

Church Farm House, Church Road, Yapton, BN18 0EP

Application ref: Y/48/25/PL

Reviewer ref: ADC/KW and SB

Planning Officer: Harry Chalk

Date of Review: 11/11/2025

Removal of tennis court and construction of 1No. self-build single storey energy efficient dwelling

CGS Civils Response: 21/11/2025

Dear Harry,

Thank you for your comments regarding the proposed drainage strategy at Church Farm House, Yapton. We acknowledge receipt of all points raised and would like to provide our responses and clarifications to the specific items where further information or justification has been requested. We trust that the explanations provided will resolve the outstanding matters and assist in progressing the application. The proposed drainage report, along with all related drawings and documents, has been updated accordingly.

Engineers Comments Regarding Surface Water Drainage (review dated 11.11.2025) requested further clarification:

1.3 To allow for 1m of unsaturated ground between the base of an infiltration feature and the peak groundwater level, any infiltration feature must be set at a level higher than 9.6m AOD (0.6mbgl). It is noted that the borehole record in the groundwater monitoring report is the only record of the geological strata on the site. This shows that there was MADE GROUND to a depth of 0.8m in the borehole. This may impact the potential for infiltration on the site as infiltration should be avoided into the made ground without the advice of a geotechnical expert. Such advice has not been submitted and there is no evidence to demonstrate that this borehole is an anomaly.

Response:

Noted. To address the potential implications of made ground on infiltration, we have sought the advice of a geotechnical consultant as requested. Please see the attached letter from E3S Consulting Ltd who installed the wells, which provides an expert statement on the suitability of infiltration in the proposed area.

The groundwater monitoring report has been updated also to clarify the correct ground level, to which the groundwater level refers. According to the topographic survey, the reference level at the GWM location is

7.500m AOD. The proposed infiltration basin base level is set at 6.900m AOD, taking into account that the peak groundwater level is 5.850m AOD.

1.4 The FSWDR includes infiltration testing completed on 26 October 2025. Record of the strata in the trial pits were not submitted. The testing was completed outside of the winter period and therefore does not accord with BRE DG 365 and may not be used for detailed design purposes. The testing provides some comfort that infiltration is likely to be viable. However, the space needed for storage may be greater than that designed due to slower infiltration potential in worse case winter conditions.

Response:

Noted. We have added a note on the drainage drawings confirming that additional infiltration testing will be undertaken during the winter period in accordance with BRE DG 365. This testing will verify whether the infiltration rate adopted in the current drainage strategy may be slower under worst-case winter conditions for detailed design purposes.

Should the winter testing indicate a slower infiltration rate, the design of the proposed infiltration basin will be adjusted accordingly. Our intention is to maintain the current storage volume within the infiltration basin as far as practically possible. Any additional storage requirements will therefore first be accommodated within the proposed bioretention planters, which are designed to provide temporary surface water retention prior to discharge into the infiltration basin.

Only if essential, and if the infiltration basin volume must be increased beyond the current layout, will its footprint be reconsidered. In such a case, and given the spatial constraints on site, the location of the basin in relation to existing trees will be reviewed in consultation with a horticultural/arboricultural consultant to ensure appropriate offsets are achieved. Any revised positioning will also remain as far as practically possible from the building footprint.

The design will continue to ensure a minimum freeboard of 300 mm between the maximum water level in the basin and the finished floor level of the building.

1.5. As space is extremely limited for further storage and there is uncertainty regarding the stratum at shallow depth where infiltration is proposed we must object to the proposed development until further detail is submitted. This is because if there is insufficient space to store surface water, or infiltration is not possible due to the made ground, then it is unclear how the development may be drained without increasing flood risk.

Response:

Noted. In response to the concerns raised regarding limited storage space and uncertainty of the shallow strata, we provide the following clarifications.

The finished floor level (FFL) of the proposed building has been raised by 150 mm to 7.750 m AOD, ensuring a minimum 300 mm freeboard between the maximum water level within the infiltration basin and the building. This measure prevents any flood risk to the proposed structure.

The drainage strategy is supported by a geotechnical statement confirming that the infiltration basin will comprise a small, shallow-sided depression (capacity 36 m³, maximum side slope 1:3) formed on a retained marginal thickness of reworked soil of approximately 0.20 m. Given the shallow design and the minimal thickness of made ground, it is considered unlikely that the existing soils would adversely affect stability or the performance of the basin.

