

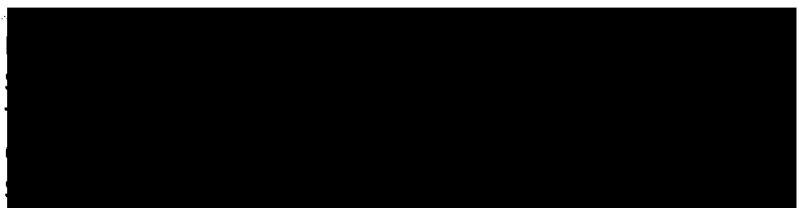
Please scan as consultee response

Anita Gardner
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 Anita

I understand from John Hall that the Jackson Purdue Lever drawings have now been superseded by the Civil Engineering Practice drawings, whereby there are significant changes, so have had to look at things afresh. It is also noted that only the layout drawings have been received ie. no calculations, construction details or management & maintenance manual..

Comments below;

Reservoir Catchment

1. The northern boundary ditch in vicinity of the proposed reservoir is currently located on the other side of the network rail fence and not within the redline boundary. As previously suggested a 'new' ditch will be required within the red line boundary and running parallel to the network rail ditch. Please adjust drawings and provide a typical profile cross section. Land drainage consent is also required for the new ditch and headwall outlet.
2. The pipe outlet invert (1.500) from the reservoir is currently shown below ditch bed level.
3. Adequate freeboard (ie. min 300mm) is required between the predicted top water levels in the reservoir and top of bank ie. may need to lower outlet level. Also, ensure the hydrobrake design head takes account of any adjustments to the design to achieve this.
4. Provide hydraulic calculations (to include upstream network) for the 1 in 100 year storm event + 40% climate change allowance. Please note that the guttering on the greenhouse should not be a limiting factor and the calculations need to allow for the full 100yr run off flows from the roof/s.
5. Overflow pipe from reservoir – provide headwall with cranked grille with bar spacings to suit 150mm diameter pipe. Include construction detail.
6. Specify gradient between overflow pipe and hydrobrake chamber.

7. Provide hydrobrake chamber construction detail.
8. Outlet headwall at ditch – Scour protection IS required. Provide construction detail (no grille required).
9. RWP inlets – Headwalls required. Specify diameters/gradients/invert levels. Provide construction details for headwalls. Fully detail pipework/manholes upstream between guttering and connection/s to reservoir. Silt traps required prior to entry to reservoir (provide construction details).
10. The layout drawings indicates the structure to be drained as a polytunnel rather than a glass greenhouse. Please confirm if this is the case.

Western Ditch

11. Provide longitudinal section showing existing and proposed bed levels.
12. Show the infilled section to be reinstated, including the trees to be removed to facilitate this.
13. If the ditch is being significantly deepened in places then the banks may need reprofiling to avoid them being too steep. Please advise and provide cross sections if necessary. Please also confirm that the regrading/profiling proposals will not have a negative impact on existing trees and their root systems.

Southern Catchment

14. Provide headwall construction details for headwall discharge to western ditch. This will need to include scour protection measures.
15. Provide hydraulic calculations for the 1 in 100 year storm event + 40% climate change allowance.
16. Provide french drain construction details, hydraulic calculations and full details of the percolation rates used.
17. Provide hydrobrake chamber construction detail.
18. The pond/swale needs a slight gradient east to west (as has been employed on the upstream swales) to improve the hydraulics and ensure water movement. Please note the base level at the eastern end is currently lower than the base level at the western end. Adjust pipe inverts to suit.
19. Short swale – 225mm pipe connection – raise invert to increase freeboard ie. to say 4.270. Provide headwall construction details.
20. Pipeline 1.001 – provide 100mm freeboard between pipe invert and swale bed.

General

21. Provide construction details for all manholes, pipe bedding, channel drains, etc.
22. Provide revised management and maintenance manual.

Please note these comments also relate to relevant conditions on F/6/20/DOC, but since they are all related, the comments have been amalgamated together.

Regards

Paul Cann
Principal Drainage Engineer
Engineering Services



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

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[Redacted]

Hi Paul,
Please can you let me know if the attached details are satisfactory for discharge?

