

From: Amanda Scholes on behalf of Planning.Responses
Sent: 14 July 2020 11:32
To: Planning Scanning
Subject: FW: D1833: Sunny Corner, Walberton WA/32/20/DOC D1833
Attachments: D1833-007F Construction Details Sheet 3 of 3.pdf; D1833-010B Pond Cross Sections.pdf; D1833-002E Engineering Layout - Below Ground Drainage.pdf; D1833 SW Design 1.2.pdf; D1833 Drainage Maintenance Schedule & Phasing Plan v3.pdf; D1833-001 Engineering Layout - Levels, Contours.pdf; D1833-300 Impermeable Areas Comparison.pdf

Amanda Scholes | Receptionist, Department, [Arun District Council](#) | Location: Ground Floor, Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF

Internal: 37736 | External: +44 (0) 1903 737500 ext 37736 | E-mail: amanda.scholes@arun.gov.uk



Visit Arun's web site at [Error! Hyperlink reference not valid.](#)



Save the environment - think before you print.

From: Laura Gibbons [REDACTED]
Sent: 14 July 2020 10:59
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Andrew Wood <Andrew.Wood@arun.gov.uk>; Dan Lytton [REDACTED]
Subject: Fwd: D1833: Sunny Corner, Walberton WA/32/20/DOC D1833

Dear Andrew,

The revised information is adequate to address our concerns and condition 8 can be discharged. Please ensure that the following plans are listed on any approval:

D1833 Drainage Maintenance Schedule & Phasing Plan v3
D1833 SW Design 1.2
D1833-001 Engineering Layout- Levels and Contours A
D1833-002DE Engineering Layout- Below Ground Drainage
D1833-005A Construction Details Sheet 1 of 3
D1833-006A Construction Details Sheet 2 of 3
D1833-007F Construction Details Sheet 3 of 3
D1833-010B Pond Cross Sections
D1833-300 Impermeable Areas Comparison

Kind regards,

----- Forwarded message -----

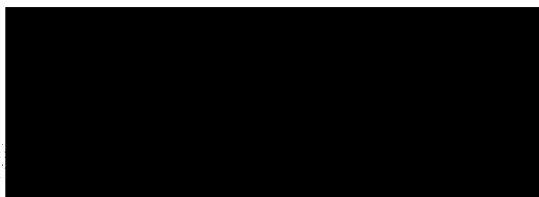
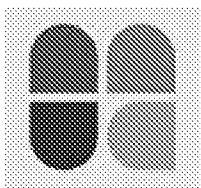
From: **Dan Lytton** [REDACTED]
Date: Wed, 8 Jul 2020 at 12:08
Subject: RE: D1833: Sunny Corner, Walberton WA/32/20/DOC D1833
To: Laura Gibbons [REDACTED]
Cc: Mark Akmenkalns [REDACTED] Jason Osborn [REDACTED]

Hi Laura,

Please find my responses to the outstanding points, as well as updated information attached.

1. Impermeable areas have been updated in line with drawing 300, however as with any site runoff from some impermeable areas such as rear patios or footpaths will never drain to the pond (these areas will drain to landscaped areas), therefore impermeable areas included within the model are an absolute maximum.
2. The calculations have been updated with correct invert and cover levels, slopes and base levels of permeable paving, and porosity. I have also included base levels of the permeable paving high and low points on the drainage drawing, and as can be seen the sub-base may be more than 350mm thickness in some high points to ensure a slightly flatter slope. The corresponding finish levels are shown on the levels drawing to limit overcrowding and to ensure clarity.
3. N/A
4. Infiltration rates have been removed from all features within the calculations.
5. The updated calculations show a hydro-brake outfall flow rate of 1.8l/s for the design event.
6. The sub-base formation levels shown on dwg 002 whilst finish levels are shown on dwg 001, for clarity.
7. N/A
8. As noted by the expanded point on drawing 002 which we request you refer to as well as the updated calculations, over 300mm freeboard is provided for up to the 100 year event and anything below. For an event of 100 year plus climate change the freeboard is 250mm. All return periods demonstrate the pond wholly contains runoff within the volume without flooding. This is in line with stipulations of NPPF regulations. Please note, in line with our response to Point 1, freeboard for these storm events are likely to be larger due to less runoff reaching the pond. This drawing is updated to reflect accurate levels.
9. Done, see updated drawing 010
10. N/A
11. N/A
12. N/A
13. N/A
14. N/A
15. N/A
16. I have included this explicitly within the revised maintenance schedule
17. N/A
18. N/A
19. N/A
20. N/A
21. N/A

