

Engineers Comments Regarding Surface Water Drainage

Application Reference:	AL/13/25/DOC	Reviewer Reference:	ADC/EXT2/D2134/70
Planning Officer:	Hannah Kersley	Date of Review:	29.04.2025
Site Name:	Karenza Hook Lane Aldingbourne PO20 3TB		
Application Description:	Approval of details reserved by condition imposed under reference AL/154/23/PL (APP/C3810/W/23/3335883) relating to condition number 3 - Construction Management Plan, condition number 5 - surface water drainage scheme, condition number 8 - external materials and finishes and condition number 9 - energy.		
Assessment Number:	1 of 2		

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>

The SuDs Manual [C753] by CIRIA

Sustainable drainage systems: non-statutory technical standards' <https://assets.publishing.service.gov.uk/media/5a815646ed915d74e6231b43/sustainable-drainage-technical-standards.pdf>

Response

Condition 5: **Further information required**

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. The same data is necessary to ensure that the potential for buoyancy has been adequately considered in attenuation designs.	Not supplied

Winter infiltration testing data.	Adequate winter infiltration testing must be supplied to justify the proposed discharge method and design infiltration rates. 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. 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. The results of incomplete tests should not be extrapolated to obtain design values for infiltration rates.	Not supplied
The hierarchy for sustainable drainage.	The proposed discharge method must accord with the SuDS hierarchy as given below. Evidence must be supplied to justify the proposed discharge method. 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. A water body may be defined as a river, watercourse, ditch, culverted watercourse, reservoir, wetland or the sea. Engineers cannot support any proposed connection of surface water to the foul sewer.	Insufficient
Calculations	Calculations for pre-development run off rates must be based upon the positively drained area only. Proposed discharge rates must not increase flood risk on site or elsewhere. Discharge	Insufficient

	rates must be restricted to QBAR or 2 l/s/ha, depending on whichever is higher.	
	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.	Compliant
	Designs must use the correct climate change allowances at the time of determination of the outline or full planning application. CV values for all events must be set to 1. This includes summer, winter, design, and simulation events. The correct allowance for urban creep must be applied. Additional storage must be set to zero unless it can be evidenced where this is provided. Infiltration half-drain times must be less than 24 hours. 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. A surcharged outfall must be modelled.	Insufficient
Natural catchments design.	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. The condition, performance (including capacity where appropriate) and ownership of any existing site surface water drainage infrastructure must be accurately reported. Appropriate easements to watercourses and other services must be shown on all plans. 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	Not supplied

	be accommodated on the site without conflicting with those areas of flood risk. 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. 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.	
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.	Not supplied
Biodiversity and amenity benefits.	The surface water drainage design must provide biodiversity and amenity benefits.	Not supplied
Trees and planting	There should be no conflict between surface water drainage infrastructure and existing or proposed trees or planting. 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.	Not supplied

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.

Condition 5 reads as follows:

"No development shall commence, other than works of survey and investigation, until full details of the proposed surface water drainage scheme have been submitted to, and approved in writing by the local planning authority. The details submitted shall demonstrate consideration of the hierarchy of preference for drainage disposal set out in associated guidance. The proposal should be supported by winter groundwater monitoring to establish highest annual ground water levels and winter percolation testing to support any infiltration drainage, and details of the maintenance and management of the proposed system. The development shall be carried out and maintained in accordance with the approved details."

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

Drainage Strategy Report TB/435050/eg Sept 2023

Application Reference: AL/13/25/DOC Site Name: Karenza Hook Lane Aldingbourne PO20 3TB	Initial Issue Date: 29.04.2025 Issue Date: 29.04.2025 Reviewer Reference: ADC/EXT2/D2134/70
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Summary and Recommendation:

Condition 5: **Further information required / Objection / No objection / Support** **[DELETE AS REQUIRED]**

Please note: Any DOC application should only have a maximum of two consultation responses. If this is the second response for an open application and there are still comments outstanding, then please object to the application.

