

Application P/2022/0795 - Coxwood Farm

Response to points raised by the council - email dated 8/11/22.

Drainage Report

ENVIRONMENT AGENCY PREFERRED OPTIONS

Sewage / foul waste generated from a property should be disposed of / treated prior to disposal within the environment.

1/ discharge into a public utility sewer.

2/ septic tank into a designated drainage field, constructed in accordance with current building regulations.

3/ sewage package treatment plant.

4/ cesspool.

Based on the information provided regarding the development; -

DISCHARGE TO PUBLIC SEWER

- discussions with Welsh Water confirm there is no foul public sewerage system within the area.

SEPTIC TANK SYSTEM

- the development is within a catchment area of the River Dee & Bala Lake Special Area of Conservation (SAC), any discharge will increase flow and phosphorus levels (phosphate), hence a conventional septic tank discharge would exceed Natural Resources Wales discharge limits.

Septic tank capacity below invert 3800 litres (10 PE units)

Actual discharge volume = 0.9 m³/day

In addition, the ground is of clay material, no porosity test has been completed due to a) discharge of partially treated effluent would exceed current discharge limits?

b) drainage field would fail porosity test (clay)

SEWAGE PACKAGE TREATMENT PLANT

- a conventional sewage package treatment plant, sized in accordance with the Code of Practice, Flows and Loads - 4, sizing criteria for off-mains drainage systems will adhere to the basic discharge limits to a watercourse, suspended solids / biological oxygen level/ammonia. [20 - 30 -20], but exceed phosphate levels.?

Marsh Ensign PE06 sewage package treatment plant would meet actual sizing criteria

Treatment design volume = 1.2 m³/ day, actual discharge volume = 1.0 m³/day

Again, the discharge would not adhere to Natural Resources Wales's required limits.

SEWAGE PACKAGE TREATMENT PLANT WITH PHOSPHATE CONTROL

A Marsh Ensign sewage package treatment plant with phosphate treatment could be used for the development.; -

- these units use chemical treatment and currently depend on an operator to ensure the dosage system continually works.

- hence the discharge would contain heavy metals due to the chemical treatment, a discharge direct to a watercourse would not be acceptable, and discharge to a drainage field would be required (ground conditions unable to sustain a drainage field)

CESSPOOL

A cesspool is a vessel to collect/store foul waste before being transferred to a licensed disposal site by a registered waste carrier.

WE WOULD RECOMMEND THAT A CESSPOOL BE INSTALLED AT COXWOOD FARM

This unit would meet all regulations and have no discharge to a watercourse or the environment.

1/ Sizing of the cesspool.

In accordance with current building regulations, a cesspool to serve the development would be as follows -

a) a capacity of 18000 litres below the inlet would be required for TWO persons.

b) For every additional person, the volume should be increased by 6800 litres/person.

Based on the information provided, the development will be a 3-bedroom property, hence a tank of 38400 litres below the inlet will be required.

Marsh 40000 litre cesspool = £7321.00 plus vat

INSTALLATION

- Excavate an area to position the cesspool. (Distance from dwelling as per building regulations)
- construct a concrete base, install holding eyes/rings within the base,
- position the tank into the excavation, strap it into place
- surround the tank with C25 Semidry concrete while filling the unit with water to ensure internal/external pressures remain constant.
- when complete leave for a period, say 7 days to allow concrete to cure.
- empty cesspool.

We recommend installing a high-level alarm to ensure the unit does not overflow.

Marsh High Level Alarm = £265.00 plus vat

NOTE

1/ The above system meets all legislation requirements, sized in accordance with current building regulations., with no discharge to a watercourse, and no pollution to the environment, It includes a high-level alarm, which is set at say, - 60 - 70% capacity of the cesspool, would be the time to contact the waste carrier to complete a desludging, leaving capacity for continued use. (Waste transfer note/duty of care document to be retained for a minimum of 3 years.)

2/ In accordance with the Code of Practice, Flows and Loads - 4, sizing criteria for off-mains drainage systems, states that a single person's daily usage is 150 litres/day.

2 persons in property = 300 litres /day

Cesspool storage = 134 days dislodging period

4 persons in property = 600 litres / day

Cesspool storage = 67 days desludging period.

FINAL COMMENT FOR CONSIDERATION / DISCUSSIONS

LOWER CARBON FOOTPRINT - for consideration

We would suggest that a cesspool of capacity 35000 litres be considered for the development, with a high-level alarm set at 75% capacity, this would provide a storage period of 58 to 60 days.

The above suggestion is based on the maximum capacity of an articulated HGV tanker attending the development (= 26000 litres/transfer) This is the maximum volume that could be transferred per visit, the alarm would be set at a capacity of 75%, equal to 26250 litres, remaining capacity in tank = 8750 litres which allow 14 days to organise a desludging prior to the tank reaching its storage capacity below the inlet.

A waste manual would be retained on site, showing the date and time of the tank capacity check, name of the registered waste carrier, volume transferred off-site and registered disposal site.

We have obtained a quotation from Envirocare (NW) Ltd to transfer the waste to a Severn Trent and /or Welsh Water disposal site, which offer a reduced cesspool disposal charge.

Regards

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