MOTT MACDONALD

Budds Farm Sludge Treatment Centre Accident Management Plan

February 2024

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Budds Farm Sludge Treatment Centre Accident Management Plan

February 2024

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1 Introduction

This Accident Management Plan (AMP) describes the requirements, procedures and actions to be taken in the event of an environmental accident or incident at Budds Farm Sludge Treatment Centre (STC), also referred to as the "Site". This plan will support the Budds Farm STC Environmental Management System.

1.1 Scope

Environmental accidents and incidents shall cover emissions to air, land or water that can cause harm to the environment.

This plan is written in accordance with the IED Environmental Permit application requirements for Budds Farm; BAT, specifically BAT1; and associated written management systems and procedures. Southern Water is required to review this plan annually, unless there are incidents, operational or managerial changes at the Site, which would require an earlier review.

The Site is manned 24 hours a day, 7 days a week.

The Site also operates under an Incident Management Plan (IMP), to be read in conjunction with this Accident Management Plan, which is incorporated into Southern Water's Environmental Management System to prevent and manage environmental related accidents. The IMP includes an inventory of substances stored at the Site, details on storage facilities, inventory of pollution prevention equipment (spill kits and fire extinguishers), inventory of waste and storage capacities, contact details of internal contacts (Site manager, Environmental Governance Manager and key HSE staff), national and regional (where appropriate) contact details of emergency services and environmental regulators. The IMP is distributed to key staff, to supervise the implementation of the Plan, and shared with external contacts (emergency services and the Environment Agency). The IMP is accompanied by a Site Plan that identifies the locations of designated storage areas (and their maximum storage capacity), location of spill kits and fire extinguisher and storage locations and hazards posed by chemical substances.

The IMP references procedures to comply with environmental legislation and protect the environment and human health in regard to potential accidents:

- Spill prevention and management, and operation of safety valves
- Procedures for recovering spilled product
- Procedures for the prevention of overfilling vessels, and the management of plant and equipment failures
- Fire prevention and responses to fires, including fire water containment procedures
- Security measures to prevent unauthorised access, arson and vandalism
- Competence, training and awareness requirements
- Monitoring and measurement requirements
- Record keeping procedures for the recording of incidents, accidents and near misses
- Emergency procedures to notify relevant authorities, emergency services and neighbours

There are several different document types referenced in the IMP. These have been listed below:

- EMS – Environmental Management System
- FEC – Field Event Co-ordinator's Manual
- IMP – Incident Management Plan

- BCP – Business Continuity Plan
- CCM – Control Centre Manual
- SIB – Safety Instruction Book
- CAT – Catastrophe Plans

Southern Water is committed to continual environmental improvements, including minimising the risk of accidents both on the Site and its operations and in the wider environmental setting. This commitment is delivered through efficient control of processes, capital investments, and environmental training.

1.2 Roles and Responsibility

The Site Manager has overall responsibility for reviewing the processes on the Site to minimise the risk of accidents and reduce the impact of any accidents should they occur. This document is reviewed annually, but the review process is ongoing as part of the regular performance monitoring for the Site.

1.3 Roles and Responsibility

The Site Manager has overall responsibility for reviewing the processes on the Site to minimise the risk of accidents and reduce the impact of any accidents should they occur. This document is reviewed annually, but the review process is ongoing as part of the regular performance monitoring for the Site. In the case of an emergency, key contacts and communication details are listed in Table 1.1.

Table 1.1: Key contacts and communication in the case of an emergency

Contact	Office Hours	Out of Hours
Southern Water	Duty Manager, Control Centre 01903 272095	Duty Manager, Control Centre 01903 272095
Environment Agency	0800 807060 (Emergency Hotline) 0370 8506506 (Routine enquiries)	0800 807060 (Emergency Hotline) 0370 8506506 (Routine enquiries)
Emergency Services	999	999
Local Police	999	999
Local Hospital	Queen Alexandra hospital Cosham Portsmouth PO6 3LY	999
EA Incident Hotline	0800 80 70 60	0800 80 70 60
EA Local Contact	0800 80 70 60	0800 80 70 60
Local Authority Emergency Planning Department	Emergency Planning department Hants county council 01962 846 846	
Borough Council	Havant Borough Council 02392 446019	
Water Company	Duty Manager, Control Centre 01903 272095	Duty Manager, Control Centre 01903 272095
Gas Company	0800 111 999	0800 111 999
Electricity Company	UK Power Networks 08433 102243	UK Power Networks 08433 102243
Framework Waste Contractor	MTS 01634 250326	MTS 01634 250326

Contact	Office Hours	Out of Hours
Specialist Spill Clean Up Contractor	MTS 01634 250326 Cappagh Browne 0330 3031279	MTS 01634 250326 Cappagh Browne 0330 3031279

2 Site information

2.1 Site location

The Site is located on an industrial estate and is bordered by Storehouse Lake to the south and west and screened in all directions by trees. The Site was built in 1953 and it is understood that it serves a population of 382,570 from the two sub-catchments of Portsmouth and Havant[1].

Activity Site address: Southmoor Lane, Havant, Hampshire, PO9 1JW.

National grid reference: SU 7096 0543

2.2 Summary of Site and sensitive receptors

The Site is located on an industrial estate with industrial facilities located to the north and west of the Site. Havant household waste recycling centre is located approximately 450m northwest of the Site. Further north is a residential area, approximately 650m from the Site. The southeast and northwest sides are surrounded by Langstone Harbour (an SSSI) where Storehouse Lake is situated south of the Site.

There are a number of sensitive receptors within 250m of the potential emission sources at Budds Farm STC. The receptors closest to a potential emission source are industrial facilities north of the Site, which are located approximately 40m northeast of the WTW reception site.

[1] Office for National Statistics (2023) Dataset: Estimates of the population for England and Wales. [online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/estimatesofthepopulationforenglandandwales. Accessed February 2024

3 Accident Management Techniques

The IED Regulations require the identification of potential accidents associated with the operation of an Installation and implementation of measures to avoid or minimise the effects of an accident, should they occur. This section sets out the measures to be adopted at the Installation to minimise potential risks to the environment. See Section 6 for Emergency Response Procedures.

The Site has an IMP designed to give first response instruction and procedures to control any Incidents/Emergencies at the Site.

Table 3.1 below provides a list, along with a brief description of each, of the procedures which form part of the IMP.

Table 3.1: Supporting Emergency Procedures – IMP

Procedure Reference	Brief Summary
EMS 234 Chemical and Oil Storage	Specifies the standard for storage of chemicals and oils. Outlines the amounts of substances that can be stored on site without consent from the Local Authority, and details how these substances should be safely stored. Also includes Information on the auditing, training requirements and any associated documents.
EMS 260 Pollution Prevention (standard)	Specifies the standard for managing and reducing the risk of land contamination. Outlines the tasks a manager should complete i.e., ensuring spill kits are available, and who to contact in the event of an incident. The document also lists the measures that Southern Water should take to prevent pollution incidents. Also includes Information on the auditing, training requirements and any associated documents.
EMS 265 Discharges (Standard)	Sets the minimum standard of operation in managing effluent and potable water process discharges. Details definitions which relate to the procedure and outlines the standard. Also includes Information on the auditing, training requirements and any associated documents.
EMS 360 Pollution Prevention Procedure	Outlines the responsibilities of staff in relation to the procedure. The Procedure includes details on items such as site drainage, working on or near watercourses and excavations. As well as addressing different spill types; chemical, oil and sludge/sewage. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 361 Chemical Risk Assessment (Procedure)	Defines the procedure for assessing the environmental risk from bulk chemicals. Outlines the procedure for undertaking a risk assessment, and where required which EMS procedures need to be followed. Also addresses risk mitigation and employee awareness as well as the auditing, training requirements, reporting forms and any associated documents.
EMS 362 Environmental Fire Risk Assessment Procedure	Specifies the procedure for minimising the environmental consequence of a fire. Outlines the responsibilities of staff in relation to the procedure and provides a procedure for an Environmental Fire Risk Assessment. Information on the auditing, training requirements, reporting forms and any associated documents
EMS 363 Procedure for Managing oil spills on sites	Outlines the responsibilities of staff in relation to the procedure. The procedure details how to determine the severity of the spill for different scenarios; land, inland waters and coastal waters/beaches, and how to prevent, control and remediate the environmental damage caused by spillages from the site. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 364 Lime Spill Management Procedure	Outlines the procedure for managing lime chemical spills at STCs. Defines the responsibilities of staff, and the procedure for managing the spill including the spill assessment and notification and escalation. Information on the auditing, training requirements, reporting forms and any associated documents.

Procedure Reference	Brief Summary
EMS 365 Discharges Procedure	Defines the procedure that must be adopted when managing intermittent discharges. Outlines the responsibilities of staff in relation to the procedure and outlines the procedure where an emergency discharge is foreseeable for both emergency and stormwater and potable water. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 381 Operational Waste Procedures	Specifies the procedure for managing wastes. The procedure addresses the definitions of different waste types and outlines a general procedure for managing waste. Identifies where further procedures should also be followed for specific waste types e.g., asbestos, WEEE and waste oils. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 382 Hazardous Waste Procedures	Specifies the procedure for moving hazardous waste between different sites. The procedure addresses identifying hazardous waste, storage of hazardous waste, consignment notes and record keeping. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 461 Chemical Risk Assessment (Form)	A template for a chemical risk assessment including the following: • Site details • Chemical details • Chemical classification • Risk activity • Risks for health, fire/DSEAR[2] and environment • Handling, usage and storage requirements • Management of spills • Disposal and the safety data sheet.
EMS 480 Waste Descriptions	Provides written descriptions of different waste types covering the following: • Process giving rise to the waste • Waste characteristics • Handling advice • Containment • Disposal • Name of waste • Waste classification • Producer and registered office details • EWC • Controlled Waste Regulations 2012 description • Waste type • Form • Temperature • SIC code Information on the auditing, training requirements, reporting forms and any associated documents.
FEC 307 Reporting of Unauthorised Access, Including Loss, Theft and Vandalism	Outlines the responsibilities of staff in relations to the reporting these incidents, and the procedure to be followed. Also includes Information on the auditing, training requirements and any associated documents.
FEC 320 Process Related Incidents	Specifies the procedures to follow in responding to process-related pollution incidents. Responsibilities of staff are outlined in the procedure, as well as contacting the FEC, FEC actions and reporting procedures. Information on the auditing, training requirements, reporting forms and any associated documents

[2] Dangerous Substances and Explosive Atmosphere Regulations

Procedure Reference	Brief Summary
FEC 322 – Spillage Procedure	Outlines the responsibilities of staff in relation to the procedure. The procedure outlines the process for handling spillages on site including: • Spillage assessment • Notifications and escalation • Containment • Awareness and training Information on the auditing, training requirements, reporting forms and any associated documents.
IMPO_101 – Overview of the Incident Management Plan	This document sets out the overall structure of the Incident Management Plans and provides a short overview of each of the main plans
IMP 217 and IMP 218 Team Roles – Objectives and Responsibilities	Sets out the Objectives and Responsibilities for roles within the Incident Management Team and provides guidance for the ELT Representative. IMP 217 identifies when Southern Water should contact the Environment Agency, and IMP 218 identifies the process for contacting other authorities.
BCP 415 Guidance on Reporting Potential Media Interest	Sets out the types of incidents to be reported back by Field Operations Staff & Contract staff working on behalf of Southern Water that will potentially attract media interest, including contact numbers.
CCM 302 Procedure Following the Receipt of a Fire Alarm	Provides a consistent regional approach to dealing with any formal notification of a fire alarm within the Company. Outlines the responsibilities of staff, the procedure for when a fire alarm notification is received, inspections/audits, training and any associated documents.
SIB 603 Risk Assessment and Safety Instructions for Fire Awareness	Covers the following: • Training needs of staff and fire wardens • What Managers must provide (i.e. fire safety meetings, plans) • Inspections • Safety instructions for occupied sites, unoccupied sites, and company vehicles • Firefighting procedure • Records to be completed
CAT 303 Actions Following Severe Weather or Flood Warnings	Outlines the plan of actions that should be undertaken following severe weather or floor warnings and the responsibilities of the staff under these circumstances. The procedure details checklists for the following scenarios: • impending severe weather, • flood watch, • flood warning, • severe flood warning, and • an all-clear checklist. Also includes Information on the auditing, training requirements and any associated documents.
Environmental Emergencies Poster (EMS)	A poster which should be displayed on all sites. The poster lists the type of emergency (fires, spills etc) and both the action which should be undertaken the contact phone number which should be called. The poster also highlights a list of things which should be checked prior to work starting such as the H&S notice boards, environmental notice boards and continuity plans.
Pollution 30 Minute Plan	Outlines a five-step plan for responding to a pollution incident in 30 minutes and outlines what should be done at each of the five stages.
Site Chemical Risk Register	Southern Water electronic database containing an inventory of hazardous substances used and stored by Southern Water and those relevant to individual sites, helping Southern Water to control substance use and comply with the COSHH regulations
Alternative Response Coordinators Booklet	These documents provide flowcharts and a step-by-step guide for completing the Alternative Response tasks. Section 5: Resilience Guidance identifies criteria on when to contact local authorities and other first responders

A site-specific Fire Prevention Plan is available for Budds Farm to reduce the risk of fire and explosion. Please see the site-specific Fire Prevention Plan for full details of corrective measures.

3.1 Loss of Containment

3.1.1 Gas Escape

Loss of containment of gaseous materials at the Site could result in the escape of biogas or other gases to the atmosphere around the site. In order to minimise the potential for accidental releases of gas from the Installation the following measures have been adopted:

- The gas holders are double-membrane inflatable bag type holders, constructed of a Type IV fabric[3], which is resistant to UV and microbial degradation. The stored gas is contained within the inner membrane. The exterior dimension of the gasholder remains constant
- All pipework at the Site used for the transfer of gaseous products has been manufactured to the appropriate British Standard using appropriate grade materials and all pipe joints and seals are also designed to meet the required British Standard
- Regular monitoring of storage vessels, pipework and gas levels is undertaken to minimise release of fugitive emissions
- Storage vessels and pipework are subject to regular inspection, by the site operators to ensure the structural integrity of the system remains uncompromised
- All staff with responsibility for the handling or transfer of gaseous materials receive training for their role
- All staff on site will receive training in site emergency procedures and the actions to take in the event of discovering a gas leak as part of their mandatory site induction training
- The gas system has safety pressure release valves, which are designed to prevent over-pressurisation of the system. Gas emissions from this point are monitored on telemetry with immediate call-out of staff to remedy
- A waste gas burner is incorporated to deal with excess biogas and is the first point of relief for excess gas or pressure as an emergency measure

The Site is designed to meet the Dangerous Substances and Explosive Atmosphere Regulations (DSEAR). Consideration of the requirements of DSEAR is included in the Designers Risk Assessment including information on the operation and maintenance of the Installation to ensure DSEAR requirements are met.

An IMP is in place for the Budds Farm site. The IMP includes actions to be followed in the event of a loss of containment of gaseous materials at the Installation.

Preventative measures incorporated into normal operations include a DSEAR operational risk assessment that will be periodically reviewed and updated against the lates DSEAR regulations and guidance to ensure best practice is adopted.

A Leak Detection and Repair (LDAR) plan is in place at the Budds Farm STC.

[3] Type IV fabric is a biogas storage system that is constructed using a polyester fabric that has a PVC coating on both sides which makes it resistant to corrosive gas and heat.

3.1.2 Liquid Escape

Failure of the liquid containment systems at the STC could potentially lead to oil bearing fluids, reagents and process effluents discharging to surface waters and ground waters in proximity to the Installation. Potential risks associated with this have been reduced through the implementation of the following measures:

- The storage vessels for all boiler feed water treatment chemicals and fuel storage liquid materials located within the installation are double-skinned or bunded to 110% capacity and have been manufactured to the required British Standard using appropriate grade materials
- Where applicable, on-site storage tanks are bunded to 110% of their storage capacity in line with environmental good practice and bunds are regularly inspected for liquid content and emptied, if required
- Regular monitoring of storage vessels, pipework and fluid levels is undertaken to ensure no fugitive emissions are being released
- Storage vessels, bunds and pipework are subject to regular inspection by the Site Manager or the nominated deputy to ensure the structural integrity of the system remains uncompromised
- All pipework at the site used for the transfer of liquids has been manufactured to the appropriate British Standard using appropriate grade materials and all pipe joints and seals are also designed to meet the required British Standard
- Spill kits comprising suitable materials for the containment of liquid spills have been placed throughout the site for the use of all staff
- Site surfaces surrounding liquid storage areas and transfer pipes are constructed of impermeable material and run off is diverted to appropriate drainage structures to prevent escape of fluids to surface waters or ground waters
- All staff with responsibility for the handling or transfer of liquid materials receive appropriate training for their role
- All staff on site must receive training in site emergency procedures and the actions to take in the event of discovering a liquid spillage and the use of spill containment measures as part of their mandatory site induction training

3.1.3 Material Storage

All chemical tanks and stores must be clearly labelled and marked with appropriate warning signs and all delivery points must be kept locked except when in the presence of an Operations team member.

