



BRIGHT PLAN CIVILS

Drainage Officer
Arun District Council
Application No. Y/57/21/PL

23 July 2021
Our Ref: D1958

RE: SUNNYMEAD FARM, NORTH END ROAD, YAPTON BN18 0DL

Consultant Response to Engineers Comments Regarding Surface Water Drainage (in Red)

Having provided a consultation response on the same site previously (application ref Y/33/20/PL) I can confirm that the applicant has not satisfactorily addressed the points raised in that objection (dated 22/05/2020) and as such **we object to the proposed development**. We have the following comments, which will include some of the points previously raised.

We prepared a formal response to your previous comments and a revised design, however we are of the understanding this information did not reach you for review before the previous application was withdrawn. Nevertheless we agreed with all your previous comments and advised the applicant to take your comments and our response to them on board, should the previous application have been continued.

1. There is a large low area to the north west of the site, this is shown as an area of surface water flooding in a 1 in 30 event and greater on our mapping and is further evidenced in the topographical survey. Flood depths for the 1 in 100 event for a large area are 0.6-0.9m, with one small area reaching a depth of 1.2m. The three detached properties are proposed to be built in this area. The Drainage Strategy Report propose to protect the properties from flooding by raising ground levels at the north and west of the site. The applicant proposes to provide flood storage volume (for the displaced storage) in the centre of the site which will extend into the parking area and rear gardens of the detached properties. Within the basic calculations that are provided they have allowed for a flood depth of 450mm in this area, based upon predicted flood depths it is our opinion this is insufficient.

The applicant argues that surface water from outside the site is not being drained to this low point, we dispute this, the area is a low lying point for the surrounding area (as shown on the LIDAR mapping attached), and as such we expect that surface water from the surrounding area will drain here in high rainfall events. **If the equivalent volume of storage is not provided on site then this will likely increase flood risk elsewhere.** The Drainage Strategy Report does not provide adequate evidence that they have provided enough storage. Furthermore, allowing the parking area and rear gardens to flood to up to 0.45m is not safe or sustainable development.

As per NPPF paragraph 163, it must be evidenced that the development will not increase flood risk elsewhere. Therefore the development must not displace flood water for events up to and including the 1 in 100 year +40% climate change event (compensatory volume is required in addition to the drainage requirements of the new development). Displaced volume should be clearly mapped, along with compensatory volume to show where these volumes will be stored so that the impact can be easily assessed by both ourselves and the Planning Officer. It is impossible to know if storage can be provided below ground as infiltration testing and groundwater monitoring has still not been provided, despite having a full winter in which to complete this in 2020-2021 and having had previous advice to do so (see points 4 and 5).

Thank you for your detailed comments, we acknowledge that there is a 'low point' within the site and this is clearly visible on the LiDAR mapping. It is worth noting that the LiDAR mapping is supplied with an advisory regarding accuracy and this is due to the relatively coarse grid that this method of measurement uses. It also shows the surrounding topography to be fairly flat. The applicant has commissioned a detailed topographic survey which provides a significantly more accurate measurement of the levels on and around the site.

The Long Term Flood Risk Maps (.gov.uk) that represent 'the risk of flooding from surface water' are based upon LiDAR data and are a basic overland flow assessment of topography and a synthetic rainfall generation. They do not take account of constructed drainage systems and local variances in level, as they are not represented within the LiDAR mapping, that can disrupt or intercept overland flows. The flood depths that are indicated on this mapping represent nothing more than the maximum difference in ground level over an area, measured during the LiDAR survey. The gov.uk website clearly states 'The results are an indicator of an area's flood risk, particularly the likelihood of surface water flooding.'

It is not suitable for identifying whether an individual property will flood. It does not include the flood risk from sources such as blocked drains and burst pipes.'

The mapping that Arun District Council has produced relating to the risk of surface water flooding uses the same method of assessment as the Long Term Flood Risk maps. The extent of the areas that are identified as being at risk of flooding on the Arun District Council's mapping is highly pixelated and this is representative of the coarse grid that the LiDAR mapping is based on.

Arun District Council has confirmed that there are no reports of flooding on this site.

A review of the local FEH catchments for this area shows that there are two defined local catchment areas here (also based on LiDAR). This shows that the potential catchment that 'could' drain to the low point on the site lies in between these two areas.

There are urbanised areas either side being 'West Bank' and 'North End' which would compound run-off (structures, fences, walls, etc) or be drained to local private systems. This leaves the West Sussex County Council highway corridor as the potential source in respect of run-off. However, there are numerous highway gullies at the low point directly adjacent our site which would collect this run-off, Arun District Council's asset mapping indicates a drain (possibly owned by West Sussex County Council) on the western boundary discharging to the watercourse to the north of the railway line. Highway drainage improvements which could include additional road and edge of carriageway water stops could assist in controlling this (3rd party run-off) from potential overspilling to the site. Clearly a drainage investigation will be necessary.

