**From:** Amanda Scholes on behalf of Planning.Responses
**Sent:** 17 June 2020 08:16
**To:** Planning Scanning
**Subject:** FW: BE/137/19/RES The Cottage, Shripney
**Attachments:** FW_ Planning Ref. BE_137_19_RES - The Cottage, Shripney - SuDs Options.pdf

Amanda Scholes | Receptionist, Department, Arun District Council | Location: Ground Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF
Internal: 37736 | External: +44 (0) 1903 737500 ext 37736| E-mail: amanda.scholes@arun.gov.uk

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**From:** Simon Davis <Simon.Davis@arun.gov.uk>
**Sent:** 16 June 2020 15:46
**To:** Planning.Responses <Planning.Responses@arun.gov.uk>
**Subject:** FW: BE/137/19/RES The Cottage, Shripney

Please add as Further Drainage comments.

You will need to put the attachment through the blocking queue as it contains several email addresses

**From:** Laura Gibbons
**Sent:** 16 June 2020 15:05
**To:** Simon Davis <Simon.Davis@arun.gov.uk>
**Subject:** BE/137/19/RES The Cottage, Shripney

Hi Simon,

I have reviewed the information for The Cottage, Shripney and can advise that insufficient information has been submitted to date to remove our objection to this application. There is a lack of detailed information to demonstrate that there is adequate space for surface water drainage with the proposed site layout.

As detailed in the attached email there are significant issues that need to be addressed. The key points and their relevance to policy are summarised below:

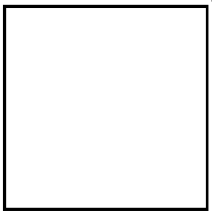
1. Discharge rates must be restricted to 1 year greenfield rates, as per WSCC policy for the management of surface water para 5.4.4. A minimum aperture size of 50mm should be ensured and features included in design to reduce blockage risk. 5l/s minimum discharge rate is outdated, and technology has advanced so that much lower rates can be obtained with suitably sized apertures.

2. Lowest recorded infiltration rates must be used in design. Given these are circa x10-7m/s it is evident that infiltration cannot be relied upon.
3. Natural catchment topography must be followed to ensure that flood risk is not increased elsewhere. Linking the two catchments will likely result in increased flood risk to Shripney Lane, contrary to NPPF Para 163. The two catchments must be separated, as per WSCC policy for the management of surface water para 5.4.4.
4. Insufficient consideration to date of conflict between drainage design and trees.

Kind Regards,

**Laura Gibbons**
Engineer, Adur & Worthing Councils
Phone:
Email:
Website: www.adur-worthing.gov.uk
Address: Facilities & Technical Services, Worthing Town Hall, Chapel Road, Worthing, West Sussex, BN11 1HA

Adur and Worthing Councils are working in partnership with Arun District Council.



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# FW: Planning Ref. BE/137/19/RES - The Cottage, Shripney - SuDs Options

1 message

**Sarah Burrow** <Sarah.Burrow@arun.gov.uk> 16 June 2020 at 07:36
To: [redacted]

These are the latest comments I have seen from Paul. There has been no response to this that I have seen.


**Sarah Burrow**

Engineering Assistant, Engineers

**T:** 01903 737815

**E:** sarah.burrow@arun.gov.uk

[redacted]

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

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**From:** Paul Cann <Paul.Cann@arun.gov.uk>
**Sent:** 02 June 2020 15:00
**To:** Paul Bond [redacted]
**Cc:** Chris Barker [redacted] Chris Springett [redacted]; Ben Daines <[redacted]; Sarah Burrow <Sarah.Burrow@arun.gov.uk>; Mark Warwick <Mark.Warwick@arun.gov.uk>; Pippa Messenger [redacted]; Keith Hicks [redacted]
**Subject:** RE: Planning Ref. BE/137/19/RES - The Cottage, Shripney - SuDs Options

Hi Paul

Comments in red;

Regards

**Paul Cann**

Principal Drainage Engineer

Engineering Services

**T:** 01903 737819

**E:** paul.cann@arun.gov.uk

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

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**From:** Paul Bond [redacted]
**Sent:** 14 May 2020 12:20
**To:** Paul Cann <Paul.Cann@arun.gov.uk>
**Cc:** Chris Barker [redacted] Chris Springett [redacted] Ben Daines [redacted] Sarah Burrow <Sarah.Burrow@arun.gov.uk>; Mark Warwick <Mark.Warwick@arun.gov.uk>; Pippa Messenger [redacted] Keith Hicks [redacted]
**Subject:** RE: Planning Ref. BE/137/19/RES - The Cottage, Shripney - SuDs Options

Hi Paul,

Thanks for the detailed response and I hope all is well with you during these challenging times.

