

[REDACTED]

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

Thank you



[REDACTED]

Hi Elvin,

Thanks for your email. My response is in *blue* below.

Condition 5- surface water drainage

The documents submitted do not accord with the documents submitted to support the planning appeal. Details supplied to discharge this condition must tie in with this, specifically regarding levels and extent of permeable paving to ensure that flood risk is not increased elsewhere.

The discharge of condition application does not appear to acknowledge the requirement for providing flood mitigation and surface water drainage.

We have updated the calculations as noted below and increased the area of permeable paving and flood storage to allow for the required 35m³ of flood water storage loss caused on the site by the new development (from the original Robert Clark Asso report/calcs). *The appeal documents submitted included undercroft parking with*

permeable sub-base to allow the water to flow through the new building area. See paragraph in Surface Water Drainage section of RCA evidence report. This was fundamental to us withdrawing our objection to the proposals and must be included in the detailed design. We have also now proposed a tanked system (and not an infiltration system) as the project developer would like to progress, this revised proposal makes the groundwater testing arguable less important (see below). You are not following the hierarchy for sustainable drainage because of inadequate data/ testing results. The winter groundwater testing was carried out in accordance with appeal condition No. 5. There was no requirement that the local authority be consulted in advance to agree a methodology for the winter groundwater testing and we feel that the study locations were reasonable. Obviously from the results with the apparent ground water testing maximum level being so high a percolation test would have been impossible to perform within the winter months, hence why it was not carried out. Consultation response of 08/06/18 clearly states that "Infiltration rates for soakage structures are to be based on percolation tests undertaken in the winter period and at the location and depth of the proposed structures....The applicant is advised to discuss the extent of groundwater monitoring with the Council's Engineers" Furthermore, it is standard practice to complete testing at or as near to the proposed infiltration locations.

Whether the sub-base of the permeable paving is lined or not is dependent upon winter groundwater monitoring. Disappointingly this monitoring was only completed to the south west of the proposed dwellings and not in the area proposed for permeable paving. Given the differences in elevation and sensitivity of the site it is not appropriate to use these results to the north east of the proposed buildings. Therefore it is not possible to determine if the base needs to be lined and if attenuated discharge to watercourse is required.

The winter ground water monitoring was carried out in February 2020, which was one of the wettest February's ever recorded. Therefore we believe that the **ground water** levels are accurate and relevant for the design. The ground level in the area of the monitoring was 6.000m AOD, the highest ground water level recorded was 5.940m AOD. Therefore this is considered the highest ground water level expected on site. *It is unclear whether groundwater levels follow the slope of the site or not, the area proposed for permeable paving is higher and further away from the culverted watercourse, therefore groundwater level may be different.* Therefore we have revised our proposals to a tanked system, proposed details and levels are given on the drawings attached. We have proposed to install an overflow to the culvert as originally proposed. This overflow pipe would only need to discharge at a rate of 0.391 L/s to have the same effect as the soakaway test results, therefore the flow to the culvert would not be excessive if a tanked storage solution is insisted upon by the planners / drainage consultee. We have added this to the drawing as a belt and braces approach to allow the project to progress. *Unclear whether a hybrid or attenuation system is proposed, statements conflict, please confirm. What is the size of the orifice proposed? The suggested flow rate is exceptionally small, and far lower than that normally permitted due to the associated risk of blockage with such a small aperture. Please provide detailed network calculations for the proposed drainage solution, with flow control accurately represented.*

The duration of monitoring was also exceptionally poor, covering only two weeks. Levels observed indicate that groundwater was found to be very close to surface level, no comment is made upon this in the application and infiltration is proposed.

As noted it was one of the wettest winters record and February is usually the wettest month, the results are satisfactory for the design purpose.

Infiltration testing results have been provided, it does not appear that three repeat tests were completed and it is not clear when, where and to what depth this testing was completed.

Testing was undertaken by others and as noted above in normal operation the test results are relevant. The results from the soakaway testing **was** poor as expected and noted above. *The condition requires winter infiltration testing in accordance with BRE365, i.e. three repeat tests.*

If further more extensive winter groundwater monitoring results and winter infiltration testing information cannot be provided we would recommend refusal of this application to enable; further testing to be completed this winter, and the other points raised to be addressed.

