



ROCHDALE ARCHERY

SURFACE AND FOUL SYSTEMS.
01.05.24



Rochdale Archery Ashworth Valley have asked Aquablast Services Ltd, to carry out a clean, inspection and connectivity of the existing surface water system and foul system.

After a short visit to site, looking at the proposed site and the existing fragmented drainage system, these are my initial suggestions, which may vary to suit the client, but in principle the aim will be to install a suitable surface water system and sewage treatment system to meet current and hopefully future environmental standards.

The surface water systems are carpark runoff and building roof water runoff.

Carpark, I believe the carpark area will be a permeable surface of stone or similar.

The carpark will still require a gentle fall toward the ditch as overtime the surface and ground will become compacted directing a higher percentage of the water to the ditch. A interceptor silt trap has been suggested to catch contaminants such as silts, (recommend scarifying carpark surface as and when surface becomes impermeable).

Building surface water runoff,

Aquablast have suggested using the water from the roof drainage for toilet flushing via a water harvesting system.



Foul water system/ sewage treatment.

An existing below ground plastic tank has been identified, see drawing, it is unknown if the tank was in use as a septic tank. Aquablast as part of the survey will empty the tank to understand it's use.

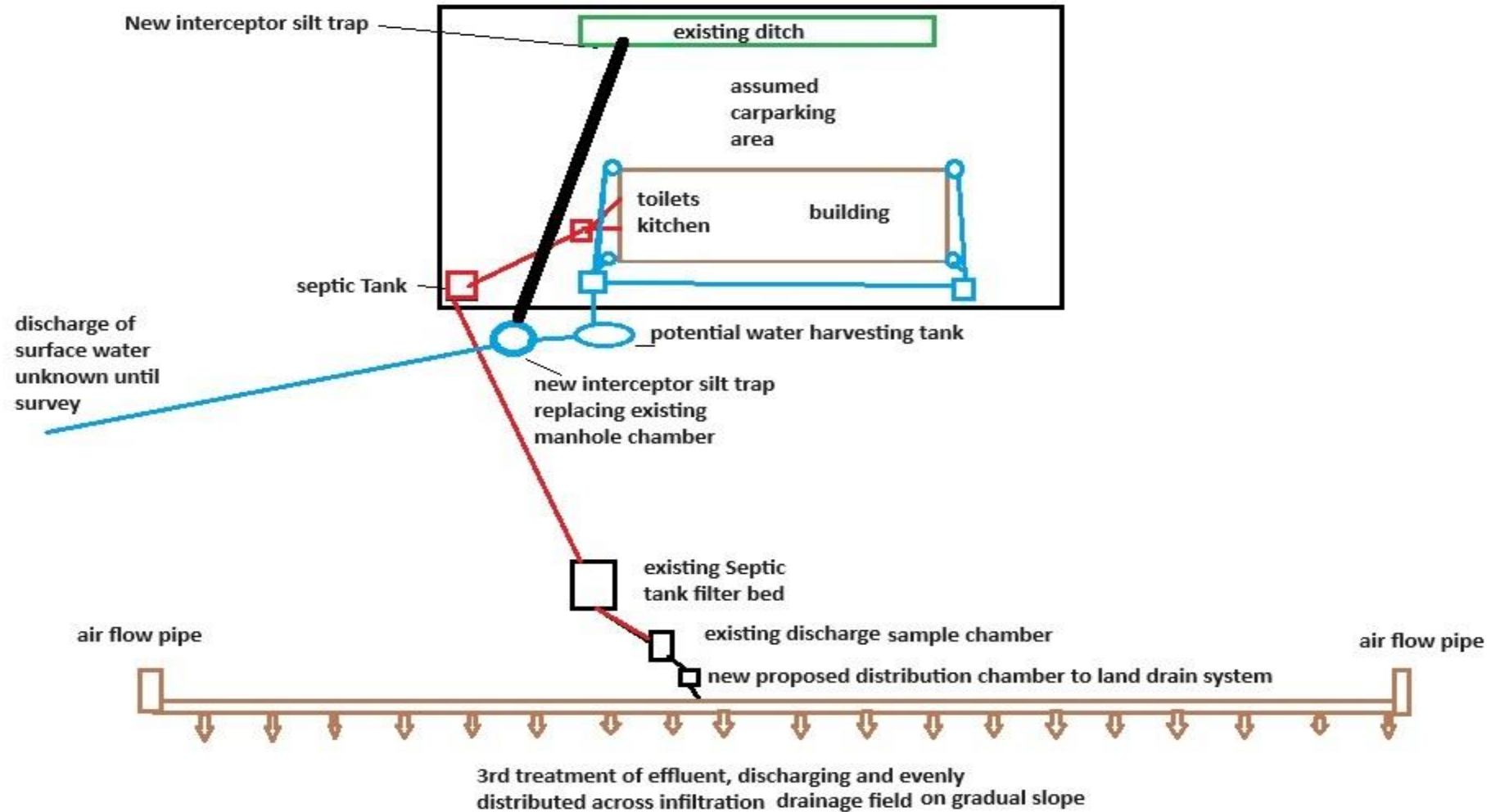
Further down the site a brick-built tank (see pic) with a cast concrete cover slab was identified as the secondary treatment/ filter bed for a septic tank (possibly the tank already mentioned).

