

Game Conservation Reed Bed for Domestic Waste

Water Case Study



In November 2013 Oceans ESU Ltd were commissioned by a UK game conservation charity to refurbish a horizontal flow gravel based reed bed. The bed is designed to treat sewage effluent from 8 properties within the area.

A common problem associated with gravel based reed beds is that over time they accumulate detritus within the gravel pore spaces, leading to a reduction in the hydraulic conductivity of the system. At this particular site, build-up of detritus over the 14 year period since installation had resulted in the hydraulic conductivity within the bed decreasing to a point where the bed was no longer able to receive and treat the effluent effectively. The reed bed had become blocked and as a result effluent was unable to permeate through the gravel and could only flow across the surface of the reed bed. As well as compromising the treatment of the effluent, the blocked gravel caused flooding to a point where untreated effluent was breaching the banks and escaping into the surrounding environment.

The solution was to convert the gravel reed bed into a horizontal flow soil based reed bed. Soil based reed beds are far more reliable than gravel beds because once fully established, hydraulic conductivity is sustained throughout the lifetime of the bed, unlike gravel based systems which block up over time.

The treatment capability of soil based reed beds is greater than that of gravel based reed beds. Soil is naturally rich in a diversity of bacteria which break down contaminants contained within the effluent.

In addition the smaller particle size of soil, when compared to gravel, has a much larger surface area and therefore soil based reed beds are able to support a significantly larger microbial population than a gravel equivalent. As such soil based reed beds have a higher treatment capability.

Installing a soil based reed bed at this site has improved the overall treatment capability of the system, whilst providing assurance of system longevity without the need for future refurbishment.