

From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>

Sent: 17 June 2019 10:13

To: 'Luke Hart'

Subject: RE: Y/9818/RES and Y/97/18/DOC

Luke,

Thank you for the email. Please see my *comments* below.

Kind 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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From: Luke Hart [REDACTED]
Sent: 07 June 2019 09:45
To: Laura Gibbons
Cc: K [REDACTED]
Else: [REDACTED]
Subject: RE: Y/9818/RES and Y/97/18/DOC

Hi Laura,

Further to your email/response, please see updated plans/information attached along with summary/commentary below:

1. ACD have added root potential areas representing a BS5837 RPA based on maximum expected stem diameter of 500mm. Refer to updated ACD drawings attached. *Okay.*
2. Specialist details are being prepared to cover your request for flotation to be assessed based on groundwater at ground level. These will follow under separate cover once we have received them. *Please could these be provided.*
3. Further soakage test result/details to follow. These are being completed this week. *When will result be provided?*
4. Ditch regrading extent added to drainage drawing. *Exact details will need to be agreed with the land drainage ordinary watercourse consent application.*
5. Calculations for attenuation basin attached. *Can you provide the full catchment calculations for this?*
6. We are proposing to diffuse rain water from roofs into the permeable paving and then connect the permeable paving to the wider sewer network (via a control). We show this typical arrangement, which applies to every drive, on the top right (inset) of drawing 18-070/103. *What size orifice are you proposing?*
7. Refer to our basin sections attached for further details. *Please provide overlap widths/joint methods for liner.*
8. *Noted. I will review once the full catchment calculation is provided for the revised pond.*
9. *Noted. Please refer to Section 5 of the surface water report attached. You will need to specifically detail maintenance for flow control devices. Can it please be confirmed whether single permeable driveways will be the responsibility of the householder or the maintenance company. I will review further once other points have been agreed.*

I trust item 1 and items 4-9 can now be concluded/agreed.

Kind Regards



Luke Hart | Associate Director

BEng (Hons) CEng MICE

Tuscany House | White Hart Lane | Basingstoke | RG21 4AF
[REDACTED]

From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>

Sent: 30 May 2019 13:06

To: Luke Hart <lhart@odysseyconsult.co.uk>

Cc: Kathryn Griffiths <k.griffiths@nexusplanning.co.uk>; Caroline Green <Caroline.Green@bovishomes.co.uk>; Zoe Knott <z.knott@nexusplanning.co.uk>; Ryan Saul <ryan.saul@odysseyconsult.co.uk>; Dorota Kaminska-Majkowska <dorota@acdenv.co.uk>; James Lawson <j.lawson@acdenv.co.uk>; Lance Else <Lance.Else@bovishomes.co.uk>; James Hammond <James.Hammond@bovishomes.co.uk>; Darren McArthur <Darren.Mcarthur@bovishomes.co.uk>;

Luke,

Thank you for sending over the revised information.

As discussed previously on the phone infiltration testing completed at this time will only rule in or out infiltration. If infiltration testing results come back as $\times 10^{-7} \text{ms}^{-1}$ or lower then we can move the design forwards and assume groundwater is at the surface for flotation purposes. If however infiltration test results show infiltration is feasible we require full winter groundwater monitoring (October to March inclusive) to be completed and winter infiltration to be completed above the maximum recorded groundwater elevation.

I have the following comments:

1. ACD have shown tank footprints on their landscaping plans. Updated plans provided. *These plans do not show the root potential areas. This is required.*
2. Pond sections with NAUE liner provided. Details provided. Tank flotation/groundwater assessment to be discussed as soon as possible. *See above comments.*
3. Further site investigation/soakage tests have been requested. Please see associated sketch sent to geotechnical engineers within the link provided. *It is not possible to review if the proposed soakage testing is at the correct depth until winter groundwater monitoring results are obtained.*
4. Headwalls are set 150mm above ditch level. Refer to the updated plan provided. *Outfall invert levels are shown to be 150mm above a localised bed level. Please acknowledge that regrading will be carried out to remove the high areas of ditch bed downstream and ensure that a smooth gradient is provided.*
5. Drainage drawing shows smaller basin (as mentioned recently) and all associated basin levels. Refer to updated plan provided. *I will require revised calculations to be submitted demonstrating that this revised basin size is adequate.*
6. Standard detail updated to show diffuser and control chamber together. Plan updated to show incoming surface water diffusers for typical drive. Permeable paving depths added to drawing (notes). Refer updated plans provided. *To clarify, are you proposing on diffusing rain water from roofs into permeable paving and then connecting the permeable paving to the wider network? You don't actually show control chambers near permeable paving on the layout. Please provide details on layout plans of the connectivity proposed.*
7. Construction drawing previously provided for tanks and outfalls. Basin sections now provided - refer to ACD drawings/sections. *The ACD drawing is not a construction detail drawing. To be clear, I require two perpendicular cross sections showing inlets and outlets, bedding layer, NAUE liner, overlap, topsoil, planting, etc. I also have concerns regarding the basin effectively being bunded along the southern side due to the lower ground level, details of this bund must be provided, i.e. construction, widths, etc.*
8. Catchment plan impermeable areas clarified. Refer to updated plan provided. *I will review when revised calculations are provided.*
9. Maintenance comments as per response before. *I will review when other points have been agreed.*

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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From: Luke Hart [REDACTED]
Sent: 17 May 2019 18:29
To: Laura Gibbons
Cc: Kathryn Griffiths; Caroline Green; Zoe Knott; Ryan Saul; Dorota Kaminska-Majkowska; James Lawson; Lance Else; James Hammond; Darren McArthur
Subject: RE: Y/9818/RES and Y/97/18/DOC

Hi Laura,

In relation to your comments (further below) and our subsequent discussions please find link below to updated drawings/information with summary below.

<https://we.tl/t-5W5e7O1DOA>

Please can we discuss the flotation/groundwater item as per my messages as soon as possible?

Comments against original responses/items are:

1. ACD have shown tank footprints on their landscaping plans. Updated plans provided.
2. Pond sections with NAUE liner provided. Details provided. Tank flotation/groundwater assessment to be discussed as soon as possible.
3. Further site investigation/soakage tests have been requested. Please see associated sketch sent to geotechnical engineers within the link provided.
4. Headwalls are set 150mm above ditch level. Refer to the updated plan provided.
5. Drainage drawing shows smaller basin (as mentioned recently) and all associated basin levels. Refer to updated plan provided.
6. Standard detail updated to show diffuser and control chamber together. Plan updated to show incoming surface water diffusers for typical drive. Permeable paving depths added to drawing (notes). Refer updated plans provided.
7. Construction drawing previously provided for tanks and outfalls. Basin sections now provided - refer to ACD drawings/sections.
8. Catchment plan impermeable areas clarified. Refer to updated plan provided.
9. Maintenance comments as per response before.

If we can discuss the remaining item noted above then that would be most appreciated.

I trust otherwise the above/provided drawings/information now addresses your comments.

Kind Regards



Luke Hart | Associate Director

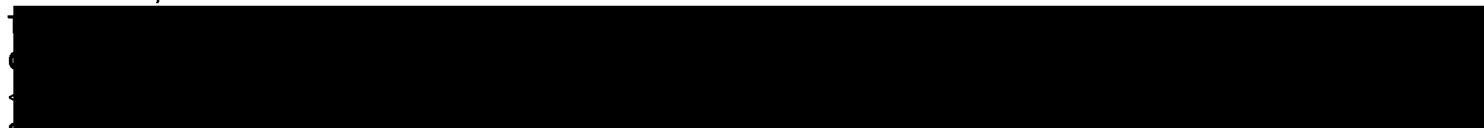
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From: Kathryn Griffiths <[REDACTED]>

Sent: 03 May 2019 16:42



Subject: FW: Y/9818/RES and Y/97/18/DOC

Hi Luke,

Laura Gibbons has provided further comments below.