The brick structure/ filter bed appears to have been built to a high standard and is in extremely good condition (subject to detailed inspection and testing).

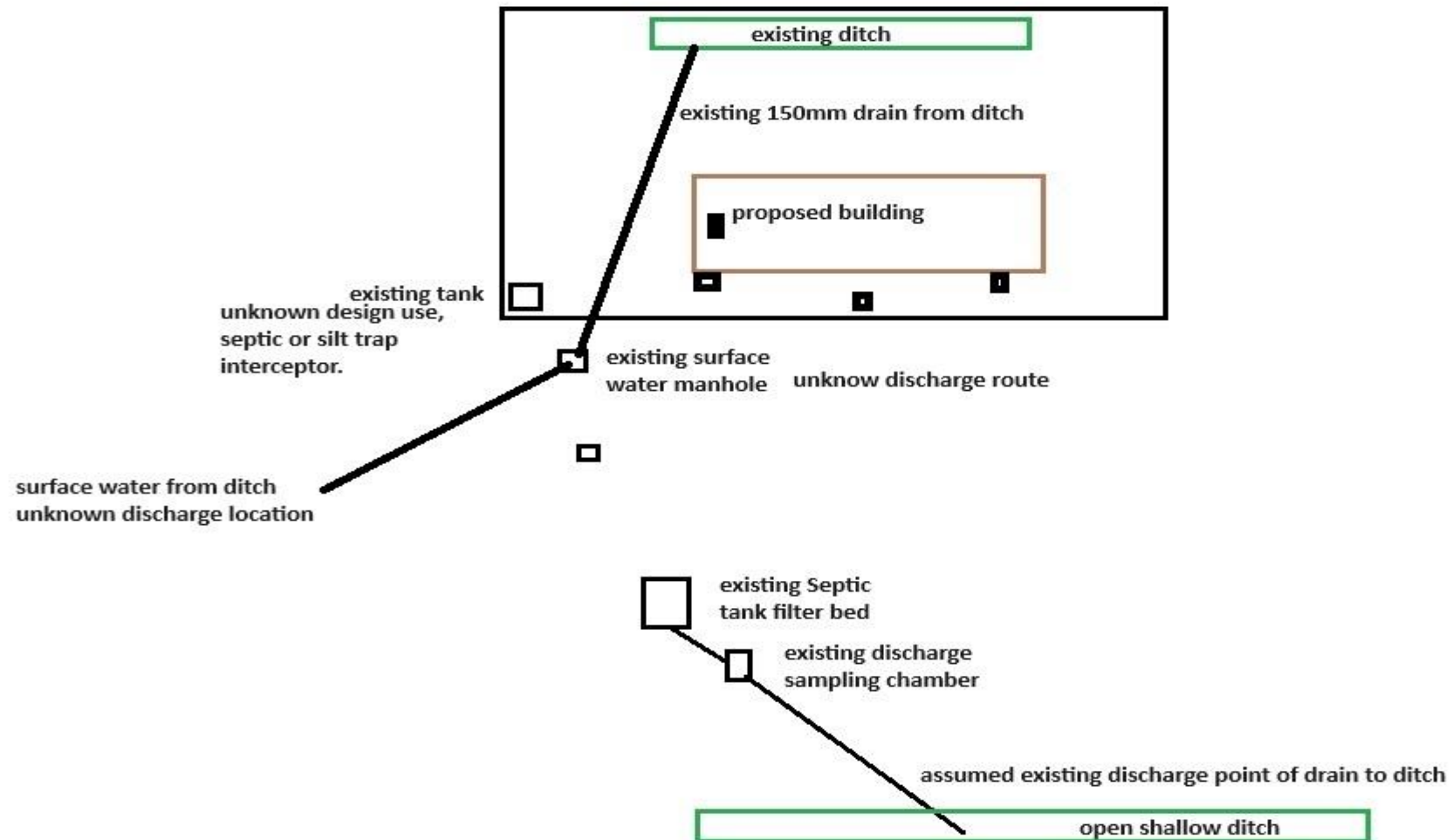
The manhole chamber directly after the filter bed is also of good quality and assumed to have been discharging to the open ditch at the bottom of the slope, which is no longer acceptable, see attached info.

