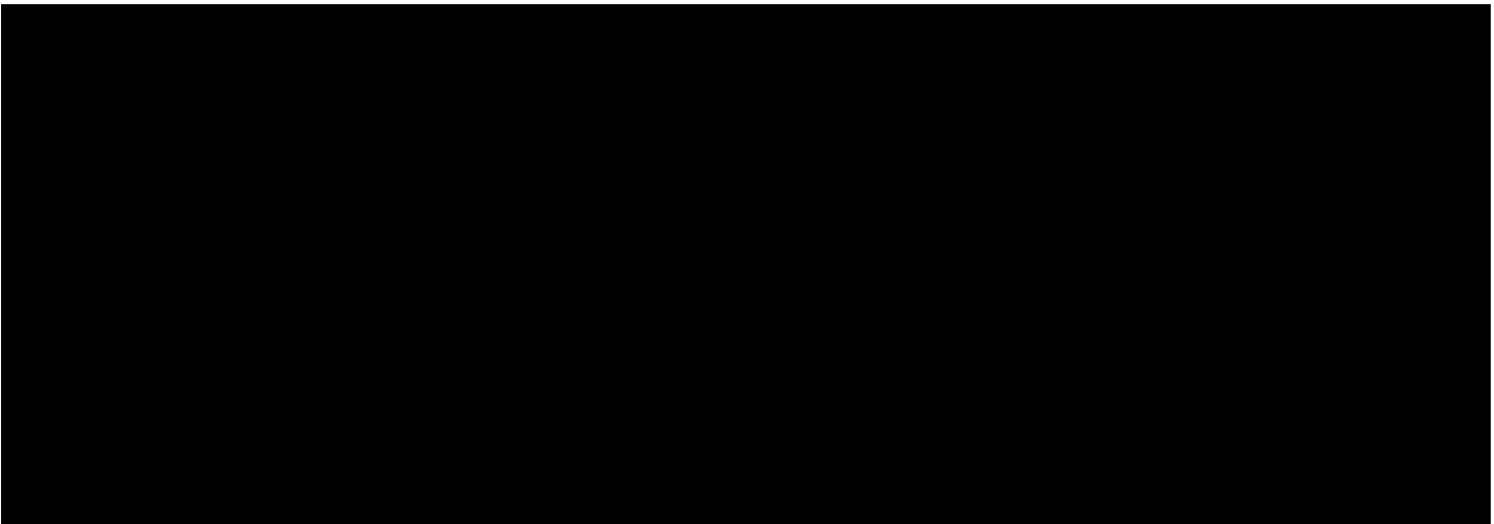
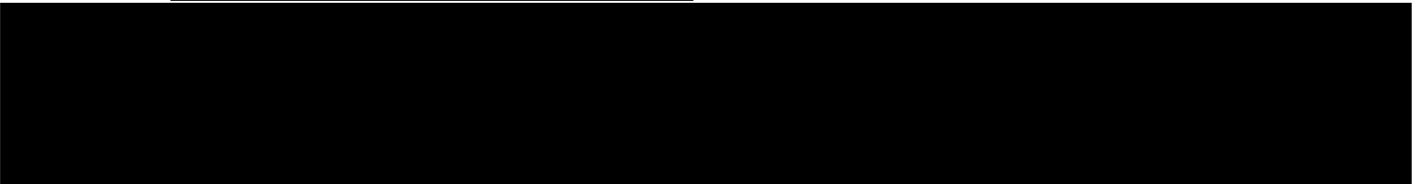




From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>

Sent: 22 July 2019 11:07

To: Luke Hart 



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

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.*
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.*
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.*
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.*
6. Please provide a schedule of permeable paving subbase depths and orifice diameters. Schedule has been added to drawing. *okay.*
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.*
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.*
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.*
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.*
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.*

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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Save the environment - think before you print.

From: Luke Hart [REDACTED]

Sent: 15 July 2019 15:41

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

Simon Davis <Simon.Davis@arun.gov.uk>
Subject: RE: Y/9818/RES and Y/97/18/DOC

Hi Laura,

Further to your comments below please find attached further/updated details along with responses against yours.

Kind Regards



Luke Hart | Associate Director

BEng (Hons) CEng MICE

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

Sent: 09 July 2019 14:25

To: Luke Hart

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

Luke,

Thank you for supplying the revised information. I have the following comments:

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.
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.
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.
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
5. Please update the construction detail drawings to show permeable geotextile wrap fully around the sub-base. Detail has been updated
6. Please provide a schedule of permeable paving subbase depths and orifice diameters. Schedule has been added to drawing
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
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.

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.
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.

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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