

Drainage Strategy

to support the Planning Application

for

the erection of one dwelling house

on

Land with Stables Myerscough Hall Drive

Bilsborrow

(350742E 440250N)

Drainage strategy

The risk of flooding has been determined to be low and from surface or ground water due to heavy rainfall.

Results from the Percolation test carried out on site

Method

We dug a test hole 300 x 300 x 300mm. The soil extracted was typical arable field sub soil.

We quickly filled the hole up with 300mm of water, timed when this commenced. We took another timing at 75% and then one at 25%. The time it took the water to soak away from 75% to 25% was approx 1 hour 45 minutes.

So our percolation test Vp (percolation value) based on this is:-

1 hour 45 minutes = 6300 seconds divided by 150 mm = 42

Therefore we have a Vp of 42

The data from the results of the percolation test was discussed with the technical department from the Polypipe team and they suggested this is a suitable method of an infiltration system for the site.

(Photograph's taken of the test site)



A soak away will be installed to manage surface and ground water flooding.

$$\text{Vol} = A \times (\text{rainfall rate}/3000)$$

The formula we have used states that the volume of soakaway required is equal to the area to be drained (in m²) multiplied by the product of the storm rainfall rate (assumed to be 50mm/hr in UK) divided by 3000.

Dwelling size 12x 12 meters = 144 sq meters.

Volume required = 144 square meters X (50/3000) = 2.4 cubic meters.

We are installing 3 x 1 cubic meter soak away crates. In addition, there will be an outlet to a trench/dyke dug to surround the boarder on the inside of the site to protect external land. The water will be soaked back into the surrounding land from both the soak away and the trench. The dyke when excavated will be along the internal East and South hedgerow at a safe distance away from the root protection area to preserve the mature hedgerow. It will be commenced at a depth of 300 mm reaching to 1 meter.

This dyke will have a 100 mm perforated land drain wrapped in geotextile membrane (to prevent clogging) then be backfilled with 70mm down to 40 mm stone and a layer of topsoil with grass seed.

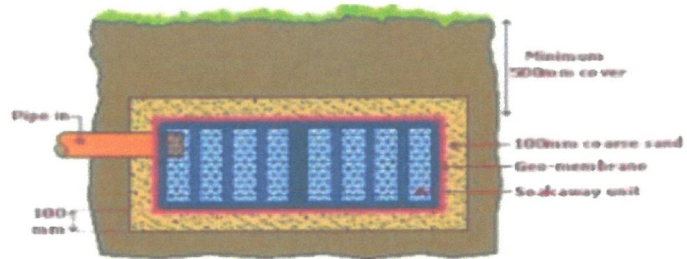
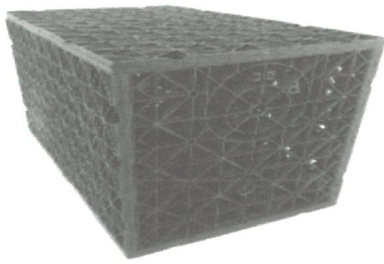
Construction Details

To construct the system, it will involve digging out a hole larger than the crates to allow for backfill and side fill. The hole for 1 cubic meter crate is 1.2m (w)x 1.2m (L) x 1.6m (d). This allows for a 100mm base layer of sharp sand, 100 mm of pea gravel side fill all around the outside of the crates and 500mm above and backfilled with the excavated soil.

This construction will be carried out using a mini-digger and laser level to ensure a flat level surface. The crates are locked together with clips and a total of 10 x 1 cubic meters laid horizontally in the hole. The crates are supplied with the suitable geotextile membrane.

Discharge

Once the system is constructed the collected water will percolate through the numerous cells of the crates, then through the geotextile membrane and then pea gravel into the (subsurface) area of soil surrounding the crates. The rate is gradual and suitable as in accordance with the data from the percolation test, but this will vary as dependent on the amount of rainfall.