As a whole, if the existing septic tank or a new septic tank is installed, then the existing filter bed, (subject to survey) would be more than adequate to treat the sewage from the toilets and a small kitchen used for drinks and light snacks, in addition the discharge water will be further improved by a 3rd treatment namely the infiltration drainage field cleaning up the ditch.

Drawing not to scale illustration purposes only
Potentially new surface water system



Drawing not to scale illustration purposes only





Discharging Sewage Effluent

It is important to remember that the effluent discharged from a septic tank or sewage treatment plant, no matter how well it has been treated, is not clean water. It is sewage effluent and presents a risk to people and the environment.

At the planning stage it is essential to bear in mind that establishing a practical and legal method of discharging sewage effluent is more important than the septic tank or sewage treatment plant that will be installed and it should not be viewed as a reserved matter.

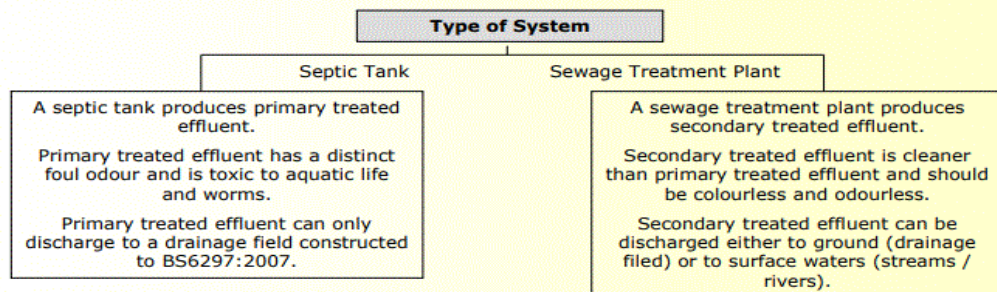
Environment Agency Permits

All sewage effluent discharges, irrespective of volume or location, must be registered with the Environment Agency. This also applies to the replacement of existing tanks and drainage fields.

The Environment Agency has three types of permit – Standard, Bespoke and Exemption.

Most domestic sites will fall under the exemption category however you must check that the site meets the required criteria. If it does not then a Standard or Bespoke Permit must be applied for.

Effluent Disposal Methods



Effluent Quality

Strong consideration should be given to the quality of effluent that you discharge.

Even though a septic tank can be discharged to ground via a drainage field it is often preferable to install a sewage treatment plant over a septic tank because of its effluent quality.

All drainage fields will fail over time and the worse the quality of the effluent the quicker it will fail due to blocking from suspended solids and bacterial biomass caused by the effluent BOD.

Not all sewage treatment plants are equal in terms of their effluent quality.

Effluent quality is usually described by three measures of pollutants – Biological Oxygen Demand (BOD), Suspended Solids and Ammonia. Each pollutant is measured in mg / Litre (parts per million).

Example:

BOD	15 mg/L
Suspended Solids	20 mg/L
Ammonia	15 mg/L

The lower the number the cleaner the effluent.

