cgs civils

Consulting Civil Engineers

Ref: C3077
28 August 2024

Woodhouse Farm, Billinghurst, RH14 9DS

Reponses to LLFA Comments Regarding Condition 3.

Condition 3:

Pre-Commencement Condition: No development shall commence until a drainage strategy detailing the proposed means of foul and surface water disposal has been submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the approved scheme. Reason: As this matter is fundamental to ensure that the development is properly drained and to comply with Policy 38 of the Horsham District Planning Framework (2015). We have reviewed the information provided by the applicant in support of the planning application. The applicant should provide the following information prior to the review to discharge Condition 3. This consultation response follows our previous response dated 04 July 2024. Thank you for the additional information. While this provides a step towards a suitable response, we require more information before Condition 3 can be discharged.

Main comments:

• Thank you for providing an updated surface water drainage strategy, consisting of an updated design of a proposed raingarden (attenuation device) with a now revised design of infiltration to ground and an orifice flow control which is restricted to 1 l/s to the existing watercourse. The applicant confirms an overflow is proposed as the half drain down times cannot be achieved due to the low infiltration rate. The upstream hard paved areas are designed as infiltrating permeable pavement with an underdrain pipe network falling to the downstream raingarden.

Reply: The BRE 365 infiltration tests have confirmed a very low infiltration rate of 1.96×10^{-6} m/s. Due to these low infiltration rates, the use of a traditional soakaway has been ruled out. Therefore, it is proposed that surface water runoff be attenuated and discharged into the existing ditch at a restricted rate of 0.5 l/s.

The drainage strategy has been updated from using an above-ground detention basin to a geocellular underground tank. This change reduces the total storage requirements, with the existing landscape areas discharging across the site towards the existing ditch, thus mimicking the existing site drainage regime.

• The greenfield runoff rates have been calculated for the total site area of 0.2042ha. The results appended to the Foul and Surface Water Drainage Report show that for the 1 in 1 year event this is 0.94 l/s (4.60 l/s/ha). The greenfield runoff rates should be calculated pro rata to the contributing impermeable area, proposed in the contributing area plan as 0.0621ha. Hence, for the 1 in 1 year event the required greenfield runoff rate would be 0.29 l/s for the proposed in the contributing area, not 1l/s as proposed. It is not clear what contributing area has been used to derive the proposed attenuation storage, however this should be checked at the same time as above.

Reply: Please see the updated drainage strategy drawings and the report. The restricted flow rate has been updated from the previously proposed 1 l/s for the 1 in 100 year rainfall event. The current runoff rate has been reduced to 0.5 l/s for the 1 in 100 year event. All downpipes will discharge through Raintiana RWP base units, which include a permeable cover and a sump unit designed to prevent silt or sediment from

entering the proposed drainage system. This setup is intended to prevent blockage of the drainage system and flow control unit.

• The Horsham District Council SuDS Suitability map, provided in the SFRA Evidence Base, shows the site has a Low SuDS infiltration potential, and the desk based study records Wealden Clay bedrock at the site. Please provide evidence to BRE 365 or revise the drainage strategy outfall strategy to discharge to the watercourse only. The Foul and Surface Water Drainage Report states an onsite infiltration test was conducted, with an infiltration rate of 1.96 x 10-6. The applicant states the half drain down time cannot be achieved within 24 hours. The applicant should provide evidence of testing to BRE 365 at the location and depth of the proposed raingarden. This should include a marked-up plan showing the infiltration test location. If infiltration testing is not shown to be to BRE 365, then infiltration cannot be proven feasible. If so, the surface water drainage strategy should discharge to the watercourse only.

Reply: The BRE 365 test confirms a very low infiltration rate at the site, so the traditional infiltration method via soakaway for the roof drainage has been ruled out. The infiltration report has been updated accordingly.

• The Table in Section 5.2 Proposed Hydraulic Calculation Specifications of the Drainage Statement and the Causeway model storage structure outputs in the Appendices shows that an infiltration rate has been applied to both the base and sides of the raingarden and the permeable paving storage structure. Paragraph 5.2.2 of the West Sussex LLFA Policy for the Management of Surface Water, states that the infiltration rate for infiltration basins or permeable pavements (and rain gardens) the percolation rate is applied to the base only (not the sides). Consideration should be given to silt ingress by appropriate geotextile filter material wrapping for buried devices, to reduce ingress of fines and build up at the base. The design infiltration rate of the base should be reduced to account for siltation, to a maximum rate of 1x10-5 m/s on the base as per Section 25.4 of the CIRIA guidance (The SuDS Manual C753).

Reply: Please see the updated surface water calculations and the proposed drainage strategy drawings. We understand that the maximum infiltration rate of 1×10^{-6} m/s should be applied, rather than the 1×10^{-5} m/s indicated in the LLFA comment.

• As per best practice, infiltration devices should be 5m from structures and boundaries, in addition to avoiding Root Protection Zones.

Reply: This does not apply, as we are currently proposing surface water discharge into the proposed attenuation tank with restricted flow rate into the existing ditch. The proposed attenuation tank has been located away from the existing Root Protection Zones.