Kind Regards,



Bright Plan Civils, Transport Planning and Civil Engineering Consultants

Bright Plan Civils, 2 West Barn, Norton Lane, Chichester, PO20 3AF

I am working from home and not reachable by the office number, however I can be temporarily reached on my personal mobile during working hours - [REDACTED]

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From: Laura Gibbons [REDACTED]
Sent: 23 June 2020 09:20
To: Dan Lytton [REDACTED]
Cc: Mark Akmenkalns [REDACTED] Jason Osborn [REDACTED]
Subject: Re: D1833: Sunny Corner, Walberton WA/32/20/DOC D1833

Dan,

Thank you for sending over the revised details. I have the following comments:

Key

ADC comments 16/06/20

Brightplan response 18/06/20

ADC Comments 23/06/20

- 1. Please provide an impermeable areas plan.** Please refer to permeable areas drawing D1833-300, attached for reference. Impermeable area plan indicates 0.341Ha. Main drained area 0.231Ha, road catchment 0.048Ha. Total of 0.279Ha modelled. Please detail where this discrepancy is from or make amendments to calculations to ensure impermeable area modelled is the area designed..
- 2. There are discrepancies between the calculations received and the drainage layout.**

Please find revised drainage calculations attached. We would note that at the entrance road, we have kept controlled discharge as low as possible in accordance with the agreed strategy. The area east of the footbridge is shown to contain all runoff in a 1 in 30 and 1 in 100 year event, however there is minimal ponding for a short duration in a 1 in 100 year plus 40% climate change event (being the ultimate low point

and cannot reach the pond). This will be contained by kerbs i.e. less than 50mm depth and would drain down within minutes rather than hours. There still appear to be significant errors with the calculations.

Discrepancies in invert and cover levels at nodes. E.g. node 5, 12,

There appear to be significant issues with the modelled permeable paving:

- ✦ *Information provided on drawings does not tally with calculations. Please ensure that finish and formation levels on all permeable paving areas are provided. Please provide invert levels of all diffuser blocks, cover levels at these locations would also be useful.*
- ✦ *Lowest invert levels of permeable paving should be applied.*
- ✦ *Actual slopes of permeable paving should be applied, rather than generic 1:50.*
- ✦ *For example node 10 has a lowest finish level of 17.4, invert level is therefore 16.94 (as correctly detailed on layout drawing). But then calculations have an invert level of 16.915. Slope is shown to be 1:95 yet 1:50 is modelled. Similar issues are present on the other areas of permeable paving. Node 7 has no invert level specified for the diffuser block.*
- ✦ *Invert levels of outgoing diffuser blocks on Type B permeable paving areas should be set slightly above the base, say 100mm, with the bottom 100mm depth of sub-base not included within calculations.*
- ✦ *Permeable paving porosity is currently set to 1.*

3. It is unclear where some calculation nodes are located on plan, please label plan with modelled nodes, including paving areas. Please see revised drawing D1833-002 which includes FLOW model node references. *Noted, thank you.*

4. Infiltration rates have been applied to the base of permeable paving areas and the pond. However, no GI results have been supplied to support this and it appears to have been previously agreed to not include infiltration rates in calculations. Please see information previously agreed with Paul Cann and geotechnical/drainage consultant Andy Traves of Aquacallidus regarding infiltration, ground conditions and groundwater on site. The strategy has been designed in accordance with this agreement where infiltration can be utilised where feasible (pavements) but has not been omitted from the pond for assurances on volume. *Point 4 of the minutes from the meeting with PC and AT indicate that no reliance should be put on infiltration. Where GW levels permit paving can be left unlined to allow any infiltration when possible. However, rates are so low that it was agreed to ignore infiltration in calculations. Please correct calculations.*

5. Can discharge rates be reduced further? Specifically from the basin, whilst ensuring a minimum aperture size of 50mm. A small reduction in pond discharge rate to 1.8l/s is now included. *Design head of hydrobrake is exceeded in 1 in 100 + 40%cc event. Flow out of hydrobrake is actually 1.9l/s during this event. Can the design head be altered to ensure 1.8l/s is achieved for the cc event?*

- 6. Please include formation and finish levels of permeable paving on surface water drainage drawing.** Please refer to drawing 001 and 006, as well as revised drawing 002. Sub-base invert levels will be laid in accordance with the standard detail other than where explicitly detailed on drawing 002 (entrance road). *Please specify finish and formation levels on surface water drainage drawing. These can be highest and lowest finish and formation levels at each permeable paving block and then further details on levels can be obtained from the other drawings.*
- 7. Side slopes to basin should be 1:3. Please look to slacken slopes where possible, especially where surrounding ground is lower than pond crest level.** Pond widened towards the watercourse (approx. 1m shift within buffer zone as agreed) to enable a 1:3 maintenance slope alongside the watercourse. This also enables the pond internal slope reduced to 1:2.5 without compromising the constraints ecology areas to the north and not affecting the plot gardens/levels.*Okay.*

8. **A minimum of 300mm freeboard above maximum modelled water level is required in attenuation ponds. This will be reviewed once calculations have been updated.** The pond top of bank remains at 17.10 and the 1:100yr plus 40% plus 10% maximum water level is 16.80 demonstrating a 300mm freeboard. *Okay, but will likely be problems when porosity of permeable paving is corrected.*
9. **Please provide two cross sections through the pond, one perpendicular to the other.** Please see drawing D1833-010 included.