[Redacted] Road,

Arun is a CIL Charging Authority, for more information go to www.arun.gov.uk/cil

Visit Arun's web site at www.arun.gov.uk



Save the environment - think before you print.

[Redacted]

Hello Anita & Paul,

Please see the string of emails below plus the additional information attached that you requested for the glasshouse & reservoir development at Wicks Farm, Ford.
Don't hesitate to come back to me if you need further clarification on anything.

Many thanks, John.

John Hall MBA MCIOrt
John Hall Consulting Ltd.
113 Limmer Lane
Felpham
West Sussex
PO22 7LR

[Redacted]



Hi John

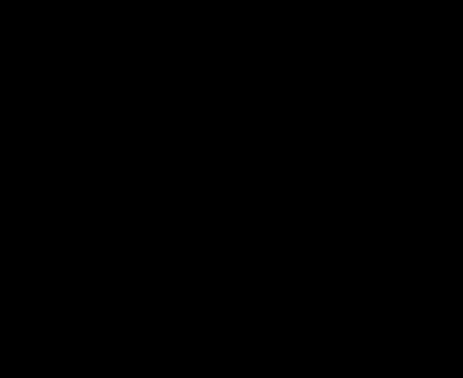
I attach the updated drawings, coordinated with the details provided by Mark yesterday for your formal response to Paul Cann.

Please do not hesitate to contact me if you have any queries or if I can be of any assistance.

Regards

Stuart

Stuart Magowan

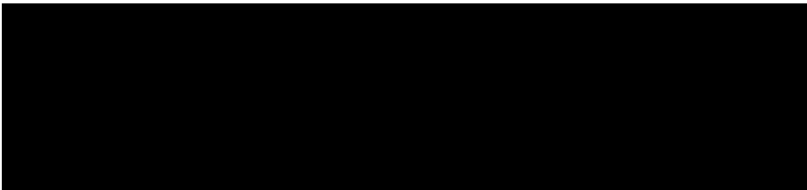


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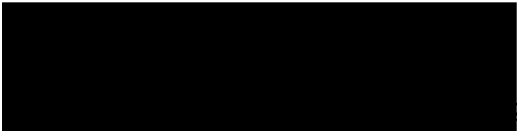
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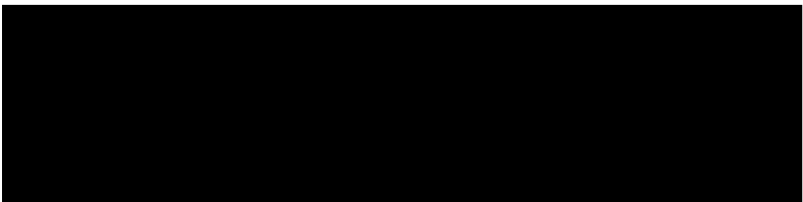
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Thanks Stuart -- John.

John Hall MBA MCIHort
John Hall Consulting Ltd.
113 Limmer Lane
Felpham
West Sussex
PO22 7LR





Hi John

Yes, I spoke to Mark yesterday and we are making these changes, I aim to issue early tomorrow.

Regards

Stuart

Stuart Magowan

stuart@civil.co.uk



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Hello Stuart,

Are you able to put this further information from Mark Wren together with yours so that I can send it all in as one response to ADC?

Many thanks, John.

John Hall MBA MCIHort
John Hall Consulting Ltd.
113 Limmer Lane
Felpham
West Sussex

Afternoon All,

Further to Stuart's issue of information we have updated our information as required to respond to Arun's comments and reflect relevant parts of the CEP design. A link to our information is included below.

<https://we.tl/t-sj9ynmYm2Y>

I spoke with Stuart M yesterday regarding any updates which may be required on his information which are minor but would be useful to tweak to ensure the packages are fully coordinated. I have included in the link a CAD file for ease:

- ✧ Twin pipes in and around the southern swale and pond to suit the Causeway model
- ✧ Flood compensation shown is based on Geodime's information not ours
- ✧ Headwall specifications on the southern ditch to suit the twin pipes
- ✧ Pond flow control specification to suit the Causeway model

One thing to highlight in relation to the responses below is that item 27 requests calculations for the reservoir system. I don't believe the CEP calculations include for the pipe network from the glasshouse to the reservoir. We were originally asked to design these pipes based on a rainfall intensity of 35mm/hr to match the design for the gutters and downpipes, resulting in the 450mm diameter pipes. This rainfall intensity does not represent that which would occur in a 1:100 year plus climate change event which would may lead to some localised flooding in short term events. Paul Cann may ask for the reservoir calculations to include these pipes and for a 1:100 year event which would increase their size.