The levels of raw materials are checked and recorded.

During deliveries of material to site, special care is taken to ensure that all storage tank levels and contents are checked in order to prevent the accidental overfilling of tanks or the inadvertent mixing of substances. Specific measures are in place for the discharging of sludge from delivery tankers to reduce the risk of overfilling of the tank and spillages during discharge.

The following are requirements for deliveries on site:

- Each direct delivery must be checked for the correct quality and strength and to ensure that no damage etc. has occurred in transit
- Supplier's Advice Notes must be checked, to ensure that the goods match the documentation, and then signed
- Retain copies of Supplier's Advice Notes
- All chemical deliveries must be supervised by nominated personnel as detailed on the current list

- Chemical deliveries must be recorded and must include a declaration that they conform to the required standard, either on the delivery note, or as a separate certificate of conformance
- Appropriate training is provided to personnel involved in receipt and handling of deliveries and specific procedures for the filling of tanks have been developed within the management systems

3.1.4 Odour

Biogas is a naturally odorous material; however, the high alkaline conditions present within the STC digesters, scrub most of the hydrogen sulphide (H_2S) (an odorous constituent) from the biogas, resulting in relatively low concentrations. In addition, there will be no other odour emissions at the site from normal operations at the Installation.

Sewage, sewage sludges and returned liquors can all contribute to odour on a STC. A number of odour release points/areas have been identified in Budds Farm STC, and a combination of good baseline site management and odour control measures have been implemented to manage these sources. One odour control unit is installed on the Site.

Regular inspection of site storage facilities and pipework will be undertaken to ensure that the structural integrity of the system remains intact in line with the Budds Farm STC LDAR plan and Odour Management Plan (OMP). Regular site inspections and sniff checks are undertaken by the site team to ensure that no significant fugitive emissions of odour likely to cause pollution of the environment, adversely impact human health or significantly reduce the amenity of the local area are present. In the event of an accidental emission of odorous material from site storage facilities or pipework, the source of the emission will be isolated, investigated and, if required, operation suspended until the source of the emission has been sealed.

3.1.5 Vandalism and unauthorised access

Vandalism and unauthorised access to plant infrastructure and work areas has the potential to result in:

- Damage to plant infrastructure and equipment
- Increased risk of injury to personnel
- Uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to the environment

Operations and Maintenance (O&M) activities at the STC occur on a continuous basis and high levels of site security are maintained to prevent unauthorised access to plant infrastructure and work areas in accordance with Field Event Coordinator's Manual (FEC) in relation to Reporting of Unauthorised Access, Including Loss, Theft and Vandalism (FEC 307). In light of this the potential for vandalism is considered to be effectively minimised.

The following measures have also been adopted as security measures:

- For visitors and unauthorised personnel, an intercom system at the Site entrance is used before entry is allowed
- On arrival at site, visitors must sign the visitor's book and also announce their arrival to staff in the control room
- The Site is manned 24 hours a day, 7 days a week.
- CCTV cameras are positioned in key locations around the Site
- Access to the Site and waste is restricted by palisade fencing approximately 2.8m high and the entrance to the Site is secured by an automatic gate
- Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to the Site

- Out-of-hour intruder alarms are set for buildings
- CCTV cameras onsite as a deterrent to any unauthorised visitors

3.1.6 Physical Protection Measures

The Site has been designed to include protection of structures to minimise accident / incident issues. Potential risks associated with this have been reduced through the implementation of the following physical protection measures:

- All pipework at the site used for the transfer of gaseous products has been manufactured to the required British Standards using appropriate grade materials and all pipe joints and seals are also designed to meet the required British Standard
- Storage vessels and pipework are subject to regular inspection, by the site team to ensure the structural integrity of the system remains uncompromised.

3.1.7 Overfilling of tanks

Details of the raw materials and process chemicals held on site and their storage arrangements are provided in Table 3.2 below. During deliveries of material to site special care is taken to ensure that all storage tank levels and contents are checked in order to prevent the accidental overfilling of tanks or the inadvertent mixing of substances. Appropriate training is provided to personnel involved in receipt and handling of deliveries and specific procedures for the filling of tanks will be developed within the quality and environmental management system (QEMS) for the Site.

The volume of material in the receiving tanks will be measured and recorded manually prior to filling.

In the event of a spillage of polluting substances, absorbent material will be used to clear the spillage. The used materials will be removed and stored in suitable containers prior to authorised disposal. The Installation will incorporate impermeable paving with self-contained drainage.

Table 3.2: Raw Material and Process Chemical Storage

Raw Material / Process Chemical	Maximum storage amount (tonnes or m^3)	Storage
Biogas	3,000m^3 Max	Gas bag Digesters Pipelines Flare Stack CHP Engine. Cake Silo.
Diesel Oil	38m^3	Tank
Limed Sludge Cake	120m^3	Silo.
Polymer C-498 (solid – cationic powder)	58 x 1m^3/750kg bags	Bags
Lime	30m^3	Storage tank
Lime (Dust).	Variable this is an unusual activity	In bags
Gas Cylinders	Welding / burning Equip.	Gas Bottles stored in a locked building overnight.
Methanol	105m^3	3 x Storage tank.
Aerosol Leaks of Biogas	Not known as would be formed by leaks	Gas bag Digesters Pipelines Flare Stack

Raw Material / Process Chemical	Maximum storage amount (tonnes or m^3)	Storage
		CHP Engine
JCB Loader / MTS Tankers & Chemical Delivery tankers.	Diesel Fuel tank on machine	Vehicle stored outside STC control room overnight.
Sludge	13,750m^3	Tanks
Sludge	1,732m^3	Tanks
Sludge	1,732m^3	Tanks
Sludge	2,540m^3	Tanks
Antifoam	4 x1m^3	Intermediate Bulk Container (IBC)
Polymer- – Kemira Superfloc C-496HMW	6 x 1050 kg as liquid in IBC	IBC
Sulphuric Acid	1000 ltrs	Storage tank
Sodium Hydroxide	11m^3	Storage tank
Sodium Hypochlorite	22m^3	Storage tank
Ferric Chloride	Redundant tank	3 x Storage tank.

3.1.8 Fire

Operational activities at the STC are such that the potential for fire and explosion exists. However, the local Fire Service has not carried out any risk assessment investigations on site. Potential hazards arising from fire and explosion at the Site include:

- Uncontrolled release of pollutants from equipment, plant and infrastructure
- Uncontrolled release of pollutants from material stores
- Loss of containment of contaminated firewater

Fire detectors and fire alarms are fitted in all buildings. Fire extinguishers are located at strategic points throughout the STC. All fire extinguishers are clearly marked and tested to confirm their functionality. All personnel will be made aware of their location and trained in their use for escape purposes only, in order to minimise the risk to life posed by fire and explosion.

However, the emergency policy is to evacuate the building in the event of a fire. Staff are informed during induction of the emergency procedures at the Site to be followed in the event of fire incidents at the Site.

To reduce the risk of fires from the Anaerobic Digestion process, it is managed by controlling KPI's on process control on a SCADA control system, DSEAR risk assessments are in place, with 12 monthly service agreements in place around the Biogas system. Six monthly inspections on the Boilers and CHP systems are also conducted.

Controls to reduce the risk of fires are good signage and EX zoned areas with fencing and locked gate policy around DSEAR areas. Lightning protection is also in place on Biogas storage bags. Operational and maintenance staff have received training in both Biogas awareness and DSEAR.

The Digestion process risks are managed by DSEAR risk assessments, Zonal areas & Biogas training for site operators and maintenance staff along with "gas safe" contractors carrying out programmed maintenance activities.

3.1.9 Arson risks

With flammable or combustible materials there is always a risk of arson on a site. This risk is controlled by secure perimeter fencing and an electric gate at the main entrance of the Budds Farm site, plus adherence to a locked gate policy.

3.1.10 Contingency for Sludge Treatment Issues

In the case of incidents with sludge treatment, the mitigation measures related to sludge treatment processes are listed in Table 3.3. A full list of mitigation measures covering different processes of the entire site can refer to the operational continuity plan of Budds Farm.

Table 3.3: Mitigation measures with sludge treatment incidents

Incident	Mitigation measures
Sludge cake import reception	• Site closure to all cake imports. Sludge team to make arrangements for alternative disposal until the issue has been rectified.
Sludge strainpress	• Huber units with spare parts on site. Duty assist operation • MEICA teams repair any non-operational plant as soon as possible.
Screened Sludge Storage Tanks	• MEICA teams repair any non-operational plant as soon as possible. If tanks are at a critical level due to process issues downstream, a mobile centrifuge can be used to produce raw cake for treatment at another STC.
Polymer Make up plants	• Use temporary polymer make up rig. • Polymer used SNF flopam 4650 VHM on Centrifuge and Kemira 496 & 498 on Drum Thickeners • Emulsion equivalent Epam SD 6081 for the Drum Thickeners and flopam • EM640CT for the Centrifuge. • MEICA teams repair any non-operational plant as soon as possible
Digester Feed Pumps	• A standby pump is available in the event of pump failure. MEICA teams repair any non-operational plant as soon as possible.
Digesters	• Loss of digester throughput will necessitate in the diversion of most/all road imports to alternative disposal facilities. Priority must be given to the Budds Farm indigenous sludge. **Retention time reducing to CCP limit** 1. Check that feeding has been stopped automatically if the daily feed volume has been exceeded. 2. Check for site issues relating to digester feeding with the FPM/Process Scientist and agree action plan to resolve any plant issues and agree subsequent feed plan to increase retention times to target (Ideal minimum14 days retention); 3. Monitor feed rates in accordance with agreed plan; 4. Discuss further with FPM/Process Scientist if feed plan is not being adhered to and take further action to address as necessary; 5. Note: no requirement for producing breach report as CCP limit has not been breached. **7 day rolling average for retention time has exceeded critical limit** 1. Check that feeding to digester has stopped; 2. Quarantine cake and divert to an empty cake bay off site to be used solely for storage of quarantined material; 3. Discuss with FPM/Process Scientist issues over feed rates and agree action plan to resolve and a feeding plan to increase retention times to above minimum CCP limits and then on to target. 4. Monitor feed rate in accordance with feeding plan; 5. Identify when retention times are above minimum critical limits as cake can then be diverted away from quarantined cake bay; 6. Complete breach report. **Digester temperature reducing to CCP limit** 1. Check that feeding has been stopped if temperature is continuing to fall below 32 degrees.

Incident	Mitigation measures
	2. Check for site issues relating to digester temperature with the FPM/Process Scientist and agree action plan to resolve any plant issues and agree subsequent feed plan to ensure digester temperature increases to desired levels; 3. Monitor digester temperatures and feed rates in accordance with agreed plan; 4. Discuss further with FPM/Process Scientist if feed plan is not being adhered to and take further action to address as necessary; 5. Note: no requirement for producing breach report as CCP limit has not been breached. **7 day rolling average for digester temperature has exceeded critical limit** 1. Check that feeding has stopped if the digester temperature 7 day rolling average has fallen below 32 degrees. 2. Quarantine cake and divert to an empty cake bay off site to be used solely for storage of quarantined material; 3. Discuss with FPM/Process Scientist issues over digester temperature and heating system and agree action plan to resolve and a feeding plan to achieve digester temperature within CCP limits; 4. Monitor digester temperature and feed rate in accordance with feeding plan; 5. Identify when digester temperature is back within critical limits as cake can then be diverted away from quarantined cake bay; 6. Complete breach report. Sludge Team to make arrangements for alternative disposal until issue rectified.
Post Digestion Storage Tanks	• Temporary tank storage to be brought on to site as a medium to long term arrangement. • If tanks are full and process is inhibited, ensure centrifuge is running at max throughput, if centrifuges are unavailable see below.
Centrifuge Feed Pumps	• A Duty / Assist centrifuge flow stream is available in the event of pump failure. Standby centrifuge must be available due to dedicated feed from each feed pump. MEICA teams repair any non-operational plant as soon as possible.
Centrifuges	• A Duty / Assist centrifuge flow stream is available in the event of a centrifuge failure. Standby feed pump must be available due to dedicated feed to each centrifuge. MEICA teams repair any non-operational plant as soon as possible. **Failure of Centrifuges** • In the event of failure of all centrifuges onsite 1. Raise a P1 emergency job for our framework partner responsible for centrifuge work 2. Ascertain the levels within the PDST's onsite to see if digester throughput will be affected. 3. If outage is total and due to be ongoing for >1 days mobilise a mobile centrifuge to ensure digester throughput is maintained • Short term; Reduce imports and tanker digested sludge to another STC for treatment, seek further information for disposal site
Lime dosing system	A standby lime dosing pump is available in the event of a pump failure. • Dedicated lime dosing to each centrifuge flow stream. Standby centrifuge and feed pump must therefore remain fully operational. 1. If lime rig fails to operate investigate issues with FPM/Process Scientist and agree action plan to address. 2. If pH <8.5 halt removal of cake from site and implement quarantine procedures.

Incident	Mitigation measures
	3. Check lime dose rate and lime dosing operation. Ensure pipework is not blocked and lime is being discharged into the centrifuge feed pipework. 4. Turn up dose rate and re-check cake pH. If pH still <8.5 continue to quarantine cake produced. HACCP Process Scientist to discuss options to increase pH with site FPM and agree plan. 5. Implement plan to correct pH and continue to monitor pH of sludge until back within range. 6. Quarantine off spec cake and store for a maturation period. 7. Complete breach report
Biogas / Flare stack / CHP / Boilers	**In the event of a gas leak – Complete a personal Risk Assessment** 1. Locate and close associated ECV which will isolate the gas line to the affected area. 2. In the event of a fire locate and isolate associated ECV if safe to do so 3. Activate any emergency stops as applicable 4. Inform site FPM (in hours) or Duty Manager (out of hours). 5. Raise emergency P1 for gas service provider to attend and resolve the issue • Significant Whessoe release - Inform as a pollution. This is a secondary defence to stop over pressure in the digesters and Post digesters. Try and get the flare stack or the CHP running ASAP. Reduce/stop feed to digester to stop foam overs. Get Gas Service Provider to flush the gas lines if required. **Failure of Flare Stack** • A flare stack failure along with the CHP failure will result in safety release of biogas from the Whessoe Valves located on the roofs of the digesters, PDSTs and the Whessoe valves located in the gas holder compound. This is to prevent over pressurisation of the digesters and gas systems. 1. Raise a P1 emergency job for our framework partner responsible for biogas work. 2. Restrict access completely to the gas holder compound, to the roofs of all digesters and PDSTs. Erect warning signs and replace padlocks with single key padlocks to prevent unintentional access. 3. Escalate & report to the pollutions team on [redacted] Reduce or inhibit the digester feed to reduce the biogas generation and the volume being released. **CHP** **NB: monitored/responded by Service Provider** • STC to contact Service Provider and provide correct quantity/quality of biogas information. Gas bag volume and pressure is visible on SCADA/Prism.
PLC Failure	• UPS will run SCADA for a limited time. Long term loss of power will result in no sludge throughput and compliance issues to the catchment. • May need to power essential PLCs with a mobile generator.
Power Failure	1. 2 separate incomers available from different supplies 2. 1 x 11KVA generator for site + 1 x 11KVA for ASP 3 3. Temporary generators required in event of main Generator fail as follows: – 1x2KVA for PS3 – 1x1KVA for Inlet – 1x500 for primary – 1x2KVA for ASP 1&2

Incident	Mitigation measures
	– 1x250 for Washwater – 1x2KVA for STC • Long term loss of power will result in no sludge throughput and compliance issues to the site and sludge catchment. • Flow will enter the watercourse via Brockhampton Creek outfall and will only be course screened so a rag pick will be necessary. The EMO course screen is also manually raked so will need an operator on site to rake for the duration
Contaminated Trade	• In the event of an injurious substance entering the process, the Process Scientist is to decide the best course of action to take as per the individual circumstances
Reduced Sludge Disposal	• Diversion of all road imports into Budds Farm to alternative disposal facilities. Priority must be given to Budds Farm indigenous sludge. • Sludge team to make arrangements for alternative disposal until issue rectified.
Odour Control	• MEICA teams repair any non-operational plant as soon as possible. • Ensure any spills are cleaned up, shutter doors are closed and hatches / covers are sealed down. • Follow odour management plan. • In the event of a total failure of the unit raise a P1 emergency job for our framework partner responsible for Odour Control work.

