

Engineers Comments Regarding Surface Water Drainage

Application Reference:	AL/6/25/DOC	Reviewer Reference:	ADC/SB
Planning Officer:	Hannah Kersley	Date of Review:	21/02/2025
Site Name:	8 Autumn Gate Hook Lane Aldingbourne PO20 3TE		
Application Description:	Approval of details reserved by condition imposed under reference AL/75/24/HH relating to condition number 4 - surface water drainage scheme.		
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 4: 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. The same data is necessary to ensure that the potential for buoyancy has been adequately considered in attenuation designs.	Compliant

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.	Compliant
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.	Compliant
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.	Insufficient
	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	Insufficient – no updated drainage layout

	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 not be supported.	
Plans	Plan areas, depths and levels of drainage infrastructure must accurately correspond with the supporting calculations.	Not supplied
Water quality benefits.	An assessment of water quality is necessary to evidence that the proposed design provides adequate treatment of surface water.	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 cannot 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.

The following documents have been submitted to support the application with reference to surface water drainage:

- Groundwater Monitoring Letter Report Ref GWPR4064
- Ordinary Watercourse Land Drainage Consent number LDC/ARUN/2021/013
- 435050-202 Rev P2 – Drainage Layout 2 of 2 – **the approved plan is a later revision [P5]**
- 435050-203 Rev P4 – Drainage Details 1 of 2
- 435050-204 Rev P – Drainage Details 2 of 2
- 435050-205 Rev P2 – Ditch Sections
- 435050-206 Rev P1 – Headwall Details – **the approved plan is a later revision [P2]**
- SW Network (Surcharged Outfall) dated 06/10/2021
- SW Network (435050 – FLOW SW) dated 28/08/2021
- SuDS Maintenance & Management Plan ref TB/435050/eg dated 11 October 2021

The applicant has submitted the surface water drainage design and supporting information for the wider Imperial Homes development that 8 Autumn Gate forms part of. Whilst much of this data is useful, it needs a supporting statement, analysis and an updated layout to show how it may be used for the proposed extension to 8 Autumn Gate.

The applicant must demonstrate how they will drain surface water from the proposed extension without increasing flood risk. If they intend to connect to the existing system, then they must show this on a drainage layout and evidence that there is sufficient capacity in the system to receive the additional flow. This may be due to an allowance for urban creep, or due to spare capacity in the system.

Spare capacity may not be double counted for additional impermeable areas that are proposed to be added to the system by other sites.

A reduced **site-specific** version of our full surface water drainage design checklist is provided below. This has been edited to remove elements that are not applicable to this site, either due to the scale of the proposal or the method of disposal. The checklist is provided to assist the applicant and designer in preparing a revised design to meet our requirements. **It is applicable to 8 Autumn Gate only.**

- Items highlighted as ☐ must be provided prior to determination to overcome our objection.
- Additional comments or notes are provided by the reviewer **in bold**.
- If an item has been submitted this is checked: ☒

Our requirements and comments are elaborated upon or condensed within a separate comment tracker where necessary. If a comment tracker is provided a designer is encouraged to refer to this and respond to comments to aid further review. Please request a .docx version of this document to by email to land.drainage@arun.gov.uk if needed.

The full unedited surface water design checklist is available on our website at <https://www.arun.gov.uk/surfacewater/>. **If the design is amended following receipt of our consultation the designer may need to refer to the full checklist to ensure that the revised design meets our requirements.**

8 Autumn Gate Designer Checklist

Ground Investigation Results

Groundwater monitoring

- ☒ Plan showing location of monitoring points provided.
- ☒ Depths of holes detailed.
- ☒ Dates of observations and depth to groundwater recorded.
- ☒ Evidence of the strata within borehole or monitoring pits provided.

Requested to aid speed of assessment

- ☐ Plan showing the peak groundwater levels at each monitoring point in mAOD.
- ☐ Peak groundwater levels recorded in metres below ground level and mAOD.
- ☐ If in an area of possible tidal influence, provide a comparison of readings against tide times/levels.

Infiltration testing – not required due to high groundwater

Surface Water Drainage Statement

Disposal method (Select as appropriate)

- ☐ Rainwater reuse is proposed where possible.
- ☐ ~~Infiltration is proposed and maximised wherever possible.~~
- ☒ Restricted discharge to a water body is proposed where a full infiltration design is not possible.

Disposal method justification

- ☒ Infiltration has been adequately investigated, in winter, at appropriate and varying depths where appropriate, above peak recorded winter groundwater levels at the given location.
- ☒ Onsite and boundary, open and culverted water bodies are investigated (location, mapping, network, flow direction, ownership/responsibility, depth, and condition).
- ☐ Any relevant permissions or legal agreements from asset or landowners that are needed are identified and evidence of consents provided.

Requested to aid speed of assessment

- ☐ Any previous relevant correspondence or pre-application advice from the Local Planning Authority [LPA] or the Lead Local Flood Authority [LLFA] regarding the surface water drainage design is included with the statement.