The scheme has also been reviewed and approved by a horticultural consultant, who confirmed that the proposed drainage works will have minimal impact on the existing trees. The consultant's letter is included within the revised drainage report.

The infiltration basin has been intentionally designed as a shallow depression allowing infiltration through the base only. This approach spreads water over a wider area, avoiding the concentrated point loading associated with deep soakaways located close to foundations. As supported by CIRIA guidance "*Using SuDS Close to Buildings*" (Steve Wilson), this design enables the basin to be safely positioned slightly closer than the typical 5 m offset while still ensuring no risk of ground instability, erosion, or impact on building foundations. This supporting document has been appended to the revised drainage strategy report.

To address the potential for reduced infiltration rates during winter conditions, additional resilience has been incorporated into the design. The bioretention planters can provide supplementary temporary storage, with outlets set at a higher level to act as controlled overflow into the infiltration basin when required. Furthermore, the rainwater harvesting tank contributes an additional source of attenuation, improving overall system capacity and reducing peak discharge into the basin.

Overall, the combination of the shallow infiltration basin design, supplementary storage provision in the bioretention planters, and the rainwater harvesting system ensures that sufficient storage capacity remains achievable on site without increasing flood risk, even under worst-case infiltration conditions.

3.1 The FSWDR includes drainage plans and modelling. The simulation for the 1% AEP +45% event has a maximum water level of 7.468mAOD. This is higher than the bank at the north east extent of the infiltration basin (7.45mAOD) and the cover levels of both inspection chambers and the rodding eye. The model demonstrates that the system may flood on the 1% AEP +45% event. This may be permissible; however, such planned flooding must be demonstrated to remain on site and not flood property. The submission does not demonstrate that.

Response:

Noted. The finished floor level (FFL) of the building has been raised to 7.750 m AOD. The cover levels of the rodding eye, all inspection chambers, and the bioretention planter have been increased to 7.600 m AOD. In addition, the top of banking at the north-east extent of the infiltration basin has been raised to a minimum of 7.500 m AOD.

Following these updates, the revised hydraulic model demonstrates that during the 1% AEP (1 in 100-year) event including a 45% climate change allowance and a 10% urban creep allowance, the maximum water level within the infiltration basin is 7.439 m AOD. This level is fully contained within the basin, remaining below the top of banking and cover levels, and therefore does not pose any risk of flooding to the property or any off-site areas.

All drainage plans and storm water modelling calculations have been updated to reflect the revised design and confirm that exceedance flow routes remain within the site boundary and not flood property.

3.2 It is acknowledged that the modelling does not include the upstream network and that additional storage will be provided by the pipework and inspection chambers. However, it is unknown if this storage is sufficient to contain all surface water within the designed system.

Response:

Noted. Surface water calculations have been updated, which include the entire proposed drainage network.

3.3 The assessment is further complicated by others elements of the standard which demand design adjustments to ensure that the SuDS design is compliant and not increasing flood risk. As submitted, there is insufficient freeboard between the maximum water level in the critical 1 % AEP +45% event and the finished floor levels (FFL). It is expected that a minimum reduced freeboard of 300mm is maintained between FFL and the maximum flood depth or water level in the basin. At present FFL are et to 7.6m AO, allowing for only 132mm freeboard. The minimum freeboard may be achieved by raising FFL or by having a shallower maximum water depth, alternatively the freeboard could be potentially contained within the basin itself. The submitted design represents an unacceptable risk in this regard.

Response:

Noted. The finished floor level (FFL) of the building has been increased to 7.750 m AOD. The updated drainage strategy and hydraulic modelling demonstrate that for the 1% AEP (1 in 100-year) event with a 45% climate change allowance and a 10% urban creep allowance, the maximum water level within the infiltration basin is 7.439 m AOD. This provides a freeboard of 311 mm, exceeding the minimum required 300 mm and ensuring that the development does not present an increased flood risk.

3.4 The designer has included two land drains, north and west of the proposed dwelling. These are designed to capture surface water flowing towards the proposed dwelling. This design feature is apparently included due to the need for the FFL to closely align with existing tennis court level. Where there is a need for surface water to be intercepted this should be accounted for in the design. It may be the surface water is diverted around the building without contributing to the SuDS scheme. This may be appropriate if the natural catchments are followed.