Discharging Sewage Effluent to Ground

The regulations governing the discharge of effluent from a septic tank or sewage treatment plant are very simple however the majority of builders and many companies that specialise in the installation of septic tanks and sewage treatment plants routinely install drainage fields (soakaways) that are illegal.

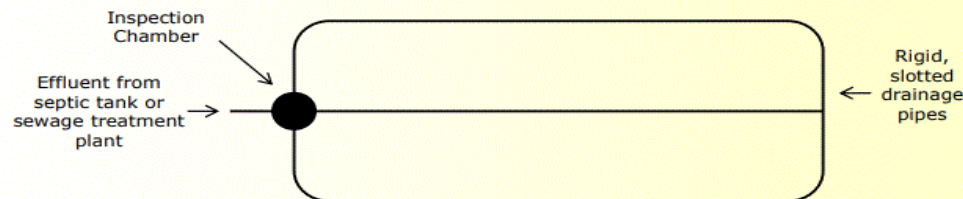
A hole filled with rubble or crates is illegal and always has been

Drainage Field Design

A drainage field (soakaway) for sewage effluent must be a series of rigid, slotted drainage pipes wrapped in 40mm stone and surrounded with a geotextile membrane. It cannot be a hole filled with rubble or crates as used for rainwater, this is illegal for sewage effluent and always has been.

Drainage fields must be constructed in accordance with BS6297 and Building Regulations Section H2

The correct layout for a drainage field for sewage effluent is given below.



Distance From Other Structures

Feature	Distance (m)	
	Building Regulations	BS 6297:2007
Habitable Building	15	7
Watercourse	10	10
Well / Borehole / Spring	50*	-
Site Boundary	-	2

Environment Agency Permits

All sewage effluent discharges, irrespective of size or location, must be registered with the Environment Agency. This also applies to the replacement of existing drainage fields.

Under the new Environment Agency discharge permits a permit exemption can only be obtained for drainage fields serving 11 people or less (2000 litres per day). If a drainage field is to serve more than 11 people then a bespoke permit is required.

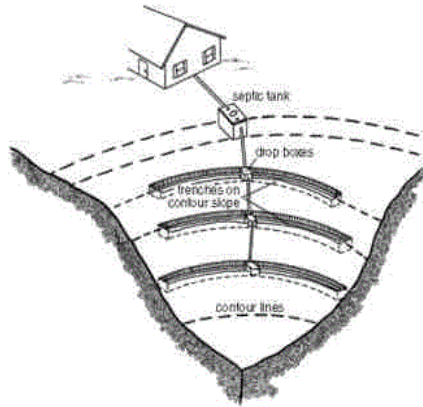
Drainage Mounds

In areas of poorly draining ground then a subsurface drainage field is not suitable.

In areas of poorly draining ground with no access to a watercourse a drainage mound may be the only option. This is a specialist structure and should be installed only by experienced contractors.

For sites with clay soils and no running watercourses, drainage mounds are often the only option.

Design of Drainfields - SLOPING SITE



A foul water soakaway drainfield is NOT a 'Pit filled with stones' or 'Crates' etc. These types of sewage effluent soakaways are built by 'Cowboys' who don't know the regulations. They are ONLY allowed for surface roof water, NOT sewage effluent.