4 Risk Assessment Methodology

The risk assessment has been undertaken by identifying hazards and source-pathway-receptors and assigning a probability of exposure and a severity of consequence. These are assigned as described in Table 4.1 and Table 4.2 and are based on the generic risk assessments used for standard rules “SR2012 No11 and No12”, “SR2009 No 4” and “SR2008 No 19”, applicable to anaerobic digestion operations including use of the resultant biogas.

The probability and severity scores are then combined within a matrix to give an overall magnitude of the risk. This matrix is shown in Table 4.3 and is intended to illustrate the general approach to scoring.

Risks are categorised as either low, medium or high; this ranges from being a nuisance in some instances to potential health risks in others.

Table 4.1: Severity Index

Severity of harm	Severity index
Impact to people or designated receptor	
Impact to non-designated receptor	
All other impacts	

Table 4.2: Probability Index

Severity of harm	Severity index
Impact to people or designated receptor	
Impact to non-designated receptor	
All other impacts	

Table 4.3: Magnitude of risk

Magnitude of risk	Probability index		
Severity index	**Low**	**Medium**	**High**
Low	Low	Low	Medium
Medium	Low	Medium	High
High	Medium	High	High

Table 4.4: Accident risk assessment table

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
All surface waters close to and downstream of the Site.	Tank failure, spillages of digestate and/or liquids including oil. Damage to drainage system. Spillage of raw materials of sludge/liquor during delivery/storage. Contaminated run off from cake storage e.g. containing suspended solids.	Aquatic or chronic effects to aquatic life, contamination, and water deterioration of water quality.	Direct run-off from the Site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Medium	High	High	Potential for leaks from digestion tanks, storage vessels/bays and drainage system which may cause contamination or deterioration of surface water quality. The hardstanding and pavement across the site are in reasonable condition. Parts of the site are bunded including storage areas for raw materials and waste stored on-site, and as hardstanding is in place, all water flows to the drainage network which diverts all water to the head of works. Quantities of liquids stored are generally low. The nearest stream is Brockhampton Creek, which bounds the northwest of the Site. The site is bounded to the southwest by the Broad Lake,	The Site drainage plan is documented and all staff are trained in the event of emergency or accident. Impermeable surface and secondary containment, in the form of constructed bunds or portable bunds, is in place around storage areas of all wastes and raw materials surrounding the STC and WTW. There is a waste area where all skips and bins are stored on a hardstanding area. Additional containment around digesters and other storage vessels is subject to a risk assessment and will be undertaken as part of the BAT requirements and in accordance with the Construction Industry Research and Information Association (CIRIA) standard 736.	Medium

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
							approximately 6km south of the Site. However, no pollution incidents substantiated or related to the STC have been recorded in the past five years.	All transfer of digestate and material takes place under supervision and with flow rate control. All tanks undergo a delegated inspection regime and the process parameters are monitored and understood by Site operatives. Digestion tanks are built to appropriate standard and require appropriate bunding. There is one cake storage silo on-site and one 50-60t cake bay. Cake is moved around the Site by 20t tippers. Activities are managed and operated in accordance with the EMS. Spill procedures are in place under EMS363 and 364 as well as a pollution prevention procedure EMS360 All spillages are recorded in the site diary including actions taken. Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is	
Abstraction from watercourse downstream of facility (for agricultural or potable use).	Spillage of liquids, contaminated rainwater run-off from waste e.g. containing suspended solids.	Acute effects, closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains etc. then abstraction.	Low	Medium	Low	Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off. No groundwater abstractions are present on-site. However, no pollution incidents substantiated or related to the STC have been recorded in the past five years.		Low
Groundwater, land and surface water	Spillages of liquids, contaminated rainwater run-off from wate e.g. containing suspended solids. Sludge/liquid spillages as a result of loss of	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic	Transport through soil/groundwater then extraction at borehole or intake.	Low	Medium	Low	Potential for leaks from digestion tanks and storage vessels. Site infrastructure and hardstanding is generally in good condition. The hardstanding and pavement across the key areas of the site		Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
	tank/pipe integrity carelessness during transfer or overfilling	life, contamination and deterioration of land and water quality. Pollution of water or land.					is in good condition, with no cracks. Quantities of liquids stored are generally low.	implemented effectively to minimise the probability of equipment malfunction. Control of substances hazardous to health (COSHH) assessment undertaken for all raw materials. Both clean and contaminated surface water is directed to a pumping station which recirculates it back into the system. The surface drainage of potentially contaminated areas from within the Site boundary is routed into the head of the works with no discharge outside of the Site boundary. Regular inspections of the Site drainage systems and other equipment are undertaken, with any repairs and maintenance carried out if necessary. All complaints and other incidents are recorded in the site diary including actions taken.	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								The condensate is clean, uncontaminated water and is small in quantity.	
Groundwater, land and surface water	Spillages of sludge/liquids during transfer of imported and indigenous/ unknown sludge and liquids from tankers.	Acute or chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Low	Medium	Low	Potential for spillage during transfer of liquid/sludge from tankers. 7-10 lorries a day of sludge are imported to the Site from other SWS Sites, cake and liquid sludge are imported seven days a week. Sludge cake is delivered in both sealed and open containers and is unloaded inside the main building. Cake is transported around the site via 20t tippers Cake is dropped directly from the silo into the trucks.	Impermeable surface required for storage of all waste. Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented to reduce spills when transferring liquids/sludges from tankers. Established procedures in place for the acceptance of Tankered trade waste (EMS387), waste duty of care (EMS380), operational waste procedures (EMS381) and waste rejection (EMS488). Compliance with the waste duty of care requirements to ensure waste accepted meets the permit conditions and relevant legislation. All liquid run off will be captured in the drainage network and returned to head of works.	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
Groundwater, land and surface water	Damage to drainage system	Acute or chronic effects: to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction/abstraction at borehole or intake.	Low	Medium	Low	There is no leak detection of underground pipework on the Site.	The Site Manager ensures the programme of PPM is implemented effectively and inspections are carried out frequently to minimise the probability of damage to the drainage system.	Low
Groundwater, land and surface water	Flooding of site	If waste is washed off-site it may contaminate natural habitats downstream.	Flood waters	Low	Medium	Low	Permitted waste types are sludges/bio-solids, which may contain pathogens, so any waste washed off-site will add to the volume of the local post-flood clean up and may be hazardous to human health. Area is at risk of flooding, but there are no historical floods are on record., The drains did experience overflows on-site in June 2021.	The drainage network sends water to the head of the works for treatment. There are no direct potentially contaminated discharges to controlled surface waters. Activities to be managed and operated in accordance with a management system and management plans and procedures implemented, including the removal of spilled waste and other pollutants (such as use of spill kits and mobile bunds) before these could enter any flood waters if an event was to occur.	Low
Local human population, domestic	Spillages of odorous materials	Nuisance, loss of amenity.	Air transport, then inhalation.	Low	Medium	Low	Local residents and staff often sensitive to odour.	Procedures for dealing with spillages are covered in the EMS	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
properties, site offices.	including oils, fuels, chemicals. Failure to clean up spillages. Contaminated spill equipment not disposed of appropriately.						There are 5 sensitive receptors within 500m of the Site	under EMS363 and 364 for the Site. There is also a Field Event Co-ordinators (FEC) Manual which provides spillage procedures for EP sites (FEC322). The Site Manager shall ensure all relevant staff are appropriately trained to use the spill kits and that all spillages are cleaned up immediately. All areas of the Site are to be cleaned regularly; Site Manager to oversee regular cleaning schedule, all staff trained on importance of good housekeeping and site cleanliness. All spills are recorded in the site diary including actions taken.	
Local human population and local environment.	Flooding of the site.	If waste is washed off-site it may contaminate buildings / gardens / natural habitats downstream.	Flood waters	Low	Medium	Low	Permitted waste types are sludges/bio-solids, which may contain pathogens, so any waste washed off-site will add to the volume of the local post-flood clean up and may be hazardous to human health.	The drainage network sends water to the head of the works for treatment. There are no direct potentially contaminated discharges to controlled surface waters. Activities to be managed and operated in accordance with a	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
							The site is located within Flood Zone 3 benefitting from flood defences, which mitigate the high probability of flooding (less than 1 in 100 annual probability of river flooding or 1 in 200 annual probability of sea flooding). There are no known issues with flooding at the Site from the nearby waterbodies, The Site did experience on-site flooding in June 2021 from overwhelmed drains, no historical floods have been recorded.	management system and management plans and procedures implemented, including the removal of spilled waste and other pollutants (such as use of spill kits and mobile bunds) before these could enter any flood waters if an event was to occur.	
Local human population and / or livestock after gaining unauthorised access to the installation.	All on-site hazards: machinery, wastes and vehicles.	Bodily injury, death.	Direct physical contact.	Low	Medium	Low	Potential injury to on-site personnel as a result of vehicle movements or equipment malfunction or misuse. Direct physical contact is minimised by activity being carried out within enclosed digesters so a low magnitude risk is estimated.	Overall management of the site is overseen by an experienced member of staff holding an appropriate Certificate of Technical Competence (CoTC) awarded by the Waste Management Industry Training and Advisory Board. This competent person delegates responsibilities to appropriately	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
							Contact with waste is minimal with exception of leaks or spills from unloading of tanker and transfer of filter cake.	experienced and trained site operatives throughout the operating hours. All operational staff are fully trained in the site operating procedures and SWS' safety and environmental management procedures and are kept up to date on changes. Training includes awareness raising of the potential on-site hazards and health and safety measures to adhere to. Preventative measures will be under continuous review as part of the EMS procedures. Activities are managed and operated in accordance with the EMS – this includes site security measures to prevent unauthorised access. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. The main site entrance is secured by an automictically operated gate approximately 2.8m	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								high. Furthermore, a 2.8m high metal palisade fence surrounds the entire site boundary to prevent unauthorised access of pedestrians. The Site also benefits from a CCTV system, there are 20 CCTV cameras. Combination of fixed, 360-degree, thermal imaging and number plate recognition. All monitored and controlled from control room. The Site is staffed 24 hours a day, 7 days a week. Authorised personnel can gain access to the Site using a fob system. For visitors and unauthorised personnel there is an automatic gate with an intercom system at the site entrance, and a visitor signing-in book is used. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements. Key sludge treatment and wastewater treatment activities undertaken within enclosed systems. 7-10 lorries a day of sludge are imported to the Site, cake and liquid sludge are imported seven days a week. Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is moved to cake bays once a trailer is full. Cake is removed from the site daily, the cake is dropped directly from the silo into tippers. Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by site staff and maintenance contractors.	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								Operator has produced a hazard review and risk assessment documents relating to this and other types of potential incidents, within the EMS, H&S and O&M manuals.	
Local human population and local environment.	Explosion of biogas causing release of polluting materials to air (smoke or fumes), water or land	Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or arsonists/vandals. Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.	Air transport Direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer Transport through soil/ groundwater then abstraction.	Low	High	Medium	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. An explosion could cause injury to local residents and site staff from flying debris. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings.	The key sludge treatment and WTW processes are undertaken within enclosed systems such as the AD and biogas systems. All sludge storage tanks are covered and enclosed. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals – this includes site security measures to prevent unauthorised access. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
							Permitted waste types limited to sludges and liquids.	detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS includes procedures relating to maintenance and inspection of bunding of tanks. Site Manager shall ensure the programme PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment. All equipment is checked and calibrated as per the manufacturer's instructions. Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site.	
Local human population and local environment.	Explosion of pressurised tanks due to equipment and/ or process failure.	Respiratory irritation, illness and nuisance to local population. Fatality/injury to staff, fire fighters. Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.		Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke, fumes and material released from tanks may cause irritation, illness or nuisance to local residents and site staff. Impact from the tank explosion may cause external damages to other equipment, buildings located close to the epicentre of the explosion.		Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								The main site entrance is secured by an automictically operated gate. Furthermore, a 2.8m high metal palisade fence surrounds the entire site boundary to prevent unauthorised access of pedestrians. The Site also benefits from a CCTV system. There are 20 CCTV cameras. Combination of fixed, 360 degree, thermal imaging and number plate recognition. All monitored and controlled from control room. The site is manned 24 hours a day, 7 days a week.	
Local human population and local environment	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land. Equipment failure.	Respiratory irritation, illness and nuisance to local population. Injury to staff or fire fighters. Potential for uncontrolled release of fugitive emissions of gaseous, liquid or	Air transport Direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer Transport through soil/ groundwater then abstraction	Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. Although biogas is flammable, risk of	The key sludge treatment and WTW processes are undertaken within enclosed systems Storage tanks are enclosed and covered. Activities are managed and operated in accordance with the EMS, H&S and O&M	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
		solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.					direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Risk of accidental combustion of waste is minimal. Permitted waste types limited to sludges and liquids.	manuals including, fire and spill management. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. A Fire Prevention Plan is not required to be submitted for the permit application as the biowaste process on-site is wet anaerobic digestion. However, fire prevention and environmental fire risk assessment procedures are provided in the EMS, H&S manual and Safety Instruction Book (SIB) (EMS362, H&S204, H&S440, and SIB603). There is also Safety zoning of areas under DSEAR/PEXA on-site and Smoking is only permitted in designated areas.	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								Firewater is diverted through the drainage system to the head of the works allowing for contaminated fire water to be contained on-site and treated through the wastewater treatment system. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS and Safety Instruction Book (SIB) includes procedures relating to maintenance and inspection of bunding of tanks, spills and environmental incidents. Site Manager shall ensure the programme of PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment. All equipment is checked and calibrated as per the manufacturer's instructions.	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site.	
Local human population and local environment.	Arson and/or vandalism causing the release of pollution materials to air (smoke and fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or vandals/arsonists. Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination of land and water quality.	Air transport. Spillages and contaminated firewater by direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/ groundwater then abstraction.	Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Risk of accidental combustion of waste is minimal. Permitted waste types limited to sludges and liquids	The key sludge treatment and WTW processes are undertaken within enclosed systems such as AD and biogas systems. Storage tanks are covered and enclosed. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals – this includes site security measures to prevent unauthorised access, fire explosions and spill management. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. A Fire Prevention Plan is not required to be submitted for the permit application as the biowaste process on-site is wet anaerobic digestion. However, fire prevention and environmental fire risk assessment procedures are provided in the EMS and H&S manual (EMS362, H&S204 and H&S440). There is also Safety zoning of areas under DSEAR/PEXA on-site and Smoking is only permitted in designated areas. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS includes procedures relating to maintenance and inspection of bunding of	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								tanks, spills and environmental incidents. Site Manager shall ensure the programme of PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment. All equipment is checked and calibrated as per the manufacturer's instructions. Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site. The main site entrance is secured by an automatically operated gate approximately 2.8m high. Furthermore, a 2.8m high metal chain-link fence surrounds the entire site boundary to prevent unauthorised access of pedestrians. The Site also benefits from a CCTV system. There are 20 CCTV cameras. Combination of fixed,	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								360-degree, thermal imaging and number plate recognition. All monitored and controlled from control room. The Site is staffed 24 hours a day, 7 days a week. Authorised personnel can gain access to the Site using a fob system. For visitors and unauthorised personnel there is an automatic gate with an intercom system at the site entrance, and a visitor signing-in book is used. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to the Site. Repairs are undertaken in accordance with the EMS requirements.	
Local human population and local environment.	Operator Error.	Pollution to air, land, surface water and groundwater and human health	Air transport Direct run-off from site across ground surface, via surface	Low	Medium	Low	Possible contamination to air, land, groundwater and surface water.	Activities to be managed and operated in accordance with the EMS and management	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
			water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/ groundwater then abstraction.				Given the level of operator controls which are in place and management plans, it is considered the probability and magnitude will be low.	plans and procedures implemented. All equipment is checked under preventative maintenance plans and is checked and calibrated as per the manufacturer's instructions. Overall management of the Site is overseen by an experienced member of staff holding an appropriate Certificate of Technical Competence (CoTC) awarded by the Waste Management Industry Training and Advisory Board. This competent person delegates responsibilities to appropriately experienced and trained site operatives throughout the operating hours. All operational staff are fully trained in the Site operating procedures and SWS' safety and environmental management procedures and are kept up-to-date on changes.	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								Training includes awareness raising of the potential implications of failure to control operations and the potential impact on the environment. Preventative measures will be under continuous review as part of the EMS procedures. Emergency operating procedures are in place and detailed in the Site's Operational Contingency Plan Senior site-based management have direct responsibility for implementing risk management measures.	

5 Reporting and Recording

5.1 Reporting

The procedure employed by Southern Water for reporting, recording, investigating and responding to incidents or breaches of the permit is the EPR notification procedure. Notifications must be made to the Environment Agency without delay and within 24 hours of the detection of an accident that has caused, is causing or may cause significant pollution or a breach of a limit specified in the Site's Environmental Permit.