3.5 Alternatively, land drainage features can contribute to the SuDS design (as drawn). However, if they positively connect to the system then the contributing surface water volume from these features should be accounted for. This involves analysis of the contributing catchment which has not been submitted. The submitted SuDS allows an unquantified volume of surface water to be drained into the infiltration basin. This surface water volume will consume storage which is set

aside for the rainwater that falls on the new contributing area. This means that there is an increased likelihood that the basin will flood. The design must be altered to account for this volume or to manage the land drainage in alternative manner.

Response for 3.4 and 3.5:

Noted. Following the increase in the building FFL to 7.750 m AOD, the previously proposed land drains to the north and west of the dwelling are no longer required. The updated levels now allow surface water to naturally fall away from the building toward the surrounding landscaped areas, following the natural catchment pattern without the need for interception.

As the land drains have been removed from the design, no external contributing catchment will enter the SuDS network. Consequently, no additional surface water volume will be directed into the infiltration basin, and all modelled storage requirements remain based solely on the runoff generated by the proposed development. This ensures that the infiltration basin storage capacity is not compromised and that the system does not present an increased risk of flooding.

The revised architectural plans and drainage layout confirm that surface water is safely routed away from the property, and there is no residual risk of flooding to the building.

3.6 A factor of safety of 2 has been used in the design. As the contributing area is between 100m² and 1000m² the factor of safety is expected to be 1.5 or 3. The onus is on designer to justify the factor of safety that is used, however, 1.5 may only be used where there can be expected to be no damage or inconvenience from flooding.

Response:

Noted. The factor of safety of 3.0 has been updated in the surface water calculations.

6.1 There is no formal assessment of biodiversity benefit, and the ecological appraisal report does not appear to consider or acknowledge the SuDS design in delivering ecological and biodiversity benefit. However, it is believed that when the biodiversity benefit of the drainage system is properly assessed it will be found to have a positive contribution. This is because it includes an open infiltration basin. As such we have no objection subject to condition which will secure the details of any biodiversity benefit delivered by the SuDS.

Response:

Noted. We acknowledge that the ecological appraisal did not explicitly reference the biodiversity value provided by the proposed SuDS features. The drainage strategy highlights the ecological benefits that form an integral part of the design. The open infiltration basin is designed as a shallow, planted depression that will support wet-tolerant and moisture-loving vegetation, providing habitat diversity, supporting invertebrates, and creating foraging opportunities for birds and small mammals. The bioretention planters incorporate native planting to attract pollinators and increase structural diversity on

the site. These planters also slow, filter, and temporarily store runoff while providing year-round habitat and improving ecological connectivity within the landscaped areas. In addition, permeable landscaping and soft edges around the site encourage infiltration, reduce hard edging, and create microhabitats that complement the SuDS features.

Collectively, these SuDS elements provide a multifunctional landscape delivering hydrological performance, water quality treatment, and measurable biodiversity benefits.

Planting selections will prioritise native and wildlife-supporting species, ensuring long-term ecological value.

7.1 Insufficient information regarding the construction, operation and maintenance of the SuDS system, and therefore Standard 8 of the Systems NSfS has been submitted. However, most elements of this standard can normally be secured via condition. The submission of a Management and Maintenance Plan is unlikely to affect the scale or layout of the development.

Response:

Noted. The proposed Maintenance Schedule has now been updated to include the SuDS Management Plan.

7.2 There is a significant number of good quality trees on the site, most of which are to be retained. These existing trees are a constraint to the drainage strategy as any drainage installations should not damage the trees, and the drainage infrastructure itself needs to be protected from the tree root damage. The design as submitted avoids conflict with the existing trees and their current root protection areas. However, the design may need to be altered to account for the comments relating to standards 1 and 3. The presence of the existing trees and potential conflict should be considered a significant constraint to the possibility of a fully compliant SuDS design being delivered.

Response:

Noted. All works within the tree protection areas (TPAs) will be carried out with the utmost care to avoid any damage. In locations where pipework crosses TPAs, excavation and installation will be undertaken by hand, and all pipework will be surrounded with an appropriate tree protection membrane to prevent root damage.

The updated drainage scheme has been reviewed and approved by Barry Holdsworth Ltd, confirming that the proposed works will have minimal impact on existing trees and their protection areas. The design ensures that the SuDS strategy remains feasible while fully respecting the constraints imposed by the retained trees.