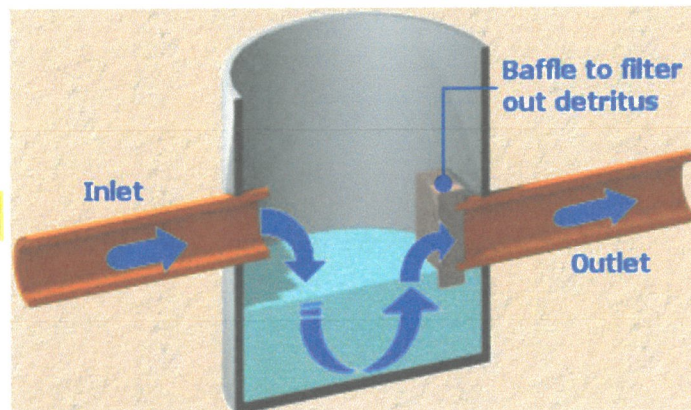
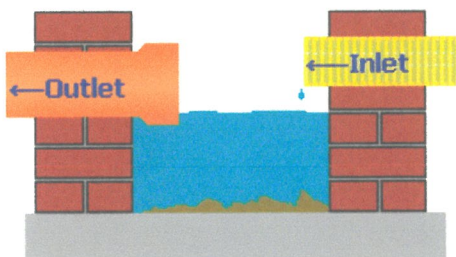
How Soakaways are constructed

Vent

A vent is not required in the specified infiltration system proposed because this system is not designed to hold water which could stagnate because of the method for discharge detailed above.

Maintenance

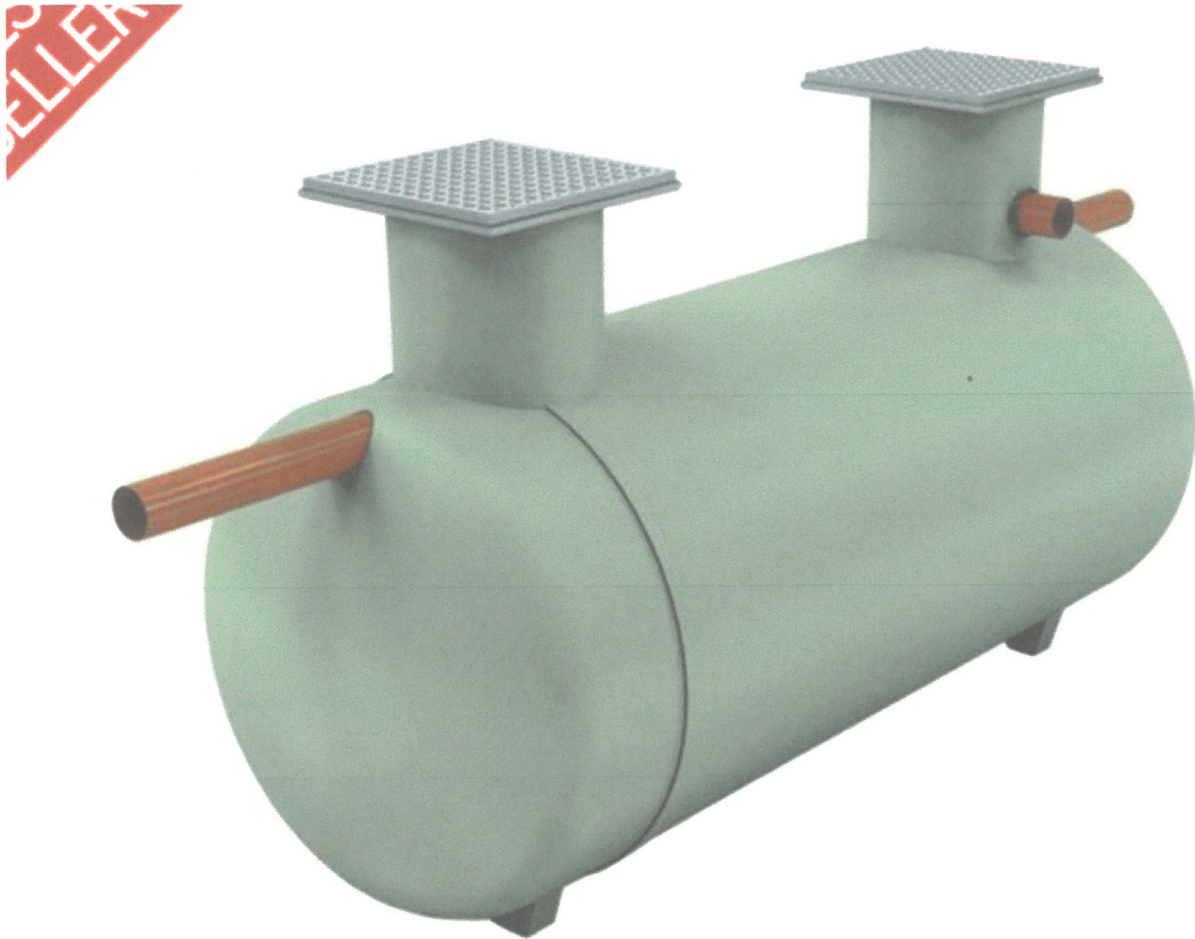
A soakaway using this method should not require any maintenance, but an inspection hatch will be incorporated of a simple paving flag covered with top soil to enable periodic inspection to be achieved. In addition we will incorporate a silt trap to intercept silt from the inlet pipeline before it gets to the soakaway to prevent any clogging. Any build-up of silt at the base of the trap will be removed manually during dry conditions when the soakaway is empty.



