



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

Sent: 01 August 2019 15:27

To: Luke Hart



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

Luke,

Comments to points below are:

2. Please provide flotation calculations for tank 3 to support the design.
3. See response to point 2 above.
4. Okay.
5. Okay.
7. Please provide freeboard between finished level of permeable paving and surrounding building finished floor levels. This should be provided so that water can pool on the surface before causing damage. It could be that permeable paving becomes clogged and water cannot get into the sub-base. This is a real risk given that you are leaving maintenance of single driveways to householders.
10. Please can detail be provided in the manual of how maintenance requirements are going to be conveyed to homeowners. I.e. are they going to receive a maintenance manual, is it going to be within the deeds anywhere, etc.
11. Okay.
12. Having spoken to Southern Water they have stated that they would not adopt the southern network. Therefore, these tanks can be made online.

Kind Regards,

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

From: Luke Hart [REDACTED]
Sent: 24 July 2019 17:44
To: Laura Gibbons <Laura.Gibbons@arun.gov.uk>
[REDACTED]

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

Hi Laura,

Thank you for the response.

Please find our comments below (in green) against yours along with relevant accompanying information attached.

Hopefully this finally concludes all items and the condition can be approved for sign off.

Kind Regards



Luke Hart | Associate Director

SEng (Hons) CEng MICE
[REDACTED]

From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>
Sent: 22 July 2019 11:07
To: Luke Hart [REDACTED]
[REDACTED]

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

Luke,

Comments in *red*.

1. The calculations for flotation of the pond are based on the liner being at 0.6m depth below ground water level. We agreed to assume ground water level at the surface in this area, i.e. 6.8mAOD. The invert level of the pond is 6.2mAOD, and there is 0.41m depth of top soil above the liner. The liner is therefore actually 1.01m below ground water level. The calculations need to be adjusted to account for this and more stabilising forces will be required. NAUE have revised their calculations to assume ground water at 6.8mAOD

and have advised that the depth of soil now required is 1.38m so we have updated our detail to reflect this.
okay Noted

2. The flotation calculations for tank 3 assume that wet sand is being used as ballast. Yet stone is specified within the drawings. We have requested clarification from SDS and are awaiting a response however see item 3 below. *I will await these details. Tank 3 has been replaced by a concrete tank. See below.*
3. The constructability, design life, and maintenance of the arrangement proposed for tank 3 are a significant concern. Please re-consider providing counterbalance outside of the impermeable membrane (then you're also displacing less groundwater) and above the tank. We are looking at an alternative tank design for this tank and will forward details as soon as there are available. *I will await these details. We have changed this tank to a concrete tank by Carlow. Please find attached associated details from Carlow and our plan updated to suit.*
4. There are discrepancies between cover levels and invert levels of tanks in flotation calculations and on drawings. Updated drawings/calcs from SDS will be sent over shortly *I will await these details. Updated SDS details provided.*
5. Please update the construction detail drawings to show permeable geotextile wrap fully around the sub-base. Detail has been updated. *Please update so geotextile is under tarmac, not over it. Detail amended and attached.*
6. Please provide a schedule of permeable paving subbase depths and orifice diameters. Schedule has been added to drawing. *okay. Noted*
7. Please provide finish and formation levels of permeable paving on plan. Finish and formation levels have been added to drawing and are also shown in the schedule. *Please ensure 150mm freeboard between cl of permeable paving and FFL, and 20mm between cl of permeable paving and FGL. The permeable paving design has a 300mm freeboard allowance in the design below the surface level to allow for block, bedding and tarmac.*
8. In some locations there are significant drops between orifice invert level and the invert level of the main surface water pipe. Please provide a detail that accurately represents this. Detail has been added to drawing 18-070/111.
9. There appear to be some discrepancies between tank dimensions (area and invert levels) shown on plan and those in calculations. Please check and update. The details need to reflect the actual storage anticipated based on SDS design as not a straight 95% due to pipe/granular running through. We have made amendments to read the same with the drawings now showing 'effective' volume. *Okay. Noted*
10. Please include reference to the covenants that will be imposed within the maintenance manual. (I have not found the example I was looking for, and cannot recall which case it was for, apologies). Reference to covenants will be added to maintenance manual. *I will await the updated manual. Updated drainage note/manual attached.*
11. Please update the maintenance manual to include replacement of geomembrane within the corrective maintenance for attenuation tanks. We are awaiting information from SDS and will update the manual with other items noted above once received. *I will await these details. Updated drainage note/manual attached.*
12. *Can you look at providing some upstream connections to the two southern tanks, to make them more online rather than offline. Offline tanks should be avoided where possible. I acknowledge that the northern most tank may have to stay offline. The main road sewer system is to be offered for adoption to Southern Water and they will not accept online tanks, only offline, privately maintained tanks.*

Kind Regards,

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

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