

Our Ref: CC/2205771

Mat Jackson
West Sussex County Council
Ground Floor
Northleigh
County Hall
Chichester
PO19 1RH

2nd December 2024

Dear Mat,

F/15/24/RES & F/14/24/RES – Land at Ford Airfield, Ford, West Sussex

Thank you for your comments on the above applications. We held extensive pre-application discussions with the LLFA and the proposals put forward followed the principles of what was agreed through this process as well as according with the approved outline strategy. We would welcome a meeting to discuss the proposals further to assist with overcoming your concerns.

This letter has been updated following our meeting of 25 November 2024 with additional information discussed and clarification on some of the points. For information, Vistry are in the process of preparing a pack of updated information for the reserved matters applications over the next couple of weeks and will incorporate additional information on the drainage in to this pack as referenced in this letter.

Below we have provided our responses to each of the LLFA's comments, with the comments replicated above for ease.

1. Infiltration testing (in accordance with BRE 365) is required in those locations where groundwater has been found to be sufficiently deep, such that a 1m buffer below the base of infiltration structures is achievable. Where infiltration is found to be viable, it should be used in accordance with the drainage hierarchy. This should then be reflected in updated drainage calculations. Further refined and site-specific groundwater monitoring is required to inform the design in these areas.

Ardent CE Response

Out of the 32 groundwater test locations, 23 (72%) of the locations show groundwater being within 1.5m of ground levels (including min. 500mm typical buildup for permeable paving and 1m buffer). Therefore, this indicates the groundwater across the site is too shallow for effective surface water infiltration. It is considered the minor number of locations which have a deeper groundwater level are outliers. Best practice is to take the worst-case value in terms of groundwater, to reduce the risks of groundwater flooding and buoyancy.

Extensive discussions were undertaken with the LLFA in relation to the groundwater monitoring and infiltration test and the LLFA sent a pre-app response dated 19th July 2024 which stated "*The amount of groundwater monitoring and infiltration testing is satisfactory for this site and demonstrates high groundwater levels and limited infiltration potential.*" This letter is enclosed. The request for further testing is therefore considered to be unwarranted given the LLFA's original pre-application response.

We have set out below the findings of the various geotechnical site investigations undertaken at the site and the reason for excluding infiltration as a means of draining the proposed development.

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Geological Site Conditions

The site investigations show that the site is underlain primarily by Sandy Clay overlain in places with pockets of River Terrace Deposits (sand and gravel). This indicates that the infiltration potential across the site is likely to be generally poor but it may be that some areas within the site, associated with the superficial deposits, that indicated infiltration would be possible.

Site Investigation

Various site investigations, including groundwater monitoring and soakage testing, at the proposed development has been undertaken, from 2018 to 2024, to inform the design of the development and the surface water drainage design. The testing locations were chosen to give a good spread of across the site but with a specific focus on obtaining groundwater levels and infiltration rates in the vicinity of the proposed SuDS features. The findings of the site investigations undertaken are shown on enclosed Drg No. 2205773-SK003.

The site investigation showed variable groundwater levels and infiltration rates across the site but notably high groundwater or poor infiltration rates at the locations of the proposed strategic SuDS basins (based on the approved outline drainage strategy). The variable levels and rates are characteristic of the underlying geology with good infiltration rates being associated with the pockets of sand and gravel within the site.

It is our professional opinion that the site investigation undertaken at the site does not support the use of infiltration for any parts of the site. Infiltration into small pockets of sand and gravel would be at high risk of causing localised groundwater issues when the soakage capacity of these pockets is exceeded. Given that the geological characteristics of the site are broadly consistent then it is prudent to consider the worst-case infiltration rates and groundwater levels to inform the drainage principles at the site, in order to ensure that risk of groundwater flooding does not increase within the site or elsewhere.

Notwithstanding the above, the worst-case groundwater readings taken at the locations of the SuDS features will be used to inform the design of these features (i.e. lining and flotation design).