If an incident with potentially significant environmental consequences occurs, Southern Water will notify the Environment Agency without delay. Southern Water will also inform the Environment Agency should any complaints be received directly to the Site due to the incident and will advise what remedial measures or actions have been taken to address the issue. Copies of complaints received will be made available to the Environment Agency for review on request.

Routine operation of the installation is subject to the conditions of the Site permit which details various requirements for actions and reporting for both routine and non-compliance.

The permit sections typically include:

- **Section 1 - Management of Installation** - General management of the Site, including handling and disposal of wastes
- **Section 2 Operation of Installation** - General operation of permitted activities and improvements
- **Section 3 Emissions and Monitoring** - Routine monitoring of all emissions (e.g. odour), including annual reporting of specified point emissions (e.g. various specified exhaust gases from CHPs)
- **Section 4 Records and Reporting** - An important section that includes the reporting of non-compliance with any permitted element. The major elements of concern would be:
  - Loss of containment of gaseous substance
  - Loss of containment of liquid substance
  - Equipment / plant failure causing loss of gas or liquid – inclusive of routine emissions monitoring.

Any losses or failures to comply with these areas require immediate notification to the Environment Agency, followed by "Schedule 6, Part A Notification" by email or paper means. The Part A must be submitted within 24hrs of detection of failure. "Part B" notification would then follow giving supporting information as soon as practicable.

Handling of the incidents on Site will be in line with relevant internal incident and accident procedures. These are all subject to audit via internal and external audit protocols.

5.2 Recording

In the event of an accident, a Schedule 6 notification is completed following an incident with potentially significant environmental consequences. Relevant information that must be recorded includes:

- Date, time and location of the event
- Substances involved, including estimated quantities

- Immediate measures taken to minimise environmental impacts

Part A must be completed within 24 hours of detection of the incident and Part B is completed as soon as practicable. Records will be made of all incidents with potentially significant environmental consequences that occur at the Site. The associated actions arising will be held in Corporate Documents.

All records of events with potentially significant environmental consequences and the associated actions arising will be retained as required by the Environmental Permit. Where an incident with potentially significant environmental effects occurs, and the nature of the incident supports further investigation, a post incident review may be required.

5.3 Post-incident Review

Following an incident where potentially significant environmental effects occur, and the nature of the incident warrants it, the incident will be logged and an investigation will take place to determine both the root cause of the incident and how to prevent the incident re-occurring.

This review will assess:

- The cause of the incident
- The effectiveness of the response measures
- The effectiveness of the emergency response management team
- Lessons learned
- Recommendations for improvement

The findings of the investigation will be reported to Southern Water's management and shared with all relevant employees to enable the incorporation of good practice into future works.

Any changes to processes or procedures required as a result of the formal review will be communicated to Southern Water management and employees. If, as a result of the incident, this Accident Management Plan is subject to revision, it should be updated as part of this post-incident review and communicated to relevant Southern Water management and employees.

All safety equipment used to respond to an incident should be checked and replenished as required.

5.4 Competence and Training

Staff at the Site have the competency to manage and operate activities without causing pollution. Competency is ensured through the appropriate training of all staff, covering:

- Awareness of the regulatory implications of the Environmental Permit and AMP for the activity and their work activities
- Awareness of all potential environmental effects from operation under normal and abnormal circumstances
- Awareness of the need to report any deviation from the Environmental Permit
- Prevention of accidental emissions and action to be taken if accidental emissions occur

All staff are aware of the implications of activities undertaken including the operation of the Site. Staff have clearly defined roles and responsibilities. Skills and competencies necessary for key posts are documented and records of training needs and training received for these posts maintained.

Training in the actions to be taken in the event of an accident or emergency is provided to all.

Operator and Contractor staff working on-site as part of their mandatory site induction procedure. All staff are required to demonstrate their understanding of the AMP, and the actions and procedures contained therein, prior to undertaking any activities on-site. It is the responsibility of the Works manager to ensure that all staff members have received this training.

Regular installation drills are undertaken to ensure that all staff are aware of the actions to be taken in the event of an accident or emergency and those staff with specific responsibilities are fully versed in their duties.

Copies of the AMP are available for the review of all staff.

6 Emergency Response Procedures (ERP)

The following Hazards are addressed in specific Emergency Response Procedures (ERP) which will be located at each Emergency Control Centre.

- Fire
- Explosion
- Pollution
- Flooding
- Road traffic accident impact or collision
- Collapse of a structure or building
- Spill transferring wastes
- Chemical spillage/leak onsite
- Sludge spillage on site
- Diesel spillage/leak on site
- Overfilling vessels
- Plant and equipment failures
- Containment failure
- Failure to contain firewater
- Incorrect connection leading to releases to drains and other systems
- Incompatible substances coming into contact

In the event of one or combination of the following incidents occurring, the actions listed in the relevant ERP must be followed.

6.1 Fire

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	Action
		Use the Model Fire Emergency plan on the H&S notice Board and in the Grab Pack container. This Model Emergency plan outlines responsibilities for site staff and call out staff during events.
		Raise the Site Alarm - call 999 and raise the alarm with the DM / RCC.
		SW rules are that we only fight fire to evacuate area or building.
		Attend the muster point and check register for any missing persons.
		If it is safe to do so, isolate any fuel sources.
		Make sure the fire brigade first response team are handed the Site Grab Pack on arrival.
		Liaise with the fire brigade on the area, mention if anyone is missing and confirm what is stored on site (e.g. chemicals, combustible materials, BIOGAS systems etc)
		Refer to plan of Fire Hydrants / Final effluent / Potable water points for use if required.

6.2 Explosion

N/A	**Done**	**The Incident controller will: -**
		Raise the Site Alarm - call 999 and raise the Alarm with the DM / RCC.
		Attend the muster point and check register for any missing persons.
		Make sure the fire brigade first response team are handed the Grab pack on arrival.

N/A	Done	The Incident controller will: -
		Liaise with the fire brigade on the area, mention if anyone is missing and confirm what is stored on site (e.g. chemicals, combustible materials, biogas systems etc – as per Sections above)
		Refer to plan of Fire Hydrants / Final effluent / Potable water points for use if required.

6.3 Pollution

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	Action
		Use the Pollution 30 Minute Plan.
		Consider whether the pollution event can be mitigated or stopped - use the 10-minute checks. If it is safe to do so, isolate the equipment to stop the pollution, the consequence of isolating any equipment needs to be considered.
		If not raise the Alarm with the FEC / Process scientist in hours and DM / RCC/ FEC out of hours.
		Liaise with the FPM/ Process scientist in hours & DM / RCC/ FEC out of hours to reduce the impact.

6.4 Flooding

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan.
		Raise the site alarm – call 999 as soon as the site starts to flood and notify the DM / RCC.
		Attend the muster point and check register for any missing persons.
		If it is safe to do so, try to understand why the site is flooding. This may be obvious like the river is overflowing – the river levels are controlled by the Environment Agency so it may be possible to be managed quickly.
		Make sure the Fire brigade/first response team are handed the KFB Grab pack on arrival.
		Liaise with the fire brigade on the area, mention if anyone is missing and confirm what is stored on site (e.g. chemicals, combustible materials, biogas systems etc

6.5 Road traffic accident impact or collision

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Raise the Site alarm - call 999 and raise the alarm with the DM / RCC.
		Keep the area isolated, do not move vehicles other than for freeing people.
		Cordon off area if the impact or accident is serious.
		Await instruction from the fire brigade or police depending on the nature of the event.
		Please see plan of Fire Hydrants / Final effluent / Potable water points for use if required.
		For leaking tankers after the event (Fuel or Chemicals) put out spill containment if safe to do so.

6.6 Collapse of a structure or building

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Raise the alarm - call 999 and raise the alarm with the DM / RCC.
		Attend the muster point and check register for any missing persons.
		Keep the area isolated, do not move debris other than for freeing people.
		Cordon off area if the collapse is serious.
		Await instruction from the fire brigade or police depending on the nature of the event.
		Please see plan of Fire Hydrants / Final effluent / Potable water for use if required.

6.7 Spill transferring wastes

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan.
		Stop the transfer if safe to do so and isolate if possible - complete Personnel Risk Assessment first.
		Contain the spill if safe to do so, using spill kits if small amounts, cover drains if possible
		Determine what has been spilt and where it has gone (i.e. to ground, to the site drains etc.)
		Report the incident to the FPM/DM/RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM.

6.8 Chemical spillage/leak onsite

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Identify source and look to isolate the affected tank/pipework to prevent further leaks.
		Escalate & report to the pollutions team on [redacted]
		Instigate mitigation or remedial work • Contain the affected area – utilise spillage kits/pads to absorb the chemical • If chemical has made its way to the site drains please confirm if they return to the works return or the environment. If they go to works return, consider isolating and tankering this as contaminated waste rather than returning through the process. If this drains to the environment, consider bunging the outfall and tankering the contaminated waste from site.
		Check the notice board to see if the site is located within a SPZ (source protection zone) or SSSI? If you are unsure ask the Pollution Team who can check. Out of hours please ask RCC/Duty Manager. This will guide you on remedial actions needed to be taken.
		Collect evidence (photographs, samples & keep any parts of failed assets that will be needed as evidence)
		Assess the condition of the downstream processes to determine the level of contamination present and whether they will be adversely affected.

6.9 Sludge spillage on site

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Spill from tank • Isolate the sludge tank so no more sludge is feeding into it. • If the tank has overflowed isolating will stop the spill, if it is from a hole in the tank it may need to be drained to stop the spill.

N/A	Done	The Incident controller will: -
		• Contain the spilled sludge with sandbags/barriers to prevent spread to the environment. • If the area has drains, please check the site drainage plan to ensure that these drain to the works return. If they do not or there is no plan, assume they drain to the environment. In this case, seal the drains to prevent sludge draining into it. Check the surface water drainage ponds if sludge has escaped into these drains. Tanker and remove as required. • Depending upon the size of the spillage, organise a Super sucker and a 4k tanker to assist with the clean-up. For smaller spills (with drains which lead to works return) it may be suitable for the operator to clean up themselves. • If this is the only sludge tank onsite consider other options for removal of sludge from the process whilst the tank is offline.
		Spill from pipe • Isolate the sludge pipeline and either end. • Contain the spilled sludge with sandbags/barriers to prevent spread to the environment. • If the area has drains, please check the site drainage plan to ensure these drain to the works return. If they do not or there is no plan assume they drain to the environment. In this case seal the drains to prevent sludge draining into it. • Depending upon the size of the spillage, organise a Super sucker and a 4k tanker to assist with the clean-up. For smaller spills (with drains which lead to works return) it may be suitable for the operator to clean up themselves. • Organise a framework contractor to repair the pipe (if above ground) or a dig down and repair if underground. • If this is the only desludge route and cannot be bypassed, ensure other options for controlling the sludge are put in place, if the repair is likely to take >1 day.

6.10 Diesel spillage/leak on site

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Identify source and look to isolate the affected tank/pipework to prevent further leaks.
		Escalate & report to the pollutions team on [redacted]
		Instigate mitigation or remedial work • Contain the affected area – utilise spillage kits/pads to absorb the diesel. • If diesel has made its way to the site drains, please confirm if they return to the works return or the environment. If they go to works return, consider isolating and tankering this as contaminated waste rather than returning through the process. If this drains to the environment, consider bunging the outfall and tankering the contaminated waste from site. • If diesel has escaped from site, instigate remedial works, which could include booming watercourses.
		Check the notice board to see if the site is located within a SPZ (source protection zone) or SSSI? If you are unsure, ask the Pollution Team who can check. Out of hours please ask RCC/Duty Manager. This will guide you on remedial actions needed to be taken.
		Collect evidence (photographs, samples & keep any parts of failed assets that will be needed as evidence)
		Assess the condition of the downstream processes to determine the level of contamination present. Instigate remedial action, if necessary, which could include skimming of tanks, draining of tanks or re-seeding if the biological process has been severely affected.
		If diesel has worked its way through the entire process, then deploy a boom for the outfall to capture any further diesel and remove accordingly.
		Inform the Process Scientist or on call Process Scientist to make a condition of the works to determine the impact and whether flows can be restored.

N/A	Done	The Incident controller will: -
		If the isolation process has removed the availability of any onsite generators and the repair is likely to be >1day then contact framework Partners to install a temporary fuel tank whilst the repairs are carried out.

6.11 Overfilling vessels

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Stop the transfer if safe to do so and isolate if possible - complete Personnel Risk Assessment first.
		Use the Pollution 30 Minute Plan.
		Contain the spill, if safe to do so, using spill kits if small amounts, cover drains if possible
		Determine what has been spilt and where it has gone (i.e. to ground to the site drains etc.)
		Report the incident to the FPM/DM/RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM.

6.12 Plant and equipment failures

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Stop the transfer or process if safe to do so and isolate if possible - complete Personnel Risk Assessment first.
		Use the Pollution 30 Minute Plan.
		Contain the spill, if safe to do so, using spill kits if small amounts, cover drains if possible
		Determine what has been spilt and where it has gone, including Biogas releases (i.e. release to ground, to the site drains or the atmosphere etc.)
		Report the incident to the FPM/DM/RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM.

6.13 Containment failure

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Stop the transfer or process if safe to do so by isolation - complete a personal Risk Assessment first.
		Use the Pollution 30 Minute Plan.
		Contain the spill, if safe to do so, using spill kits if small amounts, cover drains if possible
		Determine what has been spilt and where it has gone, including Biogas releases (i.e. release to ground, to the site drains or the atmosphere etc.)
		Report the incident to the FPM/DM/RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM.

6.14 Failure to contain firewater

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan.

N/A	Done	The Incident controller will: -
		Contain the firewater if it is possible to do so, use spill kits if small amounts, cover drains if possible
		Determine what amount has been spilt and where it has gone (e.g. site return WPS, to ground, to the site drains). Consider whether it can be contained and disposed of offsite.
		Report the incident to the FPM/DM/RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM. – Process Scientist to risk assess impact.

6.15 Incorrect connection leading to releases to drains and other systems

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan.
		Contain the spill, if safe to do so, using spill kits if small amounts, cover drains if possible
		Determine what amount has been spilt and where it has gone, is it in the site return WPS, has the release been to ground to the site drains. Consider whether it can be contained and disposed of offsite.
		Report the incident to the FPM/DM/RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM. – PS to Risk Assessment & impact.

6.16 Incompatible substances coming into contact

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan.
		Keep upwind of any potential fumes.
		Raise the Site alarm - call 999 if any fire or fumes are being generated, raise the Alarm with the DM / RCC.
		Discuss the impact of the spill with the FPM /Process Scientist/DM.
		Contain the liquid solution, if safe to do so, using spill kits if small amounts, cover drains if possible
		Determine what amount has been spilt and where it has gone (e.g. released to site return WPS, to ground, to the site drains). Consider whether it can be contained and disposed of offsite.
		Check the site COSHH register for both or all the components for likely reactions.

6.17 Emission of effluent or Biogas before composition checked

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan.
		Remember this emission may be a release of biogas to atmosphere. (We are not able to sample biogas).
		Sample the effluent if it is safe to do so and notify the FPM/ Process scientist of results.
		Discuss the impact of the spill with the FPM /Process Scientist/DM for next steps.
		Report the incident to the DM/RCC/ SW Pollution team for Info.
		Stop the transfer if safe to do so and isolate if possible - complete Personnel Risk Assessment first.

N/A	Done	The Incident controller will: -
		Contain the release if safe to do so, if there are spare containment tanks utilise these via discussion with Incident team.
		Stop the process, use site spill kits if small amounts have been spilt, cover drains if possible.
		Determine what has been released and where it has gone (e.g. to ground, to the site drains etc.)

6.18 Theft & Vandalism

The Duty Operator on receiving either an automatic or a personnel-raised alarm will:

N/A	Done	The Incident controller will: -
		Use the Pollution 30 Minute Plan if the vandalism has affected the process.
		Remember pollution emission may be a release of biogas to atmosphere or poor effluent quality or a release from a process or fuel storage vessel to land or a water course.
		Discuss the impact of the theft or vandalism with the FPM /Process Scientist/DM.
		Report the incident to the DM/RCC/ SW Pollution team for inclusion in the morning 24-hour report.
		Make a thorough inspection of the SCADA and a walk of the Site if we have had intruders or vandalism on the Site as changes may have been made to the process.
		Report any thefts or vandalism to the police and ask for a crime reference number.

A. Grab Pack

Southern Water

Budds Farm WTW/STC

Emergency Grab pack.

Nov 2023.

Final Draft

Author: [redacted].
Sponsor: [redacted]
Approved and signed off by: [redacted].

