

Installing a new Septic Tank System - Environmental Solutions from O'Reilly Oakstown By Paul Mooney Farmers Journal 27th August 2011

[See Picture 1 & 2](#)

This treatment system is large and requires digging out of a large, deep hole. The system consists of two separate large concrete tanks, for primary and secondary treatment, connected by pipes. Diarmuid O'Reilly told me that this unit is designed for a house with up to ten people.

Each tank has capacity of 900 gallons and measures approximately 1.5m wide, 2.8m long and 1.5m high. The hole was dug at a size of 12 feet by 12 feet (3.5m by 3.5m) about two feet wider and longer to allow working room and the base under each tank made level. The digging and other ground work was carried out by Ciaran Howlett of Kilcock, Co Kildare and he also constructed the percolation area.

This installation job was relatively straight forward. The site was dry and there was no water rushing into the excavated hole. To avoid problems with water, digging out is typically done just ahead of the treatment system arriving for installation - not in advance. The digger is then also on hand for any adjustments and for backfilling, etc. If water does collect, a pump may have to be used to take it away.

[See Picture 3](#)

Concrete treatment tanks are heavy and must be installed by a truck crane or an excavator of 20t or more. The two tanks here are 5.5t and 6.5t respectively.

Getting the tanks from the public road to the site requires advance planning. The 16t excavator operating here would not be able to lift these tanks so they would have to be lowered in by the truck crane.

Luckily it was possible to drive the truck in across this stubble field, right up to the site.

[See Picture 4 & 5](#)

The tanks are pre-cast with jutting out edges under which lifting chains can be safely positioned. The crane is operated by a remote control (picture five). This means the operator always has a good view of where the tank is being lowered but it's also a safety benefit. The operator can stay well away from danger.

[See Picture 6 Here](#)

The primary tank is lowered into the hole and levelled. These tanks are reinforced with steel and are very sturdy.

[See Picture 7](#)

The secondary treatment tank is lowered into position and given final adjustments by Thomas Mrosek, senior technician with O'Reilly Oakstown, and Diarmuid O'Reilly (right).

A key feature of modern treatment systems is that the tanks are sealed off from rain and flood water. The inlet of any septic tank or treatment system must be lower than the toilet outlet from the house, to allow flow by gravity. But putting any tank low into the ground means it can be flooded in times of heavy rain, flooding, etc. The top openings on many older septic tanks regularly allow in water in times of heavy rain, leading to major problems including waste backing up towards the house, etc.

New treatment systems such as this one don't have unnecessary openings. For service and inspection, each tank has two openings. To exclude any flood water these opening and their lids are kept above ground level. To facilitate this, while at the same time allowing the tanks be low enough in the ground, O'Reilly Oakstown use risers to bring the inspection and service lids above ground level.

On the end of both tanks we see the four inch plastic pipes protruding. These will be connected to join up both tanks. There is a similar connection at the end of the primary tank which will be the inlet from the sewer pipe coming from the farm house.

See Picture 8

Here we see one of the risers being put on. We can see the bead of sealant that is used to seal the joint. As many risers as necessary can be put on. If there is any risk of temporary flooding on a site at a time of heavy rainfall the lids can be brought a foot over ground level.

Another key design feature of most modern treatment systems is that the treated water is actively pumped out to the percolation area - in older septic tank set ups the discharge simply overflowed out an outlet pipe to the percolation area.

Discharge by pump has several advantages. The percolation bed does not have to be lower than the treatment tank - it can be built to give most effective performance. If desired it can be located any distance away from the treatment tanks. It prevents any once off flood from backing into the tanks via the outlet to the percolation area.

One downside is that the pump requires electrical power. However, once power is brought to the system, then it is possible to use it to operate other equipment that will help treatment of the waste material, ie pumping in air to keep conditions aerobic, timers, floatation switches, etc. After the tanks are installed and leveled they are connected up, the pumps and other treatment equipment are fitted and the electrical cable is brought to the house or yard.

See Picture 9

The tanks have now been backfilled with the excavated soil. This is an elevated site in a strongly sloping field and there is no risk of any flooding here, so the tops of the tanks have been installed level with the surrounding field. The area can be sown to grass and screened with hedging or bushes if desired.

See Picture 10 & 11

Diarmuid O'Reilly told me that this treatment system, suitable for up to ten people, costs €4,200 installed. This does not include digging of the hole, construction of the

percolation area or any electrical work back at the yard or house. Michael Forde (picture 11) told me that he went for a new treatment system because the old septic tank and its percolation area in particular were not working properly. The land here has an impermeable sub soil and this was the cause of the problem, he said.