The case officer has requested that you liaise directly with Laura and only submit further information once you have reached an agreement.

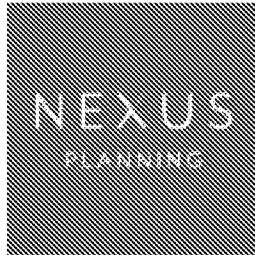
Many thanks

Kathryn

Kathryn Griffiths
Graduate Planner

[REDACTED]

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Nexus Planning
5th Floor, Thames Tower
Station Road
Reading
RG1 1LX

[REDACTED]



From: Simon Davis <Simon.Davis@arun.gov.uk>

Sent: 03 May 2019 16:25

To: Kathryn Griffiths <[REDACTED]>

Subject: FW: Y/9818/RES and Y/97/18/DOC

As discussed

Kind Regards

Simon J Davis MRTPI | Principal Planning Officer, Planning Department, Directorate of Place, Arun District Council |

Location: Planning, First Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF

Internal: 37874 | External: +44 (0) 1903 737874 | E-mail: simon.davis@arun.gov.uk

Please note that I typically work from home on Thursdays when I am unreachable on my work phone

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From: Laura Gibbons

Sent: 03 May 2019 16:02

To: Simon Davis <Simon.Davis@arun.gov.uk>

Subject: RE: Y/9818/RES and Y/97/18/DOC

Hi Simon,

Still not happy with the details or the proposed landscaping details. My original comments are shown in blue, the applicants responses are provided in red, and my responses to these are shown in *purple*:

1. There are still trees proposed in close proximity to the southern-most attenuation tank. 2 no. trees close to this tank have been removed. Refer to updated ACD landscaping drawings. *On the ACD landscape drawing sheet 4 revision G there are trees in close proximity to the crate nearest the pumping station. Please can a plan be provided which shows both the proposed drainage and the proposed planting and associated potential root areas on the same drawing.*
2. A ground investigation report has been provided which details how groundwater monitoring was conducted November to December 2015. Peak ground water levels within this window were 1.64m bgl near the proposed location for the attenuation pond. Winter monitoring is required to be completed October to March inclusive. This is required even when infiltration is not proposed to ensure that the effects of flotation are adequately accounted for in design. Groundwater levels recorded are below the basin levels (the basin is also shallow at approximately 600mm deep/300mm water level.). Flotation assessment will be carried out where necessary as part of the detailed design and in discussion with the relevant attenuation tank manufacturer. *We do not know if groundwater levels are below the basin levels, the monitoring completed is insufficient. This level of detail regarding lining and flotation is required in order to discharge the drainage condition as it is quite a fundamental issue. I also would be very hesitant at agreeing a layout without this level of detail as we would affectively be confining the space available for surface water drainage and ending up with an implementable scheme.*
3. The ground investigation report includes results of infiltration testing completed at two locations. Both tests were completed at over 2m depth. One test gave results which are acceptable to support infiltration. Shallow infiltration testing needs to be completed in the winter to ascertain the potential for permeable paving and shallower infiltrating crate systems. The evidence provided to date is insufficient to justify not utilising infiltration. Our design is based on the recommended advice by the geotechnical engineers (BRD), which advices that the site *"has low permeability and therefore poor infiltration, which would be expected given its cohesive nature.... Consequently the disposal of collected surface water to conventional soakaways are not considered particularly feasible at this site. It is anticipated that any drainage associated with the proposed development will need to feed into the existing local drainage network...."*. Planning has been given on this basis and we are progressing site design to accord with planning/FRA/strategies. *Other nearby sites have found shallow infiltration is achievable. Describing a soil as cohesive is insufficient to rule out infiltration. We did not agree the strategy, in all of our responses to the outline application we stated that infiltration should be investigated, especially shallow infiltration. Shallow infiltration tests must be completed in the winter.*
4. Top of bank levels, invert levels and slope need to be labelled on proposed ponds. These have been added to the drainage plan. *Okay, but will review further once the points above are resolved.*
5. Proposed invert levels of outfalls to ditches appear to be low in comparison to surrounding bed levels. A minimum of 150mm must be provided between the invert level of outfall and ditch bed level. The site is quite constrained as we have had to look to achieve outfalls without impacting significantly on pipe depths in the road (for adoption), meeting highway adoption standards and building regulations/level design requirements, existing tree retention at boundaries, minimising roof heights etc. We have amended the outfall pipe diameter and gradient and pulled the headwalls back/provided a new short section of ditch prior to connecting the site to the existing ditch. This improves the level difference by around 50-100mm. *Site specific detail drawings of outfalls need to be provided. 150mm is our absolute minimum requirement.*
6. Details of how the permeable paving links to the main drainage system have not been provided. Typical arrangement/details have been shown on the drainage plan. These still don't seem to have been provided.
 - a. *Construction detail drawings have been provided of diffuser units stating inlet from house, is this what is proposed? It isn't actually clear from the layouts if standard rwp connecting to the main piped network are proposed. There certainly are no diffuser units shown on layouts.*
 - b. *There are still no drawings or indications on the layout of how the permeable paving connects to the main network. Please provide these. Please also ensure formation and finish levels of permeable paving is provided.*

