

At this stage we **would not recommend discharge of conditions** until the following comments are addressed.

Condition 9 –

- 1) A 1:80 gradient has been applied to the permeable paving sub-base within the drainage calculations. Nonetheless, the slope across the paving appears to be steeper than this value. The applicant should provide justification for why a 1:80 gradient has been selected within the calculations, to ensure that any differences between the calculations and design levels will not impact on the hydraulic performance of the permeable paving system.
- 2) The design of the pond / basin should include a freeboard of at least 150mm, preferably 300mm or more (in accordance with C753).
- 3) Regarding the geo-cellular storage, there is a note on both the drainage layout plan and section detail of the storage tank which states "Polypipe Civils (or similar approved)". At DOC stage we require certainty that specifications will be followed, as any changes to the specification may impact associated calculations. As there is no mechanism for enforcing further review of such changes, which could result in significant changes to the design if different crates are approved, please can the applicant remove the "or similar approved" section of this comment from the drawings.
- 4) The results of groundwater monitoring have not been provided; the technical note report states that these results are included within Appendix B, however, section 4.3 of the report included within Appendix B confirms "the results of the on-going groundwater monitoring will be issued under separate cover". We request that this separate document containing the remaining elements of the groundwater monitoring be submitted so they can be reviewed.
- 5) Greenfield runoff rates have been based on ReFH2 method. The applicant should provide details of the catchment descriptors used within the analysis and confirm whether adjusted catchment descriptors have been applied. Justification for the catchment descriptors used within the calculations should also be provided.
- 6) If the drainage calculations only account for runoff draining from impermeable surfaces, then the calculations should use a CV of 1.0.
 - The requirement to use CV 1.0 is based on recent clarifications from HR Wallingford which suggest the values of 0.84 and 0.75 often used are in error and confirm that a value of CV = 1 should be used in situations where runoff from only the impermeable areas is considered.
 - It is noted that CV 1.0 is only considered applicable to the sizing of the SuDS, and pipework may still be designed to lower values.
- 7) The surcharge scenario calculations appear to be based on the 120 minute critical event and a surcharged depth of 0.19m. Justification for the 0.19m surcharged depth should be provided. If possible, a graphical output of the surcharged flows out of the drainage system should also be provided. If ReFH2

Commented [SH1]: Looks like gradient on the permeable sub-base is about 1:40 not 1:80 used in the calcs – this needs double checking from a scaled plan. Cant be right as when taking values from calcs 1:60 is the shallowest possible solution.
I think they have good reason for this as the gradient does shallow to virtually 0 in the lowest part of the site - but they havnt confirmed why or that it will work so we must work under the assumption that it hasn't been considered.

4.3 Groundwater Conditions and Stability

Groundwater was recorded at a depth of 0.65m on corner borehole W545 in November 2020. The results of the test are under separate cover.

During the trial pitting works groundwater was noted. However, during the leakage testing this trial pit was filled and on completion.

Both trial pits TPO1 and TPO2 were dry on completion of testing the water level within trial pit TPO2 never fell to show draining soils or a high water table.

It is noted that groundwater levels should be expected

Commented [SH2]:

has been used to derive expected surcharge depths within the adjacent watercourse, then details of the ReFH2 calculations including hydrograph outputs should be provided.

- In the absence of a suitable analysis of expected surcharging depths within the adjacent watercourse, please model a reasonable worst case surcharged outfall, with a fixed surcharged water level set equal to the top of bank level at the outlet (as previously requested).
- 8) The type of membrane surrounding the permeable paving sub-base / specification should be specified on the drawings.
- 9) The pond has a note which states; "To be co-ordinated with landscaping proposals." This should confirm that the only details that still need co-ordinating are the planting scheme, as other details leave the pond open to partial redesign, e.g. if landscaping takes precedence over drainage - shallower side slopes or smaller forbay.
- 10) All inlets into the pond must have headwalls. The inlet pipe from gully to the north west of the pond needs an outfall headwall on the drainage layout plan.

The applicant should note that, the drainage report relies on the 1m easement being unachievable to justify not proceeding with infiltration SuDS. Across the coastal plain within Arun District the 1m easement has been waved and does not apply. Nonetheless, as the results provided suggest groundwater at depths of 0.6m BGL, which is extremely shallow, it only leaves 600mm for any infiltration SuDS and any associated cover. In this case, there is sufficient justification as to why shallow groundwater levels will prohibit infiltration SuDS being used to drain this site.

Condition 10 –

- Land Drainage Consent has been granted therefore we have no further comments on this condition and Condition 10 can be discharged.

Condition 11 –

- 11) The maintenance and management plan states that a swale will be used for pretreatment within the pond. This differs from the section drawings of the pond, which show a sediment forbay. The applicant should clarify whether a swale or forbay is to be used within the pond. It is noted that the maintenance schedule (cited directly below this statement) refers to the forbay.
- 12) The maintenance of the tank is stated to be dependent on the maintenance frequencies specified by the manufacturer. These details should be provided (unless they do not differ from the submitted information).

- 13) Inspection of the flow control device for the 3 months following installation should specify whether this period is to cover autumn, as discussed in the control chamber table. If inspection through the autumn is required, this should be specified in the text above. If this is not required and the monthly inspection period can occur at any time during the year, then this should be specified in the table. This is to avoid confusion between the text and associated table over the frequency of maintenance and for how long monthly inspections must be carried out.
- 14) Please detail how maintenance will be funded, i.e. will a charge be levied on residents? If so how will this be applied? If not, who will be paying for the ongoing maintenance?
- 15) Please add to maintenance of ponds the annual removal of tree saplings.
- 16) Please detail inspection and replacement of liners.
- 17) Please detail inspection, greasing and movement of bypass doors on Hydro-Brake and frequency of this.
- 18) Please include maintenance of gullies and pipes.
- 19) Please include maintenance of the ordinary watercourse, for which the developer will have riparian responsibility for. Please include a layout plan which clearly defines the watercourse extents.
- 20) Ideally contact details for the Environment Agency (EA) should be provided to ensure maintenance personnel know which EA office to contact. If the contact information is updated by the EA during the lifetime of the development, the contact details should be updated to reflect this.