Proposed Drainage Strategy

On the basis of the above, the proposed drainage strategy for the site has been designed to discharge all flows to the surrounding watercourse network (i.e. the second option of the drainage hierarchy within the Planning Practice Guidance). The proposed discharge rates have been limited to less than the Qbar rates (i.e. greenfield runoff rates) based on the proposed impermeable areas as a conservative measure. This demonstrates that the proposed drainage strategy will result in a reduction in discharge rates, relative to the existing site conditions.

2. The high groundwater levels will also need to be considered in detailed design of attenuation structures. 1m buffer (finished level and water level)

Ardent CE Response

Please refer to response to Point 1. The detailed design will give consideration to the groundwater level and SuDS features will be appropriately lined where required and flotation calculation will be provided as required.

3. Qbar rate is 2.42 l/s/ha. Currently discharging over greenfield runoff rate, flood risk could increase elsewhere. Rates must only account for impermeable areas which will drain off-site.

Ardent CE Response

The discharge rates were calculated based on the developable areas of the site which is appropriate for this type of development. However, the discharge rate from the northern part of the site will be reduced due to the existing

outfall pipe size meaning the discharge rate will be below existing greenfield rates (circa 13l/s).

We will update our drawings to the new extents of the basin.

4. Northern pond section is shown to be discharging c20l/s above Qbar at 70l/s? This infers potential flood risk. This must be reduced to actual Qbar.

Ardent CE Response

Please refer to response to Point 3.

5. Details of any additional attenuation features required within parcels should seek to act as source control where feasible.

Ardent CE Response

The design submitted in accordance with the outline site-wide strategy. There is minimal space within developable areas to provide attenuation features, however rainwater butts are proposed to be included within every residential property. As a conservative measure, the rainwater butts have not been accounted for within the attenuation provision for the drainage strategy or the hydraulic calculations. These will therefore provide additional storage over and above the requirements of the site. Rainwater butts would be owned and maintained by individual property owners. The drainage drawings will be updated to show the proposed rainwater butts.

6. Calculations showing 50% AEP rainfall event have shown no surcharge in the drainage network, also the 3.33% AEP rainfall event plus climate change does not flood outside the drainage network. These will require updating as necessary. Any areas which are shown to hold water should be clearly shown on plans.

Ardent CE Response

Please find enclosed Causeway Flow calculations for the 50% and 3.33% AEP events showing no surcharge and no flooding respectively for the northern part of the site. Similar calculations will be provided for the southern part of the site. As discussed at the meeting, and as part of the pre-app, these calculations use Cv values of 0.84 and 0.75 for winter and summer respectively. Calculations for the 100 yr + CC design event with a Cv value of 1 have been run as a sensitivity test and provided as part of the submission.

7. Easements 3m from the top of the bank on both sides of any watercourses and the basins are required for maintenance access. Off road parking for maintenance vehicles is also required. Updated plans should reflect these requirements and be sufficiently and clearly annotated.

Ardent CE Response

This is provided as annotated on applicable plans as hashed lines around each drainage feature – we will ensure this is made clearer by adding a note(s) to the plan. Parking for maintenance vehicles is available within the maintenance strip which is more practical for access and vegetation removal.

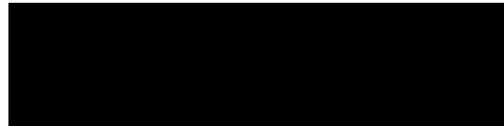
8. There is potential for the development to be phased, therefore we suggest consideration is given to the requirement of a SuDS implementation plan to reflect how areas may drain independently in advance of further phases coming forward.

Ardent CE Response

The SuDS basins will be constructed at the outset of the construction phase to manage runoff from the development. Due to the relatively low discharge rates, staged phasing of the discharge rate is not considered to be necessary. However, initially an orifice plate with a rate of 50% of the proposed discharge rate will be installed in prior to final outfall and this will be upgraded to a hydrobrake with the final discharge rate on completion of 50% of the development.

We trust the above is satisfactory and we look forward to hearing back from you.

Yours sincerely,



Charlie Cooper
Associate Director

Encl Letter - Ford Airfield Pre-app Meeting 2 comments – 19th July 2024
Causeway Flow calculations for Northern part of the development
Ardent Drg No. 2205773-SK03 Site Investigation Findings

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