

November 2024

Justification for Foul Treatment Plant

at
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Ty'n y cwm lane,
Rhos,
Pontardawe,
Sa8 3ey

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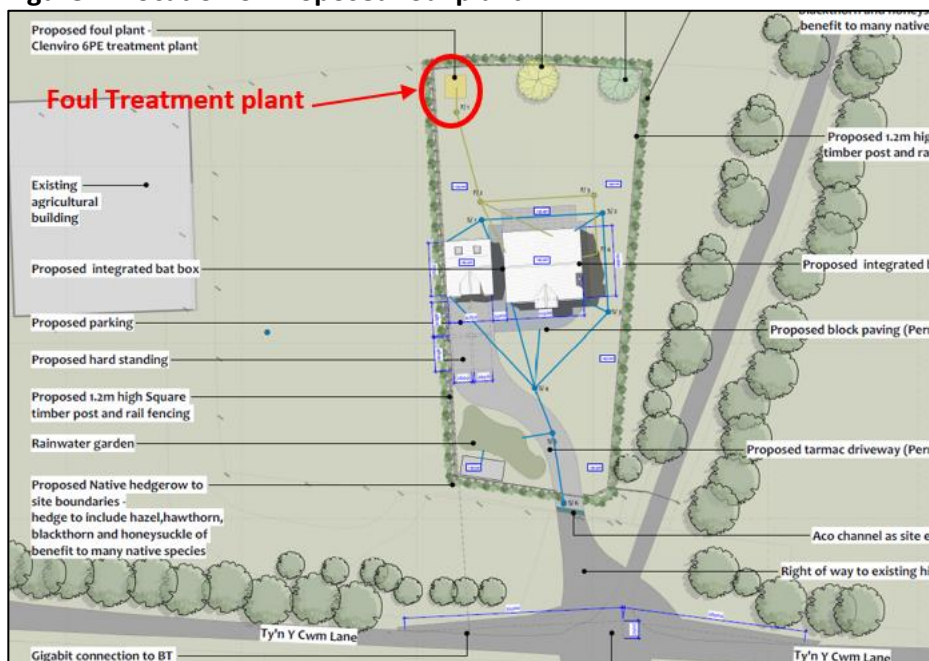
1 Introduction

- 1.1 This document has been prepared to support the provision of a foul treatment plant serving a rural enterprise dwelling and garage at Ty'n Y Cwym Farm, Rhos.

2 The Site and Justification

- 2.1 The site comprises of an open field, located off Ty'n y Cwm Lane. It is immediately to the east of an existing mixed-use yard and proposed sheep building at Ty'n Y Cwm Farm. It is located in open countryside and within a designated Green Wedge and also in a Mineral Safeguarding Zone.
- 2.2 The land surrounding the site is predominantly agricultural with large expanses of pasture land divided by hedgerows.
- 2.3 The site is currently open field and is not currently served by any foul system.
- 2.4 There is no mains sewer connection on the land or within the highway outside of the site and as such it is proposed to used a private treatment plant to handle foul flows from the dwelling.
- 2.5 The Plant is to be positioned in the north-western corner of the application site, away from the proposed dwelling, as shown on plan A1.2 and in the extract below.

