

Waste Water

In the renovation of old farm buildings as Mucknell Abbey, the lack of connection to mains sewerage was dealt with by installing a biodigester and a sustainable urban drainage system.

Foul Drainage

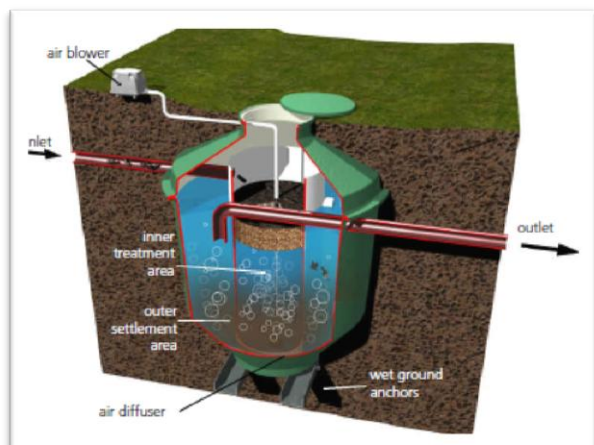
The foul drainage from the buildings connects at the south west corner at a depth of about 3 metres, and passes underground westwards. The ground falls away, and where the drain reaches ground level, a biodigester has been installed.

The untreated sewage enters the inner treatment chamber within the unit, for primary treatment using naturally-occurring micro-organisms. These digest the solids to a clear effluent and a non-toxic sludge. The partly-treated sewage then passes into the outer settlement chamber, before final discharge.

To provide an increased oxygen supply and accelerate the activity of the micro-organisms, air is blown into the bottom of the primary treatment chamber by electric compressor units housed in a small hut near the biodigester. The diffused air also operates as an 'air lift', which recirculates solids from the settlement chamber back into the treatment chamber, ensuring that both chambers remain aerobic.

Depending on usage, the unit will require emptying of solid matter every 2-5 years.

The treated water quality is acceptable to discharge to a stream. Because the nearest stream is at the far end of the site, the opportunity was taken to excavate a series of three swales and provide a wetland habitat and enhance biodiversity. Swales are intended to be soak-aways, but the clay-ey soil has remained watertight and the new ponds have attracted much insect and bird life.



Storm Water

Sustainable Urban Drainage Systems (SUDS) aim to treat and dispose of waste water locally without reliance on a larger managed infrastructure. SUDS is a cheaper option than the construction of large underground holding tanks to attenuate the flow of storm water into the conventional drainage system, which can be very expensive.

French (or land) drains have been installed in the kitchen garden area and around the buildings, including a drain around the external envelope of the basement to relieve excess water pressure from the basement retaining walls. The flow from the kitchen garden area is directed into the existing pond. Flow from around the buildings is directed into the foul drainage and thence the swales.

