cgs civils

Consulting Civil Engineers

Ref: C3077
26 July 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.

• An assessment of the current and proposed drainage patterns entering and leaving the site, including an understanding of how surface water would flow across the site in normal and rainfall event conditions.

Reply: Please see the updated drawing no: 301 'Exceedance Flow Routes' which indicates pre-development flow patterns based on the topographical survey information and post-development flow patterns. In both pre- and post-development scenarios, exceedance runoff is routed towards the existing ditch located to the south of the site following exiting site topography.

• The proposed surface water drainage strategy is for surface water from the roof to be directed to the positive drainage network comprising an attenuation pond/raingarden prior to discharge restricted to 1 l/s to the existing watercourse. The hard-paved areas will be permeable to drain to ground, designed so any exceedance runoff is intercepted by a channel drain then directed to the attenuation pond/raingarden. Further detail on how the combined proposed attenuation pond/raingarden will manage surface water is required from the applicant. The final location of the proposed attenuation pond/raingarden should be provided at the detailed design stage.

Reply: All hard surface areas have been included in the proposed raingarden calculations. This includes access road, car parking area and the proposed building roof area.

• The proposed total volume of attenuation storage should be provided within the report and supporting drawings.

Reply: Please see the updated drainage strategy drawing no: 101 and in the updated drainage report attached.

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• The Foul and Surface Water Drainage Report states, "An infiltration test to BRE365 should be undertaken at the detailed design stage to confirm if soakaways can be utilised." At the detailed design stage, if infiltration is being proposed, infiltration testing to BRE DG 365 must be undertaken as per Sections 5.2.2 to Section 5.2.3 of the LLFA Policy. The applicant will be required to provide infiltration testing at the location and depth of proposed devices. Minimum proven infiltration rates are 1x10^-6 m/s as per The SuDS Manual (C753). Any infiltration structure must have half drain-down times of less than 24 hours and be constructed a minimum of 1.0m above the highest groundwater level. This must confirm the suitability of the proposed permeable paved areas to infiltrate to ground, and the infiltration rate must be incorporated in the infiltration device design.

Reply: An onsite preliminary infiltration test was conducted to BRE365 method to a total depth of 1m below ground level (BGL). Due to the very low permeability, only one test was performed. The infiltration results indicated a 155mm drop within 4 hours, classifying the infiltration as failed. The infiltration rate was calculated to be 1.96 x 10^-6 m/s. The time for water to drop between 75% - 25% was transposed and is approximately 46,800 seconds (13 hours). These results indicate that when applying a factor of safety, infiltration elements will not achieve the 24-hour half-empty time, and therefore an overflow connection into the existing ditch will be required. It should be noted that in case of any blockage surface water runoff will overtop the proposed raingarden and flow towards the existing ditch mimicking the existing floodwater route.

• The Storm Water Calculations demonstrate that the attenuation pond provides suitable storage for the 1 in 100-year plus 45% climate change design event. The applicant should model the proposed surface water drainage network in full. This should include the exceedance flow from the proposed paved area to ensure the proposed pond/raingarden has sufficient capacity during the required events.

Reply: Please see the updated surface water calculations. The proposed permeable surface drainage area has been added to the surface water calculations. It should be noted that permeable surface is to be constructed with permeable geotextile allowing for a shallow infiltration. This will provide interception for the first 5mm of the rainfall resulting in no runoff to existing ditch.

• Full detailed drawings of all drainage assets should be provided at the detailed design stage.

Reply: Noted, detailed drawings are to be provided at detail design stage.

• A catchment analysis of the areas of the site that drain to the proposed pond/raingarden feature should be provided at the detailed design stage.

Reply: Please refer to *'Contributing Area Plan'* indicating all the hard paved areas that were included in required attenuation calculations. A more detailed drawing will be provided at detail design stage.

• The applicant should include an allowance for urban creep within the Storm Water Calculations.

Reply: Please see the updated surface water calculations.

• The Proposed Drainage Strategy Drawing should show all pipe details, including gradients.

Reply: Please see the updated proposed drainage strategy drawing.

• The Proposed Drainage Strategy Drawing shows the orifice outfall with a diameter of 500mm, but the provided modelling data differs as does the attenuation design water levels; these conflicts should be resolved, and a detailed drawing of this asset is to be provided at the detailed design stage.

Reply: Please see the updated proposed drainage strategy drawing, and updated surface water calculations. A more detailed drawing to be provided at detailed design stage.

• The design calculations must show consideration of a surcharged scenario if required and so have considered and evidenced the expected WL of the receiving watercourse in the design event.

Reply: Please see the updated surface water calculations.

• The applicant has provided a maintenance schedule for the permeable paving, ponds, inlet structures/inspection chambers, and below-ground pipes. This should include any raingarden feature. Device manuals for all drainage features and SuDS devices should be provided at the detailed design stage.

Reply: Please see the updated drainage report. The maintenance schedule will be updated at detail design stage to reflect the final design.

• It is noted in Table 2 of the Foul and Surface Water Drainage Report that additional storage is not provided in the Hydraulic Calculations; however, the Storm Water Calculations have included additional storage of 1m³/ha. A sensitivity check of the hydraulic model should be provided without additional storage.

Reply: Please see the updated surface water calculations and drainage report.

• A full detailed design of the watercourse outfall should be provided, with details such as the existing watercourse water level.

Reply: The existing ditch is a 0.5m shallow depression flowing from east to west and then south towards an existing pond located to the south of the site. Surface water runoff is subsequently discharged into the River Adur. The area of the existing ditch is fully overgrown with foliage and hedges, and from the site walkover, it appears there are no headwalls present up to the existing pond. At the time of site visit the existing ditch was running dry.

• Consents from authorities for land drainage or discharge consent and any thirdparty agreement because of access, surface and foul drainage works, or discharges. Ordinary Watercourse Consent will be required from Horsham District Council acting on behalf of the LLFA.

Reply: To be provided at detailed design stage. It should be noted that the existing ditch seems to be an old farm ditch which currently is 0.5m deep ground depression. The OWC consent will be obtained during the detail design stage.

• 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 4 persons, the peak discharge has been calculated as 0.05 l/s.

• An environmental permit to discharge treated domestic sewage effluent to the existing watercourse will be required from the Environment Agency.

Reply: The proposed development is located beyond the source protection zone, and the discharge is less than 5m³ per day. Therefore, an EA application is not required. The proposed treatment plant and discharge will meet the binding rules. Consequently, the proposed FW system will only need to be designed to meet Building Regulations specifications.