

**From:** Laura Gibbons <Laura.Gibbons@arun.gov.uk>  
**Sent:** 07 October 2019 16:15  
**To:** Planning.Responses <Planning.Responses@arun.gov.uk>  
**Cc:** Michael Eastham <Michael.Eastham@arun.gov.uk>  
**Subject:** RE: Planning Consultation on BN/85/19/DOC

Engineers Comments Regarding Condition 6

1. The details submitted include proposals to attenuate rather than use infiltration. The infiltration rates observed were not low enough to justify this stance. It is also suspected that infiltration at shallower depths may yield better infiltration rates. Please can the applicant complete winter infiltration testing in accordance with BRE365 at shallower depths.
2. No groundwater monitoring results have been provided. Please can the applicant provide winter groundwater monitoring results. These will be required, even if an infiltration solution is found not to be viable to ensure that the risk of flotation is adequately taken account of in design.
3. If it is found that attenuation is proposed we will require discharge rates to be restricted to 1 year greenfield rates for the impermeable areas, and not the total site area. The applicant should also note that we allow discharges down to 2l/s and not 5l/s.
4. The applicant may need to find additional storage volume if attenuation is found to be required, further permeable paving may provide some of this additional storage.
5. Site specific construction details must be provided for all of the key elements of the design. The applicant should refer to our checklist (attached for further information on these).
6. The proposed invert level of any outfalls must clearly be shown on plan with hard and soft ditch bed levels also provided.
7. The proposed attenuation basin has inadequate easement around it and to the watercourse. 3m easement must be provided around the attenuation basin and to the watercourse.
8. Proposed side slopes of basins must be stated on the layout drawing and construction detail drawing.
9. Finish and formation levels of permeable paving must be clearly stated on plan.

I would recommend that the applicant completes our checklist and submits this along with the further information required.

Engineers Comments Regarding Condition 7

Further investigations into infiltration potential must be completed prior to the final agreement of discharge rates to watercourse. Ordinary watercourse land drainage consent must be sought for any proposals to discharge to watercourse.

Engineers Comments Regarding Condition 8

It would not be appropriate to review the adequacy of the SuDS maintenance manual prior to the agreement of the surface water drainage proposals.

Engineers Comments Regarding Condition 9

Insufficient easement to watercourse is currently being provided. 3m easement from top of bank of watercourse to any structure which will restrict access must be provided.

Regards,

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

Laura Gibbons | Engineer (Drainage & Coastal), Engineering Services, Arun District Council | Location: First Floor, Arun Civic Centre,  
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Visit Arun's web site at <http://www.arun.gov.uk/> and [www.chichester.gov.uk](http://www.chichester.gov.uk)



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**From:** [planning.responses@arun.gov.uk](mailto:planning.responses@arun.gov.uk) <[planning.responses@arun.gov.uk](mailto:planning.responses@arun.gov.uk)>

**Sent:** 23 September 2019 16:05

**To:** Land Drainage <[Land.Drainage@arun.gov.uk](mailto:Land.Drainage@arun.gov.uk)>

**Subject:** Planning Consultation on BN/85/19/DOC

To: **Engineers (Drainage)**

## NOTIFICATION FROM ARUN DISTRICT COUNCIL

### TOWN AND COUNTRY PLANNING ACT 1990

**APPLICATION NO:** BN/85/19/DOC

**Registered:** 19-SEP-19

**Site Address:** Land Rear of Lillies Yapton Road Barnham PO22 0AY

**Description of Works:** Approval of details reserved by condition imposed under ref BN/32/15/OUT relating to Condition Nos 6 - proposed surface water drainage, 7 - discharge of any flows to watercourses, 8 - SUDs system, 9 - future access & maintenance of any watercourse or culvert, 10 - surface water drainage, 11 - rising main & foul sewer and 15 - foul drainage system.

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 have any comments to make, these should be sent **by replying to this email** by 7th October 2019.

[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 officer dealing with this application is Michael Eastham who can be contacted on telephone number 01903 737772.

Thanking you in anticipation

Planning Case Officer  
Arun District Council

post\_con\_email

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## Surface Water Drainage Proposal Checklist

This 'Surface Water Drainage Proposals Checklist' has been designed to clearly define Arun District Council's and Chichester District Council's expectations and requirements for any surface water drainage proposals, submitted for appraisal by the council's Engineers, during the planning process.