With regard to your various comments, I will respond to each in turn (main points in bold):

1. "***I am not surprised about the poorer infiltration rates, which is one of the reasons why we wanted them undertaken, although I wasn't expecting them to be that much worse.***"

With regard to the original infiltration testing conducted on 13/11/19 which returned rates ranging from $10^{-6}$ to $10^{-5}$ m/s, this was carried out 17 days prior to the first day of meteorological winter (1st December), in order to ensure a pre-Christmas submission. Met Office Records show that November, together with the preceding October and September received higher than average rainfall for the Southern Region at 129 % (Sept), 125 % (Oct) and 129 % (Nov) of the long-term (1981-2010) averages for these months. As such, even though the first round of testing was slightly premature for winter, this would have been offset by carrying out the testing following a prolonged period of particularly high rainfall.

With regard to the repeat February testing, which returned $10^{-7}$ m/s rates, it is not surprising that these were considerably worse than the November 2019 results, as apart from January, this prolonged period of exceptionally wet weather continued throughout the winter. Not only was it exceptionally wet, but it was record breaking wet. With reference to the attached Met Office article, February 2020 was the wettest February ever recorded (*i.e.* since 1862) for England (together with Wales, Northern Ireland and the UK as a whole), and the fifth wettest of any calendar month over this 158 year period, with Storm Ciara occurring on the 8th/9th February, Storm Dennis on 15th/16th February and Storm Jorge on 28th/29th February. In addition, this winter (December, January, February) has been the fifth wettest winter on record for the UK as a whole. In February, the Southern Region in which the site is located, was recorded as having 240 % of the long-term average rainfall for this month.

The second round of testing was carried out on 25th February (following) Storm Ciara and Storm Dennis and according to the Soakage Report, performed during "*Heavy rainfall amongst short periods of sunshine, and hail*".

In summary, the ground was saturated due to the wettest February on record and one of the wettest winters ever recorded and the testing itself was carried out during heavy rainfall. As such, it is not surprising that the results were significantly poorer than those conducted in the preceding November, which, due to the very wet antecedent period would have been anticipated to be representative of winter conditions for this area.

As such, we can conclude that the November results are more likely to represent typical worst-case winter values, whereas the February results represent very atypical worst-case winter conditions with a return period (to date) of > 1 in 100 years. As such, it is anticipated that the proposed drainage strategy will be able to rely on infiltration for the majority of the time, with discharge to local watercourses only required during exceedance conditions. I am afraid the drainage strategy will need to be based upon the latest test results.

2. "***Can you confirm at what depth the testing was done and that it was above peak recorded groundwater levels on the site.***" All infiltration testing was carried out to a depth of 0.9 m, other than SA01 (NW area of site), which was conducted to a depth of 1.2 m. Table 1 below shows the highest recorded groundwater levels (recorded in the winter of 2018/2019) closest to the infiltration test locations compared with the respective depth of the test.

As such, all tests would have been carried out above "normal" winter peak groundwater levels. Noted. Test depths should also take account of the proposed depth of the suds structures.

| Test Location | Infiltration Test Depth (mm) | Closest Highest Recorded Winter Groundwater Depth (mm) |
|---|---|---|
| SA01 (NW of site) | 1200 | 1280 (GWP7) |
| SA02 (Central N of site) | 900 | 1033 (GWP1) |

| | | |
|---|---|---|
| SA03 (NE of site) | 900 | 1033 (GWP1) |
| SA04 (SW of site) | 900 | 1280 (GWP7) |
| SA05 (Central S of site) | 900 | 956 (GWP3) |
| SA06 (SE of site) | 900 | 918 (GWP2) |

3. "***Utilising infiltration where possible and a restricted discharge to watercourses/s at QBAR rates. Greenfield run off (at QBAR) calculations to be provided.***" We have designed the SuDS Strategy as per DEFRA's "Non-statutory technical standards for SuDS" in that the peak discharge for the site has been restricted to the 1 in 100 year greenfield rate and the storage ensures that the 6-hour 1 in 100-year storm is accommodated. This has required a total combined peak discharge (*i.e.* from the western and eastern parts of the site) of 6.9 l/s and a total storage capacity of 204.7 $m^3$, which was previously acceptable to you..