Existing Site

Essential

- ☒ It is clear what the natural drainage characteristics of the site and hydraulically linked areas are.
- ☒ Natural flow paths are identified on a plan (where applicable).
- ☒ Existing site drainage features are investigated – condition, performance, and ownership.
- ☒ Any appropriate easements to watercourses or other infrastructure are investigated.

It is suggested that the above is achieved with the following, which may be combined where appropriate:

- ☒ An existing topographical plan.
- ☒ An existing site surface water drainage plan (where applicable).

Proposed Design

Essential

- ☒ Natural catchments are followed.
- ☐ The design is gravity based with no use of pumps.
- ☐ Natural systems that deliver specific hydrological function, such as watercourses or wetlands, are preserved.
- ☐ Where there is existing drainage infrastructure on the site it is clearly explained or illustrated what is being retained, upgraded, or removed.
- ☐ If the surface water drainage is designed to flood in the 1% Annual Exceedance Probability [AEP] + Climate Change Allowance [CCA] event, then the flood volume is contained safely on site without flooding any part of a building or utility plant susceptible to water or affecting safe access or egress.
- ☐ The design provides and evidences interception drainage and is able to capture and retain on site the first 5mm of the majority of all rainfall events.
- ☐ Water quality and treatment is adequately assessed – with an assessment appropriate for the scale and proposed use of the site.
- ☐ There are no clashes with other infrastructure.
- ☐ Self-cleansing velocities are achieved where pipes are proposed.
- ☐ The proposed discharge rate is explained and justified (for attenuation designs).
- ☐ Where there is a risk that the base of an attenuation feature may penetrate peak groundwater levels, additional mitigation measures to prevent groundwater ingress are incorporated into the design and construction method statement.
- ☐ Where there is a risk that the base of an attenuation feature may penetrate peak groundwater levels the effects of buoyancy have been considered in the design.
- ☐ A construction method statement for the SuDS system, appropriate to the scale of the development, is submitted. **Groundwater consideration only.**
- ☒ A maintenance plan for the SuDS system, appropriate to the scale of the development, is submitted. [Please refer to our SuDS Maintenance Checklist where this is stipulated by condition.]

Preferred

- ☐ Ground raising is avoided where possible.
- ☐ The drainage system is considered by and contributes to the biodiversity net gain statement (assessed by others).

Impermeable Area/Catchment Plan

Essential

- ☐ An impermeable area plan is provided showing all positively drained areas including open surface water storage plan areas.

Preferred

- ☐ Impermeable areas are shown in m² on the impermeable areas plan(s).
- ☐ Demarcated impermeable areas correspond with the distribution of those areas in the supporting calculations.

Surface Water Drainage Calculations

General

- ☐ The most recently applicable, or previously agreed FEH rainfall data is used.
- ☐ CV values for all events are set to 1. This includes summer, winter, design, and simulation events.
- ☐ The correct climate change allowances, appropriate for the full lifetime of the development, have been applied to all calculations.
- ☐ A 10% allowance for urban creep is applied to all residential roof areas. **TBC**
- ☐ 3.33% AEP + CCA (1 in 30 year) event calculations provided showing that the full surface water volume is contained within the designed system without flooding.
- ☐ 1% AEP + CCA (1 in 100 year) event calculations provided showing that the full surface water volume is contained safely on site, without flooding any part of a building or utility plant susceptible to water or affecting safe access or egress.

Attenuation and Restricted Discharge

- ☐ Greenfield run off rates are based upon the positively drained area of the site only.
- ☐ Discharge rates are restricted to QBAR or 2 l/s/ha, depending on whichever is higher, for all storms up to the 1% AEP + CCA event.
- ☐ Half drain times and available capacity in the drainage system for subsequent storms are considered.
- ☐ A surcharged outfall to a watercourse or sewer has been modelled. The surcharge level is the 1% AEP + CCA flood event for the receiving watercourse, or to the top of the bank if appropriate hydraulic modelling is not available.

Requested to aid assessment

- ☐ FEH22 point descriptors for the site are provided.

Drainage Plans and Specifications

Essential

Plans are provided showing:

- ☐ The proposed design within the proposed site layout. **Specific to the proposed extension**
- ☒ Existing and proposed levels.
- ☐ Exceedance flow management routes.
- ☒ Details of connections to watercourses and sewers.
- ☒ Maintenance access and any arisings storage and disposal arrangements.

These plans must be of sufficient detail that a reviewer can be confident that the design can be constructed without flood risk being increased on site or elsewhere.

Specifications are required for all materials used in the design. We suggest that this is best achieved and illustrated with site specific construction detail drawings. The combination of construction details, with plans and sections, ensure that the proposed standard of construction will facilitate adoption and maintenance by an appropriate body and have structural integrity.

The following checklist is designed to demonstrate the level of detail required:

Easements

- ☒ 3m easements are shown from the top of the bank of all ordinary watercourses, and from the edge of all culverted watercourses on all plans.
- ☒ Existing trees and their root protection zones are shown on any drainage layout.
- ☐ Proposed trees and appropriate easements are shown on any drainage layout.