Version 2.0 Nov 2023

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1. EMERGENCY CONTACT NUMBERS

Management

RCC – 0330 3030261

[redacted]

[redacted]

SITE OPS

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

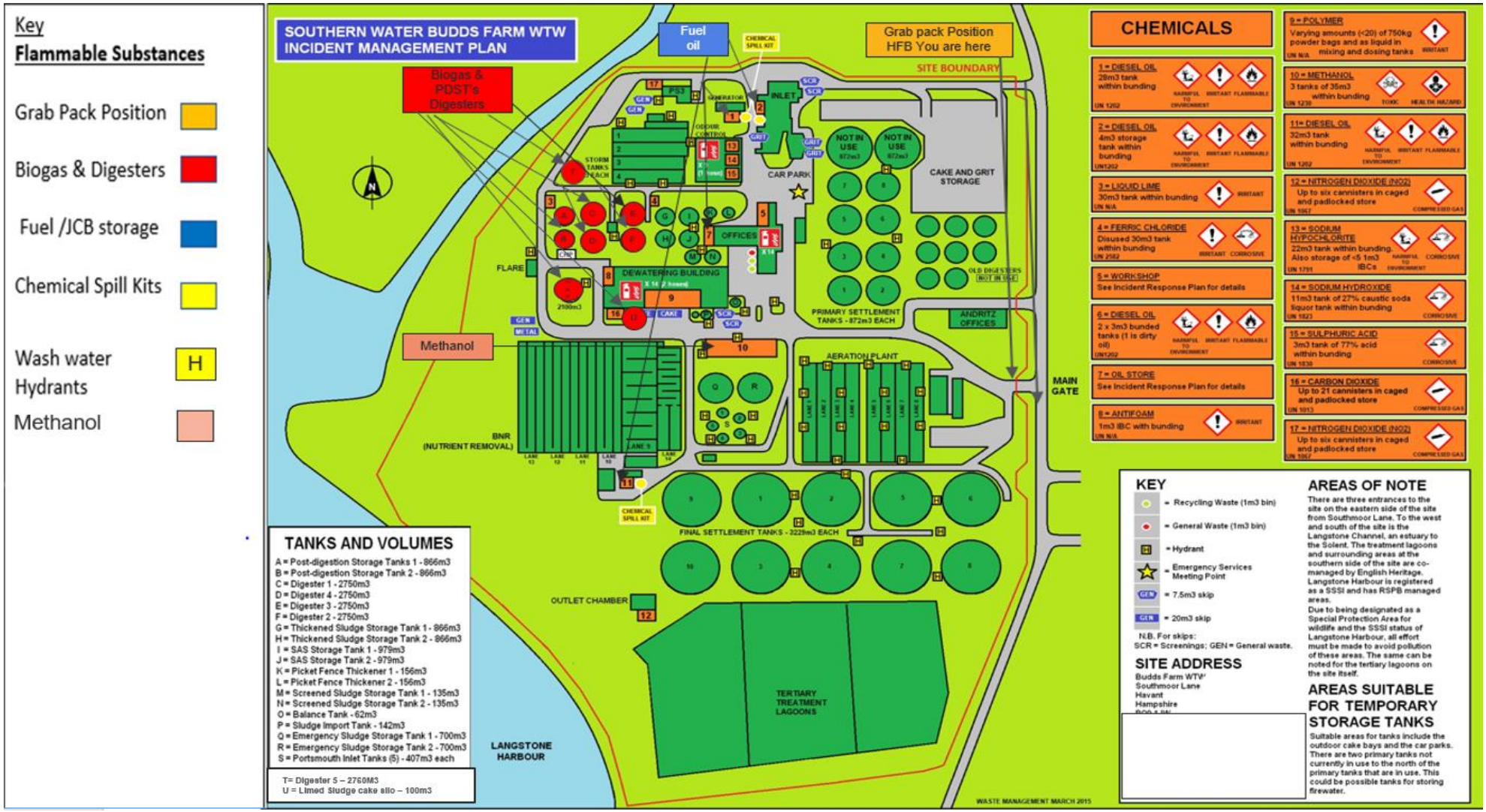
[redacted]

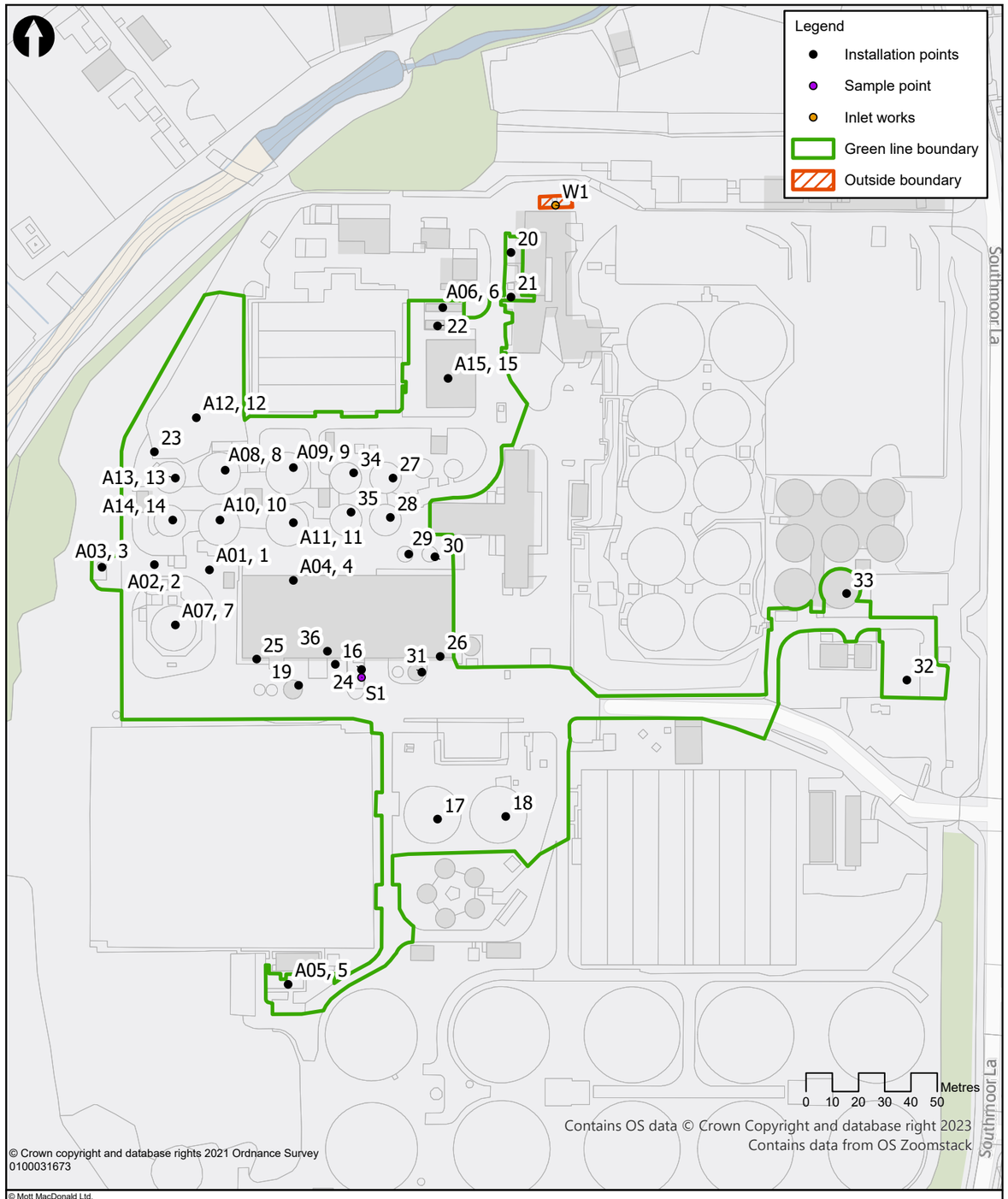
[redacted]

2. SITE PLANS

Map of Processes

Map of flammable substances and fire hydrants (H).





Title

Budds Farm STC

Site Layout Plan

MOTT MACDONALD

Mott MacDonald House
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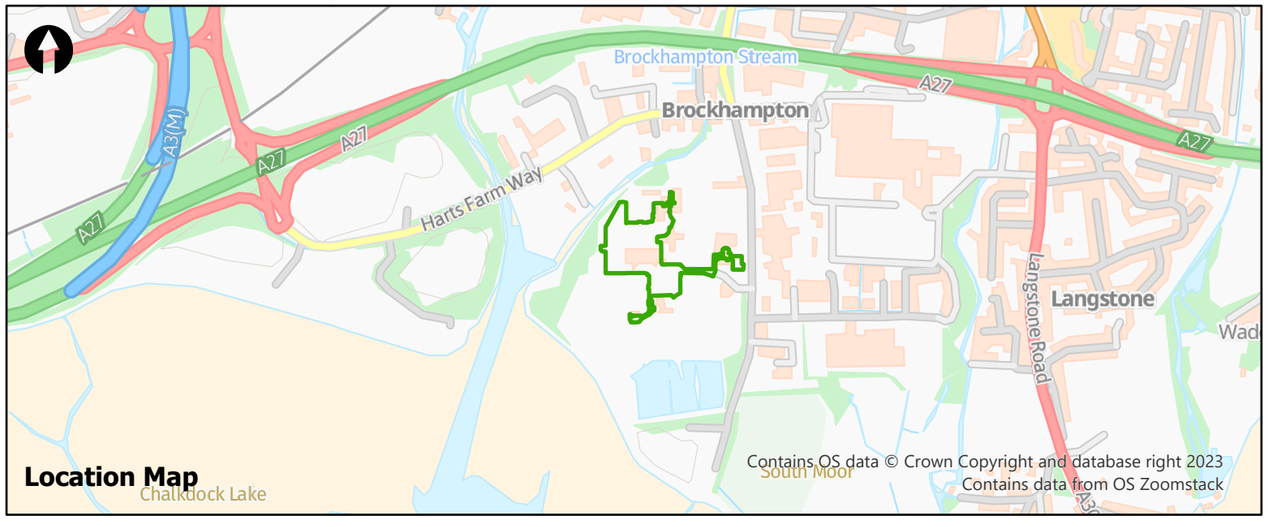
Croydon
T +44 (0)20 8774 2000
W mottmac.com

Date	Drawn	Checked	Approved	Scale at A4	Drawing Number	Status	Rev
16/02/24	M Pinney	S Stone	A Manns	1:2,000	790101_MSD_SitelayoutPlan_BUD	INF	03

Emissions Ref	Emissions Points	Assets Ref	Assets	X	Y
A01	CHP exhaust stack	1	CHP 1	470661	105528
A02	CHP exhaust stack	2	CHP 2	470640	105530
A03	Flare stack	3	Flare	470620	105529
A04	Boiler exhaust stack	4	Boilers	470693	105524
A05	Generator exhaust 1	5	Generator	470691	105370
A06	Generator exhaust 2	6	Generator (back-up)	470750	105628
A07	Whessoe valve 1	7	Gas holder	470648	105507
A08	Whessoe valve 2	8	Digester 1	470667	105566
A09	Whessoe valve 3	9	Digester 2	470693	105567
A10	Whessoe valve 4	10	Digester 3	470665	105547
A11	Whessoe valve 5	11	Digester 4	470693	105546
A12	Whessoe valve 6	12	Digester 5	470656	105586
A13	Whessoe valve 4	13	Post-digestion storage tank 1	470648	105563
A14	Whessoe valve 5	14	Post-digestion storage tank 2	470647	105547
A15	OCU	15	Odour control unit	470752	105601
W1	Inlet works			470793	105667
S1	Liquor sampling point			470719	105487
		16	Alternative cake bay	470709	105492
		17	Alternative sludge storage tank	470748	105433
		18	Alternative sludge storage tank	470774	105434
		19	Cake silo	470695	105484
		20	Cess and Tankered Trade Waste reception area	470776	105649
		21	Day tank (red diesel)	470776	105632
		22	Diesel tank	470748	105621
		23	Liming plant	470640	105573
		24	Liquor return plant	470719	105490
		25	Polymer storage	470679	105494
		26	Raw cake reception area	470749	105495
		27	Surplus activated sludge tank	470731	105563
		28	Surplus activated sludge tank	470730	105548
		29	Screened sludge	470737	105534
		30	Screened sludge	470747	105533
		31	Sludge reception	470742	105489
		32	Tankered Trade Waste pumping station	470927	105486
		33	Tankered Trade Waste reception area 2	470904	105519
		34	Thickened Sludge Storage Tank 1	470716	105565
		35	Thickened Sludge Storage Tank 2	470715	105550
		36	Centrifuges	470706	105497



3. MATERIALS & CHEMICALS STORAGE ON SITE.

List of combustible materials stored on site.

WASTE INVENTORY (See EMS 480)					
Trade Name/ Substance	**Solid/liquid/ gas/powder**	**UN Number**	**Max Stored on Site**	**Location Marked on Site Plan**	**Type of Containment**
Biogas	Biogas	UN1971	3000m3 Max	Biogas Holder Digester Headspace PDST's headspace Limed sludge cake silo headspace	Gas bag Digesters Pipelines Flare Stack CHP Engine. Cake Silo.
Diesel Oil	Liquid	UN1202	38m3	2x by main generator 1 x by ASP generator	Tank
Limed Sludge Cake	Dried Limed Sludge Cake	Non - Hazardous	120m3	Limed Sludge cake silo.	Silo.
Polymer	Powder	UN2923	58 X 1m3/750kg bags	Inside centrifuge building	Bags
Lime	Liquid	UN1956	30m3	Centrifuge feed pump area	Storage tankb
Lime (Dust).	Solid (granules)	UN1956	Variable this is an unusual activity	Cake Bays	In bags
Gas Cylinders	Gas	N/A	Welding / burning Equip.	Workshop marked as building.	Gas Bottles stored in a locked building overnight.
Methanol	Liquid	UN1230	105m3	Methanol area – marked 10 on plan	3 x Storage tank.
Aerosol Leaks of Biogas	Gas	UN1971	Not Known as would be formed by leaks	Biogas Holder area Digester headspace	Gas bag Digesters Pipelines Flare Stack CHP Engine
JCB Loader / MTS Tankers & Chemical Delivery tankers.	Diesel Powered	UN1202	Diesel Fuel tank on machine	Stored outside STC control room out of hours but may be anywhere on site.	Vehicle stored outside STC control room overnight.

WASTE INVENTORY (See EMS 480)					
Trade Name/ Substance	Solid/liquid/ gas/powder	UN Number	Max Stored on Site	Location Marked on Site Plan	Type of Containment
Wastewater	Liquid	N/A	7,250m3	Storm Tank x4	Tank
Wastewater	Liquid	N/A	6979m3	8 X Primary Settlement Tanks	Tanks
Wastewater	Liquid – Non-Buoyant	N/A	82016m3	Aeration Lanes x14	Lanes
Wastewater	Liquid	N/A	28014m3	8 X Final Settlement Tanks	Tanks
Sludge	Liquid	N/A	13,750m3	5 X Digesters	Tanks
Sludge	Liquid	N/A	1,732m3	Thickened Sludge Storage Tankx2	Tank
Sludge	Liquid	N/A	1,732m3	Post Digestion Storage Tank x2	Tank
Sludge	Liquid	N/A	2,540m3	Pre thickened storage tanks x6	Tank
Biogas	Biogas	UN1971	3000m3 max	Biogas Holder Digester Headspace Sludge Cake Silo headspace	Gas bag Digesters Pipelines Flare Stack CHP Engine.

List of Chemical Inventory Normally stored on site.

CHEMICAL PRODUCT INVENTORY (See relevant COSHH sheets)					
Trade Name/ Substance	Solid/liquid/ gas/powder	UN Number	Max Stored on Site	Location Marked on Site Plan	Type of Containment
Diesel Oil	Liquid	UN1202	38m3	2x by main generator 1 x by ASP generator	Tank
Polymer	Powder	UN2923	58 X 1m3/750kg bags	Inside centrifuge building	Bags
Antifoam	Liquid	N/A	4 x1m3	Inside centrifuge building.	Intermediate Bulk Container (IBC)
Polymer	Liquid	UN2923	6 x 1050 kg as liquid in IBC	Inside garages next to offices	IBC
Lime	Liquid	UN1956	30m3	Centrifuge feed pump area	Storage tank
Sulphuric Acid	Liquid	N/A	1000 ltrs	Odour control	Storage tank
Sodium Hydroxide	Liquid	N/A	11m3	Odour control	Storage tank
Sodium Hypochlorite	Liquid	N/A	22m3	Odour control	Storage tank
Methanol	Liquid	UN1230	105m3	Methanol area – marked 10 on plan	3 x Storage tank.
Ferric Chloride	Liquid	UN2582	Redundant tank	Number 4 on site plan.	Storage tank.

