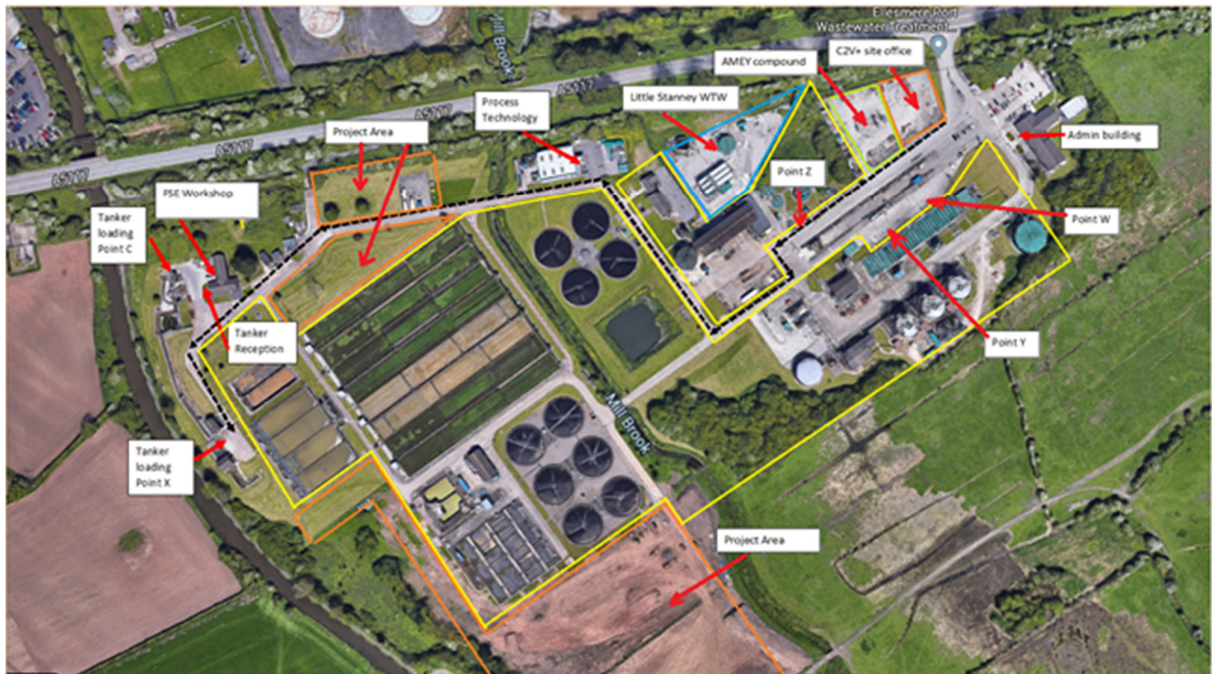
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# Foaming in Digesters SSI for Ellesmere Port WwTWs

CH2 4HZ




**Ellesmere Port WwTW – Site Map**



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## 1.0 Introduction


### 1.1 Purpose of the Document

Any operational problem that cannot be dealt with by following normal operational Digester Safety Control (DSC) procedures shall be classed as an **INCIDENT** and the current issue of U UW Operational Incident Management Procedure and [WP/S/001/30/01 Incident Response](#) should be applied.

All actions and communications carried out while applying any Standard Operating Procedure, Instruction or other documented operational procedure or activity shall be recorded using [the site diary, incident log and electronic daily handover form \(Site diary stored in controller's office, Incident log stored in Production Managers office\).](#)

