



Please could you upload the correspondence below and the attachments to the application folder BE/70/20/DOC as additional drainage information?

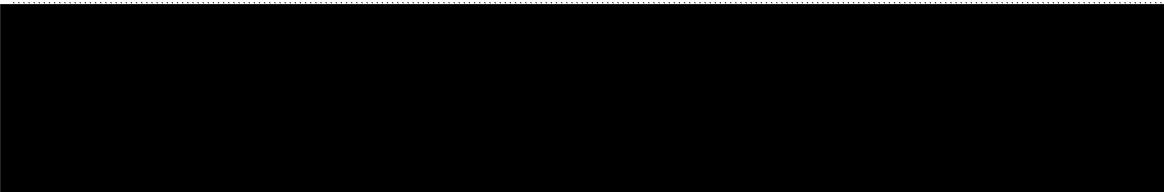
Thank you

Raymond Cole
Principal Planning Officer
Directorate of Place



Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF
www.arun.gov.uk

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Hi Laura,

We've amended the drainage package as per your comments below. New package attached for your review. Note, I'm still awaiting more information on the ground water testing but should be able to provide this to you when I receive it. All other comments should now be addressed as referenced below.

Hopefully we can catch up when you are back in on Tuesday.

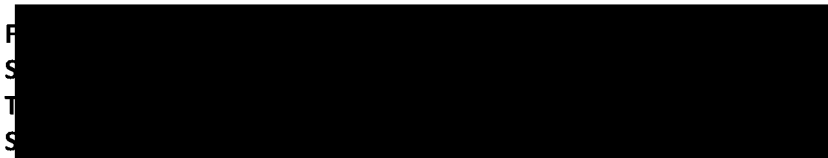
Many Thanks,

Kind regards
Chris Leigh
Principal Engineer, Infrastructure & Highways



chris.leigh@arun.gov.uk

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Registered office: 240 Blackfriars Road, London SE1 5NW



Hi Chris,

I only work Tuesday's for Arun.

I have had a quick look at the calculations and these seem okay, please could you provide me with plans and construction details and the other outstanding details. My comments are in *purple* below.

Please note I am also on leave next week, as is Paul and our colleague Sarah so there is no drainage cover next week.

Kind regards,

[Redacted signature block]

Hi Laura,

Would you be able to give me an update on the below please?

Many thanks,

Kind regards

Chris Leigh

Principal Engineer, Infrastructure & Highways

[Redacted signature block]

christopher.leigh@ramboll.co.uk

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Registered office: 240 Blackfriars Road, London SE1 8NW

[Redacted signature block]

Subject: RE: RE: BE/70/20/DOC Drainage Planning Comments [Filed 20 Aug 2020 08:10]

Hi Laura,

Just to follow up on the below I have remodelled the network to incorporate, no flooding for the required storm event, 1m/s for the carrier drain runs and surcharged outfall as requested. Note, the green areas including pond area are included within catchment.

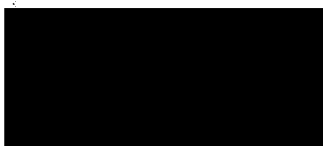
Please could you review the attached model in conjunction with my previous comments and confirm this closes out the related comments?

Many Thanks,

Kind regards

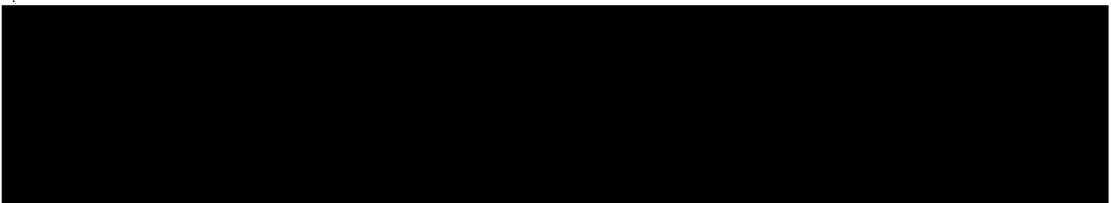
Chris Leigh

Principal Engineer, Infrastructure & Highways



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Hi Laura,

Noted, and thank you for coming back to us quickly on this. I have outlined below our proposals to update the design in blue. Please can you confirm you are happy with this approach and we will make the necessary updates to the design, drawings and drainage model?