Please be aware that it is in your interest to provide all of the requested information, as this will allow the council's Engineers to quickly and efficiently review your proposals. The omission of any requested information may lead to delays in the planning process.

This document will be of help to any applicant, or drainage consultant, preparing to submit a 'Discharge of Conditions Application' relating to surface water drainage conditions. Alternatively, it can also be used earlier in the planning process, 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. Therefore, if you wish to avoid pre-commencement conditions, in relation to surface water drainage, you will need to submit proposals that provide the information requested in this checklist and also align with the requirements of the following documents:

'Supplementary Requirements for Surface Water Drainage Proposals'. (Arun DC)

'Supplementary Requirements for Surface Water Drainage Proposals'. (Chichester DC)

By submitting all of the information requested by this checklist you will enable the council's Engineers to determine whether your proposals follow the hierarchy for sustainable drainage and will adequately drain the site.

Please be aware that it will be difficult for the council's Engineers to undertake a timely assessment of your application if you fail to provide any of the information requested.



## Surface Water Drainage Proposal Checklist

| Ground Investigation Results                                                                 |                   |                          |    |                          |
|----------------------------------------------------------------------------------------------|-------------------|--------------------------|----|--------------------------|
| Results Required                                                                             | Results Provided? |                          |    |                          |
| Winter groundwater monitoring results <small>(Please refer to guidance note 1 below)</small> | Yes               | <input type="checkbox"/> | No | <input type="checkbox"/> |
| Period of winter groundwater monitoring <small>Note 1</small>                                | From              | DD/MM/YYYY               |    |                          |
|                                                                                              | To                | DD/MM/YYYY               |    |                          |
| Maximum recorded groundwater level                                                           | mAOD<br>mBGL      |                          |    |                          |
| Winter infiltration test results <small>Note 2</small>                                       | Yes               | <input type="checkbox"/> | No | <input type="checkbox"/> |
| Date of winter infiltration testing                                                          | DD/MM/YYYY        |                          |    |                          |
| Details of the location and depth of the infiltration testing <small>Note 3</small>          | Yes               | <input type="checkbox"/> | No | <input type="checkbox"/> |
| Minimum infiltration rate <small>Note 4</small>                                              | m/s               |                          |    |                          |

### Guidance Notes

1. Groundwater monitoring should be undertaken during the wet winter months, (October to March) to enable the peak annual groundwater levels to be established. The extent of winter monitoring should be discussed with the council's Engineers.
2. Infiltration testing should be undertaken during the wet winter months, (October to March) and in line with BRE365, or a similar approved method. Tests should be repeated 3x, to replicate saturated ground conditions.
3. Infiltration testing should be undertaken at the location and depth of any proposed infiltration structures. This must be above the maximum recorded groundwater level in that vicinity.
4. The minimum infiltration rate obtained at the location and depth of the proposed infiltration structures should be used to inform the design of the structures.

| Proposed Method of Surface Water Disposal                                                                  |     |                          |    |                          |
|------------------------------------------------------------------------------------------------------------|-----|--------------------------|----|--------------------------|
| Infiltration                                                                                               | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| On-site, via soak-away structures                                                                          |     |                          |    |                          |
| If on-site infiltration is not to be used, has justification for this been provided? <small>Note 5</small> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| Attenuation (on-site) with a restricted discharge to a watercourse on, or adjacent to, the site            | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| Attenuation (on-site) with a restricted discharge to a surface water sewer on, or adjacent to, the site    | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| Attenuation (on-site) with a restricted discharge to a foul water sewer on, or adjacent to, the site       | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |

### Guidance Notes

5. If on-site infiltration is not being used to drain the site you will need to provide evidence that demonstrates on-site infiltration is unviable.

