

**From:** Laura Gibbons  
**Sent:** 20 December 2018 10:58  
**To:** Planning.Responses  
**Cc:** Anita Gardner  
**Subject:** RE: Planning Consultation on: LU/328/18/PL

Engineers Comments Regarding Flood Risk and Surface Water Drainage

The site is within flood zone 3, the environment agency were consulted on the previous application where a condition regarding minimum required finished floor levels was requested. I presume this will be applied to this application. The applicant has also stated that the applicant will register with the flood warning service and form a flood plan.

Please apply condition **ENGD2B**.

Soakaways must be investigated for surface water disposal.

Infiltration rates for soakage structures are to be based on percolation tests undertaken in the winter period and at the location and depth of the proposed structures. The percolation tests must be carried out in accordance with BRE 365, CIRIA R156 or a similar approved method and cater for the 1 in 10 year storm between the invert of the entry pipe to the soakaway, and the base of the structure. It must also have provision to ensure that there is capacity in the system to contain below ground level the 1 in 100 year event plus 40% on stored volumes, as an allowance for climate change. Adequate freeboard must be provided between the base of the soakaway structure and the highest recorded annual groundwater level identified in that location.

Any SuDS or soakaway design must include adequate groundwater monitoring data to determine the highest winter groundwater table in support of the design. The applicant is advised to discuss the extent of groundwater monitoring with the Council's Engineers. Supplementary guidance notes are also enclosed for information.

Regards,

Laura Gibbons, MEng, GMICE  
Engineer (Drainage & Coastal)

Laura Gibbons | Engineer (Drainage & Coastal), Engineering Services, Arun District Council | Location: First Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF

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Save the environment - think before you print.

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**From:** planning.responses@arun.gov.uk [mailto:planning.responses@arun.gov.uk]  
**Sent:** 21 November 2018 15:04  
**To:** Land Drainage  
**Subject:** Planning Consultation on: LU/328/18/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** LU/328/18/PL  
**NO:**

**Registered:** 16th November  
2018

**Site Address:** 90/91 South Terrace Littlehampton BN17 5LJ

**Grid Reference:** 502860 101608

**Description of Works:** Change of use from existing leisure use (except lower ground floor which will retain leisure use) to 8 No flats to include extension to form new first floor, alterations to roof space including creation of dormer windows & installation of roof lights (amendment to LU/197/17/PL)

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The Council have received the above application. I shall be pleased to receive any observations you may wish to make.

[Click here to view the application details](#)

**Should you have any comments to make, these should be sent by replying to this email by 20-DEC-18.**

You can also monitor the progress of this application through the Council web site:  
[www.arun.gov.uk/planning](http://www.arun.gov.uk/planning)

**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.

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 as can the leaflet which deals with material planning considerations.

Should the application go to appeal the Planning Inspectorate will publish any

comments made to the Council on their website:  
[www.planningportal.gov.uk/planning/appeals/](http://www.planningportal.gov.uk/planning/appeals/) but they will protect personal details.  
The officer dealing with this application is Mrs A Gardner who can be contacted on  
telephone number 01903 737529.

Regards  
Planning Officer

consultee\_email

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## Supplementary Requirements for Surface Water Drainage Proposals

Any proposed surface water scheme must consider sustainable drainage principles.

### **SuDS Selection**

The following destinations must be considered for surface runoff in order of preference:

1. Discharge into the ground (infiltration);
2. Controlled discharge to a surface water body;
3. Controlled discharge to a surface water sewer.

Surface water must not be discharged into the foul sewer system. Infiltration structures include soakaways, basins, swales and permeable paving. Discharge to surface water bodies and surface water sewers must be restricted to an agreed rate.

*SuDS selection hierarchy based on:*

*CIRIA C753 - The SuDS Manual*

*BS8582:2013 – Code of Practice for Surface Water Management for Development Sites*

*Approved Document H of the Building Regulations*

*For additional guidance, please refer to the 'West Sussex County Council (Lead Local Flood Authority) Policy For The Management of Surface Water'*

[https://www.westsussex.gov.uk/media/12230/ws\\_lfa\\_policy\\_for\\_management\\_of\\_surface\\_water.pdf](https://www.westsussex.gov.uk/media/12230/ws_lfa_policy_for_management_of_surface_water.pdf)

### **Infiltration Drainage Design**

Infiltration rates for soakage structures are to be based on percolation tests undertaken in the winter period at the location and depth of the proposed structures. The percolation tests must be carried out in accordance with BRE 365, CIRIA R156 or a similar approved method, and cater for the 1 in 10 year storm event between the invert of the lowest entry pipe into the infiltration structure and the base. For the purpose of design, the percolation rate must be applied to the sides of the infiltration structure only and the rate for the base must be zero. This does not apply to infiltration basins or permeable pavements, whereby the percolation rate is applied to the base only. There must be provision to ensure that there is capacity in the system to contain the 1 in 100 year storm event plus 40% on stored volumes, as an allowance for climate change. The infiltration structure should also drain 50% of its total volume in 24 hours or less for both the 1 in 10 and 1 in 100 year (plus 40%) storm events, in order to provide spare capacity for subsequent storms.