• All control orifices 100mm or less must be guarded to reduce the risk of blockages. All flow control of any diameter must be provided with an overflow weir.

Reply: Please see updated proposed drainage strategy drawings. All rwps to be discharged through Raintaina Rwp Base Units, which include a sump designed to allow silt and sediment settle, thereby preventing blockage of the proposed drainage system.

• The Proposed Exceedance Flow Route drawing shows the exceedance flow route is directed around the proposed building however no measure such as device exceedance overflow weirs, or landscaping i.e. land raising, bunding or shallow v-drains is proposed to direct these exceedance flows. The flows are shown to flow to greenspace, and to the proposed attenuation feature but the contributing catchment plan does not account for external flows into the attenuation device or the permeable paving. Contributing flows from the external catchment, including from higher ground such as the access and wider surroundings within and beyond the redline boundary, should also be included in exceedance considerations. Measures must be provided to mitigate any exceedance flows shown to flow to the upstream side (front elevation) of the proposed dwelling.

Reply: The Proposed Exceedance Flow Route drawing has been updated. A BN kerb with a 25mm upstand has been designed at the entrance to the proposed site to ensure that the levels to the north outside the kerb are lower. This design reduces the risk of water exceeding from the access road onto the site.

Additionally, part of the proposed driveway and parking area adjacent to the building has been graded away from the building towards the proposed drainage channel. This adjustment will direct any exceedance flow away from the building and into less vulnerable areas, such as the rear garden and the existing ditch.

• As the proposed dwelling is located downstream of the driveway area permeable paving, the factor of safety for the permeable paving should be increased. The factor of safety should align with Table 25.2 of the CIRIA SuDS Manual and be justified. If infiltration to BRE 365 if proven, the calculations should be updated to incorporate this.

Reply: Please see updated surface water calculations.

• The Surface Water Calculations Raingarden document shows negative and low velocities for each modelled storm event. There are no areas shown draining to pipes 1.000 and 1.002. Each pipe should be designed to achieve minimum self-cleansing velocities.

Reply: Please see updated surface water calculations.

• The Drainage Report and the Drainage Strategy drawing labels the 'Headwall Inlet' on the raingarden outlet, and 'Headwall Outlet' on the raingarden inlet. The 'Proposed ACO SuDS Swale Inlet' label is located on the raingarden outlet. Please update the Drainage Strategy drawing.

Reply: *This does not apply, as we are currently proposing surface water discharge into the proposed attenuation tank with restricted flow rate into the existing ditch.*

• Ordinary Watercourse Consent must be sought from the LLFA (West Sussex County Council) prior to starting any works (temporary or permanent) that affect the flow of water in the watercourse. This includes the

proposed outfall to the watercourse. This is in accordance with Section 4.3 of the West Sussex LLFA Policy for the Management of Surface Water.

Reply: Noted. An Ordinary Watercourse Consent application, along with the relevant drawings, will be prepared and submitted once approval of the Condition 3 DC/23/1188 has been obtained from the Horsham District Council.

• The Drainage Report and the Drainage Strategy drawing indicate that the foul water flow loading is based on the British Flows and Loads guidance for six persons. However, the Reply to LLFA comments document states that the peak discharge has been calculated based on four persons. Please provide the correct figure and update the relevant document.

Reply: Noted. The Drainage Report and proposed drainage strategy drawing have been updated. The information has been updated, see below.

• In the first instance, Building Regulations (Part H) sets out the presumption in favour if available for the foul drainage to connect into the existing public foul sewer network. The Foul and Surface Water Drainage Report confirms that the area is not served by a public foul sewer network. The Proposed Drainage Strategy plan shows foul drainage is dealt with via a single Marsh Ultra Polylok L package treatment plant or equivalent; then the treated effluent is to be connected to the surface water discharge via a combined manhole prior to discharge to the existing watercourse. Supporting flow calculations in line with Sewerage Sector Guidance and/or Building Regulations Part H are to be provided.

Reply: Please see the updated proposed drainage strategy drawing and updated drainage report. The proposed treatment plant type and size have been calculated using the British Water 'Flow and Loads - 4' Guidance, which indicates 150 l/head/day. Therefore, based on a total of **6 persons**, the peak discharge has been calculated as 0.05 l/s.

• The proposed foul water is to be discharged to an on-site treatment plant prior to the existing watercourse. The applicant has stated that this will not require Environment Agency approval as it will meet the binding rules. It must be noted that the applicant has described the drainage ditch as follows, "At the time of site visit the existing ditch was running dry". Hence, Rule 19 of the binding rules is not met. Confirmation of an approved environmental permit for foul discharges, or evidence showing the treatment plant is exempt is required. Please review the guidance linked: https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-asurface-water

Reply: *Noted. The information has been updated- please see updated proposed drainage strategy drawing. The Klargester Reed Bed Tertiary Filter for 6 persons will be installed to improve the discharge quality after the proposed treatment plant, and to facilitate the natural filtration of effluent migrating into the existing ditch.*