



Comments in respect to surface water drainage. Please also note that these comments also deal with the conditions under P/35/20/DOC;

1. Further to the site meeting with interested parties on the 22nd January 2020, I can confirm that we accepted the principle of the surface water drainage scheme ie. To connect part of the site into the northern boundary ditch and for that ditch to be redirected across the site via on the onsite suds and ultimately reconnecting to the ditch on the southern boundary. This agreement was on the basis that offsite works would be undertaken by the applicant, subject to our approval and landowner agreements. This was to be progressed by having a further meeting with all interested parties/landowners to agree the way forward and this was to be arranged by the applicant. To date, I am not aware of any progress in this respect, but is critical to the scheme.
2. Infiltration to ground was ruled out due to the presence of high groundwater and known ground conditions.
3. Provide full details of the proposed remediation works to the northern ditch and Crayfern outfalls.
4. Existing outlet from northern ditch – detail how this is being incorporated into the scheme. Indicate pipe diameter and invert level too. I would suggest that a manhole is constructed to provide a robust means of access.
5. Section through swale (Drg. 432) – indicate top predicted water level.
6. I note the proposal for basin/swale link pipes and inlets to discharge into gravel filled channels. Instead, I would like to see the gravel filled channels to be either open channels or a perforated pipe arrangement of suitable diameter/headwalls.
7. Southern ditch to which the ultimate outfall connects (Drg. 431) – show proposed ditch bed levels and invert level of existing 300mm culvert downstream. As much freeboard as possible needs to be achieved between the ditch bed and the connecting pipes invert.
8. Northern boundary ditch – Indicate true bed levels and all Crayfern outfall inverts.
9. All headwall grilles to be cranked as opposed to be flat or just sloped faced.
10. Provide construction detail for headwall SW-14.
11. Headwall SW-1 construction detail – remove grille. Indicate proposed ditch bed level , pipe invert level and diameter. Concrete capping to be ST4 or similar approved.
12. All headwalls - 50mm cover required to reinforcement.
13. All headwalls – Dimension and specify concrete for hand railing foundations. Dimension handrail height above ground level and offset from brickwork.
14. All hydrobrake chambers – pull handle to be attached to a point vertically above the hydrobrake.
15. If gabions are to be utilised as part of the solution, bearing in mind item 6 above, then specify wire thickness/protective coating.
16. Land drainage consent is required for the three headwalls being constructed in the banks of the existing ditches. Please submit the application accordingly.
17. Incoming pipes at headwalls SW-4, SW-5 and SW-32 – increase freeboard between pipe inverts and basin/swale bed.
18. SE corner of site – investigate possible presence of culvert from Sylvia Close.
19. SE corner access road – where Summer Lane culvert passes beneath, provide CCTV results of the pipe section, so any necessary remedial work can be identified and provide details of how the pipe will be protected from vehicular loadings.
20. Headwall construction details for eastern section of site – include pipe outlet invert level and true ditch bed level.
21. Provide construction details for all manholes, pipe bedding, rodding eyes, permeable paving, gullies, fin drains, diffuser units, catchpits, backdrops, RWP's, etc.
22. Specify materials for all pipes.