7. Construction detail drawings need to be provided. I recommend that the applicant refers to our checklist for further detail of our requirements. Construction details provided. *Construction details of tanks, ponds and outfalls need to be provided.*
8. Please can the applicant supply a catchment area plan. Catchment area plan provided. *Please provide area figures on this plan.*
9. Again it would be inappropriate to comment in detail on maintenance proposals whilst design has not been agreed. However, I note that the document does not state how maintenance will be funded. This must be detailed. Maintenance will be by the highway authority (WSCC) for road gullies and highway drains, by Southern Water for the main adopted sewers (subject to a s104), and privately maintained for areas that fall outside of these. Bovis have advised that privately maintained areas will go over to a management company with all residents paying a fee towards upkeep. *I will comment further once details have been agreed.*

Kind 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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From: Simon Davis
Sent: 29 April 2019 10:26
To: Laura Gibbons
Subject: FW: Y/9818/RES and Y/97/18/DOC

Hi Laura,

Please see below. These will not be added to the website unless you advise they are acceptable.

Kind Regards

Simon J Davis MRTPI | Principal Planning Officer, Planning Department, Directorate of Place, Arun District Council |

Location: Planning, First Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF

Internal: 37874 | External: +44 (0) 1903 737874 | E-mail: simon.davis@arun.gov.uk

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From: Zoe Knott <z.knott@nexusplanning.co.uk>
Sent: 29 April 2019 08:45
To: Simon Davis <Simon.Davis@arun.gov.uk>
Cc: Kathryn Griffiths <k.griffiths@nexusplanning.co.uk>
Subject: FW: Y/9818/RES and Y/97/18/DOC

Morning Simon,

Please see the comments below in red in response to the email from Laura Gibbons and the attached supporting evidence.

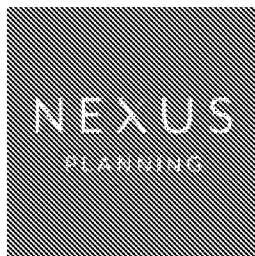
Many thanks,

Zoe

Zoe Knott
Principal Planner

T: 0118 214 9340
M +44 (0) 7867 351620
E z.knott@nexusplanning.co.uk

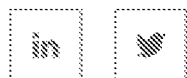
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From: Luke Hart <lhart@odysseyconsult.co.uk>

Sent: 26 April 2019 17:48

To: Kathryn Griffiths <k.griffiths@nexusplanning.co.uk>; Zoe Knott <z.knott@nexusplanning.co.uk>

Cc: Caroline Green <Caroline.Green@bovishomes.co.uk>; Ryan Saul <ryan.saul@odysseyconsult.co.uk>; Dorota Kaminska-Majkowska <dorota@acdeny.co.uk>

Subject: FW: Y/9818/RES and Y/97/18/DOC

Hi Kathryn,

Please see comments/response below in red against original email along with updated/additional drawings attached.