We do not feel that this is acceptable, infiltration testing has been provided and winter ground water monitoring. Any additional requirements where not laid out and therefore the provided information fulfils the requirements originally laid out by the planners and their consultants. We are now proposing a tanked system with overflow at the original soakaway rate (very small) so the **ground water** levels are not relevant for this solution. *If you are lining the system, it is not an overflow, it is the point of discharge. Please clarify what is proposed.*

Therefore the proposed drainage system will work on the site during the 1in100 year + 40% climate change. Should a more intense storm or flooding occur on site the system has the lost flood volume built into the storage blanket to offset the new buildings. *Please provide detailed network calculations for the proposed drainage solution, with flow control accurately represented.*

We would strongly advise the applicant to discuss the locations and durations of monitoring with us prior to undertaking works on site to ensure our requirements are met. While we understand the advice, both my client and the LPA are bound by the wording of the appeal conditions. In fact the appeal inspector took Arun's suggested condition verbatim and presumably there was an opportunity for the LPA to ask for the methodology to be agreed before the testing work began. As this is not the case we feel that the winter groundwater testing satisfied the condition.

We also note that finish and formation levels must be shown on permeable paving and it must be accurately modelled to include any slope.

These are shown on the sectional drawings on the drainage details drawing and as noted above.

Condition 6- discharge of flows to watercourse

As detailed above the information provided is insufficient to demonstrate whether attenuated discharge to watercourse is required. This has now been added to the drawings as discussed above and we are expecting further dialogue on this matter with the LPA and Southern Water to obtain their approval to connect. *This will require ordinary watercourse land drainage consent.*

Kind regards,

Hi Laura

We have taken over this one for the developer and trying to get approval of the drainage system.

I have commented below on your last emailed comments and revised the drainage proposals accordingly. I would be grateful if we could get your approval for the proposals so that the Developer can continue in the very near future with the works:

Condition 5- surface water drainage

The documents submitted do not accord with the documents submitted to support the planning appeal. Details supplied to discharge this condition must tie in with this, specifically regarding levels and extent of permeable paving to ensure that flood risk is not increased elsewhere.

The discharge of condition application does not appear to acknowledge the requirement for providing flood mitigation and surface water drainage.

We have updated the calculations as noted below and increased the area of permeable paving and flood storage to allow for the required 35m³ of flood water storage loss caused on the site by the new development (from the original Robert Clark Asso report/calcs). We have also now proposed a tanked system (and not an infiltration system) as the project developer would like to progress, this revised proposal makes the groundwater testing arguable less important (see below). The winter groundwater testing was carried out in accordance with appeal condition No. 5. There was no requirement that the local authority be consulted in advance to agree a methodology for the winter groundwater testing and we feel that the study locations were reasonable. Obviously from the results with the apparent ground water testing maximum level being so high a percolation test would have been impossible to perform within the winter months, hence why it was not carried out.

Whether the sub-base of the permeable paving is lined or not is dependent upon winter groundwater monitoring. Disappointingly this monitoring was only completed to the south west of the proposed dwellings and not in the area proposed for permeable paving. Given the differences in elevation and sensitivity of the site it is not appropriate to use these results to the north east of the proposed buildings. Therefore it is not possible to determine if the base needs to be lined and if attenuated discharge to watercourse is required.

The winter ground water monitoring was carried out in February 2020, which was one of the wettest February's ever recorded. Therefore we believe that the ground water levels are accurate and relevant for the design. The ground level in the area of the monitoring was 6.000m AOD, the highest ground water level recorded was 5.940m AOD. Therefore this is considered the highest ground water level expected on site. Therefore we have revised our proposals to a tanked system, proposed details and levels are given on the drawings attached. We have proposed to install an overflow to the culvert as originally proposed. This overflow pipe would only need to discharge at a rate of 0.391 L/s to have the same effect as the soakaway test results, therefore the flow to the culvert would not be excessive if a tanked storage solution is insisted upon by the planners / drainage consultee. We have added this to the drawing as a belt and braces approach to allow the project to progress.

The duration of monitoring was also exceptionally poor, covering only two weeks. Levels observed indicate that groundwater was found to be very close to surface level, no comment is made upon this in the application and infiltration is proposed.

As noted it was one of the wettest winters record and February is usually the wettest month, the results are satisfactory for the design purpose.

Infiltration testing results have been provided, it does not appear that three repeat tests were completed and it is not clear when, where and to what depth this testing was completed.