### 1.2 Assets in Scope




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Asset Type <sup>1</sup>	Substance Held	Capacity (m <sup>3</sup> )	Commission Date	No. of Units	Location on Site (See Site Layout)	Hazard <sup>2</sup> (insert symbol)
3 No Digesters	Digested sludge	3370m <sup>3</sup>		3	A	
Covered sludge tanks 1, 2 & 3	Thickened sludge	880m <sup>3</sup>		3	B	
Covered Bio tank 4	Leachate	880m <sup>3</sup>		1	C	
Covered sludge tank 5	Digested sludge	880m <sup>3</sup>		1	D	
Fuel tank	Diesel	64m <sup>3</sup>		1	E	
CHP Engine oil				1	F	
CHP Waste Oil				1	G	
Chemicals	Hydraulic oil and various chemicals	2m <sup>3</sup>		1	H	
Gas Storage	Bio gas	1780		1	I	
Pre-digestion TADs heat exchangers	Raw sludge and hot sludge	22m <sup>3</sup> of each		3	J	
Pre-digestion TADs reactors	Raw sludge	110m <sup>3</sup>		3	K	
Digested sludge tank	Digested sludge	2500m <sup>3</sup>			L	
Centrate tank	centrate	2500m <sup>3</sup>			M	
Assembly Point					O	

Table 1: Main Assets, Capacities & Hazards

**NO WORK TO BE UNDERTAKEN WITHOUT THE CONSENT OF A CERTIFIED DIGESTER SAFETY CONTROLLER (DSC).**

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## 2.0 Safety

All persons carrying out any Standard Operating Procedure, Instruction or other documented operational procedure or activity shall do so in accordance with United Utilities Plc. Safe Systems of Work and Procedures, Details of which are contained in United Utilities Plc. Safety Management Framework documents and available via the “ONE” Hub site.

All other applicable regulatory and statutory requirements shall be observed at all times.

Detailed operating instructions, control philosophies and technical information may be found in the following

- **QA Documentation**
- **Process Loss Contingency Plans**
- **Compliance Action Plans**
- **Environmental Permits**
- **Accident, Incident and Emergency Management Plans**
- **Drainage Plans**
- **Environmental Risk Assessments**
- **O & M Manuals**
- **Control philosophies**


## 2.1 Responsibility

All Standard Operating Procedures, Instructions and other documented operational procedures and activities are to be carried out by the Process Controller or other trained person designated by the Installation Manager.

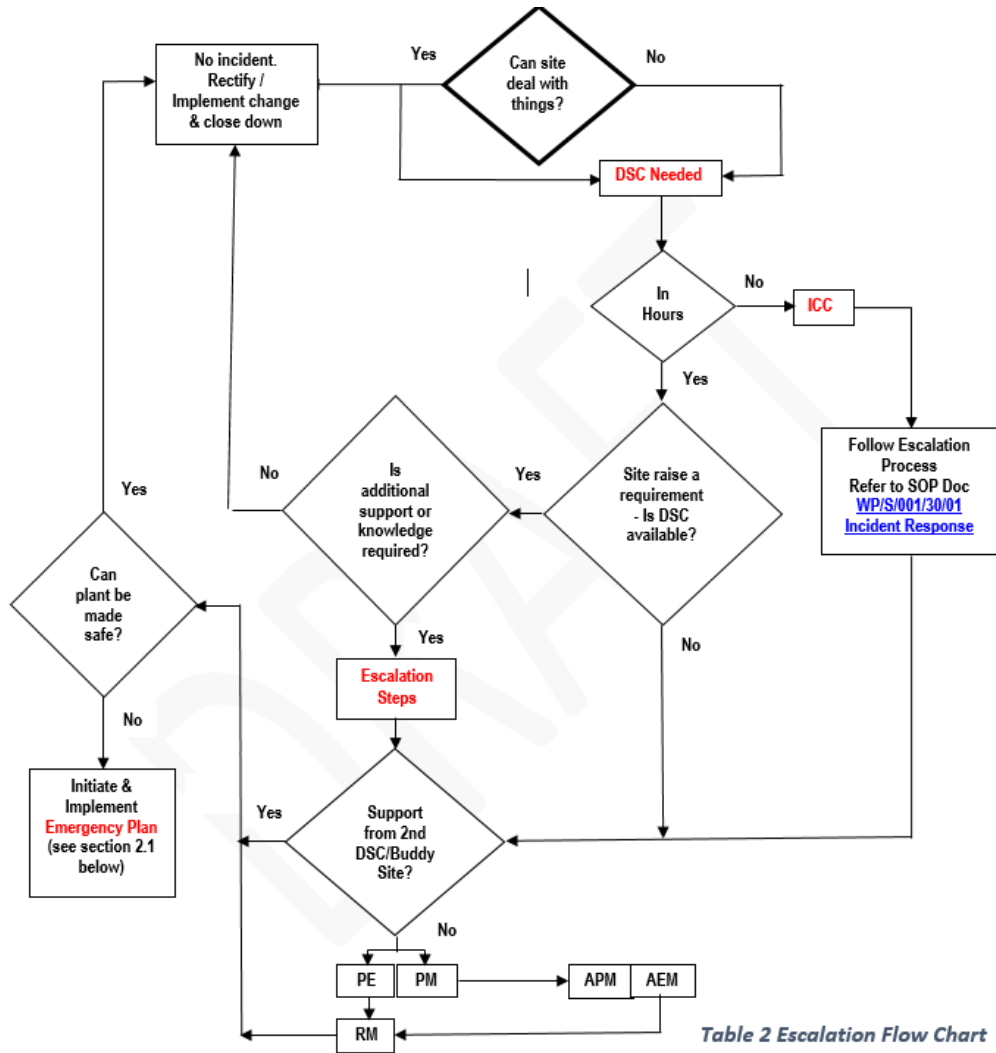
If in carrying the instruction it is not possible to rectify any problem encountered within a reasonable timescale the Installation Manager or senior equivalent person must be contacted.