| Drainage Design: Supporting Calculations        |                                                                                                                                                                                                                                                                 |              |  |                        |  |       |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--|------------------------|--|-------|
| Calculations Required                           |                                                                                                                                                                                                                                                                 |              |  | Calculations Provided? |  |       |
| Infiltration Structures                         | Half-drain time for 10 year event (plus climate change allowance)                                                                                                                                                                                               | Yes          |  | No                     |  | Hours |
|                                                 | Half-drain time for 100 year event (plus climate change allowance)                                                                                                                                                                                              | Yes          |  | No                     |  | Hours |
|                                                 | Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. <small>Note 7</small>                                                                                                                       | Yes          |  | No                     |  |       |
|                                                 | Lowest base level of infiltration structure                                                                                                                                                                                                                     | mAOD<br>mBGL |  |                        |  |       |
|                                                 | Has the design sought to provide treatment of potential contaminants? i.e. hydrocarbons.                                                                                                                                                                        | Yes          |  | No                     |  |       |
| Attenuation and Subsequent Restricted Discharge | Pre-development run-off rate calculations                                                                                                                                                                                                                       | Yes          |  | No                     |  | l/s   |
|                                                 | Proposed discharge rate <small>Note 6</small>                                                                                                                                                                                                                   | l/s          |  |                        |  |       |
|                                                 | Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. <small>Note 7</small>                                                                                                                       | Yes          |  | No                     |  |       |
|                                                 | Has the design sought to provide treatment of potential contaminants? i.e. hydrocarbons.                                                                                                                                                                        | Yes          |  | No                     |  |       |
|                                                 | If your proposed scheme incorporates any impermeable lined attenuation features we require calculations to demonstrate that appropriate resistance to floatation (due to groundwater levels) is catered for in the design                                       | Yes          |  | No                     |  |       |
|                                                 | If you propose discharging into or altering an ordinary watercourse; have you sought Ordinary Watercourse/Land Drainage Consent? <small>Note 8</small>                                                                                                          | Yes          |  | No                     |  |       |
|                                                 | If discharging to a watercourse, piped system or the sea, has the proposed drainage network been modelled against predicted top water levels for the 1 in 100 year storm event plus climate change allowance, within the existing system? <small>Note 9</small> | Yes          |  | No                     |  |       |

### Guidance Notes

- Any proposed discharge rate must be less than, or equal to, the pre-development rate. Greenfield sites must use the mean flow rate (Q<sub>bar</sub>). Additionally, if you are developing a brownfield site, we expect you to provide fully detailed plans of the existing surface water drainage arrangements on site, including impermeable areas, gullies, outfalls, pipes & diameters, manholes, etc.
- The appropriate factor of safety from the table below must be applied to your calculations to ensure your design is fully in accordance with CIRIA R156/ CIRIA C609.

| Factor of Safety Table                  |                            |         |                                                     |         |                                             |         |
|-----------------------------------------|----------------------------|---------|-----------------------------------------------------|---------|---------------------------------------------|---------|
| 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      |



8. Ordinary Watercourse/Land Drainage Consent will need to be sought, ideally in parallel with planning permission, if you propose discharging into, culverting or altering a watercourse.
9. Modelling is required to ensure that problems, such as surcharged outfalls, are addressed.

| Plans/Drawings/Diagrams                                                                                                                                                                                                                                                       |           |  |    |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|----|--|
| Required                                                                                                                                                                                                                                                                      | Provided? |  |    |  |
| Plan detailing the location of groundwater monitoring and infiltration testing                                                                                                                                                                                                | Yes       |  | No |  |
| Detailed drainage layout plan <small>Note 10</small>                                                                                                                                                                                                                          | Yes       |  | No |  |
| Construction detail plans <small>Note 11</small>                                                                                                                                                                                                                              | Yes       |  | No |  |
| Exceedance flow route plans <small>Note 12</small>                                                                                                                                                                                                                            | Yes       |  | No |  |
| Impermeable area plan                                                                                                                                                                                                                                                         | Yes       |  | No |  |
| If ground levels are being raised $\geq 300\text{mm}$ above existing levels and is unavoidable, have fully detailed plans been provided, together with drainage proposals, to address any potential drainage related issues.                                                  | Yes       |  | No |  |
| If any part of the development site is within recognised flood plain i.e. 1 in 100 & 1 in 200 year fluvial/tidal events, have plans been provided showing the extents, together with any proposals for ground raising/displacement within these areas. <small>Note 13</small> | Yes       |  | No |  |

#### Guidance Notes

10. 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 management of surface water runoff. Please note that ground raising should be avoided unless there are exceptional circumstances.
11. Site specific construction detail plans should be supplied if your proposed drainage scheme includes any of the following elements: pipe bed and surround; infiltrating structures; attenuating structures; manholes; catch-pits/silt traps; control devices; permeable paving; headwalls.
12. Unless specifically requested by the council's drainage engineers 'Exceedance Flow Route Plans' are only required for developments of more than 5 properties.
13. Product 4 'Detailed flood risk assessment mapping data' (available from the Environment Agency) must also be provided in support. Plans/details will be required to mitigate any unavoidable loss of flood plain/storage. Please also be aware that Environment Agency approval of such proposals will also be required.

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