Any infiltration drainage design must include adequate winter groundwater monitoring data to determine the highest winter groundwater table. Residential developments in excess of five properties will require ground water monitoring to be carried out between October and

March inclusive. The extent of monitoring required for smaller developments will be subject to agreement with the Council's Engineers.

Adequate freeboard must be provided between the base of the soakaway structure and the highest recorded groundwater level identified in that location.

### **Restricted Discharge**

Discharge to a watercourse or surface water sewer must be restricted to the estimated mean greenfield runoff rate ( $Q_{bar}$ ) by means of a controlled outflow (or restricted to existing runoff rates for brownfield sites). This can be derived from IH124 or a similar approved method. Any storage design must be submitted with groundwater monitoring data where applicable to ensure there will be no detrimental effect on the structure or storage. Storage areas are preferred to be in an 'open' form such as ponds, rather than underground tanks.

### **Flow Exceedance Routes**

The drainage design should show flow routes through the proposed development, demonstrating where surface water will be conveyed for three types of flow:

#### **1. Low flow routes**

Regular flow from source control features such as permeable pavements should travel in low flow channels through the development in a controlled way contributing to landscape quality.

#### **2. Overflows**

In the event of local blockages or surcharge a simple overflow arrangement should allow water to bypass the obstruction and return to the management train sequence until conditions return to normal.

#### **3. Exceedance routes**

When SuDS are overwhelmed by exceptional rainfall, then exceedance routes are required to protect people and property. These provide unobstructed overland flow routes from the development and should be considered for all drainage schemes. Exceedance routes should also be protected from future changes in land use.

### **Culverting a Watercourse**

Culverting (piping) a watercourse is not advised unless there is no alternative. The resulting reduction in storage volume, flow capacity and habitat potential would be unacceptable. Culverted watercourses are also more difficult to maintain due to the limited accessibility.

Land Drainage Consent must be sought from the Lead Local Flood Authority (West Sussex County Council), or its agent (Arun District Council – [land.drainage@arun.gov.uk](mailto:land.drainage@arun.gov.uk)), prior to starting any works (temporary or permanent) that affect the flow of water in the watercourse. Such works may include culverting, channel diversion, discharge of flows, connections, headwalls and the installation of trash screens.

Please also refer to the 'culvert policy' and consent application form available on the West Sussex County Council website; <https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/dealing-with-flooding/flood-risk-management/ordinary-watercourse-land-drainage-consent/>

The development layout must take account of any existing watercourses (open or culverted) to ensure that future access for maintenance is not restricted.

*See also:*

*Land Drainage Act 1991 (amended 1994)*

### **Maintenance and Management**

Ditches and watercourses (including culverts) should retain a three metre easement with access that allows for its future maintenance.

Details of the maintenance and management of the SuDS system are to be set out in writing in a site specific maintenance manual. This manual shall include details of the financial management and arrangements for the replacement of components at the end of the manufacturers recommended design life. This document is then to be submitted as part of the planning process.

### **References**

The Building Regulations 2000  
Drainage and waste disposal  
Approved document H  
ISBN: 1-859462-08-1

Building Research Establishment,  
Soakaway Design – Digest 365 (BRE 365)  
ISBN: 1 86081 604 5, 1991

Centre for Ecology and Hydrology  
Flood Estimation for Small Catchments - IH Report 124  
Marshall, D.C.W. & Bayliss, A.C.  
ISBN: 0948540621, 1994

CIRIA  
C697 The SUDs Manual  
Woods-Ballard, B.; Kellagher, R. et al  
ISBN: 978-0-86017-697-8, 2007

CIRIA  
R156 Infiltration Drainage – Manual of Good Practice  
Bettess, R.  
ISBN: 0 86017 457 3

British Standards Institution  
BS8582:2013 – Code of Practice for Surface Water Management for Development Sites  
ISBN: 978 0 580 76700 5



## Surface Water Drainage Proposal Checklist

### Foreword

Before completing this checklist you are advised to read "Arun/Chichester District Council Supplementary Requirements for Surface Water Drainage Proposals".

The Surface Water Drainage Proposals Checklist is designed to clearly outline Arun/Chichester District Council's expectations and requirements for Surface Water Drainage Proposals and to expedite their review. This document should be used when completing Discharge of Conditions Applications or if the applicant wishes to avoid pre-commencement conditions relating to surface water drainage.

The Town and Country Planning Regulations now require pre-commencement conditions to have the prior agreement of the applicant regarding their wording and use. If an applicant wishes to avoid surface water drainage pre-commencement conditions they will need to submit detailed surface water drainage proposals in line with the Surface Water Drainage Proposal Checklist.

The below details are required to enable Arun/Chichester District Council to examine if proposals follow the hierarchy for sustainable drainage and if the design will adequately drain the site.