Any operational problem that cannot be dealt with by normal operational procedures shall be classed as an INCIDENT and the current issue of UUW Operational Incident Management Procedure and. **Incident Response**.


All actions and communications carried out while applying any Standard Operating Procedure, Instruction or other documented operational procedure or activity shall be recorded using **Site Diary Log**

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## 2.2 Plant status identification & escalation





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## 2.3 CONTACTS

Name	Role	Support	Number
<b>Site based UU contacts &amp; APM details</b>			
Lee Donnellan	Area Production Manager	Area escalations	<b>07795235762</b>
Diane Mason	Production Manager	Site escalations and permit holder	<b>07771838229</b>
Neil Wilkinson	Technical Officer		<b>07712774316</b>
Heath Jones	Process Controller		<b>07500849284</b>
Jake Firth	Process Controller (DSC)	Digester Safety Controller	<b>07990801782</b>
Alex Ranley	Process Controller		<b>07717228195</b>
Fred Mahon	Process Controller		<b>07765385949</b>
Gerald Mugisha	Production Engineer(DSC)		<b>07827 829160</b>


### **NO WORK TO BE UNDERTAKEN WITHOUT THE CONSENT OF A CERTIFIED DIGESTER SAFETY CONTROLLER (DSC).**

The following activities are within a zoned area – due to the nature of the tasks detailed the work area should be treated as a Zone 2 area. Methane & Hydrogen Sulphide gas is likely to be present due to leaking valves or purging.

Non-EX electronic devices must not be present near the digester during this task; gas is likely to be present.


Non-Sparking or wetted tools must be used.

No Naked flames permitted in the vicinity.