Testing was undertaken by others and as noted above in normal operation the test results are relevant. The results from the soakaway testing was poor as expected and noted above.

If further more extensive winter groundwater monitoring results and winter infiltration testing information cannot be provided we would recommend refusal of this application to enable; further testing to be completed this winter, and the other points raised to be addressed.

We do not feel that this is acceptable, infiltration testing has been provided and winter ground water monitoring. Any additional requirements were not laid out and therefore the provided information fulfils the requirements originally laid out by the planners and their consultants. We are now proposing a tanked system with overflow at the original soakaway rate (very small) so the ground water levels are not relevant for this solution.

Therefore the proposed drainage system will work on the site during the 1in100 year + 40% climate change. Should a more intense storm or flooding occur on site the system has the lost flood volume built into the storage blanket to offset the new buildings.

We would strongly advise the applicant to discuss the locations and durations of monitoring with us prior to undertaking works on site to ensure our requirements are met. While we understand the advice, both my client and the LPA are bound by the wording of the appeal conditions. In fact the appeal inspector took Arun's suggested condition verbatim and presumably there was an opportunity for the LPA to ask for the methodology to be agreed before the testing work began. As this is not the case we feel that the winter groundwater testing satisfied the condition.

We also note that finish and formation levels must be shown on permeable paving and it must be accurately modelled to include any slope.

These are shown on the sectional drawings on the drainage details drawing and as noted above.

Condition 6- discharge of flows to watercourse

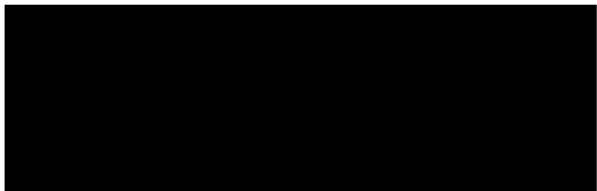
As detailed above the information provided is insufficient to demonstrate whether attenuated discharge to watercourse is required. This has now been added to the drawings as discussed above and we are expecting further dialogue on this matter with the LPA and Southern Water to obtain their approval to connect.

Please feel free to contact me to discuss any of the above the attached drawings.

Regards

Elvin Gomery

Direct Dial 01489 210096



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Elvin

I've made a few changes for planning reasons. My comments are in Green. I spoke to the client this morning and warned him that they were pushing for further testing this winter which I said we would resist for all our worth.

The only other thing to say on your email is a clear indication that the site has been purchased with planning permission and we are happy to work together with the LPA to resolve these issues which will be in both parties interests.

Stuart



To: Stuart Bone
Subject: RE: BR/188/20/DOC

Hi Stuart

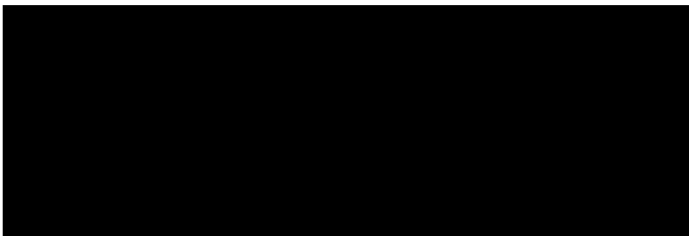
See some comments below based on our discussions and updated designs and drawings.

Let me know if you want to discuss anything before submission.

Regards

Elvin Gomery

Direct Dial 01489 210096



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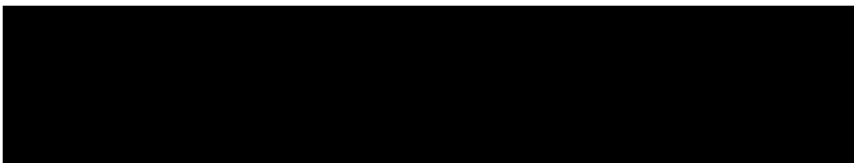
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Dear Mr Bone,

Please see below the comments of our Drainage Engineers with regards to discharge of conditions 5 and 6 of the above application.

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Therefore we do not recommend discharge of this condition at this time.

Kind regards

Maria



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Laura Gibbons

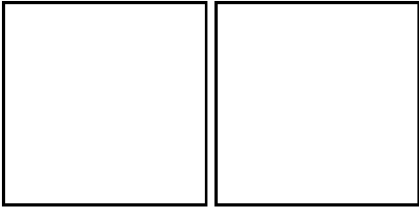
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