	ADC Drainage Comments	Designer Response			
Date:					
Condition Number:					
Comment Number					
1.	Firstly there is some uncertainty we are in receipt of all relevant information from the DOC application in pursuant of the drainage related conditions. Some of the comments below may have been actioned, however for completeness it is requested that the applicant provide a supporting summary and full information by return.				
2.	The drainage strategy report strategy cites the site address incorrectly as postcode PO20 0TE (Selsey), which should read PO20 3TE for review of all relevant information.	Noted and amended			
3.	The drainage strategy report makes reference to coordination with 'phase 1' yet as-built/construction record data for earlier phases has not been provided.	Construction issue drawings now provided			
4.	The drainage strategy report, section 4 does not summarise QBAR values. This is included on the hydraulic calculations, page 9, however a summary is still required.	A summary has been provided in para 4.16 & 4.17			
5.	The drainage strategy report, section 4 must include sufficient supporting drawing information to demonstrate pre-development exceedance flow.	Exceedance flow added (see Appendix E)			
6.	The drainage strategy report, 4.10 makes reference to the phase 1 design yet no information has been supplied therein. Please provide full design package.	Construction issue information provided			
7.	The drainage strategy report, 4.7 makes reference to historic geotechnical testing yet no evidence is provided to	Testing provided from the Autmn Gate site, see Appendix D			

	demonstrate infiltration testing and groundwater monitoring data. Subject to reviewing historic testing assumptions cannot be accepted and further geotechnical testing within confines of the application site may be necessary in strict accordance with drainage hierarchy to rule out infiltration.				
8.	Subject to geotechnical data being evidenced, it is noted that the phase 1 flow control rate of 1.2l/s is proposed for phase 2 hence no increases in flow and minor increases to volume. This strategy is accepted.	OK			
9.	The drainage strategy report, 4.16 makes reference to urban creep of 10% being included, however this calculation is not demonstrated clearly on drawing 435050-221P2.	Please see drawing no. 435050-220P			
10.	Hydraulic calculations for both summer & winter are set with a CV=1 which is accepted.	OK			
11.	As above in comment 4, please explain why a 6% additional flow has been included with the hydraulic calculation.	In the Autumn Gate design we were advised by Arun DC engineer that no urban creep need be applied to the access road, therefore the 10% urban creep has been applied to all impermeable areas except the access road, which gives an overall urban creep of 6% applied to all impermeable areas			
12.	Subject to reviewing and understanding the phase 1 strategy, and seasonal peak groundwater levels, the hydraulic calculations may require a surcharge outfall simulation.	A surcharge outfall has been modelled			
13.	The hydraulic calculations drain down time must be set to 1440mins to observe 24hrs period and considerations to half drain down times. For infiltration and tanked system alike, ADC's preference is to achieve half drain down of 50% for a 10yr return period.	OK			
14.	The hydraulic calculations specify node SW-13 as a vortex flow control with an invert of 9.49m, however drawing 435050-221P2 shows this to be higher @ 9.494m. As cited above, for certainty the as-built levels must be used as they may not correlate with the phase 1 design.	Amended in the model			
15.	The hydraulic calculations specify several nodes as 700mm diameter				

	which is not a recognised manhole/IC chamber size.	Updated to as built 450mm dia			
16.	Please qualify the permeable pavement formation gradients of 1:460 specified.	It was quite challenging to achieve a gravity system for the phase 1 site due to the shallow ditch invert and the topography of the site, therefore we set the base of the attenuation crates on a very slight gradient to convey the surface water instead of using a pipe in a sump, as this would have required a lower ditch IL which was not achievable. Therefore, a rectangular link has been used to model in flow, but in reality the link will just be the permavoid crates.			
17.	A supporting node drawing overlay with the site layout and drainage arrangement is required in order review the 1D modelling.				
18.	The cover level and invert levels for numerous nodes do not appear to correlate wholly with drawing 435050-221P2.	updated			
19.	Please explain wat is the relevance of a 1:500 return period has been demonstrated, also with CC.	This has been removed			
20.	Drawing 435050-221P2 is very difficult to review where phase 1 is greyed out and the key does not clarify all items i.e. its is assumed the pink text represents the phase 1 formation levels?	The revised drawing is clearer and also the construction issue of phase 1 has now been provided			
21.	Drawing 435050-221P2 requires formation levels at all corners and at outlets/inlets of all permeable pavements.	This has been added			
22.	Rainwater pipes run through silt traps (catchpits) and into the permavoid. Please provide a construction detail of how this is interfaced.	Detail provided on Drawing 435050-222P			
23.	Please provide construction details for all features identified on drawing 435050-221P2.	Detail provided on Drawing 435050-222P			
24.	Measures to protect the permeable pavement (asphalt construction) during the construction period must be annotated on the drawings to ensure that it does not become silt up prior to completion of the project.	See details on drawing 435050-222P			
25.	Please provide details of the foul drainage routing so this can be reviewed in conjunction with the surface water drainage.	Foul added on layout			
26.	Please provide details of the main service routing/crossings so this can be reviewed in conjunction with the surface water drainage.	Service routings added on layout			

