

Engineers Comments Regarding Surface Water Drainage

Application Reference:	P/110/25/DOC	Reviewer Reference:	ADC/Ext4
Planning Officer:	Simon Davis	Date of Review:	13/11/2025
Site Name:	Land West of Pagham Road Pagham Road Pagham PO21 3PY		
Application Description:	Approval of details reserved by condition imposed under reference P/178/21/OUT (APP/C3810/W/22/3302023) relating to condition number 11 - foul drainage system, condition number 12 - surface water drainage, condition number 13 - discharge rates of watercourses and condition number 14 - management and maintenance of surface water drainage system. (See P/109/25/DOC for condition number 17 - contamination, condition number 22 - internal noise level, condition number 24 - broadband provision, condition number 26 - bus stop information screens and condition number 28 - acoustic.).		
Assessment Number:	1 of 2		

Policy and Guidance Information	
Arun District Council Surface Water Drainage Guidance (including design checklists) - 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/ Arun District Council Land Drainage Byelaws - https://www.arun.gov.uk/byelaws/ Arun District Council surface water pre-commencement conditions - https://www.arun.gov.uk/planning-pre-commencement-conditions The National Standards for 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	Condition 12: Objection Condition 13: Objection Condition 14: Objection
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References
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' [NsTS] 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. The NsTS have been superseded by the National Standards for Sustainable Drainage Systems [NSfS] from 19 June 2025.

This consultation has been primarily informed by the NSfS and The SuDS Manual.

Summary

This summary highlights if critical items aligning with each of the standards have been met. Critical items are highlighted in **bold** on our surface water drainage design checklist (linked above). A failure to address these will result in an **objection** to any application to discharge a surface water drainage design condition.

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, or the provision of other important infrastructure to satisfy the NSfS set out below.

All relevant items on the checklist are expected to be met before an application to discharge an application to discharge a SuDS design condition is supported.

Our response and requirements are elaborated upon or condensed within an attached 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.

Standard	Assessment	Response
1. Runoff destination	Compliant	No objection
2. Interception drainage	Insufficient	Objection
3. Extreme Rainfall and Flooding	Insufficient	Objection
4. Water Quality	Insufficient	Objection
5. Amenity	Compliant	No objection
6. Biodiversity	Compliant	No objection
7. Construction, operation, maintenance, decommissioning and structural integrity	Insufficient	Objection

Reviewed Plans

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

- Phase I Review & Phase II Geo-Environmental Assessment April 2023
- Management Company Procedure Rev C Sept 25
- Discharge of conditions 11,12,13 & 14 (Drainage) April 2025 6th Issue (Part 1)
- Discharge of conditions 11,12,13 & 14 (Drainage) April 2025 6th Issue (Part 2)
- Discharge of conditions 11,12,13 & 14 (Drainage) April 2025 6th Issue (Part 3)

Condition wording

Condition 12 is worded as follows:

No development shall commence, other than works of site 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 design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Design considerations must take full account of the 'Supplementary Requirements for Surface Water Drainage Proposals' produced by Arun District Council and are an overriding factor in terms of requirements. Winter groundwater monitoring to establish highest annual ground water levels and winter percolation testing to BRE 365, or similar approved, will be required to support the design of any infiltration drainage. No dwelling shall be occupied until the complete surface water drainage system serving the property has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.

Condition 13 is worded as follows:

No development shall commence until details have been submitted to and approved in writing by the local planning authority for any proposals to discharge flows to watercourses, or for the culverting, diversion, infilling or obstruction of any watercourse on or adjacent to the site. Any discharge to a watercourse must be at a rate no greater than the predevelopment run-off values and in accordance with current policies. No construction is permitted that will restrict current and future landowners from undertaking their riparian maintenance responsibilities in respect to any watercourse or culvert on or adjacent to the site.

Condition 14 is worded as follows:

No development shall commence until full details of the maintenance and management of the surface water drainage system is set out in a sitespecific maintenance manual and submitted to, and approved in writing, by the local planning authority. The manual is to include details of financial management and arrangements for the replacement of major components at the end of the manufacturer's recommended design life. Upon completed construction of the surface water drainage system, the owner or management company shall strictly adhere to and implement the recommendations contained within the manual.

Consultation comments to the planning officer

1. Please see the attached comment tracker for detailed comments relating to the submission.
2. **The information provided in support of condition 12 ,13 and is only strategy or preliminary design information and does not provide detailed proposal for the onsite drainage as well as outfall details to the existing watercourses. The current information provided does not provide sufficient detail to allow and assessment and ensure that the proposals will not be detrimental to flood risk both on or offsite.**

Drainage Impact on Other Planning Matters

This application has been assessed with regards to surface water drainage design only, together with land drainage aspects if deemed necessary.