Any queries then let me know.

Kind Regards

Luke Hart | Associate Director

Tuscany House | White Hart Lane | Basingstoke | RG21 4AF

T: 01256 331144

E: lhart@odysseyconsult.co.uk W: www.odysseyconsult.co.uk

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From: Laura Gibbons

Sent: 12 April 2019 12:16

To: Simon Davis <Simon.Davis@arun.gov.uk>

Subject: RE: Y/9818/RES and Y/97/18/DOC

Simon,

Comments on the revised drainage and landscape proposals:

1. There are still trees proposed in close proximity to the southern-most attenuation tank. 2 no. trees close to this tank have been removed. Refer to updated ACD landscaping drawings.
2. A ground investigation report has been provided which details how groundwater monitoring was conducted November to December 2015. Peak ground water levels within this window were 1.64m bgl near the proposed location for the attenuation pond. Winter monitoring is required to be completed October to March inclusive. This is required even when infiltration is not proposed to ensure that the effects of flotation are adequately accounted for in design. Groundwater levels recorded are below the basin levels (the basin is also shallow at approximately 600mm deep/300mm water level.). Flotation assessment will be carried out where necessary as part of the detailed design and in discussion with the relevant attenuation tank manufacturer.
3. The ground investigation report includes results of infiltration testing completed at two locations. Both tests were completed at over 2m depth. One test gave results which are acceptable to support infiltration. Shallow infiltration testing needs to be completed in the winter to ascertain the potential for permeable paving and shallower infiltrating crate systems. The evidence provided to date is insufficient to justify not utilising infiltration. Our design is based on the recommended advice by the geotechnical engineers (BRD), which advises that the site *"has low permeability and therefore poor infiltration, which would be expected given its cohesive nature.... Consequently the disposal of collected surface water to conventional soakaways are not considered particularly feasible at this site. It is anticipated that any drainage associated with the proposed development will need to feed into the existing local drainage network..."*. Planning has been given on this basis and we are progressing site design to accord with planning/FRA/strategies.
4. Top of bank levels, invert levels and slope need to be labelled on proposed ponds. These have been added to the drainage plan.
5. Proposed invert levels of outfalls to ditches appear to be low in comparison to surrounding bed levels. A minimum of 150mm must be provided between the invert level of outfall and ditch bed level. The site is quite constrained as we have had to look to achieve outfalls without impacting significantly on pipe depths in the road (for adoption), meeting highway adoption standards and building regulations/level design requirements, existing tree retention at boundaries, minimising roof heights etc. We have amended the outfall pipe diameter and gradient and pulled the headwalls back/provided a new short section of ditch prior to connecting the site to the existing ditch. This improves the level difference by around 50-100mm.
6. Details of how the permeable paving links to the main drainage system have not been provided. Typical arrangement/details have been shown on the drainage plan.
7. Construction detail drawings need to be provided. I recommend that the applicant refers to our checklist for further detail of our requirements. Construction details provided.
8. Please can the applicant supply a catchment area plan. Catchment area plan provided.
9. Again it would be inappropriate to comment in detail on maintenance proposals whilst design has not been agreed. However, I note that the document does not state how maintenance will be funded. This must be detailed. Maintenance will be by the highway authority (WSCC) for road gullies and highway drains, by Southern Water for the main adopted sewers (subject to a s104), and privately maintained for areas that fall outside of these. Bovis have advised that privately maintained areas will go over to a management company with all residents paying a fee towards upkeep.

I will review further once points 1-3 are resolved.

Kind 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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