SITE ADDRESS: Service Area Site, A483, Wrexham By Pass, Wrexham, LL12 0AU

SuDs details

Please see below details required for the above application regarding SuDs and foul water:

Foul water

The site already benefits from a cesspool. However, this was very basic, and it has been upgraded to a **Kingspan Klargester 4,800 Litre Shallow Dig Cesspool. The benefit of this tank is:**

A Klargester shallow dig cesspool provides a reliable solution for locations without mains drainage, where the discharge of treated effluent is not permissible due to unsuitable ground conditions, or where infrequent or seasonal use, such as a holiday home, would prevent the successful functioning, for example of a packaged sewage treatment plant.

- Klargester cesspools provide quality and reliability as they are constructed from non-corrosive materials and are priced competitively.
- Easy to install, with minimal on-site installation time
- Each cesspool is tested to ensure it is watertight and is structurally sound.
- For added safety cesspools can be supplied with a lockable man cover.
- High Level Alarm so the tank will never overflow.
- Constructed from non-corrosive materials in line with BS 6279: 1983 regulations.
- 46,000 litre capacity

The size of the tank is ample for the intended occupants. The minimum standard is 180 litres per person per day with a minimum of a 45 day collection. The site is proposed for 4no people which would require a tank to take 32,400 litres within the 45 day period. The tank which has been installed goes beyond what is required and also has an alarm which will sound and flash should the tank become full. If there are more people on site then this would not mean a bigger tank is required. It just means that the tank would be emptied every 30 days rather than 45 days. The tank is therefore ample for the proposed occupants.

The alarm is called a **High Level Alarm Kit (Smart) - (1009102).** Suitable for lots of units that need to have a high level alarm - this is great for any Cesspool or Small Pump-chamber to advise when unit is full. Also, a small discharge pump or Air-blower can be wired into this panel.

Kit Includes :-

- Control Panel
- Low Voltage Beacon
- High Level Float Switch

The tank will be emptied by B. J. Cesspool Services in Ashford. The contents will be removed and cesspool waste taken to and disposed of at registered waterworks. There are several that they use, the most regular of which are at Ashford, New Romney, Wingham and Faversham. These are all owned by Southern Water and are strictly regulated.

All sewage tankers have to be registered with Southern Water and the Environment Agency and carry a Waste Carriers Licence.

Surface Water Drainage

The site is within an area which has a low risk of surface water flooding. Any surface water drainage which may occur will also be reduced significantly by using a permeable material. Ordinarily, gravel can easily be displaced by car tyres, however interlocking permeable paving grids helps retail the gravel in the right place, all whilst minimising flooding risk by storing and discharging excess stormwater back into the ground.

Features of permeable asphalt and permeable paving:

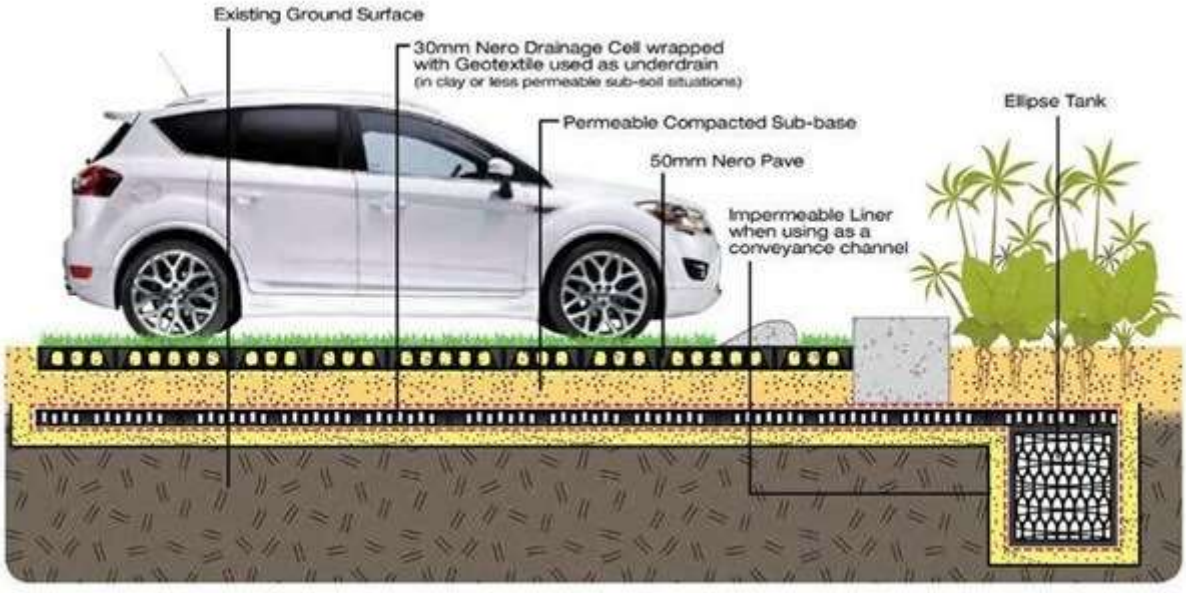
- High load capacity suitable for foot or vehicular traffic - up to 230 tonne per square metre
- Allow rainwater to permeate and infiltrate
- Reduces flooding or pooling of water
- Easy installation thanks to lightweight materials

Permeable asphalt and paving allow for water to seep and infiltrate back into the ground rather than being obstructed by a solid surface and causing flooding. Nero Permeable Paving has a load-bearing capacity of up to 230 tonnes, meaning it can withhold vehicular weight exceptionally.