For completeness I have copied the Arun comments and Stuart's responses below and added further comments.

1. It is noted that some infiltration will be possible but this has not been accounted for in the proposals in terms of the calculations which is fine.

*Noted. No response required.
No further comment.*

2. Is there a ditch on the eastern boundary? If so, include details on the plans.

*No details provided. From available information there is no ditch in this location.
No further comment.*

3. Please show the ditch on the western boundary on the plans. As per discussions with John Hall following a visit to site, it was noted that some sections of the ditch have been re-dug, whilst the section before

discharge to the Network Rail ditch needs maintenance and un-filling where the dead tree is located. Please add suitable notes regarding the intended proposals.

Details of western boundary ditch are now shown on drawings 21 and 24 requested note now included.
No further comment, our drawings now indicate the western ditch as shown on the CEP drawings and we have adjusted the pipe routing also.

4. The existing northern boundary ditch is located within Network Rail land. As discussed, the intention is to now provide a new ditch parallel to that one and discharge to the western boundary ditch. Please also the drawings as necessary and provide a typical cross section and a longitudinal section.

The ditch along the northern boundary within the site to be cleared of vegetation, silt & debris, and to be regraded where necessary to provide continuous fall from headwall to western ditch. Additional levels information has been included on the plans indicating the top of bank and ditch base level.

No further comment, our drawings now indicate the northern ditch as shown on the CEP drawings and we have adjusted the pipe routing also.

5. Provide fully detailed construction drawing for the reservoir, including base levels and top of bank levels.

Additional details have now been included on drawing 51 along with a section through the reservoir and outgoing drainage (Hydrobrake).

No further comment.

6. Specify pipe invert level where discharging to northern ditch, ensuring as much freeboard as possible between ditch bed and pipe invert.

Pipe invert specified on drawing 22 allowing for 100mm freeboard within the design between ditch bed and pipe invert as requested.

No further comment, our drawings now indicate the pipe routing as shown on the CEP drawings.

7. Land drainage consent is required for the new northern ditch including the pipe and swale connection to this ditch. Forms enclosed. Fees will be £300 – see attached methods of payment.

Noted. John Hall to confirm any action

No further comment.

8. The new headwall into the northern ditch must not encroach into the ditch profile (detail this or add suitable note)

Requested note added onto drawing 22.

No further comment, our drawings now indicate the pipe routing as shown on the CEP drawings.

9. Provide construction details for all prefabricated headwalls. All 450mm pipe exits/entries to be fitted with suitable cranked grille.

See Althon detail 'RIOCA Headwall + 400mm Toe + Hinged Cranked grating' for all headwalls serving 450mm pipes.

We have provided further details for the headwalls forming part of our design works into and around the southern boundary swale and pond.

10. Provide hydrobrake manufacturers technical details for each hydrobrake.

The Hydrobrake specifications added to drawings 22 and 24.

Hydrobrake specification is already on the drawing for the pond, refer to CEP drawing for the reservoir hydrobrake specification.

11. Inflows to reservoir – scour protection may be required beyond headwall aprons, depending on the construction of the reservoir.. Please provide fully detailed drawing.

The reservoir has been design to always retain a body of water therefore no scour protection is necessary.
No further comment.

12. Catchpit type W detail – include step rungs for access.

Steps added to catch pit detail on drawing 51.
Step rungs added to our detail also.

13. Reservoir outlet is at a very steep gradient and connecting at 90 degrees to the hydrobrake. Resultant flows could affect the performance of the hydrobrake – could this arrangement be revised to improve the situation.

Inlet and Outlet pipe to Hydrobrake manhole amended as requested as shown on drawing 22.
No further comment, our drawings now indicate the pipe routing as shown on the CEP drawings.

14. Swale connection to the new northern ditch – angle the point of entry to ensure flows merge in an improved manner.

Point of entry angled as requested see drawing 21.
No further comment, our drawings now indicate the pipe routing as shown on the CEP drawings.

