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Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
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From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>
Sent: 21 September 2021 11:49
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Michael Eastham <Michael.Eastham@arun.gov.uk>
Subject: RE: Planning Consultation on: A/188/21/DOC

Engineers Comments Regarding Surface Water Drainage

We do not recommend discharge of conditions 18, 19 or 21 at this time.

Comments Regarding Condition 18

The below is a detailed comment log regarding this application. The information submitted shows that the proposals could result in internal flooding to on site dwellings as well as an increased risk of flooding offsite. Furthermore, it is not clear how the proposals are constructable.

Key

ADC Comments 01/06/21 and 20/07/21
ADC comments 24/08/21

BGC response 30/08/21
ADC comments 21/09/21

No flotation calculations have been provided, a further statement from a geotechnical company has been provided, this does not alter our previous requests for features to be lined and for flotation calculations to be provided. The

majority of Angmering sites in this area have groundwater at around 1m depth or shallower, design must demonstrate that groundwater will be kept out of attenuation features now and for the lifetime of development. BGC 30/08/21 - Attenuation Basin floatation calculations illustrated on drawing; 20079/211. Cellular Storage floatation calculations illustrated on word document; 20079 – Cellular Storage Floatation Calculations – 2021.08.04.

Calculations should apply a factor of 0.9 to resisting forces, and a factor of 1.1 to destabilising forces. Furthermore the concrete cover slab to crates will also displace groundwater, this has not been accounted for in calculations and design.

Concrete slab of 600mm depth leaves insufficient depth of topsoil to ensure adequate grass establishment. A minimum depth of 250mm of topsoil is required.

Cost of 600mm deep concrete cover slab and the cost likely involved in replacing this tank at end of design life will be very significant and an unfair burden upon residents. Shallower drainage design should be considered.

Concrete cover slab must be shown on construction detail drawing.

It is unclear how it will be possible to excavate 4.5m below the base of the attenuation basin and line it with an impermeable liner. Groundwater will make construction exceptionally difficult, if not impossible. The proximity of the basin to the adjacent watercourse will also prevent adequate batter, and will necessitate significant temporary works to stabilise excavations. Cost of replacement of liner at end of design life is an unfair burden upon residents. Also unclear how it will be possible to construct the basin with such varying liner depth accurately.

1. Please provide greenfield runoff calculations. Not provided, please provide. I note you have an impermeable area of 1.587ha, according to UKSuDS this gives a QBar rate of 3.19l/s. Please provide justification for your discharge rate, including calculations. BGC 30/08/21 – Greenfield runoff calculations provided within re-submission, please refer to 1109-20079_ReFH2-Dev Area.pdf. In addition to this, we would like to add that the RGP Design Flood Risk Assessment (D1260/FRA 1.4 dated 08/09/2020) states that post-development flows are not to exceed 13.6l/s (the calculated Qbar rate). Document referred to does not appear to have been provided. Please provide, and please not RGP design at Full planning was not approved.

~~2. Please provide 30-year calculation results. Provided.~~

~~3. Please include details of flow control devices within causeway printouts. Provided, okay~~

4. Please provide cover levels on plans. Cover levels of attenuation tanks should be provided on layout plan too. CL of CC12 is incorrectly detailed on plan. Please also see comment 6 below. BGC 30/08/21 – Cover levels of attenuation tanks added to plan & CC12 cover level corrected, see drawings; 20079/1005104 & 20079/116-118. See below comments.

5. Please detail all pipe diameters and falls on plan. Not provided, please provide for Private Drainage network. BGC 30/08/21 – All pipe diameters added and falls illustrated, see drawings; 20079/116-118. Okay. Please connect pipes which drain more than one property to the main network via manholes rather than junctions, e.g. plots 71-72, 77-78.

6. Please detail pipe networks from housing on plan. Cover levels and invert levels, pipe diameters and falls all need to be shown on plan as per checklist requirements. I would also request that more of the network is modelled to evidence that appropriate pipe sizes and falls are being provided and that flooding does not occur. BGC 30/08/21 – All pipe diameters added and falls illustrated, see drawings; 20079/116-118. PS126, PS150, have no cover level stated.

PS170, PS200, PS202, PS294, PS300 have inconsistent cover levels between modelled network and layout drawing.

~~7. Please detail gully levels. Okay.~~

8. Please clearly show permeable paving extents, finish and formation levels of these areas, and how they connect to the wider drainage network. .

Broadly okay, greater network detail is required, with invert levels of collectors very clearly shown along with the accompanying network. BGC 30/08/21 – All Permavoid collectors have invert levels and connections to sewer network illustrated along with the accompanying network, see drawings; 20079/101-103 for sub-base formation

levels and 20079/116-118 for Permavoid collector invert levels and connection to drainage network along with the accompanying network levels. *Okay. As per comments to floatation calculations, you may wish to look at a shallower drainage solution here, i.e. utilising the storage within permeable paving.*

9. *Please provide details of how your proposals will ensure adequate water quality prior to discharge. And how they provide treatment at source and via a treatment train as is required. Not elaborated on. How is satisfactory treatment being provided, e.g. for highways that are not permeable.*

BGC 30/08/21 – We have reviewed the SuDS Manual in regard to Surface water treatment and as per Table 26.2 and Table 26.3 below we can advise the following; The proposed development consists of 'Residential roofs' and 'Individual driveways, car parks & low traffic roads', the anticipated 'total suspended solids', 'Metals' and 'Hydrocarbons' are no greater than the treatment we are providing. For example, the total expected 'TSS' 'Low traffic roads' provides a pollutant index of 0.5. As per Table 26.3 the basin provides a pollutant mitigation index of 0.5 which will counter act the anticipated 'TSS'. *Okay.*

~~10. Please provide a catchment area plan. Please clearly show where urban creep allowances have been applied. Provided.~~

~~11. Please provide an exceedance flow route drawing. Provided.~~

12. *Please make the attenuation tank online rather than offline. Both tanks are offline, please make these online.*

BGC 30/08/21 – The tanks must remain offline as this is to the adopting authorities' requirements (ICOSA) and to make them online would mean no infrastructure drainage can be put forward for adoption.