Likely combustible waste management.

- Paper or cardboard – this is controlled by using sealed bins.
- Plastics – We do not store plastic waste other than in recycle Bins.
- Rags and textiles – rag is managed in skips by MTS for composting.
- Scrap metals contaminated or mixed with other waste such as oils or plastics – managed by Southern Water Scrap metal skips and Fly tipping requests to empty skips.
- De-polluted and un-depolluted ELVs – We do not break ELV's
- Refuse derived fuel (RDF) and solid recovered fuel (SRF) – N/A.
- Compost and plant material – Managed by MTS on SW behalf.
- Biomass – Managed In process control and via sludge cake.
- Mixed waste containing any combustible wastes – Via Sealed bins.
- Sludge cake Storage in cake bays and Silo.
- Lime used to treat Sludge cake could be stored on Cake Bays if in use.
- WEEE – Managed via Locked Wee containers.
- Wood – Pallets are stored on site.

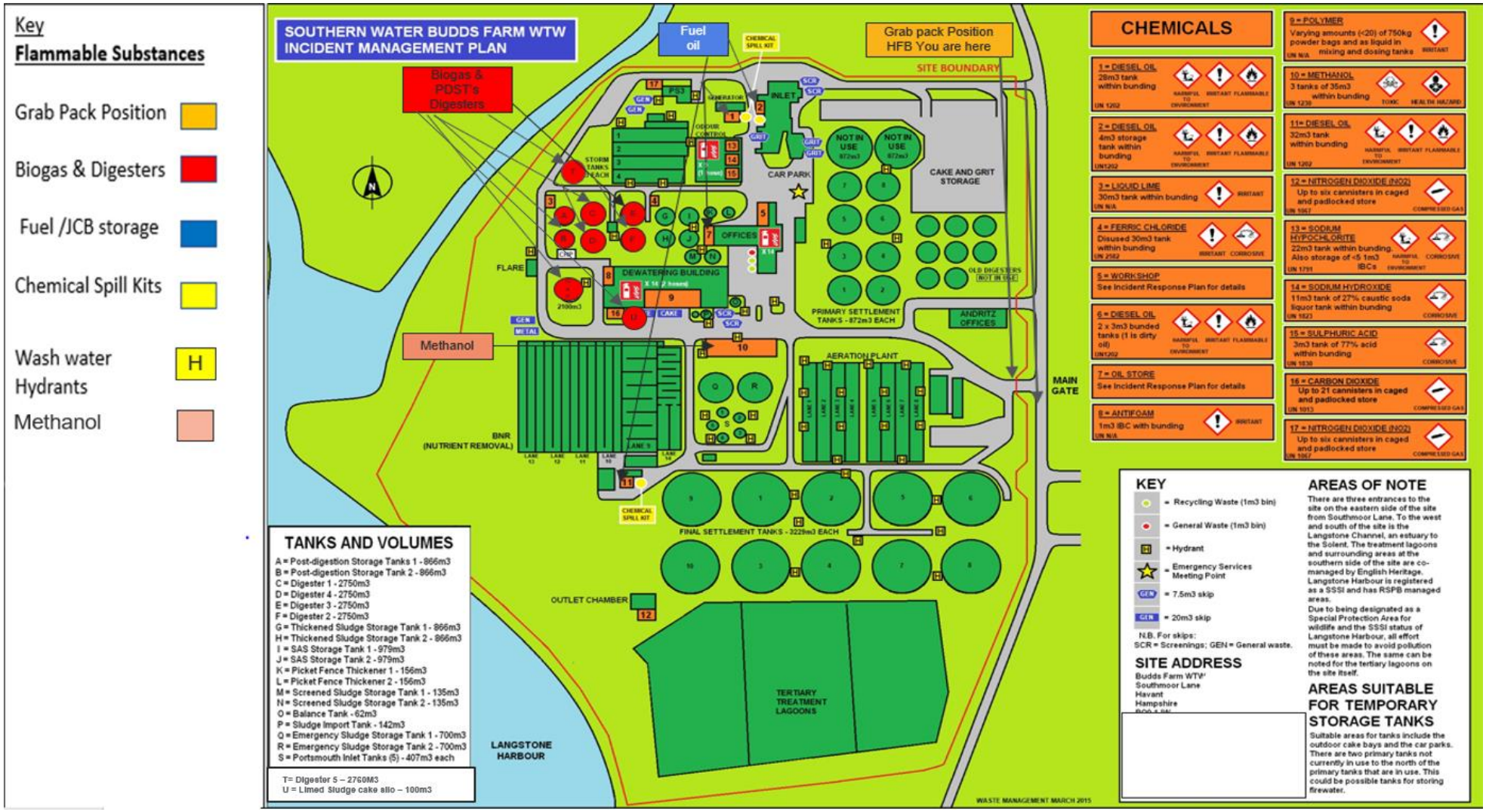
Non-Combustible.

CHEMICAL PRODUCT INVENTORY (See relevant COSHH sheets)					
Trade Name/ Substance	**Solid/liquid/ gas/powder**	**UN Number**	**Max Stored on Site**	**Location Marked on Site Plan**	**Type of Containment**
Antifoam	Liquid	N/A	4 x1m3	Inside centrifuge building.	Intermediate Bulk Container (IBC)
Polymer	Liquid	UN2923	6 x 1050 kg as liquid in IBC	Inside garages next to offices	IBC
Wastewater	Liquid	N/A	7,250m3	Storm Tank x4	Tank
Wastewater	Liquid	N/A	6979m3	8 X Primary Settlement Tanks	Tanks
Wastewater	Liquid – Non-Buoyant	N/A	82016m3	Aeration Lanes x14	Lanes
Wastewater	Liquid	N/A	28014m3	8 X Final Settlement Tanks	Tanks
Sludge	Liquid	N/A	13,750m3	5 X Digesters	Tanks
Sludge	Liquid	N/A	1,732m3	Thickened Sludge Storage Tankx2	Tank
Sludge	Liquid	N/A	1,732m3	Post Digestion Storage Tank x2	Tank
Sludge	Liquid	N/A	2,540m3	Pre thickened storage tanks x6	Tank

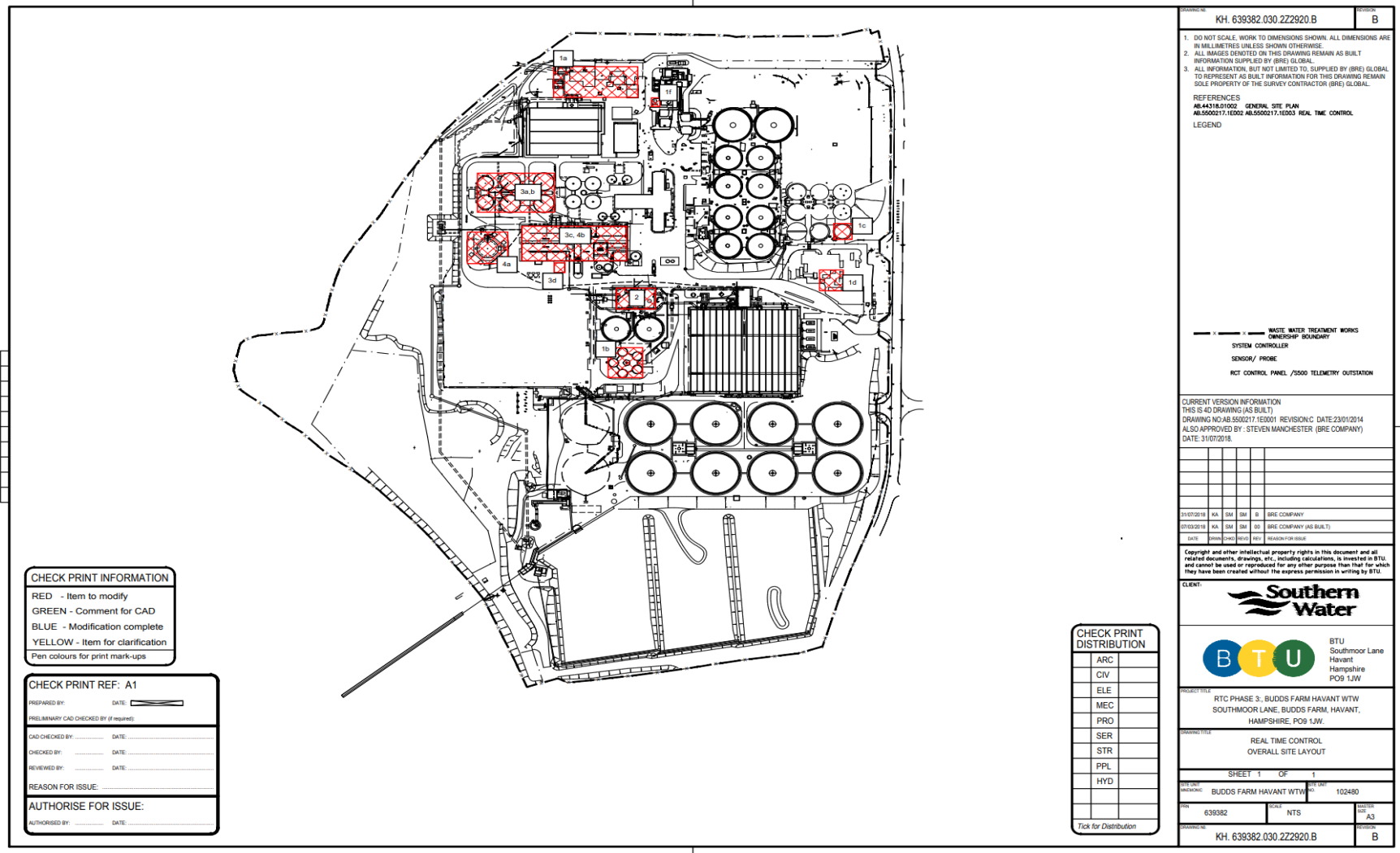
4. LOCATION OF FIRE EXTINGUISHERS ON SITE.

POLLUTION PREVENTION EQUIPMENT INVENTORY (ON AND OFF-SITE RESOURCES) ILLUSTRATED ON HAM HILL IMP MAP			
Type	Location	Amount	Staff Contact
Fire Extinguishers	Main building	14	[redacted]
Fire Extinguishers	STC building	16	
Fire Extinguishers	blower houses	4	
Fire Extinguishers	Odour control	6	
.	PS3	4	
Fire Extinguishers	Methanol Building	2	
Fire Extinguishers	Various MCC buildings	16	
Chemical Spill Kits	Located around site	12	

5. WASHATER MAINS & FIRE HYDRANTS (H).



6 DSEAR DRAWINGS.



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5 Risk assessment

For each hazardous area a risk assessment table has been complied, giving a risk rating for the identified ignition hazards. The likelihood rating given to sparks generated by equipment is based on the number of non-ATEX equipment present. Equipment in each zoned area was catalogued. Where applicable any hazardous areas allocated are illustrated in hazardous zoning drawings of the site and relevant equipment.

5.1 Preliminary treatment

5.1.1 Havant catchment

The underground wet well for the raw sewage which is assumed to include flammable liquids such as petrol according to Southern Water's MED 4004 April 2015[3] has been allocated a zone 2 classification internally. Externally, above ground, the wet well is unclassified. The dry well is also unclassified.

Figure 1: PS3 underground wet well / inlet works.

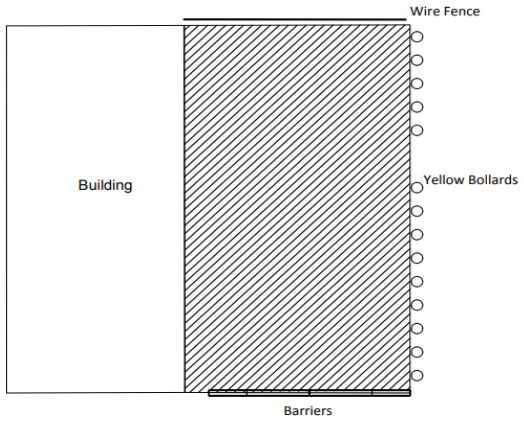
Figure 2: PS3 inlet works dry well

bre

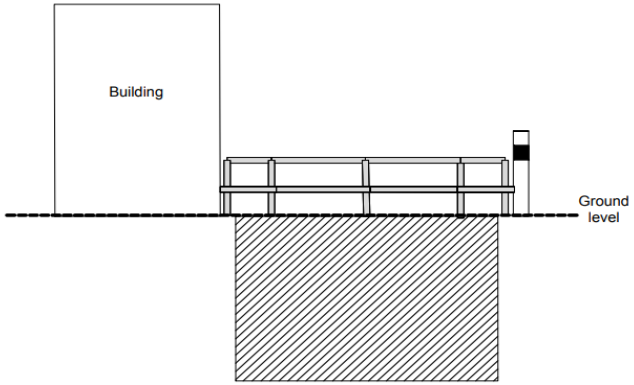
Raw sewage wet well

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	n/a	n/a	n/a

HAVANT CATCHMENT INLET



PLAN



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	INLET WORKS BELOW GROUND	2		INTERNALLY
ZONE 1					
ZONE 2					

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PROJECT TITLE: BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT, HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
INLETWORKS - HAVANT CATCHMENT

SHEET 1 OF 1

SITE UNIT MNEMONIC	SITE UNIT NO.	PRN	SCALE	MASTER SIZE
BUDDS FARM HAVANT STC	108912	639382	NTS	A3

DRAWING NO. KH. 639382.030.2Z2917.B — REVISION B

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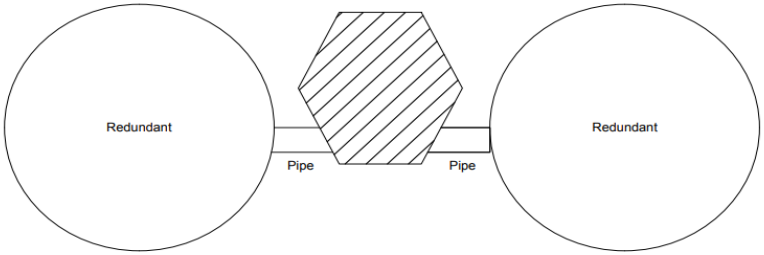
5.1.2 Portsmouth catchment

Based on Southern Water's MED 4004 April 2015[3] the inlet system from Portsmouth has been allocated a zone 2 classification. The concrete filters located adjacent to the inlet (see photo) are redundant.

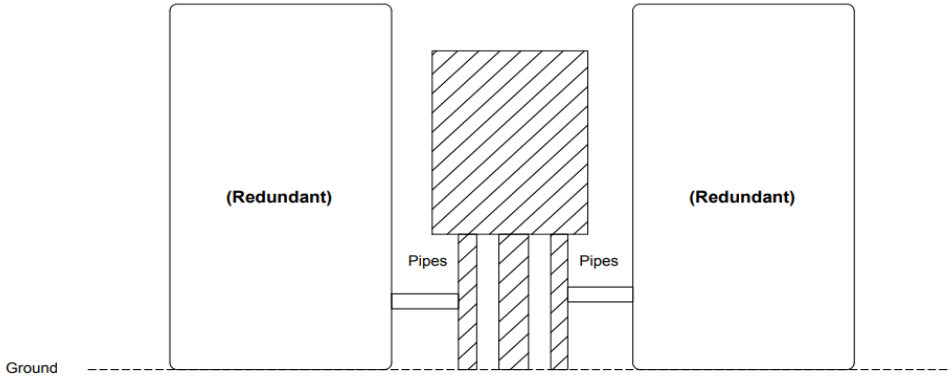
Figure 3: Inlet 2 (Portsmouth catchment)

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	n/a	n/a	n/a

PORTSMOUTH CATCHMENT INLET



PLAN



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	BIOGAS AND NATUAL GAS PIPEWORK	2		EXTERNALLY - 1M AROUND FLANGES AND FITTINGS
ZONE 1					
ZONE 2					

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PO9 1JW

PROJECT TITLE: BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT, HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
PORTSMOUTH CATCHMENT INLET

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC — SITE UNIT NO: 108912

PWA: 639382 — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2914.B — REVISION B

5.1.3 Commercial waste

The commercial waste inlet includes two areas; the tanker offload to a storage tank and a dedicated pumping section. Each area can be seen in the photos below.

