

Arun District Council
Planning Department
C/O
Dandara Southern

Our Ref: AK/19-156-22945

Date 5th Oct 2020

By Email Only

Dear Sirs

Re : Land at Stakers Farm, Yapton – Y/71/20/RES

Further to the e-mail of the 15th September 2020 containing drainage queries we would like to provide additional information to address these.

Reserved Matters Comments

1. *“There appears to be conflict between the proposed public open space and surface water drainage proposals...”* - CIRIA C753 document under the ‘Amenity Design’ (para 22.6) of the detention basins states that:

“Detention basins may be constructed to serve more than one purpose, and can be used as car parks, playgrounds or sports fields. When constructed for multiple purposes, the detention basin should be usable for the function other than surface water detention for most of the time. Where multi-functional use is intended, the recreational area should normally have a relatively low flooding frequency such as 1-5 year return period, depending on its use”.

Infiltration blanket/basin design ensure that there should be no flooding within the basin for the design storms of up to 1 in 5 yrs. If climate change is considered there might be some visible flooding at the surface of the infiltration basin with a depth of: 9mm for the 1 in 2 years with 40% climate change, and 36mm for the 1 in 5 years with 40% climate change. (Please refer to the relevant infiltration basin calculations). We believe therefore that such design meets CIRIA’s guidance.

2. *“An infiltration rate of $1.8 \times 10^{-6} \text{m/s}$ has been applied across the entire site...”* – This value was placed within Arun DC checklist as a typical value for the whole site, however infiltration components were sized based on an individual infiltration rate obtained in the closest test location. Please refer to drawing YAP-130-28 for test locations with corresponding infiltration rate and to the calculations of each infiltration component.

3. *“Within the checklist it is stated that all infiltration devices are kept to a maximum of 600mm depth. Yet permeable paving area 1 has a total depth of 770mm...”* – Arun DC checklist form itself allows for a single input only and in this instance it was chosen for the infiltration blanket with basin which at its lowest point has a level of 6.020m AOD. All other infiltration features and their depths are designed with base level set above highest recorded ground water level for the closest monitoring station – please refer to drawing YAP-130-28 showing recorded ground water levels (‘GW Level’ in light blue text) and base levels of infiltration features.

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4. *"It is understood that the permeable paving areas will not have a flat sub-base, please provide spot levels..."* – Please refer to drawing YAP-130-28.
5. *"Construction detail drawings of check dams have been provided, please clearly indicate on plan..."* - Please refer to drawings YAP-130-20B and YAP-130-28.
6. *"Please provide impermeable areas plans that clearly show the areas draining to each surface water drainage feature..."* – Please refer to drawing YAP-130-20B clearly demonstrating with hatch patterns of different colours which areas drain to which infiltration feature. Drawing YAP-130-20B is also provided for paperless review as requested – it should however only be used to facilitate check and measurement of contributing areas.
7. *"Please provide network calculations"* – Please refer to "Land at Stakers Farm, Yapton_38 Units SW System" Microdrainage calculations for the infiltration blanket / basin system and additional calculations for specific infiltration components.

DOC comments

2. *"Please provide two perpendicular site specific cross sections of the proposed infiltration basin. These should show invert level..."* – Please refer to drawings YAP-130-27 and YAP-180-32A and its 'Gully grating within infiltration basin' detail.
3. *"Please provide construction detail drawings of pipe bed and surround"* – Please refer to drawing YAP-180-31A.
4. *"Please provide construction detail drawings that clearly correspond to each of the proposed permeable paving types"* - Please refer to drawing YAP-180-35.
5. *"The construction detail drawing of the infiltration blankets needs to clearly show the layers of geotextile separating the geocellular units from the stone..."* - Please refer to drawing YAP-180-32A which states that geotextiles are to be used - as opposed to impermeable geomembranes. Please also refer to letter 'SEL 19-156 Stakers Farm Yapton' which is manufacturer's confirmation on suitability of 'Permavoid' geocellular units used in trafficked scenarios. Compaction method is stated on drawing YAP-180-35 for Permavoid units used underneath the road and. For different geocellular units (i.e. used in gardens) the exact product is not specified (as a minimum it must have 95% voids - as stated on drawing YAP-180-32A – and the overall plan and height dimensions of the feature must be met) as it will be a choice of a Client or contractor and in such instance manufacturer's installation guidelines must be followed.

We trust we have addressed all your comments in full, however should you have any further questions please do not hesitate to contact us directly for explanation.

Yours faithfully

Arek Kadlec
Principal Engineer
(Romsey Office)