Many Thanks,

Kind regards

Chris Leigh

Principal Engineer, Infrastructure & Highways



[REDACTED]

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[REDACTED]

Hi Chris,

Thanks for your email. I would note that comments were provided by my colleague Sarah previously and these comments were reviewing the drainage at a high level, a condition was still requested. You are reliant upon "an approval of the drainage design" at full planning stage, this simply has not occurred. No approval of the drainage design was provided at full planning stage, comments were provided by engineering services and a condition was applied to the decision. Thus, the detailed design was not agreed and I would highlight that Sarah stated "*Please note I have **no objection** to the application, these points are simply for clarification going forward, assuming all parties are happy for surface water drainage to be dealt with as part of a DOC application should you approve this application*".

My latest comments are shown in *red*.

Condition 6- surface water drainage design

1. Please provide a figure showing groundwater monitoring locations. This is required to establish if flotation resistance measures are required within the basin. We will request the locations from the Client team, *Groundwater monitoring locations awaited*.
Noted, locations have been requested. *Awaited*.
2. Please model a surcharged outfall with water levels set to adjacent top of bank level as a conservative assumption. This will invalidate the original drainage design simulations that were already reviewed by ADC. In any case I have attached print outs for both with and without surcharged outfalls. It is noted that with surcharged outfall no flooding occurs for 1 in 30 yr + 40% but approx. 22m³ occurs at the outfall for the 1 in 100+40% storm. For the originally submitted simulation reviewed by David as part of the strategy document no flooding occurs for all storm scenarios. *A surcharged outfall must be modelled, wet winters will see high water levels within the ditches*. This is a large volume of flood water. Can pipe diameter be increased, or more storage be provided upstream, see comment 8 re permeable paving.
As per previous microdrainage output provided we will retain the surcharged outfall and provide storage upstream in order to remove this flooding. Additional storage will be in the form of cellular storage tank within the car park in order to remove the flooding experienced at the outfall. *Calculations appear okay, but will be verified once plans are provided*.

3. Please include printout from Microdrainage evidencing impermeable areas modelled.

As per point 2 see attached for clarification. Noted, it is not clear that the pond area has been included within these calculations.

Catchment plan will be provided to show areas considered. Latest plan to be reviewed.

4. We note that MicroDrainage has been set to autodesign pipes to achieve 0.75m/s, 1 m/s must be achieved. Please include a printout from MicroDrainage indicating velocities achieved in pipes. *As per point 2 original design submitted and reviewed was set to 0.75m/s and was not requested to be increased to 1m/s as part of the comments raised by David. We are working to fairly constrained site levels and as such do not believe this is achievable in the current system. The maintenance schedule provided will ensure these pipes are cleansed accordingly in any case. Pipes must achieve 1m/s, we note that the majority of pipes are achieving circa 0.9m/s as per MicroDrainage printout. Please review design.*

We will review the pipe falls and increase as best we can to achieve 1m/s. Note, we currently have 250mm freeboard above the ditch connection point this will likely reduce in order to increase velocities. However, it is noted minimum freeboard of 100mm will still be required as per previous ADC comments. This may also result in more storage being required due to the velocity at which flow moves through the network. This will also be achieved through additional cellular storage provided upstream with appropriate flow controls (orifice or similar). Plans awaited.

5. Pond cross sections have been provided, these indicate slopes are to be set to 1:2. 1:3 slopes should be provided. *As per point 2 this pond cross-section was proposed and shown to ADC previously and no objection received. We have no further space in the area of the pond to alter to 1 in 3 side slopes as this would reduce the overall storage volume and cause flooding. Can any slackening of slopes occur, please see comment 8 below where additional storage is suggested. You have room on site to provide additional storage, you are just opting not to currently.*

We do not believe we can slacken the pond side slopes any further as the impact on storage would be to drastic and no further space is available to expand the pond area. Considering this is our main storage component we believe the 1 in 2 side slopes should be retained and we can make reference to the 1 in 2 side slopes in the maintenance manual so care is taken during any maintenance procedures. Okay, proceed with this.

6. It appears that a post and rail fence is proposed 1m from the top of bank of the attenuation basin. We require a 3m clear buffer around the basin to facilitate future maintenance. *3m easement has been provided in regard to distance to any structures. The post and rail fence has been provided as a safety measure to prevent access. Although this is within the 3m it is thought it would be best to keep this and maintenance can still be carried out by the private maintenance consultants. Maintenance manual should acknowledge the location of this feature and the potential requirement for its dismantling and reconstruction to complete maintenance.*

Noted, we will update the Maintenance Manual to ensure this is mentioned. Awaited.