**If we revise the scheme to discharge at Qbar (2.2 l/s) during the critical 1 in 100-year storm, this would require 203.2 $m^3$ of storage. This is 1.5 $m^3$ less than that originally proposed, so the current design could accommodate this. Nevertheless, we have concerns regarding the potential for system blockage should the discharge rate be reduced to 2.2 l/s for the whole site during all storms (see point 4 below).** QBAR is the requirement. Where there are low discharge rates, measures need to be put in place upstream to reduce the risk of blockage. This includes silt traps/permeable paving/vertical filters (especially where small diameter orifices are proposed) ,etc.

4. "***As there are two catchments, these must remain unlinked***". Assuming peak discharge at Qbar, this would require 135.5 $m^3$ storage and 1.5 l/s peak discharge from the larger (western) part of the site and 67.8 $m^3$ storage and 0.7 l/s peak discharge from the smaller (eastern) part of the site. The current design intentionally has the two catchments linked so that if one surcharged it could overflow into the other and maximise use of available storage and infiltration areas. See response to item 5.

5. We could separate the two *e.g.* by removing the connecting pipes between SuDS storage tanks AT9 and AT10A, removing the pipes connecting SuDS storage tank AT16 to AT14 and AT15 and splitting SuDS tank AT7 so that the tank area to the south of the Plot 11 and 12 garages discharged to the western catchment, whilst the tank area to the east of the Plot 11 and 12 garages discharged to the eastern catchment, ensuring the required 135.5 $m^3$ : 67.8 $m^3$ split. However, there would be distinct disadvantages in isolating the two catchments:

   a. As explained above, keeping the two linked would maximise available storage and infiltration areas during exceedance conditions – as such the current design spreads the risk of system failure much better and gives the whole site "access" to the western infiltration chambers;

   b. If the catchments were split as described above there would be significant areas of infiltration available for the western catchment, but a disproportionately smaller area available for the eastern catchment (*i.e.* Tank AT10A), due to the various constraints present across the eastern catchment;

   c. The resulting maximum discharge rates at the western and eastern outfalls would be uncomfortably low, being 1.5 l/s to the western highway dich and 0.7 l/s to the eastern ditch. This is significantly below the 5 l/s minimum discharge rate preferred by adopting water companies to avoid system blockage and we would be unsure how we could practically achieve these low discharge rates. 0.7 l/sec is way below any minimum flow rate that could be achieved by a Hydrobrake so we would be looking at a very small orifice plate, with the obvious risk of blockage during storm events and the requirement for regular inspection to make sure that it remained clear.

6. **Consequently, with reference to Point 1 above, if we assume that the proposed drainage strategy will be able to rely on infiltration for the majority of the time, and will discharge to local watercourses only during exceedance conditions, we could, with your approval, keep with the plan to discharge at the respective greenfield rates (rather than Qbar), thereby diminishing the impact of the proposed development on neighbouring watercourses, but also reducing the risk of system blockage whilst avoiding excessive maintenance. I would appreciate your thoughts on this matter.** See item 1 response. We are also very keen not to discharge any additional water into Shripney Road beyond what currently drains there due to inherent flooding issues, so separating the catchments seems to be the best option. On other sites it might be suitable to link catchments but not here. The flooding is very political in Shripney and therefore anything to potentially exacerbate the flooding situation needs to be avoided. Yes, it can also benefit Shripney Road but there are no guarantees as to which catchment/discharge point would take precedence.

7. "***the original proposal to construct a pipeline through the tree area in the SE corner of the site would not be acceptable and therefore alternative routing needs to be considered and must be accessible for future maintenance***".