*N.B.* It will be difficult for Arun/Chichester District Council to undertake an appropriate and therefore timely assessment of your application if you answer "no" to any of the questions below, or if you fail to provide any of the information requested.

### Checklist

|                                                                                                          |                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Winter groundwater monitoring results included</b>                                                    | Y/N                                                                                                                                                     |
| <b>Winter infiltration test results included</b>                                                         | Y/N                                                                                                                                                     |
| <b>Period of winter groundwater monitoring</b>                                                           |                                                                                                                                                         |
| <b>Maximum recorded groundwater level (AOD)</b>                                                          |                                                                                                                                                         |
| <b>Date of infiltration testing</b>                                                                      |                                                                                                                                                         |
| <b>Depth of infiltration testing</b>                                                                     |                                                                                                                                                         |
| <b>Minimum infiltration rate recorded<br/>(At location of infiltrating structure)</b>                    |                                                                                                                                                         |
| <b>Plan showing the location of winter groundwater monitoring and infiltration testing included</b>      | Y/N                                                                                                                                                     |
| <b>Method of surface water disposal proposed<br/>(Delete as appropriate)</b>                             | Infiltration / Attenuation with discharge to watercourse / Attenuation with discharge to surface water sewer / Attenuation with discharge to foul sewer |
| <b>If infiltration is <u>not</u> to be used: Justification supplied</b>                                  | Y/N                                                                                                                                                     |
| <b>If infiltration is proposed: half drain time for 10 year event + climate change allowance (hours)</b> |                                                                                                                                                         |

|                                                                                                                                                                                                         |                    |      |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------|-----|
| <b>If infiltration is proposed: half drain time for 100 year event + climate change allowance (hours)</b>                                                                                               |                    |      |     |
| <b>If infiltration is proposed: lowest base level of infiltrating structure</b>                                                                                                                         |                    |      |     |
| <b>If attenuation is proposed: calculations of pre-development runoff rates included *</b>                                                                                                              | Y/N                | Rate | l/s |
| <b>If attenuation is proposed: is proposed discharge rate less than or equal to pre-development rate?*</b>                                                                                              | Y/N                | Rate | l/s |
| <b>Calculations included demonstrating that the 1 in 100 year plus climate change event can be accommodated on site**</b>                                                                               | Y/N                |      |     |
| <b>If proposing an impermeable lined attenuation feature/s, calculations included demonstrating that resistance to floatation (due to groundwater levels) is achieved and catered for in the design</b> | Y/N/Not applicable |      |     |
| <b>If alterations or discharge to an ordinary watercourse is proposed: has Ordinary Watercourse Land Drainage Consent been sought?</b>                                                                  | Y/N                |      |     |
| <b>Drainage layout plans included***</b>                                                                                                                                                                | Y/N                |      |     |
| <b>Construction detail plans included****</b>                                                                                                                                                           | Y/N                |      |     |
| <b>Exceedance flow route plans included (Not required for &lt;5 properties)</b>                                                                                                                         | Y/N/Not applicable |      |     |

\*If developing brownfield sites, please provide fully detailed plans of the existing surface water drainage arrangements on site, including impermeable areas, gullies, outfalls, pipes & diameters, manholes, etc.

\*\*If infiltration is proposed the following factor of safety should be applied to calculations (in accordance with CIRIA R156/ CIRIA C609)

| Size of Area to be Drained              | Consequences of failure    |         |                                                     |         |                                             |         |
|-----------------------------------------|----------------------------|---------|-----------------------------------------------------|---------|---------------------------------------------|---------|
|                                         | No damage or inconvenience |         | Minor inconvenience, e.g. surface water on car park |         | Damage to buildings or structures or roads. |         |
|                                         | Cv=1.0                     | Cv=0.75 | Cv=1.0                                              | Cv=0.75 | Cv=1.0                                      | Cv=0.75 |
| <100 m <sup>2</sup>                     | 1.5                        | 2       | 2                                                   | 3       | 10                                          | 13      |
| 100m <sup>2</sup> to 1000m <sup>2</sup> | 1.5                        | 2       | 3                                                   | 4       | 10                                          | 13      |
| >1000m <sup>2</sup>                     | 1.5                        | 2       | 5                                                   | 6.5     | 10                                          | 13      |



\*\*\*Please note that drainage layout plans should include:

- All surface water drainage pipes labelled with; diameters, pipe materials, falls and invert levels.
- All infiltrating and attenuating structures (including permeable paving) labelled with; dimensions, invert and cover levels.
- All manholes labelled with; cover levels, invert levels, cover types detailed.
- All silt traps clearly labelled with sump depths.
- Control structures with outflow rates and invert levels.
- Proposed/existing levels of any areas subject to ground raising, together with suitable measures/detailed drawings for the associated managing of surface water runoff. Please note that ground raising should be avoided unless there are exceptional circumstances.

\*\*\*\*If your proposed drainage scheme includes any of the following elements site specific construction detail plans should be supplied: pipe bed and surround; infiltrating structures; attenuating structures; manholes; catchpits/silt traps; control devices; permeable paving; headwalls.