



BRIGHT PLAN CIVILS

Drainage Engineer
Arun District Council

24th May 2022
Planning Ref: P/153/21/RES
Our Ref: D1915

Dear Drainage Engineer,

RE: CONSULTANT RESPONSE TO DRAINAGE COMMENTS

Please find our consultant response letter to supplement the additional information provided in response to your engineers comments regarding surface water drainage for the proposed development at Summer Lane, Pagham. These are numbered according to your original comment numbering system on your email dated 30 November 2021.

1. Although our proposed Reserved Matters drainage strategy follows the principles of the Flood Risk Assessment and Drainage Strategy approved at Outline Planning Stage, and was based on addressing the planning conditions imposed at this stage, we have considered the positive drainage area in more detail in light of your comments and after further discussion with ADC.

The proposed hardstanding area for the south site is 4.81 Ha – which would result in a Greenfield runoff rate of 16.8l/s. We have proposed a revised discharge rate of 16.0l/s, within this threshold, and have increased the pond volumes and permeable pavement area to allow for this.

The proposed hardstanding area for the north site is 3.04 Ha – which would result in a Greenfield runoff rate of 10.6l/s. We have proposed a revised discharge rate of 10.0l/s, within this threshold, and have increased the pond volumes and permeable pavement area to allow for this. (We have also included allowance in the model for a 1.0l/s additional flow rate and the catchment area in order to allow capacity for the unpermitted ditch along Summer Lane to be incorporated.)

We expect this to meet your requirements.

2. We have taken your concerns into account and reworked the site level design in coordination with highways design and drainage design, as well as acknowledgement of potential flood risk to the site, using Civils 3D and Causeway Flow software to ensure a compliant design with sufficient surface water drainage falls. The site levels have been reduced to ensure significantly less ground raising and no more than 1.0m level raising across the site.

We expect this to meet your requirements.

3. We are in agreement that the watercourses require maintenance, and our Director Mark Akmenkalns has been in communications with your colleague Paul Cann to discuss this in further length. We visited site in December 2021 to assess requirements, and subsequently ensured the applicant undertook two separate rounds of further clearance works needed to enable further investigations of existing connections over the winter. This allowed additional survey work required in order to provide confirmation of watercourse network, culvert inverts, and flow directions.

We have provided an updated assessment of the watercourse networks in drawings 600 and 601 following site investigation.

4. We have reviewed all three flow direction queries you have raised again, following site clearance and additional topographic survey and would contend that the information we have available does not

indicate as you've stated. I would agree however that this could be misleading, and as such we have determined the watercourse network in more clarity. We advise our additional investigation has established:

- a) Agree that this watercourse appears to flow west to east, following clearance and investigation. Culvert also established.
 - b) We disagree here. Upon further investigation on site, this watercourse is no more than a minor depression to the western/central stretch, with no connections identified to west and higher ground beyond extent. This flows west to east, likely draining hardstanding from Horns Lane, before discharging via a culvert under a horse-field entrance and into watercourse running north (see below). Clearance furthered establish the details and condition of existing culvert here.
 - c) We disagree here, following further clearance we can confirm that this watercourse begins to the southwest (see above) and north to the 'T shape' and then east to Pagham Road.
5. Agreed. Site visit on 8 December 2021 identified a number of possible culverts/connections not previously shown on topographic survey, as well as an increased extent of watercourse along the west side of Horns Lane than shown. Subsequent clearance, further site visits and further topographic survey confirmed connections. These are shown on Drawings 600 and 601.
 6. Agreed. As above. Revised drainage design proposes improvements to the Horn Lane watercourse network.
 7. Agreed. As above. Revised drainage design proposes improvements to the Horn Lane watercourse network.
 8. Agreed. As above. Revised site layout design and revised drainage design proposes improvements to the Horn Lane watercourse network, with open ditches wherever possible, increase in ditch network capacity and conveyance.
 9. Drainage design has been updated to show Horn Lane watercourse improvements, as per this comment.
 10. Proposed basins have been reconfigured to ensure minimum 3.0m clearance from top of banks.
 11. Noted and intended to be undertaken. It is noted that some discharges have already been approved by Paul Cann from the outline planning revision, and these will be discussed in further detail to establish requirements.
 12. This is not viable, as we have already proposed significant areas of permeable pavement across shared surfacing, and this is unnecessary expense with the number of diffuser units, catchpits, and connections. It is also noted that other neighbouring LPA's have recently enforced permeable pavement areas to be within shared surfacing only, as private individual maintenance schemes are required in private driveways and cannot as easily be enforced. Permeable pavement extents within the road network have been expanded however.
 13. Noted, FSR Data and CV of 1.00 used for revised design.
 14. Noted, surcharged outfalls included to top of existing watercourse bank levels.
 15. Noted.
 16. Additional groundwater monitoring has been undertaken to provide data for winter 2021-2022 from December onwards, which provides groundwater levels for all relevant points and will be utilised to ensure design of basins accounts for flotation calculations at detailed design.

17. Noted, as provided.
18. Noted, to be provided at detailed design following receipt of 2021-2022 full winter groundwater monitoring at proposed pond locations.
19. Noted, drainage engineer to communicate to landscape architect to ensure no proposed trees are located where there is potential for tree roots to conflict with surface water drainage features.

Yours sincerely,

Dan Lytton
Bright Plan Civils