For further information please refer to 'Polystorm Technical Guide Water Management System' for full specifications at www.polypipe.com/cms/toolbox/Polystorm_Technical_Guide.pdf

Waste

Main's waste services are not located close to the property. All the developments along Myerscough Hall Drive have septic tanks. The property's waste will be serviced by installation of a septic tank.



CLEARWATER SHALLOW DIG 2800 LITRE SEPTIC TANK

The following tank or similar will be installed.

Description

This 5 person Clearwater shallow dig septic tank is the perfect choice for when sewage treatment plants, which discharge cleaned effluent into the ground, are not suitable. The brochure is appendix detailing the treatment process. The final

stage of the treatment disinfects the effluent fluid to be discharged to the water course or stored in the chamber for emptying using a private contractor. The Clearwater model will treat the effluent to a higher standard making it suitable to allow direct discharge to the watercourse. Micro-organisms in the drainage field help break down the effluent and the treated liquid eventually pass through to the groundwater presenting no risk of contamination.

This tank will store the effluent of 5 people, perfect for off-mains domestic properties, holiday homes and static caravans. Supplied with manhole cover, pedestrian loading, up to 1.5 tonne. Galvanised steel cover with black polypropylene frame. Measurement for the manhole cover only is L:600mm x W:600mm. Lifting keys are supplied.

To reduce costs and installation time, this septic tank is shallow dig, meaning you need to excavate less of the ground where it will be installed. Save on labour costs even more on dry sites too as this septic tank can be backfilled with pea shingles. There's no need to worry about the durability of this septic tank with pea shingles or concrete backfill as it's manufactured from strong, chemically resistant and watertight GRP.

Supplied Complete with:

- 2800 Litre GRP Septic Tank
- Manhole Cover and Frame
- Inlet Invert Depth of 0.5m as Standard But Can Be increased To 1.0m or 1.5m

99.7% efficient and approved to EN12566-1, these septic tanks are the perfect upgrade from traditional cesspools as they tend to last longer, increase hygiene and have improved efficiency in the treatment of waste.

<https://www.tanks-direct.co.uk/clearwater-2800-litre-shallow-dig-septic-tank/p5890>

Please see site drainage plan