

**Foul Drainage Assessment to Accompany Planning Application for
Barn Conversion at Halghton New Mill, Mill Lane, Hanmer SY13 3DT**

Introduction

This statement accompanies a planning application for conversion of an existing outbuilding into a domestic dwelling. The proposed conversion forms a modest two-bedroom unit for max 4-person occupancy.

Location

The building sits within open countryside and is surrounded by farm land and a handful of dwellings. This is indicated on accompanying drawings 2032D03C Location Plan and 2032D13 Mains Sewer Proximity Plan.

Existing Drainage

There is no mains sewer connections to the site. The Mill, Mill Cottages, surrounding Farms and nearby dwellings are served by private septic tanks or packaged sewage treatment plants. Hafren Dyfrdwy, Welsh Water and Severn Trent have confirmed there are no foul drainage assets in that area.

Nearest Foul Sewer

The nearest accessible foul sewer to the site would be in Penley some 2 miles to the south west of the site. Please refer to accompanying drawing 2032D13 Mains Sewer Proximity Plan.

Proposals

It is proposed to install a small packaged sewage treatment plant to serve the accommodation. The tank will be located adjacent to the barn with the outfall discharging into a holding tank and then lift pumped up to the drainage field, as indicated on accompanying drawing 2032D12C. The new drainage field will be designed and constructed in accordance with BS6297:2007 and current Building Regulations. The treatment plant proposal would be a GRAF one2clean (4-5 inhabitant) solution and a copy of the manufacturers details are attached.

Percolation Tests & Trial Holes

Percolation tests have been undertaken and a copy accompanies this statement. The tests have confirmed that the ground is suitable for a drainage field.

The test hole also served as a trial hole and confirmed that the ground was of a cap of clay and greyish silty sand below which was free draining. The hole was taken down to 2.5m below ground level, 1.5m below the intended level of the invert pipework, and the water table was not encountered.

Proposed Treatment Plant Sizing

In accordance with "*British Water Code of Practice Flows and Loads – 4*" a treatment system for a single house with up to and including 3 bedrooms shall be designed for a minimum population (P) of 5 people.

The Building Regulations state that treatment plants should have a capacity below the level of the inlet of at least 2,700 litres (2.7m³) for up to 4 users. The size should then be increased by 180 litres for each additional user.

Therefore the new plant is to have a capacity below the inlet of at least **2880 litres** (2700 + 180).

The plant to be installed for the Barn Conversion is a Graf one2clean (4-5 inhabitants) with a volume of 3750 litres and which serves a population of 4-5. The volume of the proposed tank exceeds the minimum requirement of the Building Regulations.

Halghton New Mill, as a betterment the existing septic tank will be removed/piped through and a Graf (6-7 inhabitants) treatment plant installed prior to occupation of the Barn Conversion.

Drainage Field Sizing

The proposals are to adopt as closed loop drainage field trench soakway as shown on accompanying drawing 2032D12C. The floor area of the land drainage trench will be in excess of 115m², as determined by the percolation test results.

System Safety due to Sensitive Location

The treatment plant is oversized for the requirement of the site which gives additional capacity should there be a breakdown, the system relies on a power feed to power a compressor which provides air to an aerator in the tank, this is intermittent so the pump is not constantly running and is located outside the tank. The power consumption on an aerator has a 12-hour battery backup and faults will be displayed by a visual beacon on the tank for which the location is next to the house and an audible signal in the kitchen of the property. On seeing or hearing this the occupier will need to stop where ever possible discharging into the tank and contact their maintenance engineer.

These systems come with log books to monitor the treatment plant and there are daily checks, monthly and yearly but the unit will need to be serviced every 6 months by a specialist service engineer. A copy of the service/maintenance handbook is attached.

The clean water (grey water) is then discharged under a gravity system to a holding tank, this tank will have a capacity to hold 150L / person per day and this property is rated as 5 persons even though it is a 2 bed and that is the same as a 3 bed so there is built in additional capacity plus this is a max discharge rate.

Our discharge will therefore be 750L / day and in the Building, Regulations will need to have 100% spare capacity giving 24 hours at full use, which if there was a fault discharge would be minimal. The grey water will be pumped up to a drainage field once the tank is half full via a Grundfos Unilift AP50B.50.11 Pump. This pump is a submersible pump that can be lifted out for repair/maintenance with an isolation valve either side. The serviceable parts are bushes and impellers or on total failure a replacement unit.

The dwelling will have PV solar installed with battery storage so in a power failure essential supply can be maintained for limited periods.

The basis of any system is maintenance whether it requires power or a motor or not and as set out above no system is infallible but with a service agreement, giving regular inspections professionally there is no reason for a system to fail and if there is a failure the owner has a company to respond and a system that allows for the time it will take for them to be on site.

Conclusion

Due to the excessive distance, around 2 miles though open countryside and that the site is situated at a low point to surrounding ground, it is not feasible to connect the new foul drainage to the existing public sewer network.

Site testing has confirmed that the ground is suitable for a packaged sewage treatment plant with outfall drainage field, an approach which matches all the surrounding properties.

The low volume as the property is only two beds so the likelihood is that there is only going to be half the capacity needed most of the time, means that the system will have minimal impact and with the maintenance schedule and service contract along with overcapacity and battery backup there is security in the system even when there is a failure giving time for the repair to be carried out.

There is also the added benefit of betterment with this application including changing the septic tank on the Halghton New Mill which is in our client's ownership on occupation of the new dwelling, this will give a reduction in the phosphate levels entering the water course.