

Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF

To register to receive notification of planning applications in your area please go to
<https://www1.arun.gov.uk/planning-application-finder>

Sign up to our newsletter [here](#)



From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>
Sent: 30 March 2022 14:08
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Simon Davis <Simon.Davis@arun.gov.uk>
Subject: RE: Planning Consultation on: Y/32/22/DOC

Engineers Comments Regarding Surface Water Drainage

We have the following comments on conditions 8-10, please note we have provided a full comment log below which includes our comments from the previous application.

Key

ADC comments 11/01/22

CR response 25/01/22

ADC comments 08/02/22

CR response 08/02/22

ADC comments 30/03/22

Engineers Comments Regarding Condition 8

1. *Please supply results of winter groundwater monitoring and winter infiltration testing.* Winter groundwater monitoring and infiltration/percolation testing was undertaken on several occasions previously. Details and results are contained within Land Quality Statement submitted as part of original application (ref 13591-

CRH-XX-XX-RP-GE-0002 Revision D02), relevant extracts attached to this letter. Previous correspondence between ADC Drainage Engineer and CampbellReith is also enclosed for context.

As per WSCC policy for the management of surface water policy 1- design must follow the hierarchy for sustainable drainage. Locations of groundwater monitoring and infiltration testing have not been provided. It is noted that groundwater was found to peak at circa 1m depth. Shallow infiltration testing was completed and gave rates which do not preclude the use of infiltration. Please supply evidence why the sole use of infiltration is not acceptable here. E.g. a design with infiltrating permeable paving, swales and shallow infiltration basin.

A full review of responses to our other comments has not been completed as this fundamental issue must be addressed first before reviewing details. Please find attached layout plan showing location of the boreholes/ percolation test together with details of results -

As noted from the test results, the lowest value is 2.37×10^{-8} m/s, which when the appropriate factor of safety (in this case the lower factor of safety in accordance with CIRIA SuDS Manual is 5 for areas greater than 1,000m²) is applied would yield a percolation rate of 4.74×10^{-7} m/s and at this rate no infiltration system would pass the half drainage time requirements not even for a ten year storm return period - however for absolute clarity, please see attached calculation extract demonstrating same.

It should be noted that percolation testing (despite having been requested by ADC) is not appropriate for use in the design of infiltration drainage systems. Percolation test should only be used for determination of drainage fields for foul drainage (please refer to Building Regulations Part H for guidance on this). CIRIA SuDS Manual C753, Section 25.3 states that infiltration testing should be undertaken following the BRE method and BRE 365 tests have been undertaken for this site and yielded no infiltration. Please see attached for further details relating to those tests.

As previously noted, the drainage basin (and none of the drainage features) are to be lined - i.e. during summer / low groundwater table, the drainage features will allow natural dispersal by infiltration. The drainage basin has been designed assuming worst case scenario that ensures sufficient buffer for drainage in all scenarios and is fully compliant with the requirements under NPPF. In effect there is over provision of storage within the drainage features to cater for the worst case scenario. CIRIA SuDS Manual does not state that when determining if infiltration is viable that a factor of safety should first be applied to obtained infiltration rates, it is therefore unclear why this has been completed. The calculations submitted apply infiltration to the base of the pond only, as indicated in previous responses a design utilising permeable paving should be investigated. BRE DG 365 does not state a minimum acceptable depth of test pits, applying BRE DG365 calculations to the percolation tests provides the same results as using the equations as defined in Approved Document H. Approved Document H 3.28- surface water drainage design states that percolation test results can be used in the design of infiltrating surface water drainage systems, it advises using BRE DG 365 for larger sites. It is also worth noting that the BRE DG 365 tests referred to as yielding no infiltration were completed below peak groundwater level- so this is to be expected. We do not believe that sufficient evidence has been presented to demonstrate that the hierarchy has been followed, however the below comments are based on the attenuation design as proposed.

2. Please supply calculations to support design.

Please see enclosed drainage calculations (13591-CRH-XX-XX-CA-C-0005 Revision P1) showing proposed attenuation and discharge volumes. Total storage requirement is equivalent to approximately 530m³. The results show how this equates to an average depth of no more than 350mm over the whole basin footprint of 1,400m² and accounting for the banks. The volume of storage takes account of the high groundwater and only refers to available volume above the highest recorded groundwater level. Note that the volume of storage provided within the basin does not account for the upstream storage within the permeable paving (112 m³) and swales (240 m³) in the calculations. In dry conditions, taking account of upstream storage there

is more than sufficient volume to accommodate all storms up to and including the 1 in 100 year storm +40% climate change with runoff restricted to QBar for all events.

A source control results file has been provided, this evidences a maximum water level of 3.947mAOD, this is above the cover level of several car park gullies and channel drains. To determine degree of site flooding and adequacy of design please provide a network model. The source control model does not account for inlets to the basin being below the outlet, the impact of surcharging these networks should be evidenced within calculations. Without this information it is not possible to establish if a policy compliant design is being provided.