27.	Please provide details of all proposed planting so this can be reviewed in conjunction with the surface water drainage.				
28.	Please provide floor plans for each of the units demonstrating the footprint at ground level so that this can be checked against the extent of permeable pavement. It appears permeable pavement is not shown to extend under canopy roofs. Please show on plan the dimensions of the permavoid blocks to demonstrate that of the shelf sizes can be used. If bespoke sized blocks are required evidence shall be provided from the manufacturer. Section longitudinally and transversely are required.	Floor plans updated on layout There are no permavoid blocks on the new site			
29.	Please demonstrate how the Permavoid blocks will be installed to formed the curved edges of the drives.	There are no permavoid blocks on the new site			
30.	Drawing 435050-221P2 is very light on spot levels, no contours it is not possible to deduce where exceedance run-off will travel.	Exceedence flow layout provided in Appendix E			
31.	A post completion exceedance flow routing drawing is required.	See Appendix E			
32.	The drainage report must summarise water quality benefits.	See section 5			
33.	A maintenance manual must be provided in accordance with PCENG4 checklist and summarise surface water drainage maintenance and management.	Provided			

If a designer would like a .docx version of this document to aid administration of responses, please request this by email to land.drainage@arun.gov.uk.

Drainage Engineers response

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

To register to receive notifications of planning applications in your area please go to
<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: 02 May 2025 08:58
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Sarah Burrow <Sarah.Burrow@arun.gov.uk>
Subject: RE: Planning Consultation on: AL/13/25/DOC

Please find enclosed our consultants response in respect to condition 5.

Regards

Paul Cann

Principal Drainage Engineer, Coastal Engineers and Flood Prevention

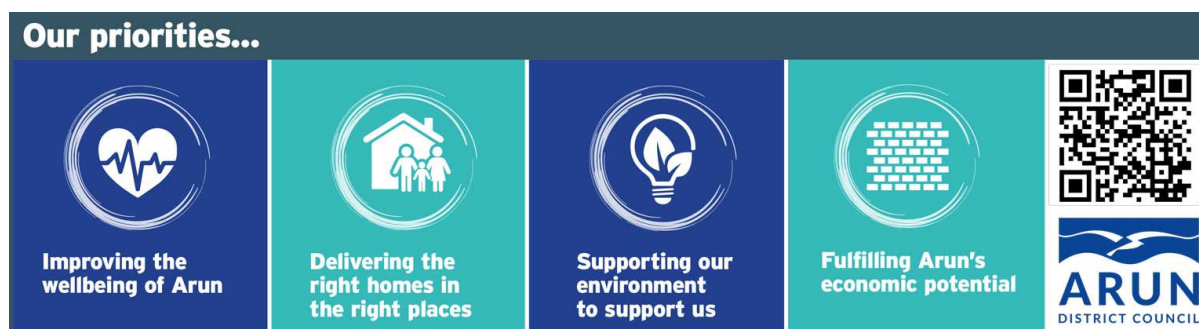
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From: Land Drainage <Land.Drainage@arun.gov.uk>

Sent: 12 February 2025 09:49

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

Subject: FW: Planning Consultation on: AL/13/25/DOC

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

Sent: Wednesday, February 12, 2025 9:48:31 AM (UTC+00:00) Monrovia, Reykjavik

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

Subject: Planning Consultation on: AL/13/25/DOC

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

Application No: AL/13/25/DOC

Registered: 11th February 2025

Site Address: Karenza Hook Lane Aldingbourne PO20 3TB

Description of Works: Approval of details reserved by condition imposed under reference AL/154/23/PL (APP/C3810/W/23/3335883) relating to condition number 3 - Construction Management Plan, condition number 5 - surface water drainage scheme, condition number 8 - external materials and finishes and condition number 9 - energy.

The Council have received the above application to discharge conditions. I shall be pleased to receive any observations you may wish to make in respect of those conditions relating to your field of expertise.

[Click here to view the Discharge of Condition application](#)

[Click here to view conditions on original application - click on decision tab](#)

Should you wish to make any comments click on the link www.arun.gov.uk/planning and click into ?Enter Comment? or if this is not possible email your response to planning.responses@arun.gov.uk by **26th February 2025**.

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.

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

Yours sincerely

Hannah Kersley

Planning Case Officer- Arun District Council

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Email: hannah.kersley@arun.gov.uk