I also note West Sussex County Council are improving the highway drainage in vicinity of the Maypole Lane junction (south of site) which drains southerly; this corroborates my summary of the catchment areas.

The requirement for compensatory storage is normally applies to 'fluvial' scenarios, it is not usually required for surface water risks, unless there is factual evidence to support the need eg. Records/reports of flooding. For this site there is no justification for compensatory storage.

The proposed finished floor levels are too low. These should be set at least 300mm above the flood depth for the 1 in 100 year +40% event. When flood extents and depths for the 1 in 100 year plus 40% cc event are not available it is standard practice to utilise the 1 in 1000 year event. The 1 in 1000 year event, flood elevation appears to be somewhere between 4 to 4.5m AOD, a reasonable assumed level would be 4.25m AOD. Therefore finished floor levels should be 300mm above 4.25m AOD.

I am unsure where the flood levels that you refer to come from as there is no modelled flood data for this site due to it being located in Flood Zone 1 (lowest risk of flooding from rivers and the sea) and the surface water flood risk data is not based on detailed flood modelling. It is therefore not possible to establish a flood level to inform a minimum floor level.

Noting the low point with the 'indication' risk of surface water flooding, there are 3 No. dwellings potentially at risk fronting North End Road. Clearly these dwellings need to tie-in with the Public Highway surface for accessibility and as such can be stepped to match the Highway corridor elevation which rises to meet the level crossing. We agree there is scope to raise these slightly.

The remaining 2 No. dwellings to the rear are wholly in FZ1 and low risk so will remain unchanged.

The 3 No. dwellings sit within the existing low point so we have proposed this shall be shifted further east to maintain an equivalent area in terms of level. In doing this we can also comply with demonstrating control of exceedance run-off around new dwellings. It is evident there is further opportunity here to maximise the 'above ground' storage provision within the shared parking and landscaped areas, and so whilst this is already covered in our report, we have refined the proposed levels. The Conceptual Drainage Strategy drawing has been updated/enhanced to reflect a number of the points discussed in this response.

3. The NPPF paragraph 158 states that the sequential approach should be used in areas known to be at risk now or in the future from any form of flooding. (My emphasis). Therefore we suggest a Flood Risk assessment is undertaken which applies both the sequential test and the exception test to show that this is a suitable location for development.

NPPF Paragraph 158 appears to relate to renewable energy rather than then need for the sequential test.

"Guidance, Flood Risk Assessments for Applicants: the sequential test" ([Flood risk assessment: the sequential test for applicants - GOV.UK \(www.gov.uk\)](#)) states:

Developments that need a sequential test

You need to do a sequential test if both of the following apply:

- your development is in flood zone 2 or 3 - find out what flood zone you're in
- a sequential test hasn't already been done for a development of the type you plan to carry out on your proposed site - check with your local planning authority

Similarly the guidance in Flood Risk and Coastal Change does not require application of the Sequential Test as it is in Zone 1.

Paragraph: 032 Reference ID: 7-032-20150415

Revision date: 15 04 2015 See revisions

Applying the Sequential Test to individual planning applications

How should the Sequential Test be applied to planning applications?

See advice on the [sequential approach to development](#) and the [aim of the sequential test](#).

The Sequential Test does not need to be applied for individual developments on sites which have been allocated in development plans through the Sequential Test, or for applications for [minor development](#) or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site).

Nor should it normally be necessary to apply the Sequential Test to development proposals in Flood Zone 1 (land with a low probability of flooding from rivers or the sea), unless the Strategic Flood Risk Assessment for the area, or other more recent information, indicates there may be flooding issues now or in the future (for example, through the impact of climate change).

This site is located in Zone 1.

4. (As per previous consultation): Infiltration testing was completed in October and not in accordance with BRE365. The applicant will need to carry out winter infiltration tests in strict accordance with BRE365, in the locations and at the depths of any proposed infiltration structures. It is expected that this will include both shallow and deeper tests to account for the permeable paving and the proposed soakaways. The testing should be undertaken in the months of January/February when the ground is most saturated and above the recorded highest groundwater level (see point 5).

We agree that this information is needed. We have advised the applicant that this is essential in order to inform the design and reach an agreeable solution with the LPA.

5. (As per previous consultation): No groundwater monitoring data has been supplied, a full winters groundwater monitoring is required to demonstrate the level at which groundwater peaks on the site. Infiltration testing and by default, all infiltration structures must have their base above this level.

We agree that this information is needed and fundamental to justify the use and arrangement of soakaway features. Whilst the initial tests are non-compliant, they do indicate infiltration techniques to be viable. The 3rd party development in close vicinity at Ford Lane also relies on infiltration methods. We have relayed this to the applicant.

6. It is important that all the documents provided to support the application are consistent. The 3D images which have been submitted do not appear to reflect the level changes which are proposed within the Drainage Strategy Report. These should be altered to show the reality of the proposed development or removed.

We have not been supplied with the 3D images and but have made it clear to the applicant that our proposed levels design is an important aspect of the drainage strategy and needs to be adhered to and/or consulted on.