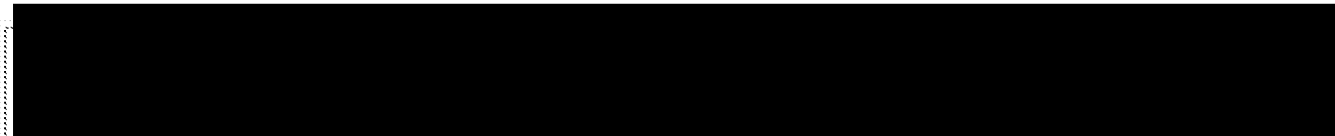
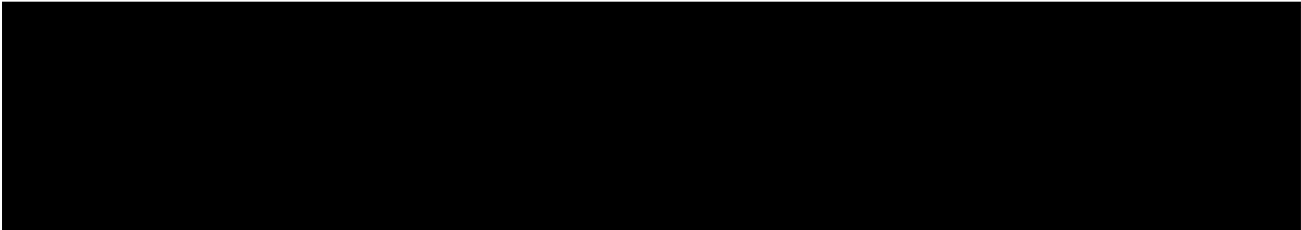


Please upload the below to the above application; Drainage Engineers further comments.



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Russell

Comments in red below (I note the revised drawings are contained within the technical report);
I look forward to receiving revised drawings, etc. Please provide revised drawings separate to the report.

Regards

Paul Cann
Principal Drainage Engineer
Engineering Services



Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
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Good morning Maria & Paul,

Paul, our Civil Engineer has now had time to look over your comments and I'm pleased to attach revised documents to address these concerns with the following comments, direct from our Civil Engineer:

- 1) A copy of winter infiltration testing and groundwater monitoring information is attached at the rear of the report. It is noted that one test hole (the worst) was only subjected to two fillings as opposed to three. However, a reasonable infiltration rate from this test pit has been used in the calculations. Based upon the overall variable ground conditions and the fact that the other test hole had superior infiltration rates, the infiltration rate used is deemed acceptable.
- 2) The extent of the proposed new paving is shown on the drawings which is reflected in the areas of the infiltration blanket within the supporting calculations. The drainage strategy plan, attached again for quick reference, shows no surface treatment changes to the Northern end of the site. The blue shaded area is the area subject to resurfacing. Noted
- 3) This is a design preference and not a planning related requirement which is beyond the remit of a consultee at Planning Stage. We are the designer and can choose between either the use of perforated pipe or diffuser units as both are acceptable designs. Disagree -- as part of our appraisal, we consider the robustness of the scheme design. Diffuser units are far more robust in terms of resisting loading from vehicles. Perforated pipes far less so. We have consulted with our Client and in this instance they are happy to use a diffuser unit. There is no obligation to place diffuser units 5m from buildings in any known guidance, again this is considered a design preference. Building regulation requirements specifically relates to soakaways due to highly focus areas of water discharging directly into the ground around building foundations, which is not the case for diffuser units proposed which disperse surface water into a wider area of voided subbase. Local Building Control officers sometimes have a preference to have the diffuser units 5 metres away from buildings, since this is the point where water flow is initially concentrated especially in lesser storm events. Amended drawings noted.
- 4) This is again a design preference. This is fundamental in ensuring that the risk of silt entering the diffuser unit is minimised, is good practice and provides a convenient chamber to enable silt removal. We have added silt traps upstream of diffusers in this instance, however diffuser units are only receiving roof water and any silt / sediment. Any loose sediments or fines are likely to be very low and unlikely to be significant enough to restrict performance of the diffuser units however we have determined in this case they are of benefit. It is surprising how much silt can be produced from a roof, especially when moss's etc become established on the tiles over time. Please add sump depth (min. 300mm) to construction detail.
- 5) Added where not shown – The foul water pipe connecting proposed FW01 and FW02 will not be known until construction and the minimum fall has been stated. Specify pipe diameter and gradient between catchpits and

diffuser units. Also indicate pipe invert level/finished paving level at connection to diffuser unit – to show that the pipe can be suitably connected based upon the proposed construction depth of the permeable paving.

- 6) Added. ok
- 7) Added where required. ok
- 8) This is a design preference. We have not shown this as there no practical reason or benefit in doing so. The request would require laying asphalt directly onto the permeable membrane during the construction process. The contractor will need to ensure that no fines enter the sub base during the laying of the base course.
- 9) The subbase thickness is dependent on the CBR values and not on the subbase thickness as demonstrated within the supporting calculations and information shown on drawings. Subbase thickness is based on an assumed CBR of 2-5% requiring minimum 350mm of subbase, storage requirements for the infiltration system for a critical 1 in 100 plus 40% climate change storm is a 240mm depth of subbase. ok
- 10) Additional levels added and subbase thickness updated to reflect the assumed CBR. There is a significant slope on the permeable paving formation level, based upon the finished surface levels provided. The calculations will need to take account of this slope, to ensure that the 1 in 100 year event + 40% is contained within the structure. There is no parameters shown in the calculations to suggest that the slope has been accounted for.

Kind regards,

Russell McCourty *BSc(Hons) MCIAT*
Chartered Architectural Technologist



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