7. Please provide site specific construction detail drawings for manholes, silt traps, pipe bed and surround, channel drains, gullies, headwalls, flow control chambers, interceptor etc. *Details have been referenced as WSCC details and necessary items updated in correspondence with Paul Cann for the outfall structure. Details must be site specific and included as part of this application.*

Noted, specific details will be provided for hydrobrake manhole and bespoke items such as additional flow controls provided and cellular storage when added. Please confirm if there are further details that need to be bespoke i.e. not covered by the WSCC standard details? I assume the outfall is covered as agreed with Paul. Specific construction detail drawings of the latest outfall drawings, flow control devices, and storage features.

8. Please detail what type of petrol interceptor is proposed and how the scheme meets the requirements of CIRIA C753 chapter 26 in terms of hazard mitigation indices.

Treatment at source is preferred, can lined permeable paving be used in parking areas?

This may also help to reduce the size of basin required to ensure side slopes meet minimum requirements. A Class 1 Bypass separator will be required and this will work in conjunction with the dry pond and trapped gullies to mitigate against pollution/contamination risk to Oldlands Farm Ditch. *Please clearly indicate how this will achieve the required pollution mitigation indices for events up to and including the 1 in 1 year event plus cc.*

We will complete the Simple Index Approach from Ciria C753 Chapter 26 to ensure we have adequate treatment facilities prior to outfall. If detention basin combined with separator and trapped gullies/chambers is not sufficient we will incorporate a vortex separator (such as Downstream Defender) to further protect the downstream receptor. *Further details awaited.*

Condition 7- discharge of flows to watercourse, etc.

Please provide details of watercourse bed level, including directly adjacent to where the outfall is proposed. This has been clarified with Paul Cann as part of the requests made in regard to the OWC. Attached latest plan for reference and email agreement. *Thank you.*

Condition 8- maintenance of SuDS

This will be reviewed once design has been agreed.

I have also observed that it appears construction has commenced on site ahead of this pre-commencement condition being discharged. Construction must cease until all pre-commencement conditions have been discharged. I will highlight this with the planning officer.

Kind regards,

[Redacted signature block]

Hello Laura, (Paul CC'd in case I have old email for Laura upon return to ADC)

Following on from receipt of your comments regarding the BE/70/20/DOC planning application please see the following.

A lot of these items have already been fully designed and reviewed by your colleague and have sequentially lead us to the drainage design we have today. To that end the comments we have historically been working to are the 8no. comments provided by David Spring. I have provided an extract of these responses below and note that David mentions he has 'no objection' to this application and the following was for providing clarification for planning approval. David's responses are in blue. Below this I have also provided additional responses to the comments you have raised. We would appreciate if you could review the below in regards to the process we have already been through and design items that have already been fixed as a result.

ADC Drainage Design Comments Agreed

My responses in blue below. Please note I have **no objection** to the application, these points are simply for clarification going forward, assuming all parties are happy for surface water drainage to be dealt with as part of a DOC application should you approve this application.

1. Both the strategy and the flood risk assessment state that infiltration is not viable without having completed infiltration testing. It is standard policy for an application of this size to carry out infiltration testing (in accordance with BRE365) to prove that this is not viable.

Statement already agreed with Laura Gibbons that infiltration is not viable due to the flood compensation works and flood risk in the area. Reference should be made to previous accepted comment. Please provide evidence of this comment. Unfortunately Laura is no longer employed by Arun District Council, however, if she agreed as such we will not contradict her, please ensure that evidence of that agreement is uploaded when you come to finalise surface water drainage design to avoid being questioned on it again. If no evidence is supplied then it will be expected that winter infiltration testing is completed as per standard policy.

2. Groundwater monitoring is referenced within the Drainage Strategy "Previous groundwater levels are known to have been between 1.2mAOD in the north of the site and up to 3mAOD to the south". However it appears no groundwater monitoring data has been supplied. For a site of this size it is expected that a full winter's groundwater monitoring is completed even if infiltration is not viable to ensure that the risks of flotation are appropriately mitigated in design. The ground investigation by Hydrock references striking groundwater at 3mbgl however states that "no groundwater (..) monitoring data is provided". If the applicant has groundwater monitoring data which shows groundwater to be at or close enough to ground level to rule out infiltration then this should be supplied and point 1 may be disregarded.

