also dictate the benefits gained and will need to be addressed during detailed design. Wet areas within the ponds should also be considered.

STANDARD 7: CONSTRUCTION, OPERATION, MAINTENANCE, DECOMMISSIONING AND STRUCTURAL INTEGRITY

There is the potential for conflict between proposed trees and drainage infrastructure on the site. As landscaping is to be determined by this application it is expected that these conflicts are resolved. Most notably there are trees proposed in close proximity to the attenuation ponds, the attenuation tanks and numerous pipelines. Tree roots damage drainage infrastructure and it must therefore be ensured that all drainage infrastructure is not impacted. Root Protection Zones of trees (at maturity) need to be considered in this respect. Tree root damage can increase flood risk due to damaging liners to ponds/tanks (allowing groundwater to infiltrate and reduce storage capacity) or obstructing flows in pipework.

It is unclear, but the outfall pipe from attenuation basin no.2 may conflict with the existing hedgerow immediately adjacent the watercourse. This will need to be verified and the proposal adjusted if necessary to ensure no detriment.

OTHER MATTERS

It is noted that existing field crossings over the watercourses on the southern boundary (Ordinary Watercourse) and the western boundary (main river) may become redundant as a result of the development. If so, there is an opportunity to remove the culverts in question (with relevant approvals) and reinstate them as open watercourses. This will reduce flood risk, improve biodiversity and reduce maintenance obligations. This can be discussed further during detailed design.

No construction details have been provided for the drainage infrastructure, however, these will be required as part of the detailed design at a later date.

The inclusion of silt traps to intercept sediment at strategic locations, in order to help safeguard the capacity and functioning of the system, will be a requirement to be addressed during detailed design.

OVERCOMING THE OBJECTION

Multiple conflicts with National Standards for SuDS have been identified. To achieve compliance with national standards and demonstrate that flood risk is not increased, it is highly likely that the scale and layout of the proposed development will need to be reconsidered.

Therefore, we **object in principle** to the proposed development.

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 our 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.

- **A revised design with supporting documents/calculations to address the issues raised under STANDARDS 2, 3, 4, 5 and 7 above.**

[Redacted]

[Redacted]

[Redacted]

[Redacted]






[Redacted]

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>



Our priorities...

 Improving the wellbeing of Arun	 Delivering the right homes in the right places	 Supporting our environment to support us	 Fulfilling Arun's economic potential	 
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From: Paul Cann <Paul.Cann@arun.gov.uk>
Sent: 20 August 2025 16:57
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Sarah Burrow <Sarah.Burrow@arun.gov.uk>; Simon Davis <Simon.Davis@arun.gov.uk>
Subject: RE: Planning Consultation on: Y/32/25/PL

Please find enclosed my consultation response, an objection.

Regards

Paul Cann

Principal Drainage Engineer, Coastal Engineers and Flood Prevention

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E: paul.cann@arun.gov.uk

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 <p>Improving the wellbeing of Arun</p>	 <p>Delivering the right homes in the right places</p>	 <p>Supporting our environment to support us</p>	 <p>Fulfilling Arun's economic potential</p>	 
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From: Planning.Responses <Planning.Responses@arun.gov.uk>

Sent: Friday, May 2, 2025 7:18:44 AM (UTC+00:00) Monrovia, Reykjavik

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

Subject: Planning Consultation on: Y/32/25/PL

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

Town & Country Planning Act 1990 (as amended)

Town and Country Planning (Development Management Procedure) (England) Order 2015

Planning Permission

Application No: Y/32/25/PL

Registered: 1st May 2025

Site Address: Land West of Bilsham Road Yapton BN18 0LA

Grid Reference: 497545 102448

Description of Works: Erection of 170 No residential dwellings (30% affordable), parking spaces, internal site roads, public open space, childrens play space, pumping station, surface water drainage features, landscaping and associated works. This application is a Departure from the Development Plan and is in CIL Zone 3 and is CIL Liable as new dwellings.

The Council have received the above application.

[Click here to view the application and documents](#) The website is updated once a day in the evening, so you may need to wait until the day after this notification to view the documents.

This application has been identified as CIL Liable. Therefore please be aware that, in accordance with Appendix 2 of the Arun CIL Charging Schedule, your consultation response should only include requests for Section 106 for onsite mitigation, Pagham Harbour Management Contributions (if applicable) or Affordable Housing. "Off" Site mitigation measures directly related to this development should be dealt with by condition if possible to ensure the scaling back of Section 106 if possible. CIL contributions will be used for "off" site infrastructure mitigation schemes. Therefore if this proposal triggers the need for "off" site mitigation, please ensure that you engage in the CIL Infrastructure List Consultation process upon receipt of a consultation letter.

Should you have any comments to make, these should be sent by replying to this email by 6th June 2025 . You can also monitor the progress of this application through the Council web site:

<https://www.arun.gov.uk/planning-application-search>

The application will be determined having regard to the development plan policies (if any are relevant) and other material considerations. The development plan can be accessed via the website

<https://www.arun.gov.uk/development-plan> as can information on what comments we can consider
<https://www.arun.gov.uk/planning-application-comments>

Please be aware that any comments you may make will be available on our website so please do not insert personal details or signatures on your reply.

Should the application go to appeal the Planning Inspectorate will publish any comments made to the Council on their website: <https://acp.planninginspectorate.gov.uk/> but they will protect personal details.

In the absence of a reply within the period stated, I shall assume that you have no observations to make.

Yours sincerely

Mr S Davis

Planning Officer- Arun District Council

Telephone: 01903 737874

Email: Simon.Davis@arun.gov.uk