15. Provide fully detailed insitu headwall construction details, for links between pond 1 and swale, and between swale 1 and 2.

See Althon detail 'R10CA Headwall + 400mm Toe + Hinged Cranked grating' for all headwalls serving 450mm pipes.
Detail provided for the in-situ headwall. In-situ needed due to narrow swale and twin pipes.

16. Incoming 225mm pipe to swale 2 – provide min. 100mm freeboard between swale bed and pipe invert.

Pipe invert specified on drawing 25 allowing for 100mm freeboard within the design between ditch bed and pipe invert as requested.
No further comment.

17. Pipe concrete bed and surround detail – specify the specific concrete mix on the detail itself.

Pipe concrete bed and surround detail shown on drawing 51.
Detail already part of information provided.

18. Car park area draining to swale 2 – is the surface to be of permeable construction? Provide fully detailed construction details. Provide perforated pipe construction details including structure on downstream end of pipes. Specify how upstream ends of pipes are to be terminated. Specify pipe invert levels/gradients.

The car park area draining to Swale 2 surface is permeable as per the detail on drawing 52. Further notes have been added to drawing 25 showing the Invert Level depths of the perforated Fin Drain.
No further comment, we have made note to refer to the CEP drawings for detailed specification.

19. The low areas on the southern perimeter of the greenhouse ie bottom of embankment – how is this to be drained? Provide details.

A French Drain has been included to the bottom of the banks as shown on drawing 51.
No further comment, we have indicated the drain as shown on the CEP information.

20. Channel drains – specify the particular models and show the specific concrete mix on the construction detail. Specify invert levels/gradients.

The Aco Channel specifications are shown on the drawings 25 & 26 and the Aco construction details on drawing 51. The channel and outlet invert levels are now shown on the drainage plans.
No further comment, we have made note to refer to the CEP drawings for detailed specification.

21. Outlets to swale 1 – provide min. 100mm freeboard between swale bed and pipe inverts.

Pipe invert specified on drawing allowing for 100mm freeboard within the design between ditch bed and pipe invert as requested.
No further comment.

22. Provide positive fall on pond 1 (swale) bed.

As noted above, there is infiltration present within the swales therefore no positive fall is proposed or required for the swale bed.
No further comment.

23. All pipes to connect soffit to soffit unless otherwise specified – add note.

Please see Note 1.1 which has now been included to drainage plans.
Note already on drawings.

24. Areas draining to channel drains – presumably concrete surface – indicate on drawings.

Areas draining to each Aco Channel now included on the drainage plans. The Aco Channel units have been sized using the Online Aco Design Tool.
No further comment, we have made note to refer to the CEP drawings for detailed specification.

25. Pond 1 system – provide pipe network numbered plan to support causeway flow calculations.

The drainage network is made up of a number of swales and ponds with a limited pipe work, therefore the pipe network has not been modelled in Micro drainage. All pipes are sized to accommodate the impermeable area they serve and flow required for a 1 in 100 storm plus 40%CC.
Network plan provided within new information to suit Causeway Flow calculations.

26. Pond 1 and associated swales – show top of bank levels on all sides.

Additional levels have been added to the top of all ponds and swales.
No further comment.

27. Provide causeway flow calculations for reservoir system. The CEP calculations provided were only preliminary and do not reflect the actual design.

Please see attached updated Micro Drainage calculation.
No further comment, refer to CEP calculations.

28. Maintenance manual - to be a separate document. Needs to explain how each system is designed to work and specify who will be responsible for maintaining the system after construction. The manual provided is quite generic and not really site specific – please adjust as necessary. There needs to be a focus on catchpits, hydrobrakes, headwalls (grilles), perforated pipes, reservoir, ditch, etc maintenance.

Please see attached updated Maintenance Manual.
Updated maintenance statement provided which is more site specific having removed some elements not part of the final scheme.

Mark Wren
Senior Engineer



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Hi John and Team

We have now completed the run through of the comments received from Paul Cann at Arun District Council and have updated the design drawings and details as discussed. The following link will allow a download of the updated information for the team to review:

<https://www.dropbox.com/sh/els9g8pu0ijyoih/AADM9xJUec4srwLMWJBGO216a?dl=0>

We have included AutoCAD copies of the layouts for the team to use as required to ensure coordination of the designs.

