

Flood Management Plan

For

Maesydd AD

Y Maesydd

Pool Quay

Welshpool

Powys

SY21 9LA

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Introduction

The proposed Anaerobic Digester will be supplied and installed by Fre-energy and has been designed with a 'fail safe' approach. The site will be surrounded by a concrete bund wall measuring 1.5m high. The floor of the site will be impermeable as it will be constructed using 300mm of concrete that sits on an impermeable plastic welded membrane.

The impact on the plant should the bund be breached would not lead to a dangerous situation.

The digester tank protection systems (over / under pressure and overflow) would remain fully operational should the site become flooded:

- The protection devices are installed high up (in excess of 5m from ground level).
- The protection devices are passive i.e. they do not require power supply or external actions to operate.

The protection systems have been designed with the consideration that should flooding or a major weather instance occur there is a strong possibility that power and external communication will be lost as such the protection systems must remain operative under those circumstances.

Under a power failure or emergency stop situation loading and unloading valves revert to their closed positions and pumping operations are inhibited.

The control system incorporates remote monitoring, this enables Fre-energy to remotely monitor the performance of the systems on site. The remote monitoring system can not override the tank protection systems nor are the safety systems dependent on the operation of the monitoring systems. However, via the remote monitoring system should a problem be detected the site can be switched from automatic to manual operation this would then prevent the auto starting of any pumps.

Impact of flooding the bunded area

Filling the bunded area with water would impact on some of the services located there. These would fail safe; all valves would close and pumping operations inhibited. The operation of the digester tank protection systems would not be affected. Further loading of the digester would be inhibited.

Elements that are likely to be effected:

- Ground mounted pumps; The unloading pump, the solids loading system, valve position monitoring sensors, the sump unloading pump, the sump level sensor and gas holder inflator pump.

Elements unlikely to be effected

- Tank level and temperature monitoring (located 3.5m above ground level).
- The control system is located in a container that is elevated above the level of the bund (in the region of 1m above the bund wall of 1.5m).
- Tank mixing system. (elements spread between the control room and the tank roof level).

Measures that should be taken to minimise the impact of flooding

If flooding is a possibility:

- Minimise the amount of material being held in the system sump by setting the control system to maintain minimum sump level, loading its contents into the digester.

If flooding is immanent:

- Under manual control pump the contents of the sump into the digester, this will ignore the low level setting and pump the sump down until no flow is detected.
- Then electrically isolate the main control panel & press the emergency stop.
 - This will ensure there is no power sent to pumps or sensors that may become submerged minimising damage to cabling and the control circuit. The electrical control circuits are protected by sensitive current monitoring overload trips, the power circuits to the pumps incorporate earth leakage detection to protect the systems.
- Leave the mixing system on power, this has all of its elements at elevated height and would help to keep the contents mobile (making process recovery an easier process).

Post flooding

When the bunded area has been cleared of water, and prior to power being re-applied, Fre-energy and an electrician contractor need to attend site to dry out and test all electrical systems that have been or may have been submerged, motors and sensors that have been submerged will need to be cleaned, dried out and tested before power is re-applied. (Earth loop impedances and grounding connections etc will all need to be re-tested).

Note: There is a high probability that electrical items that have been submerged will need to be replaced.

Emergency Contacts

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