Please ensure that top of bank levels, and base levels of pond are picked up on each cross section. Existing and proposed levels are labelled as being consistent, despite profiles showing change.

10. **Please confirm maximum recorded groundwater level at basin, if this is above liner level please supply flotation calculations.** Pond base raised from 16.10 to 16.15 (further reducing cut and improving freeboard between groundwater; already above recommendations from Andy T so floatation not an issue and you can see from the pond cross sections this sits out of the ground). *Please adjust construction detail drawing to not i.l. of 16.15*
11. **Please provide site specific construction detail of control chamber.** Please see note on revised drawing 007. *Okay.*
12. **Please provide bed levels of watercourse near to proposed points of connection.** Please see drawing 009. *Okay.*
13. **Add note 'all ditches for which your client has riparian responsibility to be cleared/desilted to the satisfaction of the ADC drainage engineer'** Please see drawing 009. *Okay.*
14. **Please include a brief summary of the surface water drainage scheme in the maintenance manual so that the management company is aware of how the system is designed to work.** Please see revised maintenance report. *Okay.*
15. **Please state how maintenance will be funded, i.e. management charge on residents.** Please see revised maintenance report. *Okay*
16. **Maintenance manual states an overflow pipe will be provided in the hydrobrake chamber, this is not noted on plan or on construction detail drawing.** Please see revised maintenance report. *Okay.*
17. **Please specifically detail the requirement for saplings to be removed from the pond.** Our design package does not include any detailing for saplings so we will pass this comment in to our client for actioning. *Any saplings that take root within the pond must be removed as part of the maintenance.*
18. **Please include maintenance of the ditch within the manual and clearly state the riparian responsibilities for this.** This is already noted within the maintenance report and within the schedule, please refer to revised report. *Okay.*
19. **Please provide more detail on requirements for hydrobrake maintenance, at least state minimum requirements for inspection in the summary table.** This is already noted within the maintenance report and within the schedule, please refer to revised report. *Okay.*
20. **Please include detail of maintenance requirements of flow controls from the highway.** This is already noted within the maintenance report and within the schedule, please refer to revised report. *Okay.*
21. **Construction detail drawings will be reviewed in detail at a later stage. Please ensure details are site specific, and any features not included in the scheme are removed from drawings.** Noted
22. **Details of headwalls to the watercourse require land drainage consent, please supply evidence of this if already obtained.** Please see approved Land Drainage Consent and associated detail. Please also note correspondence with Paul Cann agreeing to extension of Permit due to delays caused by Covid-19 restrictions. *Okay.*

Kind Regards,

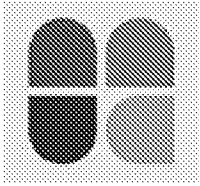
Dear Laura,

Please see our response below, with additional/revised information for reference attached. My comments are as follows, for your review:

1. Please refer to permeable areas drawing D1833-300, attached for reference.
2. Please find revised drainage calculations attached. We would note that at the entrance road, we have kept controlled discharge as low as possible in accordance with the agreed strategy. The area east of the footbridge is shown to contain all runoff in a 1 in 30 and 1 in 100 year event, however there is minimal ponding for a short duration in a 1 in 100 year plus 40% climate change event (being the ultimate low point and cannot reach the pond). This will be contained by kerbs i.e. less than 50mm depth and would drain down within minutes rather than hours.
3. Please see revised drawing D1833-002 which includes FLOW model node references.
4. Please see information previously agreed with Paul Cann and geotechnical/drainage consultant Andy Traves of Aquacallidus regarding infiltration, ground conditions and groundwater on site. The strategy has been designed in accordance with this agreement where infiltration can be utilised where feasible (pavements) but has not been omitted from the pond for assurances on volume.
5. A small reduction in pond discharge rate to 1.8l/s is now included.
6. Please refer to drawing 001 and 006, as well as revised drawing 002. Sub-base invert levels will be laid in accordance with the standard detail other than where explicitly detailed on drawing 002 (entrance road).
7. Pond widened towards the watercourse (approx. 1m shift within buffer zone as agreed) to enable a 1:3 maintenance slope alongside the watercourse. This also enables the pond internal slope reduced to 1:2.5 without compromising the constraints ecology areas to the north and not affecting the plot gardens/levels.
8. The pond top of bank remains at 17.10 and the 1:100yr plus 40% plus 10% maximum water level is 16.80 demonstrating a 300mm freeboard.
9. Please see drawing D1833-010 included.
10. Pond base raised from 16.10 to 16.15 (further reducing cut and improving freeboard between groundwater; already above recommendations from Andy T so floatation not an issue and you can see from the pond cross sections this sits out of the ground).
11. Please see note on revised drawing 007.
12. Please see drawing 009.
13. Please see drawing 009.
14. Please see revised maintenance report.
15. Please see revised maintenance report.
16. Please see revised maintenance report.
17. Our design package does not include any detailing for saplings so we will pass this comment in to our client for actioning.
18. This is already noted within the maintenance report and within the schedule, please refer to revised report.
19. This is already noted within the maintenance report and within the schedule, please refer to revised report.
20. This is already noted within the maintenance report and within the schedule, please refer to revised report.
21. Noted
22. Please see approved Land Drainage Consent and associated detail. Please also note correspondence with Paul Cann agreeing to extension of Permit due to delays caused by Covid-19 restrictions.