I am sure we can find an alternative route to the eastern ditch, avoiding all RPAs *e.g.* by providing a pipe run eastwards from Manhole SWMH7 running across the back garden of plot 16 or similar solution. However, there

may be a requirement for an easement to ensure access for inspection and cleaning. Will await your proposals for consideration.

8. *"I would suggest that the scheme includes permeable paving on all private driveways, all parking areas and the access road to create as much storage as possible".*

We have already provided permeable paving on all private driveways, avoiding constraints such as proposed foul sewer runs, utility corridors etc and providing infiltration in all areas >5 m from a building foundations as per Building Regs. We have also provided permeable paving to the whole of the roadway zone between the garages and plots 11 to 16, whilst all the paving to the east of the sleeping policeman next to plot 10 is also permeable. Consequently, there are very few additional areas that could be put over to permeable paving. Noted. Due to the additional storage that needs to be found, I would suggest that permeable paving is employed where ever possible → maybe crate attenuation beneath too if possible.

9. *"The employment of crates needs to be less 'fragmented' from what was originally proposed."*

Due to the relatively high water table, we have had to keep the bottom of the attenuation tanks above this. As a result, the top of the attenuation tanks are higher that the level at which the water, power, and comms networks will be laid, so we have had to leave space between the tanks for these to be installed and link to all the properties. This is in addition to leaving clear routes across the site for the foul drainage network. Consequently, the areas of storage are fragmented and stepped for a reason. Foul drainage will need to be shown on the plans and an indication of the other utilities that need to be accommodated. This can then be considered further.

10. *"Additional crates can be utilised in the in the original 'proposed pond area', however, this will form part of the attenuation system i.e. hydrobrake downstream of the tank rather than upstream as suggested."*

We had already suggested this in our last email to you, so this shouldn't be a problem. The additional storage will not be needed to meet our storage requirements but will act as additional capacity to help accommodate exceedance flows. This will now probably have to form part of your onsite storage provision.

11. *"Any storage structures above peak recorded groundwater levels can have permeable liners to make use of infiltration"*

This has already been done within our design, however, all storage within 5 m of a building foundation has had to be provided with an impermeable geotextile base as per Building Regs, to avoid potential heave and subsidence of built structures. Noted

12. *"No structures or pipework are to be located in root protection areas (based upon the existing trees reaching maturity). Any infrastructure in the vicinity of these areas is likely to require additional protection against tree root intrusion"*

The eastern catchment outfall pipe in the SE corner of the site is the only pipe or structure within or close to a RPA. As per point 5 above, I am sure we can find an alternative route for this pipe not passing through a RPA. Noted. Our tree officer (copied in) will need to be satisfied with the scheme in terms of tree protection.

13. *"It is very likely that offsite improvements will be required to ditches/culverts in the vicinity, especially the system alongside Shripney Road which has had inherent issues. I would suggest that the systems are surveyed to identify culvert locations/diameters/culvert and ditch levels/condition, etc, so further discussions can be had."*

The client is happy to commission such a survey. However, it would be very helpful if you could let us know exactly what you would want to be surveyed, including the area of the survey, the measurements/items of interest required and whether you would need CCTV footage etc. If you could provide this information ASAP that would be great in order to avoid further delay. See attached – our records are incomplete in this vicinity hence we are not clear as to the extent of the network and flow directions are uncertain. I would suggest verifying flow directions (2), then investigating the outlets up to the point where they discharge into the highway drainage system (light blue lines). Locations 1 and 3 are possible outlets. Please note there is significant highway flooding in the vicinity of point 3. Is point 4 an outlet, overflow or inlet – if an overflow or other outlet, investigate it up to the point where it discharges into the highway drainage system (light blue lines).

14. *"It would be useful to meet on site at some point to review your findings in this respect, but at the moment we are unable to visit site due to the virus situation"*

We can of course arrange a site meeting after the current restrictions are relaxed, should this be required. A site inspection will be undertaken once item 13 has been investigated further.

15. *"We look forward to receiving a revised scheme, etc for consideration. If we cannot reach agreement, then the development layout will need to change in order to be more accommodating."*

From the points above we are hopeful that we can accommodate your requests, where practical, within the existing general layout rather than requiring a significant redesign. It all comes down to achieving the required storage volumes within an acceptable design.