Figure 4: Commercial waste storage

Figure 5: Commercial waste pumping section

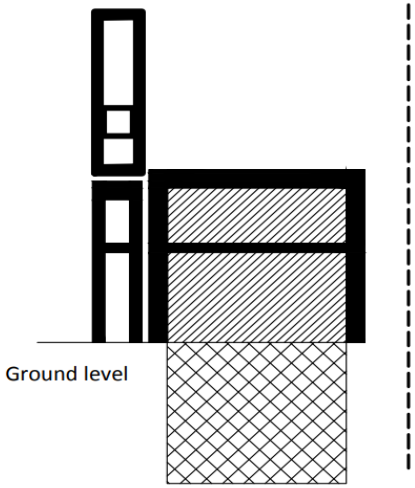
The storage tank couldn't be accessed and therefore equipment within and around could not be assessed during the visit. The tank was allocated a zone 1 internally.

The pumping area was allocated a zone 1 internally and a zone 2 externally. The zone 2 does not extend to include the equipment inside the sealed cabinet as can be seen in Figure 5.

Commercial pumping section

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	2	4

COMMERCIAL WASTE PUMPING STATION



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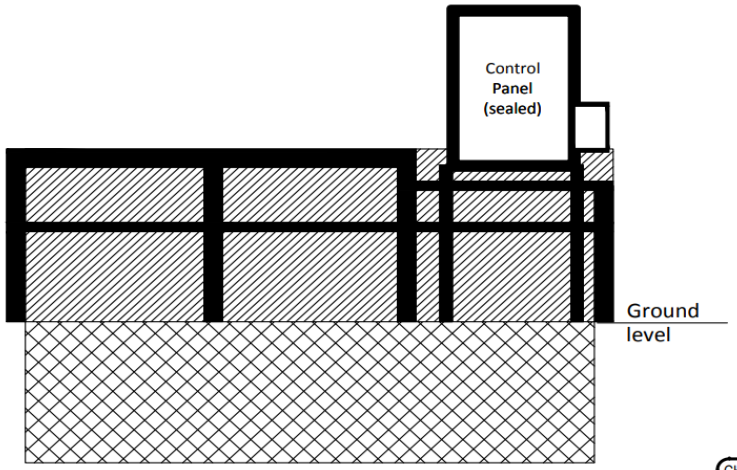

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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	BIOGAS AND NATUAL GAS PIPEWORK	2		EXTERNALLY - 1M AROUND FLANGES AND FITTINGS
ZONE 1					
ZONE 2					

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SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE
DSEAR
COMMERCIAL WASTE PUMPING STATION

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC — SITE UNIT NO.: 108912

PIN: 639382 — SCALE: NTS — DRAWING SIZE: A3

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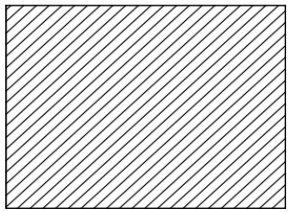
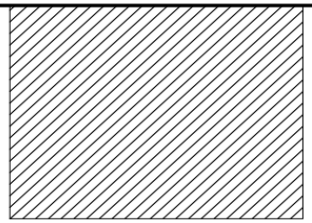
INLET WORKS RETURN WELL



PLAN

Ground level



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	INLET WORKS RETURN WELL (BELOW GROUND)	2		INTERNALLY
ZONE 1					
ZONE 2					

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BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE
DSEAR
INLET WORKS RETURN WELL

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC — SITE UNIT NO.: 108912

PRN: 639382 — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2918.B — REVISION B

5.1.4 Cess waste

The cess waste section covers the cess inlet connection for the tanker, leading onto PS3 (pumping station three).

Based on Southern Water's MED 4004 April 2015[3] the well located next to the tanker inlet connection is classified as zone 2 internally and above the lid, within the protective barrier. (see photos and diagrams below.)

No electrical equipment was observed in this area.

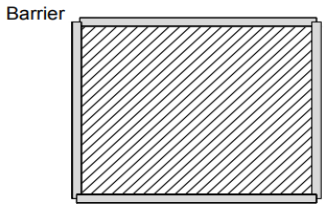
Figure 7: Cess inlet connection

Figure 8: Cess inlet wet well

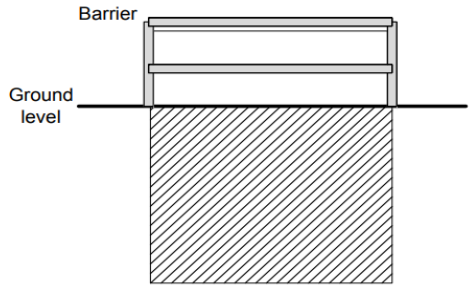
Cess inlet

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	1	1
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	1	1
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	1	1
Lightning	Exposed zoned areas fitted with protection.	1	1	1
Electrostatic discharge	Earth bonding of equipment.	1	1	1
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	n/a	n/a	n/a

'A' - CESS WASTE INLET WELL



PLAN



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	CESS WASTE INLET WELL	2		INTERNALLY - BELOW GROUND LEVEL
ZONE 1					
ZONE 2					

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BTU
Southmoor Lane
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Hampshire
PO9 1JW

PROJECT TITLE: BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT, HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
CESS WASTE INLET WELL

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC — SITE UNIT NO.: 108912

PIN: 639382 — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2912.B — REVISION B

bre

5.4 Secondary treatment

The drawing illustrating the extent of the hazardous zoning of the methanol compound is included at the end of section 5.4.

Figure 9: Methanol compound

5.4.1 Methanol dosing pump rig

Zone 1 extending across entire dosing pump rig area.

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	3	2	6

It was observed that one of the pumps (below FE2711) had rusted away and exposed the internal impellors.

bre

5.4.2 Methanol storage tank 1

Zone 0 internally and zone 1 externally. The fill panel is rated as Zone 1 internally. The allocated zonings are based on the original hazardous areas specified by Southern Water and 4D.[4]

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	3	3
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	3	3
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	3	3
Lightning	Exposed zoned areas fitted with protection.	1	3	3
Electrostatic discharge	Earth bonding of equipment.	1	3	3
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	3	6

5.4.3 Methanol storage tank 2

Zone 0 internally and zone 1 externally. The fill panel is rated as Zone 1 internally. The allocated zonings are based on the original hazardous areas specified by Southern Water and 4D[4]

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	3	3
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	3	3
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	3	3
Lightning	Exposed zoned areas fitted with protection.	1	3	3
Electrostatic discharge	Earth bonding of equipment.	1	3	3
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	3	6

5.4.4 Methanol storage tank 3

Zone 0 internally and zone 1 externally. The fill panel is rated as Zone 1 internally. The allocated zonings are based on the original hazardous areas specified by Southern Water and 4D.[4]

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	3	3
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	3	3
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	3	3
Lightning	Exposed zoned areas fitted with protection.	1	3	3
Electrostatic discharge	Earth bonding of equipment.	1	3	3
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	3	6

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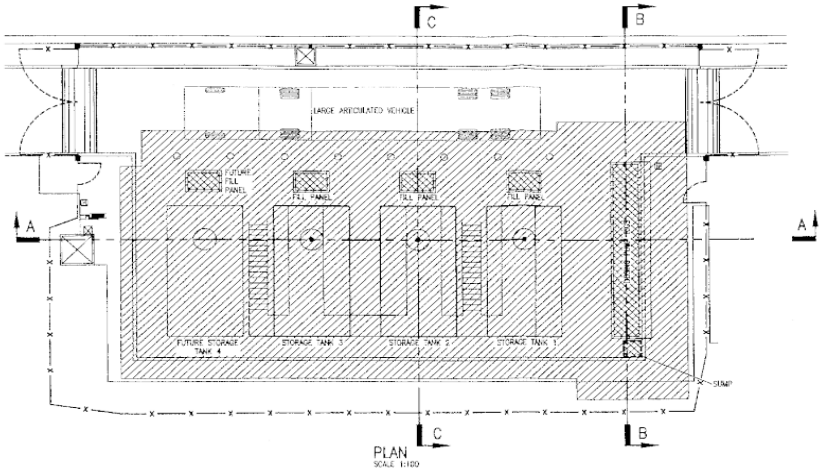

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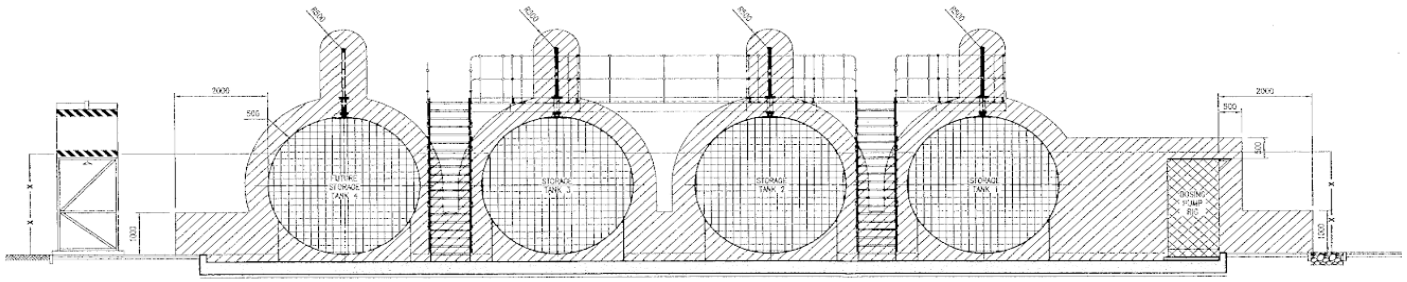
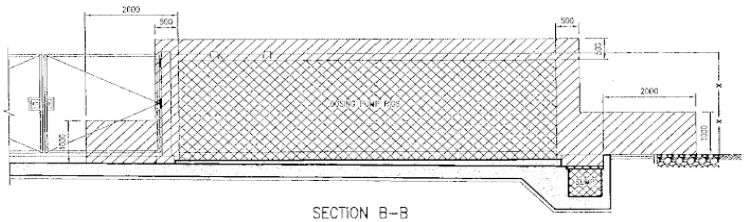


SECTION A–A
SCALE 1:50



SECTION B–B
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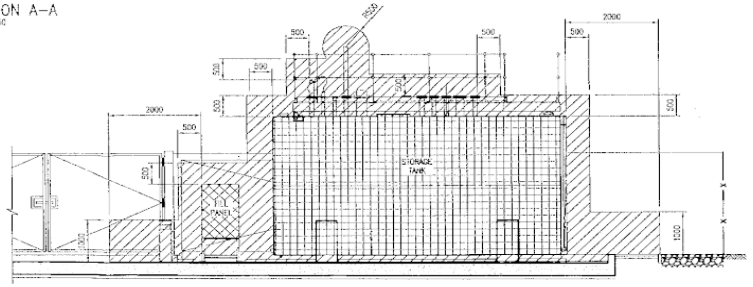

SECTION C–C
SCALE 1:50

m1 0 SCALE 1 : 50 4m

m1 0 SCALE 1 : 100 10m

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PROJECT TITLE
BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE
METHANOL STORAGE AREA
HAZARDOUS ZONING DRAWING
NORMAL OPERATION

SHEET 1 OF 1

SITE UNIT MNEMONIC	SITE UNIT NO.
BUDDS FARM HAVANT STC	108912

PRN	SCALE	MASTER SIZE
639382	NTS	A3

DRAWING NO.	REVISION
KH. 639382.030.2Z2920.A	A

5.5 Sludge treatment

5.5.1 Cake house

The cake house is not a zoned area as the raw, undigested cake is not expected to produce any methane.

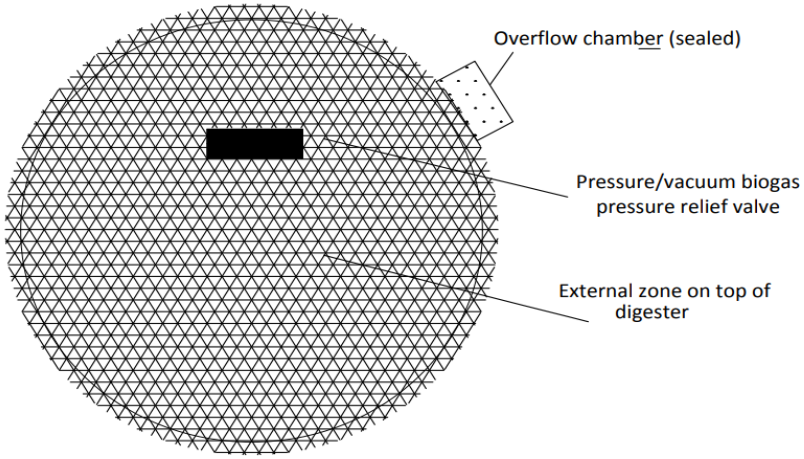
5.5.2 Digester 1

Zone 0 internally and zone 1 externally surrounding the top of the digester.

Figure 10: Primary digester

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks & hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones not allowed to be taken into zoned areas. Signs present.	1	2	2
Lightening	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	2	4

DRGB03 Primary and secondary digester - plan



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	OVERFLOW CHAMBER (SEALED)	0		INTERNALLY
	B	EXTERNAL ZONE ON TOP OF DIGESTER	1		EXTERNALLY
ZONE 1					EXTERNALLY 'V' + 'H' - 3m
ZONE 2					

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PROJECT TITLE: BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT, HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
DIGESTER PLAN HZ

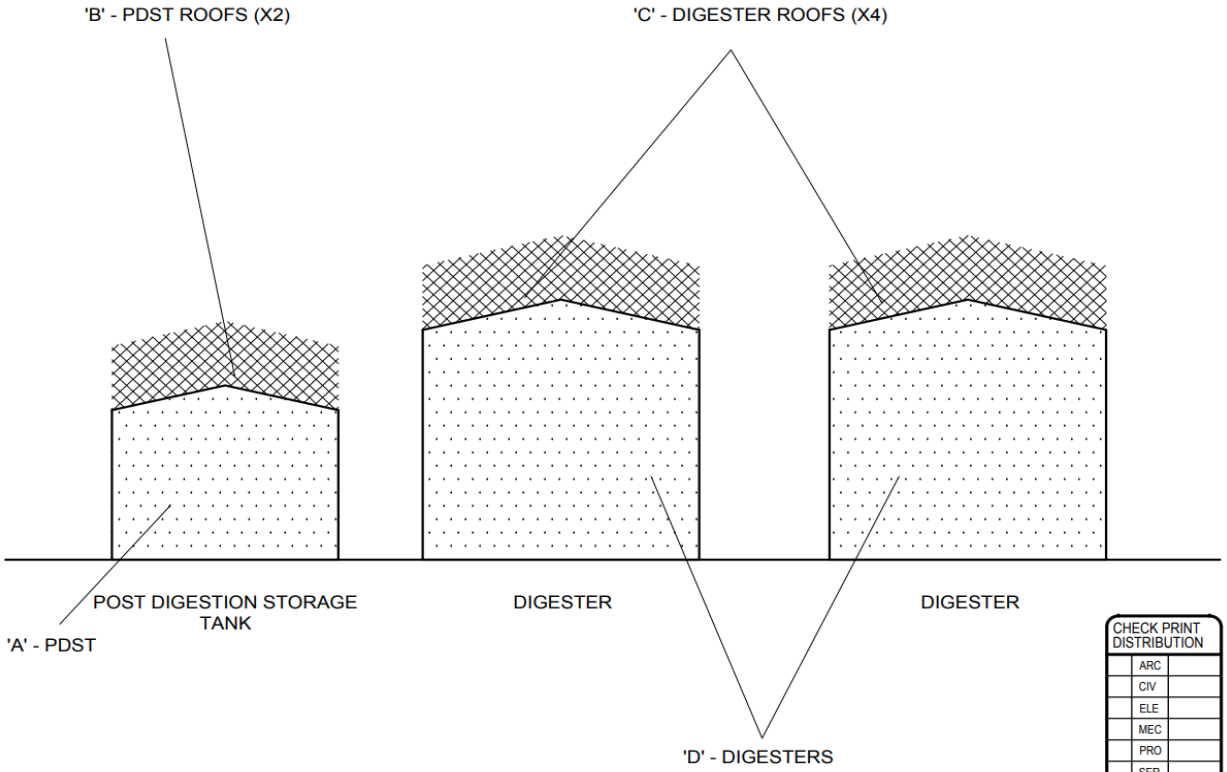
SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC | SITE UNIT NO.: 108912

PWA: 639382 | SCALE: NTS | MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2916.B REVISION B

AREA : 1+2 DIGESTERS



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	POST DIGESTION STORAGE TANKS 1+2	0	2	INTERNALLY
	B	POST DIGESTION STORAGE TANKS 1+2 ROOFS	1	2	EXTERNALLY - 3m 'V' + 'H' TO EDGE OF ROOFS
ZONE 1	C	DIGESTERS NO. 1-4 ROOFS	1	2	EXTERNALLY - 3m 'V' + 'H' TO EDGE OF ROOFS
	D	DIGESTERS NO. 1-4	0	2	INTERNALLY
ZONE 2					

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SHEET 4 OF 11

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SITE UNIT NO.: 108912

PRN: 639382
SCALE: NTS
MASTER SIZE: A3

DRAWING NO: KH. 639382.030.2Z2904.A REVISION: A

5.5.3 Digester 2

Zone 0 internally and zone 1 externally surrounding the top of the digester.