As per point 1. The response to point 1 does not apply here. As stated above "For a site of this size it is expected that a full winter's groundwater monitoring is completed even if infiltration is not viable to ensure that the risks of flotation are appropriately mitigated in design." Therefore when the design is agreed, a full winter's groundwater monitoring (that shows the peak groundwater level) will be required, if this has already been completed then the results simply need to be uploaded with the design.

3. The Flood Risk Assessment (but not the Drainage Strategy) proposes permeable paving of the parking areas which we would be keen to keep to add additional storage and further improve water quality.

Please refer to the drainage strategy in this regard. Permeable paving of the parking areas is not part of Lidl's specification, hence the design of the attenuation pond. Water treatment is a fundamental component of sustainable drainage design, as such the design will have to illustrate that water is treated adequately in accordance with the SuDS Manual as part of a DOC application.

4. We require a 3m easement from the top of the bank of the attenuation basin (on all sides).

Noted, we are double checking this and will confirm the 3m easement shortly. Great.

5.If the applicant intends to discharge to the watercourse (if infiltration has been proven unviable as per points 1 and 2) then they will need to apply for Land Drainage Consent to this department who acts on behalf of the LLFA.

This has been applied for previously through Laura Gibbons and therefore ADC has a record of this. Please contact Paul Cann the Principle Drainage Engineer regarding this as he is not aware of a Land Drainage Consent Application for this site and Laura would not have handled such an application.

6.QBar listed in the Flood Risk Assessment is inappropriate for this site and contradicts the Drainage Strategy.

Agreed, QBar is correct as per Drainage Strategy. Good.

7.As per the Drainage Strategy it is expected that the surface water drainage design caters for the 1 in 100 ± **40%** for climate change (not 30% as quoted in Flood Risk Assessment).

Correct, as per Drainage Strategy. Good.

8.Drawing details for all components of the design are expected to be submitted.

Noted, please confirm which drawings have not been received. We are aware that a detail of the basin has been provided, plus specifications for other components. We would expect to see construction details for pipe bed and surrounds, gullies, any manholes, catch pits/silt traps/petrol interceptors, control structures and headwalls.

ADC Responses 04/08/20

Condition 6- surface water drainage design

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8. Please detail what type of petrol interceptor is proposed and how the scheme meets the requirements of CIRIA C753 chapter 26 in terms of hazard mitigation indices. Treatment at source is preferred, can permeable paving be used in parking areas? This may also help to reduce the size of basin required. Ensure side slopes meet minimum requirements.

1. We will request the locations from the Client team,

2. This will invalidate the original drainage design simulations that were already reviewed by ADC. In any case I have attached print outs for both with and without surcharged outfalls. It is noted that with surcharged outfall no flooding occurs for 1 in 30 yr +40% but approx. 22m³ occurs at the outfall for the 1 in 100+40% storm. For the originally submitted simulation reviewed by David as part of the strategy document no flooding occurs for all storm scenarios.

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Kind regards

Chris Leigh

Principal Engineer, Infrastructure & Highways

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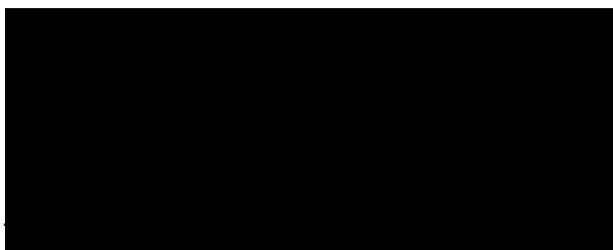
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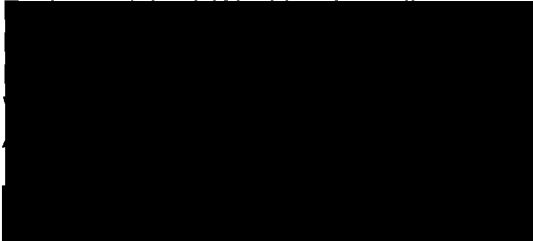


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Laura Gibbons



Worthing Town Hall, Chapel Road, Worthing, West Sussex, BN11 1HA



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