Detail

- ☐ It can be clearly determined what a pipe's diameter, pipe materials, gradients, flow directions and invert levels are from the plans. **Specific to the proposed extension**
- ☐ It can be clearly determined what an inspection chamber or manhole's cover level, invert level, cover loading grade and sump depth (where applicable) are from the plans. **Specific to the proposed extension**
- ☐ All infiltration or attenuation features (including permeable paving) are clearly labelled with their dimensions, invert/base levels and cover levels. **Specific to the proposed extension**
- ☐ Control structures are labelled with discharge rates, hydraulic head, invert and cover levels and ideally model number. **Specific to the proposed extension**
- ☒ Potential flow routes off site are shown. The plan also includes proposed external ground levels, finished floor levels of buildings and designed slopes on all impermeable surfaces such as highways or car parks.
- ☒ Construction detail drawings are site specific. **May need additional – proposed extension specific**
- ☐ Construction detail drawings are provided for all components including but not limited to:
 - ☐ Attenuation structures
 - ☒ Manholes/inspection chambers
 - ☒ Catchpits/silt traps
 - ☒ Flow control devices
 - ☒ Permeable paving
 - ☒ Headwalls
 - ☒ Pipe bed and surround
 - ☐ Pipe to pipe connections
 - ☐ Water butts or alternative methods of water reuse – also to be shown on plans.

The following items are requested to aid assessment or confidence in construction:

- ☐ Where features have a non-uniform plan area, a plan showing the coordinates of the perimeter is provided.
- ☐ All drainage infrastructure is labelled to correspond with the supporting calculations.

Other

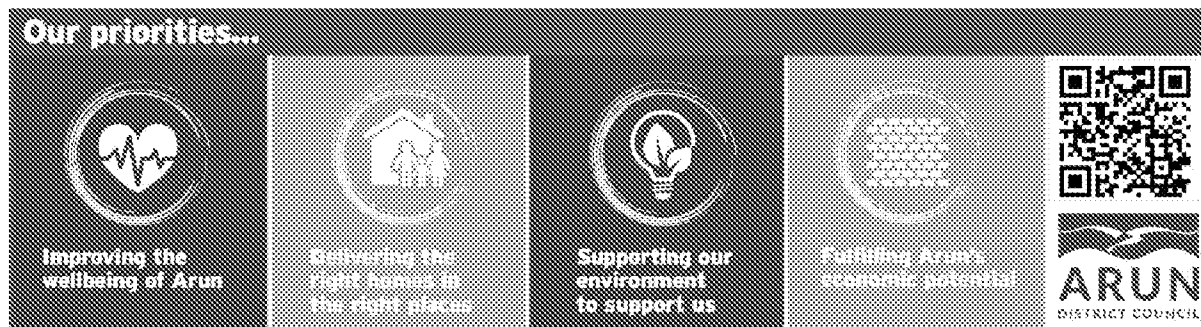
- ☐ Open feature planting specification is provided (to be assessed by others).

This checklist is designed to aid an applicant with their submission. The list is not exhaustive, and our engineers may request additional information to enable them to review a proposal to their satisfaction.

The checklist may also request information that an applicant does not feel is relevant to their submission. In this case the applicant can provide an explanation as to why they have omitted certain information in their drainage statement. However, the appraising engineer reserves the right to request this information if they believe it is necessary for their review.

Arun District Council, Civic Centre, Maltravers Rd
Littlehampton, West Sussex, BN17 5LF
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<https://www1.arun.gov.uk/planning-application-finder>



From: Sarah Burrow <Sarah.Burrow@arun.gov.uk>

Sent: 21 February 2025 14:55

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

Cc: Hannah Kersley <Hannah.Kersley@arun.gov.uk>; Paul Cann <Paul.Cann@arun.gov.uk>

Subject: RE: Planning Consultation on: AL/6/25/DOC

Hi Hannah,

Find my consultation – an objection – attached.

Kind regards

Sarah Burrow
Flood Risk and Drainage Engineer, Coastal Engineers and Flood Prevention

Usual working pattern:
Monday – Flexible between 8am and 6pm
Tuesday and Wednesday – 9:15am to 2:45pm
Thursday – 9am to 6pm
Friday – Flexible between 8am and 6pm

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Littlehampton, West Sussex, BN17 5LF
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From: Planning.Responses <Planning.Responses@arun.gov.uk>
Sent: 29 January 2025 11:05
To: Land Drainage <Land.Drainage@arun.gov.uk>
Subject: Planning Consultation on: AL/6/25/DOC

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

Application No: AL/6/25/DOC
Registered: 27th January 2025
Site Address: 8 Autumn Gate Hook Lane Aldingbourne PO20 3TE
Description of Works: Approval of details reserved by condition imposed under reference AL/75/24/HH relating to condition number 4 - surface water drainage scheme.

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 **12th 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

Telephone: 01903 737856

Email: hannah.kersley@arun.gov.uk

PLCOND00 (ODS) 2020