23. Show finished floor levels, permeable paving finished surface levels and base levels.
24. All connections not made to manholes to be connected via oblique 45 degree junctions. Add note.
25. Road gully adjacent SW-24 – not located within road channel.
26. Catchpit manholes required immediately upstream of all connections to permeable paving. Where RWP's connect directly in, a bottle gully or similar can be detailed with the downpipe discharging onto a grated cover to remove larger items of debris.
27. SW-24 to SW-26 – improve gradient to min 1/167 or upsize to 300mm diameter maintaining similar gradient to that proposed.
28. Plots 10 to 13 – connect to a manhole (in the road).
29. All drains to be 100mm diameter unless otherwise specified. Add note.
30. Add invert levels to all rodding eyes.
31. All pipes to connect soffit to soffit unless otherwise stated. Add note.
32. Manhole rear plot 15 – reposition onto pipe connection.
33. Rear plots 31 to 35 – connect drain to manhole in road. Same for plots 21 to 24.
34. On layout plans, add invert levels to manholes in road, including invert levels of all connecting pipes.
35. SW-19 to SW-20 – Improve gradient to achieve 1 m/s velocity at full bore.
36. Road gully laterals – stipulate 150mm diameter pipes.
37. Rear plot 30 – connect RWP to head manhole.
38. Rear plot 27 – pipeline seems to take a long route – not sure why?
39. Drain rear plot 28 – move pipe as far as possible away from trees.
40. SW-16 to Headwall – improve gradient to min. 1 in 400, ensuring as much freeboard as possible between pipe invert and ditch bed. Longitudinal section doesn't appear to show the SW-16 to SW-15 arrangement as per the layout plan ie. SW-15 is a headwall not a manhole.
41. Rear boundary fences of plots 29, 30 & 32-35 need to be kept 3m from top of ditch bank for future maintenance access and compliance with our byelaws.
42. Outside plot 63 – gully connections need clarifying.
43. Plot 66 – RWP needs connecting to a diffuser unit and RWP on NE corner needs connecting to the head manhole.
44. Headwall SW-32 – investigate connecting the 450mm and 225mm pipes together via a manhole before connection to the headwall or alter upstream arrangement to ensure both pipes connect to headwall in parallel.
45. Manhole S46 to be catchpit.
46. Connection into SW33 – gradient 1 in 5 – connect via backdrop? to slacken gradient.
47. Road gullies east of plot 84 – connections need clarifying.
48. Connections from plot 69 – connect to manhole SW40 and slacken gradient (currently 1 in 3).
49. Rear plot 50 – move manhole S26 onto connection.
50. Permeable paving requires an impermeable membrane wrapping (include on construction detail)
51. Manhole south of plot 48 – move southwards onto RWP connection.
52. RWP's between plots 47 & 48 – points of connection not clear.
53. Plot 47 parking space – specify as permeable paving.
54. Connections from plots 51-52 and 74 – slacken gradients – connect to manholes in road via backdrops?
55. Plots 52, 53 & 75 – Move head manholes onto downstream RWP connection.
56. Plot 49 to diffuser unit – remove bend.
57. SW43 & SW45 to be catchpits.
58. SW43 to SW-5 – show gradient and pipe diameter on plan.
59. Plot 80 – slacken pipe gradient on west side of property.
60. Manhole west side of plots 78 & 79 and plots 76 & 77 – move manholes onto connections downstream.
61. Provide silt trap at SW-3 headwall to help protect the hydrobrake.
62. Two sets of microdrainage calculations have been submitted. One set in the drainage strategy document. It is assumed that the Nov 2019 set is the most current. Please submit a new set taking into account the comments above. It would be useful for some commentary on how the system has been modelled. How the Crayfern outfall have been included in the modelling and how groundwater flows have been allowed for in the calculations. Certain items that need clarification are the hydrobrake at SW-10 being modelled at 50 /ls as opposed to 10 l/s, the weir control at SW-10 and the 4.6 l/s hydrobrake at GCF-04. Whilst I appreciate that pipe network numbers have been added to the drainage layouts, for ease of reference, it would be useful to have an overall network plan to support the calculations. Flooding is noted in some areas on the 1 in 100 year storm

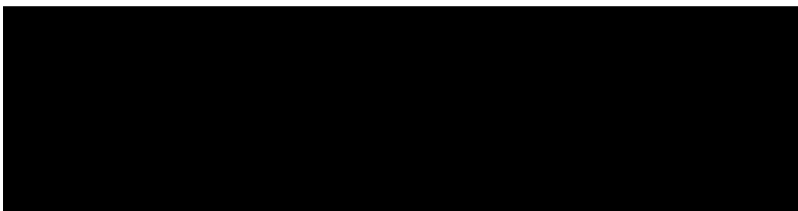
event – it will need to be proven that this water can be contained on site without detriment to people and property.

63. Maintenance manual – needs updating to reflect the current design. Explain in detail how the drainage system is designed to operate and identify key features (in layman's terms). Other items to include on the maintenance schedule;
- a) Hydrobrake chambers to include sump/sediment removal.
 - b) Bottle gullies associated with permeable paving and their importance to prevent silt entering the paving. Similar applies to catchpit manholes upstream of permeable paving.
 - c) Basins/swale – include removal of any tree saplings that seed themselves.
 - d) Grilles – include clearance after heavy rainfall.
 - e) Include ditch and culvert maintenance. Culvert under eastern access road, also possibly from Sylvia Close, proposed culverts under driveways fronting Summer Lane.
 - f) Cellular tanks are included but are not applicable on this site – please remove.

Look forward to receiving the revised drawings and information.

Regards

Paul Cann
Principal Engineer (Drainage)



To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

APPLICATION NO: P/37/20/DOC

Registered: 20-MAR-20

Site Address: Land North of Summer Lane Pagham PO21 4NG

Description of Works: Approval of details reserved by condition imposed under ref P/70/19/RES relating to Condition Nos 3 - drainage strategy and 5 - pumping station design

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 have any comments to make, these should be sent by replying to this email by 17th April 2020.

www.arun.gov.uk/planning

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.

The officer dealing with this application is Mr S Davis who can be contacted on telephone number

[REDACTED]

Thanking you in anticipation

Planning Case Officer
Arun District Council

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