

Case study 11

Surface water: where does it go?

UNDERSTAND THE PIPES!

It's not uncommon to find residential or commercial developments that have few (or even no) drawings of their drainage layout. Problems with package plants cannot be fully understood until it is clear exactly what flows reach the treatment units. If there are no drawings then lifting manhole covers, plotting alignments and spending £30 or so on a tub of dye can really aid understanding and help find the right solution further down the line.

WHY AVOID SURFACE WATER?

Rain that drains from roofs and hard surface areas such as pavements is typically much less contaminated than sewage. Letting rainwater flow to a package plant increases the volume to be treated, dilutes the sewage (which can cause problems) and introduces intermittent and highly variable flow patterns that can cause short-circuiting and re-suspend solids in settling chambers. All of these can cause consent failures. But really, though, it doesn't make sense to mix clean rainfall with sewage to then have to separate the two again, does it?



Some residential and commercial developments are far from the nearest sewer and so must use a small, self-contained sewage treatment system to treat wastewater. Like all sewage works, these package plants are susceptible to varying incoming flows and compositions. This can be exacerbated if surface water also passes to the plant.

Our client in this case owns a residential development that has an aging sewage package plant. The plant discharges to a local watercourse and intermittently fails its consent. A third party had quoted for an additional treatment unit and we were asked to comment on its suitability.

We visited the site just after a tropical downpour and, on lifting the covers of the inlet chamber, saw what could only be surface water rushing in. The client had been told this was due to a crack in the chamber but we thought otherwise. With the client's help we investigated further.

There were no drawings of the drainage layout for the development so we rolled up our sleeves and lifted as many manhole covers as we could find. We found a surface water drain that was perfectly aligned with the package plant inlet chamber. Further work found another surface water manhole further upstream that was aligned with the first. This manhole took surface water from a large residential block. Jetting the manholes with a hose led to an increased flow at the inlet chamber, strongly suggesting that was their destination. The client is about to do a dye test to confirm this.

The result? We're working with the client to divert the surface water and measure the impact on the existing plant. We strongly feel this will avoid the costly installation of an unnecessary extension to the plant.