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, River Arun internal drainage board, groundwater source protection zones)
- ☐ Southern Water (foul drainage and surface water disposal to public sewer network/groundwater source protection zones)
- ☐ Portsmouth Water (groundwater source protection zones)
- ☒ Lead local flood authority (all other sources of flooding and ordinary watercourses)
- ☐ Other: Specify
- ☐ None

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Summary and Recommendation:

Condition 12: **Objection**
 Condition 13: **Objection**
 Condition 14: **Objection**

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:	13/11/2025				
Condition Number: 12 surface water drainage					
Comment Number					
1.	Whilst we note in Appendix M of the Report , that the designers have included a completed copy of the Arun District Council Checklist, there are several key items which have not been included in the submission. In general the information submitted is of a planning strategy level of detail and not detailed design which is required to address the key elements of this condition.	This is noted, and the specific comments are responded to below.			
2.	Details of the downstream nearby watercourse doesn't appear to have been fully investigated. Please provide details on flow direction,	The watercourse flows in an northerly direction where it flows into an existing culvert as noted on the Topographic Survey. From here, the water flows west to the			

	conditions, existing culverts etc... of the watercourse immediate downstream of the proposed point of discharge	existing pond and ultimately to the Pagham Rife. The ditch levels are contained within the Topographic Survey in Appendix C of the Technical Note provided. Paragraphs 2.8 and 2.9, and Figures 2.2, 2.3 and 2.4 in the updated Technical Note illustrate the existing drainage arrangement. Paragraph 2.9 also provides a commitment to clearing the ditches and culverts within Bargate's control (within ecological and arboriculture constraints) prior to starting on site.			
3.	Please provide further details on the contributing area catchment plan. Specifically provide a breakdown on which areas enter in specific pipes/manholes and making clear references to the pipe numbers/manholes on the plans and supporting calculations.	This is now included in Appendix G within the updated Technical Note.			
4.	Please provide details on how the first 5mm of rainfall is intercepted for the majority of rainfall events.	Firstly, it should be noted that there are several notable constraints at this site. Namely the existing Southern Water rising main running through the centre of the site, and the high groundwater levels which preclude the use of infiltration drainage, and require drainage features to be lined to prevent groundwater ingress.			

		The design proposals include the following: <u>Permeable Paving</u> All roads and driveways that can be permeable paving / porous asphalt have been proposed as such. The only roads that are not proposed as permeable paving / porous asphalt are the roads with the existing Southern Water Rising Main beneath them. As outlined in the National SuDS Standards (released 30th July 2025) permeable paved surfaces whether lined or unlined meet the interception drainage requirement. Where they drain additional surfaces (as they do in this instance by draining the plots) additional downstream interception features are required (details provided below). <u>Conveyance Swale</u> The main spine road through the centre of the site drains to an under drained swale, which also collects the water from many of the porous surfaces. The longitudinal gradient of the conveyance swale is <1in100 and with the underdrain has 500mm of suitable base material. Therefore, the conveyance swale meets the requirement for interception drainage as outlined in National SuDS Standards whether lined or unlined. <u>Detention Basins</u> Finally, there are 2no detention basins that store water prior to discharging to the			
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		existing ditch network. These are lined, however there will be some losses through evaporation and into the soil beneath. <u>Summary</u> In summary, the porous paving, under drained swales and detention basins proposed extensively throughout the development proposals provide the interception drainage in accordance with the National SuDS standards.			
5.	The peak discharge from the site is proposed to be at the Qbar rate which the designers have based on the scheme at outline stage. The site layout and contributing area has changed since the outline scheme and the updated greenfield run-off calculations need to be provided reflective of the proposed schemes contributing area.	In the Flood Risk Assessment that accompanied the Outline Planning Application, the QBAR greenfield runoff rates were calculated based on the following (refer to Page 27 of Appendix N in the Technical Note): Site Area = 4.91ha Developable Area = 2.95ha Impermeable Area = 55% (1.63 hectares+10% urban creep = 1.78 hectares) It should also be noted that the proposed calculations undertaken at the Outline Planning Stage included a climate change allowance of 40% The greenfield runoff rates were therefore based on an impermeable area of 1.78 hectares, which provided the 5.08l/s peak discharge rate. The total hardstanding area when the Reserved Matters Layout is measured accurately is 2.18 hectares.			