13. *Please provide a catchpit upstream of the tank. A minimum of 300mm sump is required in manholes upstream of tanks. BGC 30/08/21 – As per above response to comment 12. Catchpits must be provided upstream of attenuation tanks.*

~~14. Please provide construction details of the attenuation basin, this should include a minimum of two perpendicular cross sections. Provided.~~

15. *Please provide full construction detail drawings. Please provide construction detail drawings of catchpits, ACO drains, permeable paved roads, etc.*

BGC 30/08/21 – Full set of Construction Details provided within latest submission including ACO drains and permeable paved roads. Please refer to drawings; 20079/311, 20079/315, 20079/316, 20079/320, 20079/321, 20079/322, 20079/326, 20079/327, 20079/330 & 20079/331.

Please see earlier comment regarding showing concrete cover slab on tank detail.

Please detail what bed and surround requirements are for pipes outside of adoptable highways.

Overflow levels at CC12 and CC28 appear to be below 100 year plus 40% cc water level.

~~16. 300mm of freeboard must be provided all around the basin. If an emergency spillway is provided, this should be set a minimum of 300mm above maximum predicted water levels. Okay.~~

17. *Can design be adjusted to ensure no flooding? Otherwise, please provide a plan which clearly shows flood extents, surrounding kerb levels and*

FFLs. No flooding shown in network that has been modelled, as requested in point 6 above a greater network extent should be modelled. BGC

30/08/21 – Master Drainage Network calculations provided for 2 Year, 30 Year & 100 Year + 40% Climate Change. Minor flooding (Less than 3.0m³) occurs across the network within the 15 min duration 100 Year + 40% CC event, flood routing plan illustrates flood routing paths, see drawing; 20079/161. It should be noted that in most cases where minor flooding occurs, it is within close proximity to permeable paving which will intercept flood paths. Where this does not occur, our levels design and drawing demonstrate the flood routing to either the attenuation basin and / or the proposed ditch.

Calculations show flooding at PS-286, where cover level is the same as adjacent property FFL, please removed flooding or revise FFL in this area.

Flooding is shown at PS-260 where adjacent garage FFL is 300mm lower than cover level. Please remove flooding.

Flooding is shown at PS-240 where adjacent FFL is 100mm lower than cover level. Please remove flooding.

Flooding is shown at PS-214 where adjacent FFL is 100mm lower than cover level. Please remove flooding.

Flooding is shown at PS102 where adjacent garage FFLS is 100mm lower than cover level. Please remove flooding.

18. Please refer to our checklist for full details of our requirements for a discharge of conditions application. BGC 30/08/21 – Checklist reviewed and no further comments / actions.

19. I note that a 300mm high bund is proposed along the northern and western boundary to "divert overland flows away from the development". It will need to be evidenced that this will not increase flood risk off site. BGC 30/08/21 – The 300mm high bund simply diverts any existing overland flows away from the development and imitates the current pre-development situation. *Unclear how this replicates the predevelopment situation, topographic survey does not identify a bund in this location currently. Proposals will mean the diversion of overland flows off site and will increase off site flood risk. Please remove bund.*

Comments Regarding Condition 19

No maintenance manual has been supplied with this application.

Comments Regarding Condition 21

Land drainage consent has not been granted to date. Furthermore, it is unclear how current proposals for the basin can be delivered without significant impact upon the ordinary watercourse.

Kind regards,

Laura Gibbons

Drainage Engineer

Engineering Services

Please note that I work Tuesdays 08:00-16:00 for Arun only.



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Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF

From: Planning.Responses <Planning.Responses@arun.gov.uk>

Sent: 07 September 2021 12:04

To: Land Drainage <Land.Drainage@arun.gov.uk>

Subject: Planning Consultation on: A/188/21/DOC

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

Application No: A/188/21/DOC

Registered: 3rd September 2021
Site Address: Land at Dappers Lane Angmering Littlehampton
Description of Works: Approval of details reserved by condition imposed under ref A/76/20/PL relating to Condition Nos 17 - existing & proposed ground levels, 18 - surface water drainage, 19 - maintenance & management of surface water drainage, 21 - discharge flows to watercourses and 22 - foul drainage system

The Council have received the above application to discharge conditions. I shall be pleased to receive any observations you may wish to make in respect of those conditions relating to your field of expertise.

[Click here to view the Discharge of Condition application](#)

[Click here to view conditions on original application - click on decision tab](#)

Should you wish to make any comments click on the link www.arun.gov.uk/planning and click into ?Enter Comment? or if this is not possible email your response to planning.responses@arun.gov.uk by **21st September 2021**.

Please be aware that any comments you may make will be available on our website so please do not insert personal details or signatures on your reply.

In the absence of a reply within the period stated, I shall assume that you have no observations to make.

Yours sincerely

Michael Eastham

Planning Case Officer- Arun District Council

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PLCOND00 (CDE) 2020