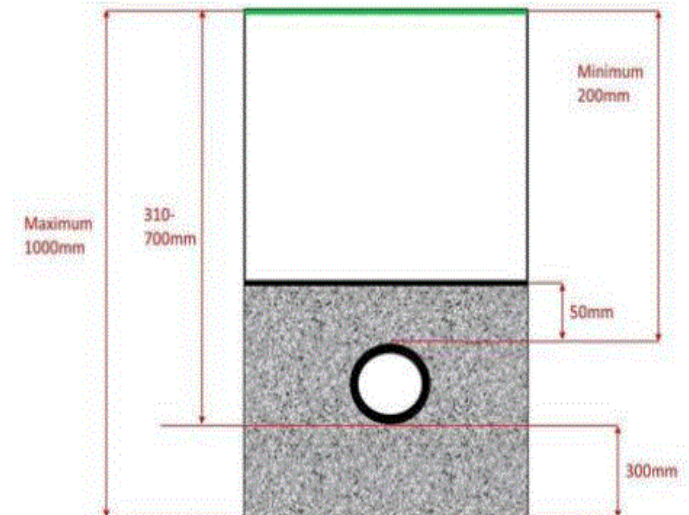
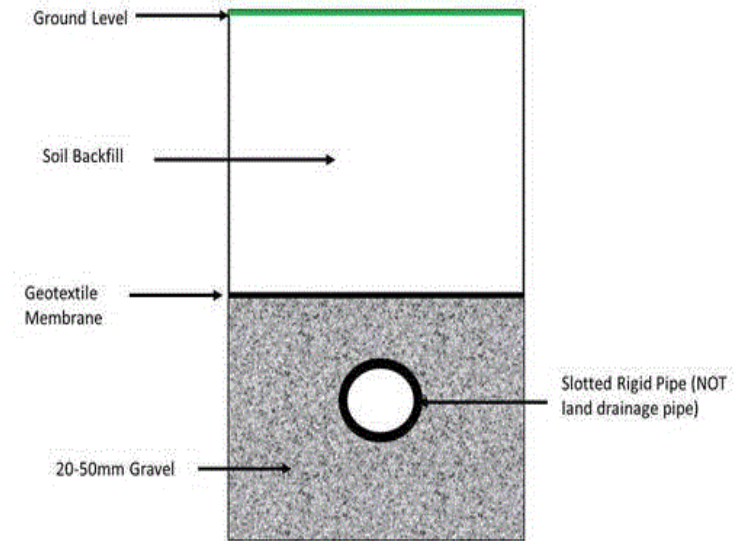
The reasons for this are:

- It does not rain every day. Soakaway pits fill up when it rains and drain when it is not raining, but sewage effluent discharges EVERY day, with no dry days to allow the pit to drain. The pit becomes full and the sewage either 'backs-up' the pipes or bursts through the surface of the ground.

It is not a serious matter if rainwater bubbles to the surface of the 'pit' during extreme weather, but sewage effluent surface contamination is an entirely different scenario. Please visit [Sewage Problems](#) if you have soakaway issues with your current system. Also visit [Failed soakaway drainfield insurance claims](#).

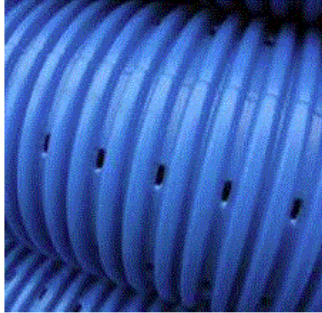
- The Building Regulations (and the BS 6297 2007) state that the sewage effluent MUST be in constant contact with the AEROBIC particles of the soil. As the aerobic soil layer ends at 1 metre below ground, soakaway pits are not allowed.

Soakaway Drainage Trench Specifications



Construction of Soakaway Drainfields

- Use SOLID perforated foul drainage pipe, with the slots/holes at the bottom, laid in trenches of a uniform gradient not steeper than 1:200. Perforated 'Flexicoil' land drainage pipe is NOT allowed nor are [soakaway crates or tunnel systems](#). These are designed for SURFACE ROOF WATER ONLY.

Correct Soakaway Drainage Pipe	Incorrect Type of Soakaway Drainage Pipe
	

- Pipes should be laid at a minimum depth of 200mm and a maximum depth of 700mm. to enable aerobic contact between the effluent and the drainage stone and soil particles.
- The Maximum length of a single trench is 30 metres.
- Pipes should be laid on 300mm of clean shingle, gravel or broken grade 1 stone (20mm – 50mm).
- Soakaway drainfield trenches should be filled to a level of 50mm above the pipe and covered with a layer of geotextile membrane to prevent silt entry.
- The remainder of the soakaway trench can be filled with topsoil.
- Drainage trenches should be between 300mm and 900mm wide with areas of undisturbed ground of minimum 1m wide between parallel trenches.
- An inspection chamber should be installed between the septic tank and the drainfield.
- The soakaway drainfield layout should be set out as a continuous loop fed from the inspection chamber, NOT a straight pipe run with an 'end'.
- The soakaway drainage pipes should be fed by a distribution chamber.
- The area of the soakaway drainfield is calculated after carrying out a minimum of three percolation tests in the proposed drainfield area, over three consecutive days and applying a formula as detailed on the [Percolation Test](#) page.