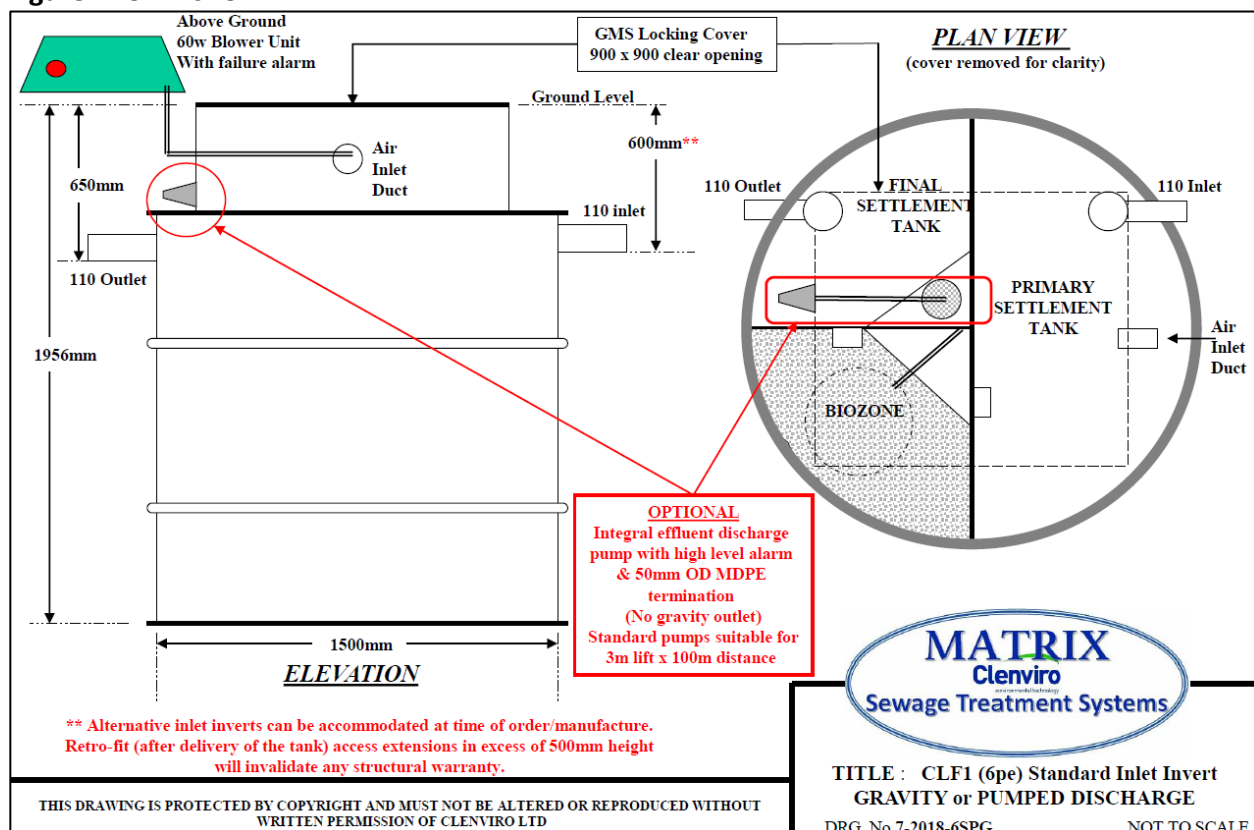
Figure 1: Location of Proposed foul plant



3 The Foul Treatment Plant

- 3.1 It is proposed to use Clenviro 6PE treatment plant (CLF1-6PE). It is a below ground system which comprises a single tank containing all the components required for the sewerage treatment process in areas where there is no access to a mains sewer.
- 3.2 It can handle flows of 0.9 cubic metres a day, which is adequate for a domestic dwelling of up to 6 people.
- 3.3 The CLF tank is manufactured in Elite Fabrication Grade Polypropylene and is supplied in a standard black colour. It is completely impervious to water and sewage and has been designed and independently tested to ensure a robust construction and a long service life. The tank is provided with a locking manhole cover, providing access to all parts of the unit.
- 3.4 The submerged filter beds comprise of plastic pieces of filter media, randomly packed into the tank. The media is made from UV stable polypropylene and provides a large surface area on which the bacteria, required for the purification process, can grow. The media is supported on an open mesh panel fixed above the base of the tank.
- 3.5 A fine bubble air diffuser is located underneath the filter bed(s) this is connected to the external air supply (blower) by uPVC pipework and a braided hose airline.
- 3.6 In most CLF units we incorporate recirculation systems which is a uPVC pipe running from the final settlement and media sections back to the primary settlement section.
- 3.7 The pipework has a tapping at its top where tubing is inserted down the uPVC pipe which is connected to the blower.
- 3.8 The blower is mounted along with its associated electrical controls inside a weatherproof enclosure.
- 3.9 The electrical controls comprise an isolator and a loss of air alarm connected to an external beacon which will provide a visual warning that the blower is not operational.
- 3.10 On models with a pumped discharge fitted there is also a high level/pump failure alarm and beacon. The below diagram details the different elements of the system.