		With the above in mind using the measured hardstanding areas would increase the flow rate by over 20%. These parameters were discussed with the Client Team, and it was felt that as this is an Appeal Site, it was in the spirit of the appeal to continue with the previously agreed flow rates (20% lower than by recalculating) and the most up to date climate change allowances (45% rather than 40%), which provides a further benefit over what was previously agreed.			
6.	Please provide buoyancy calculations to demonstrate that the proposed mitigation measures in the details provided are adequate to counter the potential uplift forces from the shallow groundwater	The filter drains proposed beneath the attenuation basin liners intercept and remove groundwater beneath the liner preventing it building up and causing hydrostatic pressure / uplift. The groundwater is therefore removed and there is no hydrostatic pressure / uplift to the liner.			
7.	An appropriate easement which is clear of proposed tree planting should be provided around all SuDS basins. Justification should be provided for the proposed easement and maintenance plans	A 3m easement is provided alongside the existing and proposed ditches and basins. Some planting is proposed within the 3m easements in order to meet the landscaping requirements of ADC, however this planting has been proposed in such a way that access is available to the features (ditches /			

	submitted if this is less than 3m. A 3m easement must be provided along the existing watercourse within the site. The current proposals appear to have proposed planting within the 3m maintenance easement.	basins) in adjacent areas to ensure maintenance of the entirety of the ditch, pipes and basins is achievable at all times. Bargate are a registered "Homes for Nature" housebuilder and take their responsibilities on providing biodiversity, amenity and appropriate maintenance very seriously, so we would hope that this provides confidence that the landscaping and SuDS features will be appropriately maintained in perpetuity.			
8.	Existing site sections, proposed site sections, drainage long sections, manhole schedules appear to be missing from the submission	Proposed site sections (including existing ground levels), drainage long sections and manhole schedules are now provided in Appendix S within the updated Technical Note.			
9.	The current drainage layout only shows the main drainage within the road, additional information is required including the full detailed layout of the proposed drainage including all surface water serving the dwellings, driveways, roads etc...	The plot drainage plans are now provided in Appendix H within the updated Technical Note.			
10.	Please provide the detailed levels designs.	The detailed levels designs are now provided in Appendix T within the updated Technical Note.			
11.	Please provide the formation levels for the				

	permeable paving on the layout	The invert level of the underdrain at the formation level of the permeable paving is provided on the main drainage drawings in Appendix H of the updated Technical Note.			
12.	The drainage details need to be provided at construction detail level. The current details provided are not specific enough and need to provide further information conducive to a construction level of detail	The construction drainage details are now provided in Appendix K of the updated Technical Note.			
13.	Please provide an exceedance flow layout based on the detailed levels design	The exceedance layout plan based on the detailed levels is now provided in Appendix O within the updated Technical Note.			
14.	Please provide proposed planting plans along with existing tree protection plans to ensure that the proposed drainage does not conflict with existing or proposed trees	The proposed planting plans and the existing tree protection plans are now provided in Appendix U within the updated Technical Note.			
Condition Number: 13 discharge rates of watercourses					
Comment Number					
1.	Please provide details of Ordinary Watercourse Consent in relation to the proposed new headwall connection to the existing ditch.	The OWC application will be submitted to WSCC in the coming weeks, and details will be provided at that time. This is covered in Paragraph 4.9 of the Technical Note.			

2.	Please provide updated calculations and discharge rates in relation to the Qbar which should be calculated to the actual contributing impermeable areas	In the Flood Risk Assessment that accompanied the Outline Planning Application, the QBAR greenfield runoff rates were calculated based on the following (refer to Page 27 of Appendix N in the Technical Note): Site Area = 4.91ha Developable Area = 2.95ha Impermeable Area = 55% (1.63 hectares+10% urban creep = 1.78 hectares) It should also be noted that the proposed calculations undertaken at the Outline Planning Stage included a climate change allowance of 40% The greenfield runoff rates were therefore based on an impermeable area of 1.78 hectares, which provided the 5.08l/s peak discharge rate. The total hardstanding area when the Reserved Matters Layout is measured accurately is 2.18 hectares. With the above in mind using the measured hardstanding areas would increase the flow rate by over 20%. These parameters were discussed with the Client Team, and it was felt that as this is an Appeal Site, it was in the spirit of the appeal to continue with the previously agreed flow rates (20% lower than by recalculating) and			
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		the most up to date climate change allowances (45% rather than 40%), which provides a further benefit over what was previously agreed.			
Condition Number: 14 management and maintenance of surface water drainage system					
Comment Number					
1.	Please refer to guidance on the Arun District Council Website on the minimum required details that should be provided within the supporting Management and Maintenance Plan	An updated Management and Maintenance Plan is now provided in accordance with the ADC website requirements, and is included in Appendix L.			
2.	The maintenance plan will required the details associated with condition 12 to be approved in order for these to be included in the finalised Maintenance Plan	We can confirm the Management and Maintenance Plan reflects the updated information.			

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.