Kind Regards,

Dan Lytton MEng GMICE
Engineer



Bright Plan Civils, Transport Planning and Civil Engineering Consultants

Bright Plan Civils, 2 West Barn, Norton Lane, Chichester, PO20 3AF

I am working from home and not reachable by the office number, however I can be temporarily reached on my personal mobile during working hours - [REDACTED]

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From: Laura Gibbons [REDACTED]
Sent: 16 June 2020 14:18
To: Mark Akmenkalns [REDACTED]
Cc: Dan Lytton [REDACTED]
Subject: Re: Sunny Corner, Walberton WA/32/20/DOC D1833

Mark,

FYI- I have replied to the planning case officer with the attached.

Should you have any questions please feel free to contact me. I will be working on Arun planning applications on Tuesdays each week, but I am happy to answer any quick questions outside of this time should you require.

Kind regards,

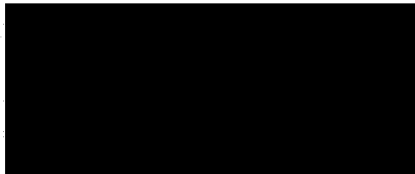
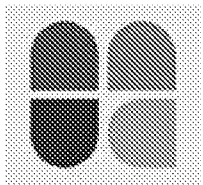
On Tue, 16 Jun 2020 at 09:32, Stuart Burnett [REDACTED] wrote:

Morning Laura,

Please find attached the requested calculations. Should you have any questions concerning these, please feel free to get back in touch – I have copied my colleague Dan in on this too, as he was involved more closely with Mark dealing with the detailed design/discharge of conditions.

Kind regards

Stuart Burnett
Engineer



Bright Plan Civils, Transport Planning and Civil Engineering Consultants

Bright Plan Civils, 2 West Barn, Norton Lane, Chichester, PO20 3AF

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From: Laura Gibbons [REDACTED]
Sent: 16 June 2020 08:47
To: Mark Akmenkalns [REDACTED] Stuart Burnett <[REDACTED]>
Subject: Sunny Corner, Walberton WA/32/20/DOC D1833

Good Morning Mark and Stuart,

I am helping Arun out with the review of some planning applications. Paul asked me to take a look at the DOC for Sunny Corner, Walberton. On the system there are no supporting calculations. I would be very grateful if you could send these over to me.

Many thanks,

Laura Gibbons

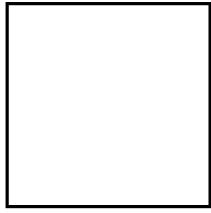
Engineer, Adur & Worthing Councils

Phone: [REDACTED]

Email: [REDACTED]

Website: [REDACTED]

Address: Facilities & Technical Services, Worthing Town Hall, Chapel Road, Worthing, West Sussex, BN11 1HA



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Laura Gibbons

Engineer, Adur & Worthing Councils

Phone: [REDACTED]

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Website: [REDACTED]

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Laura Gibbons

Engineer, Adur & Worthing Councils

Phone [REDACTED]

Email: [REDACTED]

Website: [REDACTED]

Address: Facilities & Technical Services, Worthing Town Hall, Chapel Road, Worthing, West Sussex, BN11 1HA

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Laura Gibbons

Engineer, Adur & Worthing Councils

Phone [REDACTED]

Email: [REDACTED]

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Address: Facilities & Technical Services, Worthing Town Hall, Chapel Road, Worthing, West Sussex, BN11 1HA

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