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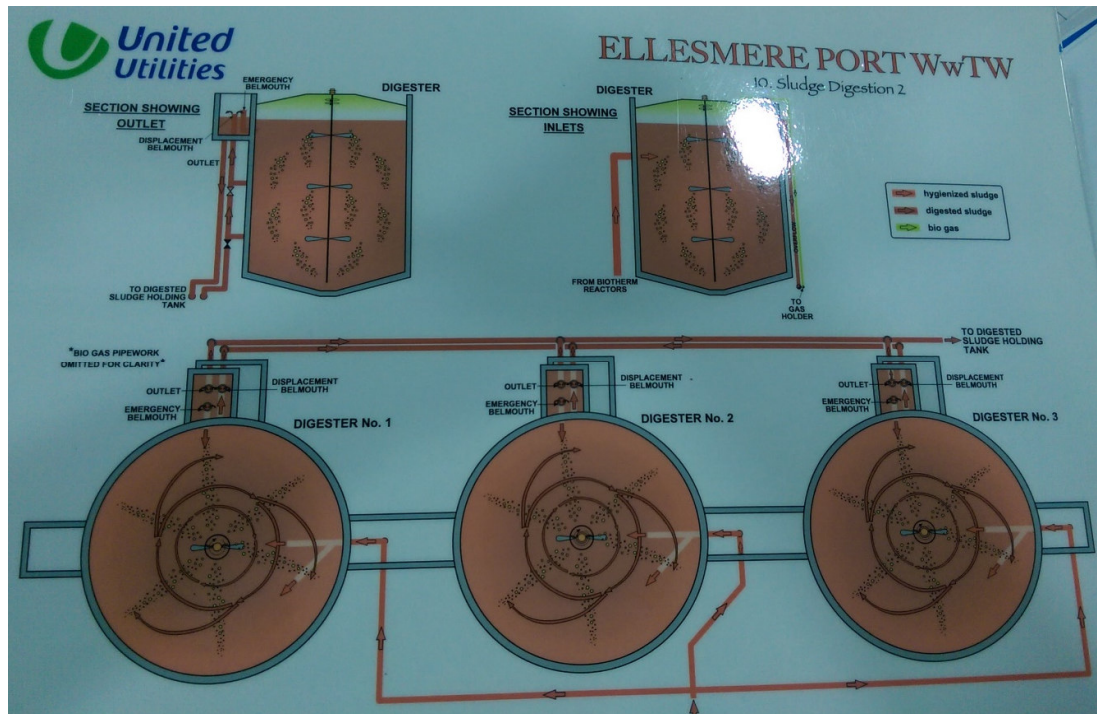


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### 3.0 Foaming in Digesters

#### 3.1 Task – Digester high level alarm


Ultrasonic level sensor on the digester roof detects when foam / sludge level hits 20.50 m (this is normally maintained at 19.30-19.35 m). When triggered this cuts off digester feed and sends out a high level alarm to HMI, SCADA and ICC out of hours. This alarm will be caused by either blockages in the displacement belmouth and emergency belmouth on side of digester, or foam.



Digester flow diagram

#### 3.2 Anticipated equipment

- Standard PPE + eye protection + Personal gas detector.
- Spanner for opening chemical dosing point.
- Anti foaming agent
- Funnel
- Non sparking hose
- Drain rods (plastic and brass fittings)

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### 3.3 Procedure

- 'Take 30' and assess the work area & task for H&S.
- Observe sludge through inspection hatches (4 on the roof of each digester), if foam is present there will be no visible effect of sludge mixing on the surface.




*Viewing window*

- Check bellmouth / emergency bellmouth chamber for foam escape from digester



*Bellmouth*

- If no foam present in either case, the bellmouth is probably blocked and needs unblocking
  - They system should have stopped the digester feed on the high level alarm
  - Inspect bellmouth & emergency Bellmouth
  - This is often a ball of rag blocking the outlet, this can be manually dislodged by rake

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- Dropping bellmouth level can raise the pressure enough to dislodge any blockages
- Alternatively using a hose to manually jet the line could free any blockage
- If this does not work, call vector services.
- If foam is present, anti-foaming agent needs to be applied.
  - Anti-foaming agent is held in the centrifuge building, ground floor far left hand side.
  - Ensure the valve on the chemical dosing pot is closed.
  - Open the lid on the chemical dosing chamber, and allow to vent.
  - Pour in anti-foaming agent until the chamber is full
  - Close the lid on the chamber and tighten, to seal the system
  - Open the valve to deposit the anti-foaming agent into the digester.
  - Repeat this process as required (~40 l per digester).
  - Reduce feed to digester to maintain operation until foam levels reduce and stop triggering the high level alarm.



Chemical dosing point

History	Remedy
High level triggered by foam (2009 & 2015)	Anti foam applied through chemical dosing hatch  Reduced feed to digester until issue resolved.