Thank you for your time and I looking forward to a response from you at your earliest convenience on the points above, particularly points 3, 4 and 11.

All the best

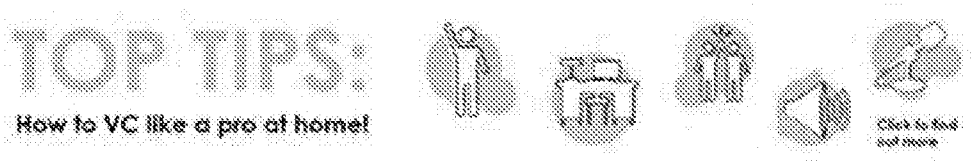
Paul

Paul Bond

PhD MSc BSc CEnv CSci MIEnvSc MCIEEM

Associate

[redacted]

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**From:** Ben Daines [redacted]
**Sent:** 29 April 2020 13:57
**To:** Paul Bond [redacted]
**Cc:** Chris Barker [redacted]; Chris Springett [redacted]
**Subject:** RE: Planning Ref. BE/137/19/RES - The Cottage, Shripney - SuDs Options

Hi Paul,

Can you let me know your thoughts on Paul Cann's email when you have the opportunity?

Kind Regards,

**Ben Daines MRTPI**
Associate Planner

ECE Planning

The team at ECE Planning are working from home but very much open for business on the phone, by email and conference calls - Please see contact details below. Please click here to find out how ECE Planning are responding to COVID-19.

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**From:** Paul Cann <Paul.Cann@arun.gov.uk>
**Sent:** 28 April 2020 11:16
**To:** Paul Bond [redacted]
**Cc:** Chris Barker [redacted]; Chris Springett [redacted]; Ben Daines [redacted]; Planning.Responses <Planning.Responses@arun.gov.uk>; Sarah Burrow <Sarah.Burrow@arun.gov.uk>; Mark Warwick <Mark.Warwick@arun.gov.uk>
**Subject:** RE: Planning Ref. BE/137/19/RES - The Cottage, Shripney - SuDs Options

Hi Paul

Sorry, we are just overwhelmed at the moment but hopefully my reply below will suffice.

I am not surprised about the poorer infiltration rates, which is one of the reasons why we wanted them undertaken, although I wasn't expecting them to be that much worse. ***Can you confirm at what depth the testing was done and that it was above peak recorded groundwater levels on the site.***

The rates of 10-7 are considered to be the design rate, so yes infiltration will not be the total solution and a hybrid scheme will need to be considered. The system needs to be designed based upon these rates ie. worst case scenario. This would take the form of utilising infiltration where possible and a restricted discharge to watercourses/s at QBAR rates. Greenfield run off (at QBAR) calculations to be provided. Please note that the existing catchments to the western and eastern watercourses need to be respected when considering the discharge points/rates. As there are two catchments, these must remain unlinked. It should also be noted that the original proposal to construct a pipeline through the tree area in the SE corner of the site would not be acceptable and therefore alternative routing needs to be considered and must be accessible for future maintenance.

Due to the number of trees within/adjacent to the site, it is critical that early discussions are had with our tree officer, as these can significantly impact any drainage design and my points below are all subject to the tree officers agreement.

I would suggest that the scheme includes permeable paving on all private driveways, all parking areas and the access road to create as much storage as possible. Any slopes need to be accounted for in order to maximise this storage ie. baffles may be required. The employment of crates needs to be less 'fragmented' from what was originally proposed ie. it just seems to be cramming in crates wherever possible due to unavailable space. Additional crates can be utilised in the in the original 'proposed pond area', however, this will form part of the attenuation system ie. hydrobrake downstream of the tank rather than upstream as suggested. Any storage structures above peak recorded groundwater levels can have permeable liners to make use of infiltration.

No structures or pipework are to be located in root protection areas (based upon the existing trees reaching maturity). Any infrastructure in the vicinity of these areas is likely to require additional protection against tree root intrusion.