The following are the proposed responses in ORANGE and notes for you in GREEN to each comment along with instructions to locate the corresponding information.

1. It is noted that some infiltration will be possible but this has not been accounted for in the proposals in terms of the calculations which is fine.

Noted. No response required.

2. Is there a ditch on the eastern boundary? If so, include details on the plans.

No details provided. From available information there is no ditch in this location.

3. Please show the ditch on the western boundary on the plans. As per discussions with John Hall following a visit to site, it was noted that some sections of the ditch have been re-dug, whilst the section before discharge to the Network Rail ditch needs maintenance and un-filling where the dead tree is located. Please add suitable notes regarding the intended proposals.

Details of western boundary ditch are now shown on drawings 21 and 24 requested note now included.

4. The existing northern boundary ditch is located within Network Rail land. As discussed, the intention is to now provide a new ditch parallel to that one and discharge to the western boundary ditch. Please also the drawings as necessary and provide a typical cross section and a longitudinal section.

The ditch along the northern boundary within the site to be cleared of vegetation, silt & debris, and to be regraded where necessary to provide continuous fall from headwall to western ditch. Additional levels information has been included on the plans indicating the top of bank and ditch base level.

5. Provide fully detailed construction drawing for the reservoir, including base levels and top of bank levels.

Additional details have now been included on drawing 51 along with a section through the reservoir and outgoing drainage (Hydrobrake).

6. Specify pipe invert level where discharging to northern ditch, ensuring as much freeboard as possible between ditch bed and pipe invert.

Pipe invert specified on drawing 22 allowing for 100mm freeboard within the design between ditch bed and pipe invert as requested.

7. Land drainage consent is required for the new northern ditch including the pipe and swale connection to this ditch. Forms enclosed. Fees will be £300 – see attached methods of payment.

Noted. John Hall to confirm any action

8. The new headwall into the northern ditch must not encroach into the ditch profile (detail this or add suitable note)

Requested note added onto drawing 22.

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See Althon detail 'R10CA Headwall + 400mm Toe + Hinged Cranked grating' for all headwalls serving 450mm pipes.

10. Provide hydrobrake manufacturers technical details for each hydrobrake.

The Hydrobrake specifications added to drawings 22 and 24.

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The reservoir has been design to always retain a body of water therefore no scour protection is necessary.

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26. Pond 1 and associated swales – show top of bank levels on all sides.

Additional levels have been added to the top of all ponds and swales.

27. Provide causeway flow calculations for reservoir system. The CEP calculations provided were only preliminary and do not reflect the actual design.

Please see attached updated Micro Drainage calculation.

28. Maintenance manual - to be a separate document. Needs to explain how each system is designed to work and specify who will be responsible for maintaining the system after construction. The manual provided is quite generic and not really site specific – please adjust as necessary. There needs to be a focus on catchpits, hydrobrakes, headwalls (grilles), perforated pipes, reservoir, ditch, etc maintenance.

Please see attached updated Maintenance Manual.

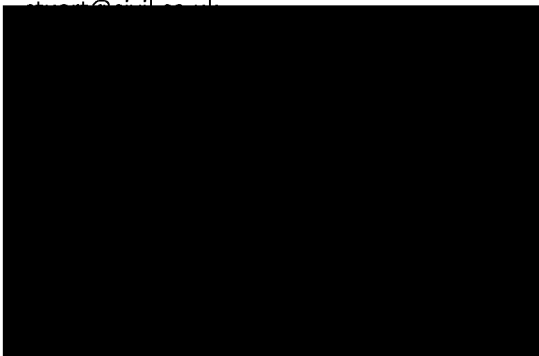
If you have any queries or if I can be of any further assistance please do not hesitate to contact me.

Regards

Stuart

Stuart Magowan

stuart@civil.co.uk



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Morning Stuart,

Please give me a call as soon as you can ref. our response to ADC concerning Wicks Farm.

Many thanks, John.

John Hall MBA MCIHort
John Hall Consulting Ltd.
113 Limmer Lane
Felpham
West Sussex
PO22 7LR