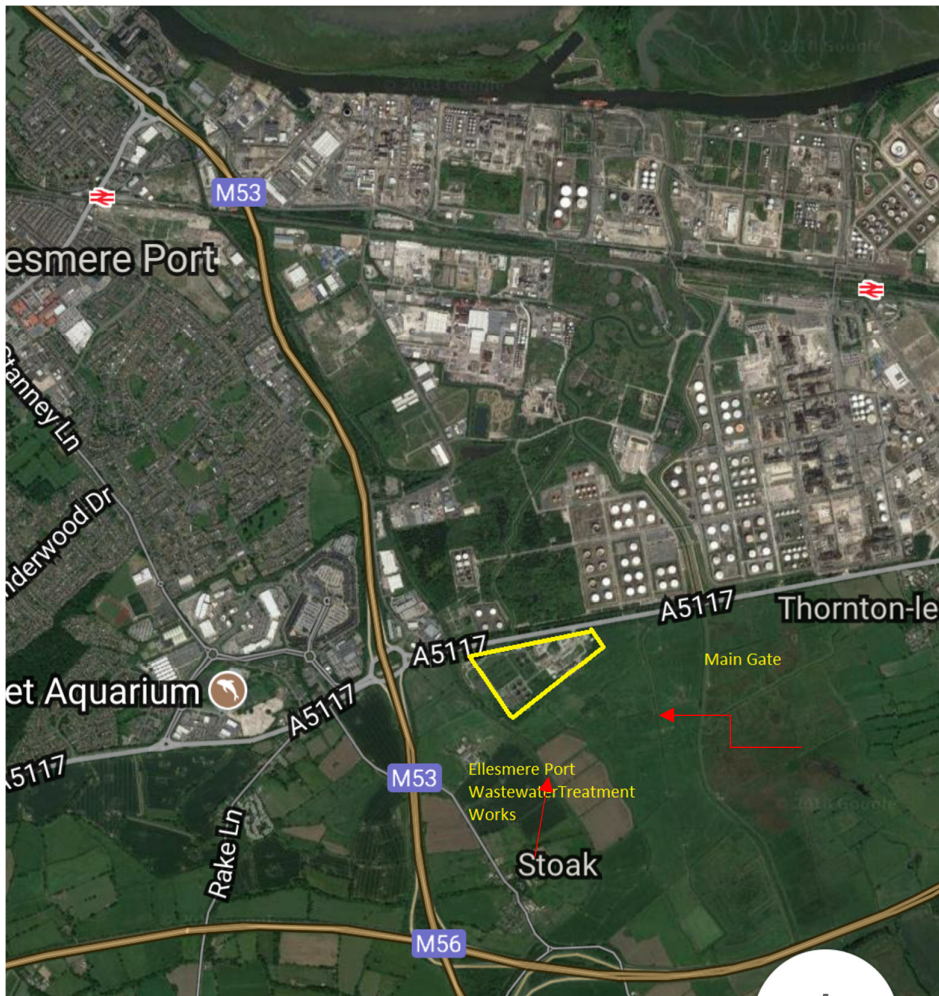
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**4.0 APPENDICES**

**4.1 Site Location & Contact Details**

United Utilities LTD  
 Ellesmere Port WwTW  
 Ring Road  
 Little Stanney  
 CH2 4HZ

**4.2 Site Location Map**



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## 5.0 Reference Information

### 5.1 SOP's

SOP	Title
<a href="#">WP/S/001/30/01 Incident Response</a>	Incident Response
<a href="#">WP/F/001/31/08</a>	Site Diary Log
<a href="#">WWP-S-001-17-10</a>	Biogas Systems

Table 4: SOPs

#### OTHER REFEEENCES

- Code of Practice No.1 Installations in Potentially Explosive Atmospheres Associated with Wastewater.
- Guidance on the Safe Operation of Sludge Digestion Plants.
- Code of Practice for the Maintenance and Commissioning of Digesters.
- Wastewater QA (Quality Works)

### 5.2 Incident & Crisis management Policy



Refer to [Incident and Crisis Management Policy and Procedure](#)