Compared to the traditional methods of paving such as using concrete slabs or stones, Rainsmart Nero Pave has a wide variety of benefits ranging from environmental to the low maintenance of the product.

Unlike typical solid paving materials, the Nero Paves recycled polypropylene material can be used to create a permeable paving surface, allowing water or other liquids through to the grass or gravel beneath. This keeps the soil hydrated and healthy, as the Nero Pave provides bioremediation which breaks down pollutants in the soil.

The combination of the plastic material and temporary water storage results in a cooler ground surface and a cooler temperature around nearby buildings when Nero Pave is installed. This is especially useful in the summer heat. The permeable properties of Nero Pave allow for the reuse of stormwater for a variety of different applications. The system on its own allows for stormwater to hydrate soil and grass through infiltration as opposed to channelling it away to a drain.



The above can be used in conjunction with a Rainsmart Ellipse Soakaway Crates (24.2-tonne vertical load capacity) and sufficient non-woven geotextile membrane to wrap all outward faces of the soakaway including the base. The dimensions of the complete soakaway are 1430mm (L) x 800mm (W) x 860mm (D).

Rainsmart soakaway crates have a void ratio of 95% - this is the amount of free space within the crate structure that can be used for rainwater storage. The capacity of this 1 cubic metre soakaway is 935 Litres.

Clips are not required to hold the crates together. No clips on any crate system are structural it is always the side fill on any soakaway installation which adds the stability needed to hold the structure in place. Cable Ties will be used, and these are used purely to hold the crates in place until the gravel side fill has been added.

All outward-facing crate surfaces will be wrapped in a non-woven geotextile membrane, which allows the free passage of water but prevents any soil or sand particles from entering the soakaway, maintaining its long-term efficiency. A 110mm (or 160mm) drainage pipe is fed into the soakaway via one of the four circular 160mm open entry points.

110mm pipes rest on the bottom of this opening and the pipe is then inserted approximately 150mm inside the crate. Geotextile membrane is then installed over the opening first and then a small cross is cut in the membrane at the entry point. We will then peel back the membrane, insert the pipe and clamp the membrane around the outside of the pipe to stop the ingress of any soil particles.

At the entrance, porous asphalt will be used. A permeable asphalt driveway is much like a traditional asphalt and tarmac driveway with the added benefit of allowing natural dissipation of surface water through the surface of the aggregate. This reduction of surface run-off helps to greatly reduce channels of water running off your drive or asphalted area and, as such, helps to avoid overwhelming existing flood management schemes and infrastructure by allowing the water to seep through into the ground below.

Four distinct courses are bound together to define permeable asphalt as a modern development over a traditional asphalt system. A geotextile membrane is first applied, then a granular reservoir before introducing the permeable asphalt binder course and then finishing with the permeable asphalt surface course.

The above will all be linked to a Rainwater Harvesting System. Water conservation and re-use is a hot topic in today's society. With UK rainfall levels fluctuating wildly in recent years it is difficult to argue that there has never been a better time to store and recycle this precious resource. With annual household water bills seeming to rise continually there is also a significant commercial factor – meaningful cost savings can be made by re-using rainwater.

Harvesting systems take rainwater storage on to the next level. Rainwater from the roof is filtered to remove leaves and other debris collected during the rainwater's journey and the resulting "clean" rainwater is stored in a giant underground tank. This water is then pumped back to the house for use in non-drinking applications such as toilet flushing, washing machines, garden watering and car washing. The tank, which is a shallow installation, needs to be situated no more than 40 metres away from the house.

The Floplast system we are going to use, estimate that their technologically advanced StormSaver Rainwater Harvesting System can reduce household water bills by up to 50%, about two-thirds of which comes from the saving made by using rainwater to flush toilets with. It is a quiet low-energy system that still manages to maintain a flow rate of 10 litres per minute, which is roughly the same as mains pressure.

The system will be accessed by a control panel situated in the house, which automatically switches the supply back to mains water in the event of the storage tank running dry. The reusable rainwater will be pumped back into the building's water system and used for the following:

- Flushing toilets
- Washing machines
- Washing vehicles
- Gardening
- Showers
- Sinks
- Baths

Our specific system is a filtered rainwater harvest system which will be installed in the form of an underground tank, which again will be connected to the rainwater system, but filters will collect any debris or leaves. The average roof collects some 85,000 litres of water, which is enough to fill 450 water butts annually, according to EST research.

Filtering and reusing this water for gardening, washing clothes, cars and flushing toilets is estimated to cut household bills and water usage by 50%, a huge impact both on the environment and a household’s outgoings.