Figure 2: CLF1 6Pe



3.11 An image of how the system will appear from above ground is shown below:

Figure 3: CLF1 – 6PE Fully installed



3.12 Technical data associated with the plant is shown below

Figure 4: Technical Data

Model No	CLF1 (6pe)	CLF1A (9pe)	CLF2 (12pe)	CLF3 (18pe)
Max Daily Flow	0.9m ³ /day	1.35m ³ /day	1.8m ³ /day	2.7m ³ /day
Total BOD Load	0.36kg/day	0.54kg/day	0.72kg/day	1.08kg/day
Population Equivalent	6	9	12	18
Overall Depth (std)	1956mm	1959mm	1959mm	1962mm
Diameter	1500mm	1700mm	1900mm	2200mm
Inlet Invert (Std)	600mm	600mm	600mm	600mm
Outlet Invert	650mm	650mm	650mm	650mm
Cover Size	900mm ²	900mm ²	900mm ²	2 x 900mm ²
Blower Rating	60w/240v	60w/240v	80w/240v	120w/240v
Discharge Pump rating (optional)	0.2kw/240v	0.2kw/240v	0.2kw/240v	0.2kw/240v
Desludge Frequency* (Based on full load)	180 days	180 days	180 days	180 days
Inlet Connection	110mm	110mm	110mm	110mm
Outlet Connection (Gravity)	110mm	110mm	110mm	110mm
Outlet Connection (pumped discharge)	50mmMDPE	50mmMDPE	50mmMDPE	50mm MDPE
Weight (empty)	200kgs	250kgs	300kgs	400kgs

*Desludge frequency assumes residential application with full daily design loading

4 Maintenance, Servicing and Emptying

4.1 Below is the recommended maintenance schedule for the unit, which will be adhered to.

WEEKLY

- Check the operation of the blower. If the blower has failed for any reason other than a mains power failure the warning beacon will be flashing

MONTHLY

- Carry out the weekly check plus:
- Check the operation of the diffusers (bubbles rising in the Biological zone).
- Check the recycle flow into the inlet zone if fitted.
- Look at the liquor being returned, it should run clear by the end of its cycle.
- Check the inlet and outlet stilling zones are clear of debris.(remove any obstructions)
- Check the blower ventilation is un-obstructed
- Check the biomass growth on the filter media. The biomass should be a light brown colour, not white or grey. The odour in the plant should be 'earthy'. There should not be a noticeable 'rotten eggs' smell.
- Check the final effluent. If this is cloudy or contains many suspended particles, then the humus tank is likely to require desludging.

6 MONTHLY / ANNUALLY

- Carry out the weekly and monthly checks plus:
- Check the primary settlement tank with a probe , the top floating crust blanket should not exceed 200mm thick, arrange desludge if required
- Desludge the primary and final tank every 12 months* and desludge the biozone every 24 months*. This should be done by an experienced local waste disposal tankering company. * This applies to CLF units 1, 1A, 2, 3 & 4. Larger systems will require desludging more frequently depending on loading and type of application.
- The tanker suction hose should be carefully lowered into the primary and final chambers ensuring all settled sludge is removed.

- When desludging the biozone carefully lower the suction hose down the triangular section (rectangular in larger units) where the air diffuser pipework goes down making sure not to damage the pipework. Ensure the hose is down to the base of the tank so that all settled biomass sludge can be removed.
- After desludging each compartment, it is essential that the unit is filled up with water. This can be done by using a hosepipe or by running several taps in the household(s).
- Remove air filter from the blower unit (remove top cover to access filter), clean and replace.
- It is the manufacturers recommendation that the diaphragms in the small blower units are replaced every 18-24 months.