It is very likely that offsite improvements will be required to ditches/culverts in the vicinity, especially the system alongside Shripney Road which has had inherent issues. I would suggest that the systems are surveyed to identify culvert locations/diameters/culvert and ditch levels/condition, etc, so further discussions can be had. I enclose a copy of records which may help but are far from complete. It would be useful to meet on site at some point to review your findings in this respect, but at the moment we are unable to visit site due to the virus situation.

We look forward to receiving a revised scheme, etc for consideration. If we cannot reach agreement, then the development layout will need to change in order to be more accommodating.

Regards

Paul Cann

Principal Engineer (Drainage)

Paul Cann | Principal Engineer (Drainage), Engineering Services, Arun District Council | Location: First Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF
Internal: 37819 | External: +44 (0) 1903 737819 | Fax: +44 (0) 1903 716019 | E-mail: Paul.Cann@arun.gov.uk

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**From:** Paul Bond [redacted]
**Sent:** 16 April 2020 12:35
**To:** Paul Cann <Paul.Cann@arun.gov.uk>
**Cc:** Chris Barker [redacted] Chris Springett [redacted]; Ben Daines [redacted]; Planning.Responses <Planning.Responses@arun.gov.uk>
**Subject:** RE: Planning Ref. BE/137/19/RES - The Cottage, Shripney - SuDs Options

Hi Paul,

I hope all is fine with you and you are weathering these strange times well.

I have left a couple of messages recently with regard to surface water discharge options for the above scheme, which I was hoping to talk through with you.

Following repeat infiltration testing at the above site on the 25/02/20, conducted after a winter of exceptionally heavy rainfall, the results were unsurprisingly poorer than those conducted in November 2019 (which also followed antecedent very wet weather throughout September, October and November).

Initial results in November returned infiltration rates across the site ranging from $10^{-6}$ to $10^{-5}$ m/s. As demonstrated in then Table below, the February infiltration rates were typically between 1 to 2 orders of magnitude less at $10^{-7}$ m/s.

| February 2020 Results | | November 2019 Results | |
|---|---|---|---|
| *Test Location* | *Infiltration Rate (m/s)* | *Comparable Test Location(s)* | *Infiltration Rate (m/s)* |

| | | | |
|---|---|---|---|
| SA01 | $2.8 \times 10^{-7}$ | BH14/BH13 | $1.7 \times 10^{-6}/2.9 \times 10^{-6}$ |
| SA02 | $1.6 \times 10^{-7}$ | BH12 | $1.1 \times 10^{-5}$ |
| SA04 | $1.5 \times 10^{-7}$ | BH11 | $2.0 \times 10^{-5}$ |
| SA05 | $1.7 \times 10^{-7}$ | BH1/BH15 | $4.4 \times 10^{-5}/6.0 \times 10^{-6}$ |
| SA06 | $1.5 \times 10^{-7}$ | BH10 | $7.1 \times 10^{-6}$ |
| SA03 | $1.3 \times 10^{-7}$ | BH9 | 3. $\times 10^{-6}$ |

Consequently, as the November 2019 results followed antecedent very wet weather throughout September, October and November (with rainfall of 121 %, 160 % and 164 % respectively compared to the long-term average) and indicated that infiltration was feasible at that time, the February results suggest that the proposed system can usually rely on infiltration, except during extremely wet conditions. During such conditions, there will be additional reliance on attenuation and discharge to the local drainage ditch network at greenfield rates.

In addition to the above, it should be noted that the AC Greenspace Officer has decided that the shallow landscaped pond at the front of the development (from which discharge into the highway ditch would have been facilitated) cannot be counted as useable amenity space and, consequently will need to be removed from the scheme (see attached figure for reference). If you remember, this pond was primarily a landscape feature and its capacity had not been required or included in the SuDS Strategy. Nevertheless, it was intended to discharge any overflow from approximately 2/3 of the site area into this feature, which originally was going to be discharged into the adjacent highway ditch at the greenfield rate. During our last conversation you had suggested that, in order to reduce the impact of the site discharge on the highway ditch, the western bank of the pond could be lowered to form a spillway, with discharge into the ditch being facilitated through diffuse overland flow from the pond during extreme events.

