Dear Mr Murdoch,

Re. Planning Application 16/02745/CT3 extension to Seacourt P&R

In our initial submission to you we mentioned that the frequent flooding of the site proposed for the Seacourt P&R is likely to result in maintenance costs which the proposal documents do not discuss. We have investigated this is more detail in the last few days and wish to add the following observations.

We have spoken to three manufacturers of porous brick paving who say that while pavement of this kind can be laid in the floodplain it will need regular inspection, cleaning and repair. If the pavement becomes seriously clogged with silt, as it could if submerged for long periods in silt-bearing water, the bricks would need to be lifted, cleaned and re-laid.

One company, Aquaflow Systems, wrote to us saying:

During a flooding event contamination and silts will be filtered by the block paved surface; the majority of silts etc will be trapped within the jointing gritstone. We recommend that after any flooding the system is inspected; any areas of heavy silting will require cleaning and reinstatement. Cleaning is carried out by sweeping or pressure washing and can be done manually or by machine depending on the extent of the flooding. Once cleaning has been completed the jointing gritstone will need to be reused or replaced. With a reactive maintenance programme in place to tackle these flooding events the system will remain functional.

If there is a catastrophic flooding event or even a high frequency of flooding events that render the surface of the system impermeable then an uplift of the blocks may be required. By lifting the blocks the laying course stone can be inspected and cleaned and also the up-per layer of Inbitex Geotextile can be inspected. The laying course stone can be washed and reinstated and the Inbitex geotextile replaced if required. This again would only be required if an initial cleaning didn't fix the problem.

These statements are from a company which was hoping to sell the product to us, and can therefore be assumed, if anything, to understate the maintenance issues.

A Google search relating to porous asphalt surfaces produced similar advice. These products can also become clogged by silt if subjected to heavy flooding. An advice note issued by the National Asphalt Pavement Association of the US includes the following advice:

- The design should provide for an alternate path for storm water to enter the stone recharge bed in the event that the pavement surface becomes plugged or experiences extreme storm events.
- An overflow system should be included to prevent water in the stone bed from rising into the pavement surface during extreme storm events.
- The stone recharge bed should be able to drain within 12 and 72 hours.

Later the document says: 'Porous pavements are not normally designed to store and infiltrate all stormwater from all storms. Therefore, it will be necessary to include overflow devices to prevent the water from rising into and over the porous asphalt surface.'
https://www.google.co.uk/?gws_rd=ssl#q=Porous+asphalt+pavements+for+stormwater+management
Another paper, this time from North Carolina State University discusses some of the challenges with restoring Porous Asphalt (PA) and Porous Concrete (PC) pavements after silting. This paper includes the following statements:
Restorative maintenance of a PA or PC system clogged by fines has not yet been deemed possible.
If pavements are neglected and allowed to clog to sometimes substantial depths, it is uncertain whether all pavements' necessary surface infiltration rates can be re-stored.
https://www.google.co.uk/?gws_rd=ssl#q=Maintaining+Permeable+Pavements+North+Carolina

The FRA makes no attempt to assess how frequently the site might be flooded, to what depths and for how long. It is therefore impossible to form a view as to how often the site might be non-operational either because of flooding or for maintenance. If it flooded for a few weeks in early November, and then drained, and bad storms were predicted for December, would the OCC clean up the car park, or operate it with the silt left in place, or close it? No cost estimates of maintenance and lost revenue are provided with the application.

Simon Collings
Oxford Flood Alliance