3. **Please supply an impermeable area catchment plan.** Please see enclosed impermeable area plan 13591-CRH-XX-XX-DR-C-5250 Revision P1. Okay.
4. **Please label all pipes with diameter and fall.** Additional pipe labels have been added to drainage layout plans 13591-CRH-XX-XX-DR-C-5050 Revision P6 and 5051 Revision P5. Gradients for short (<5m) pipe lengths have not been shown. Pipe sizes, maximum grades and materials are to be as specified on drainage notes drawing 13591-CRH-XX-XX-DR-C-5300 Revision P1 previously provided. Okay.
5. **Hydrobrake unit references should be included on layout plans.** Details have been added to updated drainage layout plan 13591-CRH-XX-XX-DR-C-5051 Revision P5. Okay, but please see comment above for more detailed calculations to evidence a compliant design.
6. **Please label finish and formation level of permeable paving.** Permeable pavement details have been previously provided on detail drawing 13591-CRH-XX-XX-DR-C-5350 Revision P2. This includes depths of proposed pavement build-up. The proposed surface levels can be obtained from levels plan 13591-CRH-XX-XX-DR-C-5200 Revision P3 and sub base levels inferred (Minor updates to Revision P3 enclosed for completeness).
Finish and formation levels of permeable paving must be detailed, thank you for providing a finished levels plan, please provide formation levels on layout plan, this is required to evidence adequacy of proposed connections from permeable paving. And to ensure correct construction.
7. **Gullies and channel drains should be labelled with cover levels.** Cover levels have been provided for proposed gullies on updated drainage layout plan 13591-CRH-XX-XX-DR-C-5050 Revision P6 and 5051 Revision P5. Channel drain cover levels will necessarily vary along the length and hence have not been provided. Exact levels will be determined by contractor to suit the finished levels as shown on levels plan 13591-CRH-XX-XX-DR-C-5200 Revision P3. Levels should be provided on plan to ensure construction is carried out in accordance with proposals.
8. **The gabion outfall construction detail drawing is unclear. Is it proposed to have buried pipes discharging to the basin?** The gabion basket is to be built into the embankment and to be exposed so as to be accessible for maintenance. The pipework will be within the basket and wrapped in a permeable membrane to prevent build-up of fines. The gabion provides siltation protection as well as dispersal of incoming flow to reduce scour. The gabion basket also removes the need for a traditional headwall and grille, reduces the maintenance requirements and provides a bigger area of contact/surface flow. *Pipework should be exposed and within headwalls. To bury pipework within a gabion will prevent visual inspections for blockage being undertaken. The permeable membrane surrounding the pipe and gabion will likely silt up. Design must be maintainable.*
9. **Please supply site specific construction details of the attenuation basin, showing invert level, top of bank level, width at bed and width at bank.** Please see enclosed basin detail drawing 13591-CRH-XX-XX-DR-C-5310 Revision P1. To be reviewed principals are agreed.

Engineers Comments Regarding Condition 9

1. **Please supply evidence of consent applications for the new ditch, and headwall to the existing ditch.** OWC application for the discharge headwall from the basin was formally submitted in September 2021 together with all information requested by Paul Cann as per his email of 11th August 2021. Referring to Land Drainage Act 1991. Section 23(3), could you please confirm when consent letter will be issued? *This is with Paul Cann.*

The OWC consent for the new ditch is as shown on the attached consent (Consent Number LDC/ARUN/2021/015) *Okay.*

2. *Please supply a buffer plan to show that at least 3m is being provided between top of bank of watercourses and obstructing features, such as fences, buildings, and basins. A suitable buffer has been provided between top of basin and edge of watercourse to allow for maintenance, as shown on drawing 13591-CRH-XX-XX-DR-C-5051 Revision P5. Buffer not clearly shown, please show the buffer on a plan.*

Engineers Comments Regarding Condition 10

1. *Review of the maintenance manual will occur once the drainage design has been agreed. Noted, but please let us know if there are any comments once you have reviewed the information provided. Original comment stands.*

Kind regards,

Laura Gibbons

Drainage Engineer

Engineering Services

Please note that I work Tuesdays 08:00-16:00 for Arun only.



T: 01903 221374

E: laura.gibbons@arun.gov.uk

Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF

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

Sent: 17 March 2022 13:34

To: Land Drainage

Subject: Planning Consultation on: Y/32/22/DOC

To: Engineers (Drainage)

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

Application No: Y/32/22/DOC

Registered: 8th March 2022

Site Address: 10 Acre Field Grevatts Lane West Yapton Bognor

Description of Works: Approval of details reserved by condition imposed under ref W/4000394 (Y/102/18/PL) relating to Condition Nos 8 - surface water drainage and 10 - maintenance & management of surface water 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 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 **31st March 2022**.

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

Mr S Davis

Planning Case Officer- Arun District Council

Telephone: 01903 737874

Email: Simon.Davis@arun.gov.uk

PLC/OND/00 (005) 2015