Now that the February infiltration test results indicate that discharge to the ditch could occur during particularly wet periods when infiltration rates will be compromised and that the pond will not form part of the proposals, it would be good to confirm with you an acceptable alternative, which could include the following:

1. Replacement of the pond feature with additional underground storage in this area, with an infiltrating bottom – to maximise infiltration opportunities (as a precautionary measure);

2. Removal of the proposed outfall into the ditch and replace this with hydrobrakes upstream of this additional storage (set at the greenfield rate);

3. Discharge into the ditch would only occur during very wet or extreme storm conditions, when it is anticipated that all of the on-site storage will fill up and water would be allowed to escape from the top of this additional storage feature, either through inspection covers or through a reinforced grass top (*e.g.* grassed AdPave system or similar – see attached brochure), which would then occasionally overflow into the ditch along its length at ground level and could still be used as amenity space.

If you could give me a call on my mobile to talk this through, I would be grateful.

Kind regards

Paul



D +44 (0)20 7940

cid:image001.jpg@01D5E7E4.C1EB4A00

Paul Bond

PhD MSc BSc CEnv CSci MIEnvSc MCIEEM

Associate

[redacted]

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**From:** Simon Davis <Simon.Davis@arun.gov.uk>
**Sent:** 18 February 2020 17:30
**To:** Ben Daines <[redacted]
**Subject:** FW: Planning Consultation on: BE/137/19/RES

Hi Ben,

Please see drainage comments as just received. Whilst, there are separate conditions to discharge, we will need to consider the points raised that relate to layout.

I have also just chased the Landscape and Tree Officers for their consultation comments.

Kind Regards

Simon

**From:** Sarah Burrow
**Sent:** 18 February 2020 16:50
**To:** Planning.Responses <Planning.Responses@arun.gov.uk>
**Subject:** RE: Planning Consultation on: BE/137/19/RES

Engineers Comments Regarding Surface Water Drainage

The applicant has provided some groundwater monitoring and infiltration testing data, alongside a drainage layout as apart of this application. The following points are noted:

1: Groundwater monitoring is expected over a full winter period for a development of this size. Luckily the applicant has captured data for when groundwater peaked in February 2019. We will accept this result in a future DOC application.



2: Infiltration testing was completed in November. These tests need to be completed in peak winter conditions when the ground is at it's most saturated. Before making a DOC application the applicant will need to repeat these tests in winter conditions. **We will**

**consider further testing to be completed up to the end of February 2020. The applicant is encouraged to contact this department to agree the level of testing required.**

-

3: Despite early indications of favourable infiltration rates the applicant is proposing to attenuate part of the surface water on site and discharge any overflows to the two boundary ditches. This is not appropriate. It is expected that all water is infiltrated on site with no overflow to the ditches in accordance with the hierarchy for sustainable drainage. This will be dictated by the results of further testing as per point 2.

4: An infiltration basin appears to be located within the public open space, please consult Parks and Greenspace regarding this matter.

-

**There is a concern that the applicant may be proposing to attenuate surface water on parts of the site due to the limited space remaining around dwellings and protected trees.** Surface water drainage must be considered at the earliest opportunity and form part of the layout development process. Without adequate winter infiltration testing there is no way of determining the area take up required for a fully infiltrating surface water drainage solution. Blanket solutions will likely be required with a 5m easement from buildings to soakaways and diffuser units in permeable paving. Leaving drainage design until after a layout has been agreed will likely unduly prejudice drainage design and not allow for the hierarchy for sustainable drainage to be followed.

Furthermore, inadequately considering drainage at this stage could potentially result in a lack of sufficient capacity being provided for surface water drainage and therefore the development could lead to an increased risk of flooding elsewhere.

**Therefore, we object to the application at this time.**

*To overcome the objection the applicant should complete winter infiltration testing and complete calculations to assess the size of structures required. A rough plan should be formed showing where these structures can be provided within the proposed layout. Detailed design of the system can be left until discharge of conditions where the applicant should provide the level of information stated within our checklist https://www.arun.gov.uk/drainagechecklist.*

Kind Regards

Sarah Burrow

Engineering Assistant

and

Paul Cann

Principle Drainage Engineer

http://www.arun.gov.uk
DX 57406 Littlehampton
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**7 attachments**

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