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks & hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones not allowed to be taken into zoned areas. Signs present.	1	2	2
Lightening	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	2	4

The drawing illustrating the extent of the hazardous zoning around the digesters and post-digesters is included in section 5.5.2.

5.5.4 Digester 3

Zone 0 internally and zone 1 externally surrounding the top of the digester.

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks & hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones not allowed to be taken into zoned areas. Signs present.	1	2	2
Lightening	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	2	4

5.5.5 Digester 4

Zone 0 internally and zone 1 externally surrounding the top of the digester.

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks & hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones not allowed to be taken into zoned areas. Signs present.	1	2	2
Lightening	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	2	4

5.5.6 Post digestion storage 1

Zone 0 internally and zone 1 externally surrounding the top of the post digestion

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	2	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	1	2	2

5.5.7 Post digestion storage 2

Zone 0 internally and zone 1 externally surrounding the top of the post digestion

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	2	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	1	2	2

5.5.8 Polyelectrolyte

There are three polyelectrolyte dust hoppers / dispenser units on site. All are located indoors in large, well ventilated buildings.

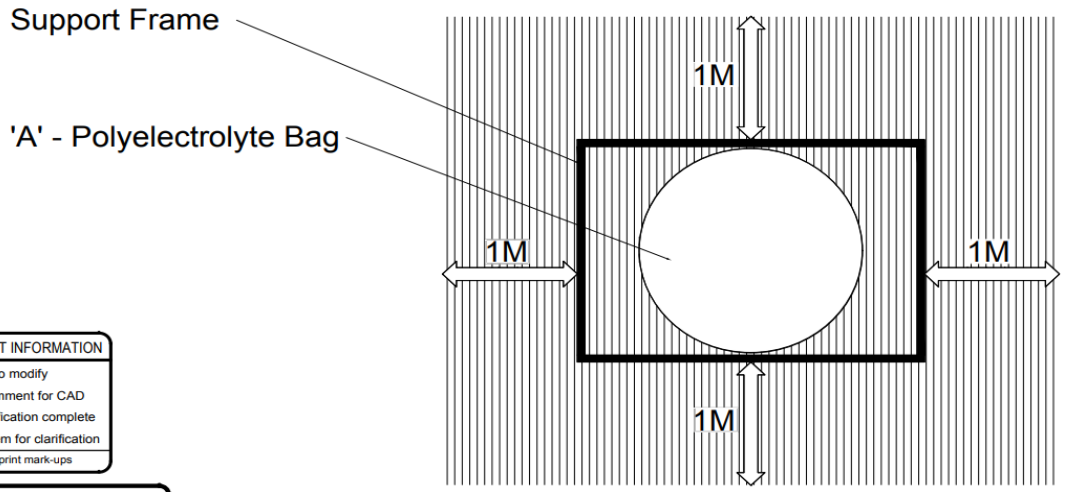
Figure 11: Polyelectrolyte hoppers, located next to boiler room.

Following Southern Water's MED 4004 April 2015[3], the receiving vessel is allocated a zone 21 classification internally and the receiving hopper is allocated a zone 22 classification internally.

Figure 12: Polyelectrolyte hopper, dryer building

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment or IP5x must be used as a minimum – see catalogued equipment.	2	2	4

POLYELECTROLYTE STATION - PLAN



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ZONE 20	A	POLYELECTROLYTE STATION	22	4	EXTERNALLY - 1M 'H' AND 1M 'V' EXTENDING TO FLOOR
ZONE 21					
ZONE 22					

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DRAWING TITLE: DSEAR
POLYELECTROLYTE STATION PLAN

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC
SITE UNIT NO: 108912

PRN: 639382
SCALE: NTS
MASTER SIZE: A3

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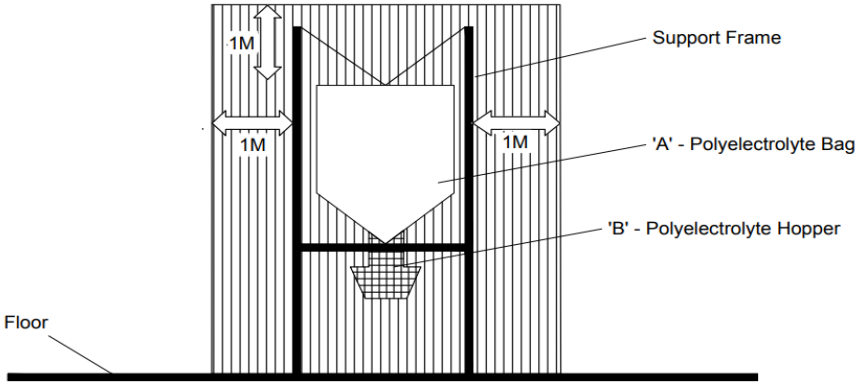
POLYELECTROLYTE STATION - ELEVATION



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 20	A	POLYELECTROLYTE BAG	22	4	EXTERNALLY - 1M 'H' AND 1M 'V' EXTENDING TO FLOOR
ZONE 21	B	POLYELECTROLYTE HOPPER	21		INTERNALLY - W ITHIN HOPPER
ZONE 22					

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ALSO APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/07/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/07/18	KA	SM	SM	B	BRE COMPANY
07/03/2018	KA	SM	SM	00	BRE COMPANY (AS BUILT)

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE: BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
POLYELECTROLYTE DRAWING ELEVATION

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC
SITE UNIT NO: 108912

PRN: 639382
SCALE: NTS
MASTER SIZE: A3

DRAWING NO: KH. 639382.030.2Z2910.B REVISION: B

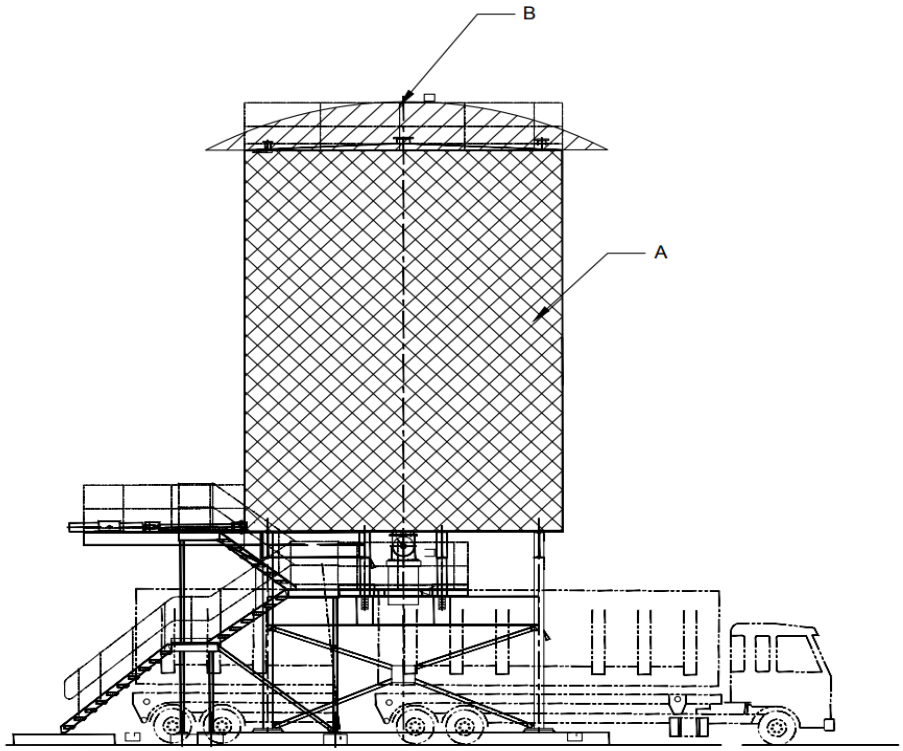
5.5.9 Post digestion sludge cake storage

Based on Southern Water's MED 4004 April 2015[3], the silo is allocated a zone 1 classification internally and a zone 2 classification externally extending above and around the top of the silo.

Figure 13: Post digestion sludge cake storage silo

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	2	4

POST-DIGESTION STORAGE SILO



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ZONE LEGEND	
ZONE 0	
ZONE 1	
ZONE 2	

REF	SITE AREA DESCRIPTION	ZONE	GAS GROUP	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL, MEASURED FROM POINT OF POSSIBLE RELEASE)
A	INTERNAL AREA OF SILO	1	11A	T3	INTERNAL + 1M FROM SILO ACCESS HATCH
B	EXTENT OF ZONE	2	11A	T3	1M FROM ALL OPENS ON THE TOP OF THE TANK

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02/07/2018	HM	SC	PD	A	UPDATED DESIGN
30/06/2016	HP	MO	RS	Z	AS BUILT
26/11/2015	EY	MO	RS	Z	FA345C- 102480-6718668-005 (AS BUILT)
02/07/2015	EY	MO	RS	P6	FIRST ISSUE

CLIENT: Southern Water

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Hampshire
PO9 1JW

PROJECT TITLE: CAKE SILO, BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR DRAWING
POST-DIGESTION STORAGE SILO

SHEET 1 OF 1

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC — SITE UNIT NO.: 108912

PRN: 639382 — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2922.B — REVISION B

5.6 Gas storage

5.6.1 Boiler house

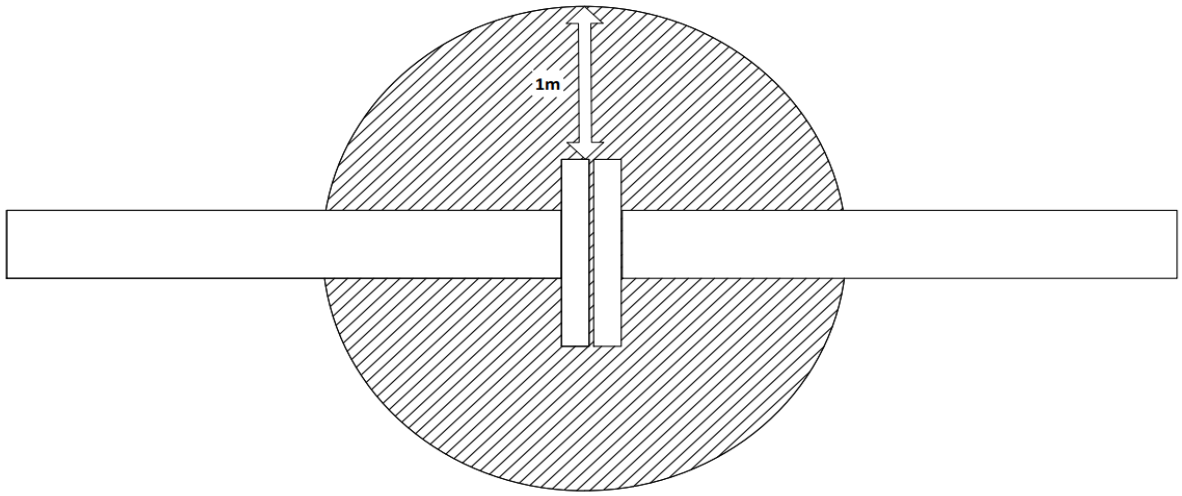
Three boilers are located inside the boiler house.

A zone 2 hazardous area is allocated extending 1m around all gas flanges and fittings on both natural and biogas pipelines.

Figure 14: Boiler

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	1	2	2

BIOGAS AND NATURAL GAS PIPELINE - INTERNAL PIPEWORK ONLY



N.B - ZONE 2 AREA NOT RELEVANT FOR EXTERNAL PIPEWORK.
- ALL GAS PIPEWORK IS ALLOCATED A ZONE 0 INTERNALLY.

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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	BIOGAS AND NATUAL GAS PIPEWORK	2		EXTERNALLY - 1M AROUND FLANGES AND FITTINGS
ZONE 1					
ZONE 2					

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PROJECT TITLE
BUDDS FARM HAVANT STC
SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE
DSEAR
BIOGAS AND NATURAL GAS PIPE FLANGE
(INTERNAL PIPEWORK ONLY)

SHEET 1 OF 1

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PRN: 639382 — SCALE: NTS — MASTER SIZE: A3
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5.6.2 Gas storage area

5.6.2.1 Double membrane gas bag

A zone 0 was allocated inside inner membrane, zone 1 in outer membrane and zone 2 around PRVs extending 3m. This agrees with Southern Water's MED 4004 April 2015[3].

Figure 15: Double membrane gas bag

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	3	3
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	3	3
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	3	3
Lightning	Exposed zoned areas fitted with protection.	1	3	3
Electrostatic discharge	Earth bonding of equipment.	1	3	3
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	2	3	6

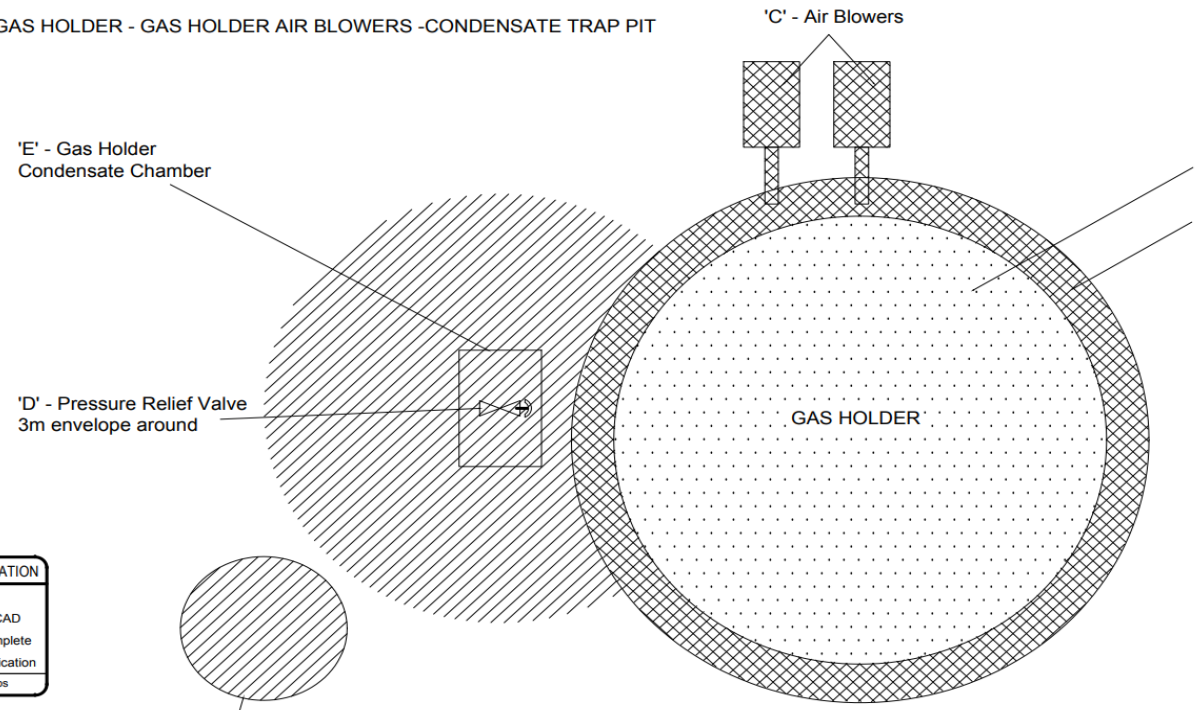
bre

5.6.2.2 Gas boosters

A zone 2 was allocated and this agrees with Southern Water's MED 4004 April 2015[3].

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	1	2	2
Electrostatic discharge	Earth bonding of equipment.	1	2	2
Sparks from equipment	Ex rated equipment must be used – see catalogued equipment.	1	2	2

AREA : 3+4+5. GAS HOLDER - GAS HOLDER AIR BLOWERS -CONDENSATE TRAP PIT



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ZONE 0	A	INNER GAS BAG	0		INTERNALLY
	B	OUTER AIR BAG	1		INTERNALLY
	C	AIR BLOWERS	1		INTERNALLY
ZONE 1	D	PRESSURE RELIEF VALVE	2		EXTERNALLY 'V' + 'H' - 3m
	E	GAS HOLDER CONDENSATE CHAMBER	2		INTERNALLY
	F	GAS BOOSTER CONDENSATE CHAMBER	2		INTERNALLY
ZONE 2	G	BOOSTER KIOSKS	2		INTERNALLY

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SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
POTENTIALLY EXPLOSIVE ATMOSPHERES
CLASSIFICATION DRAWING

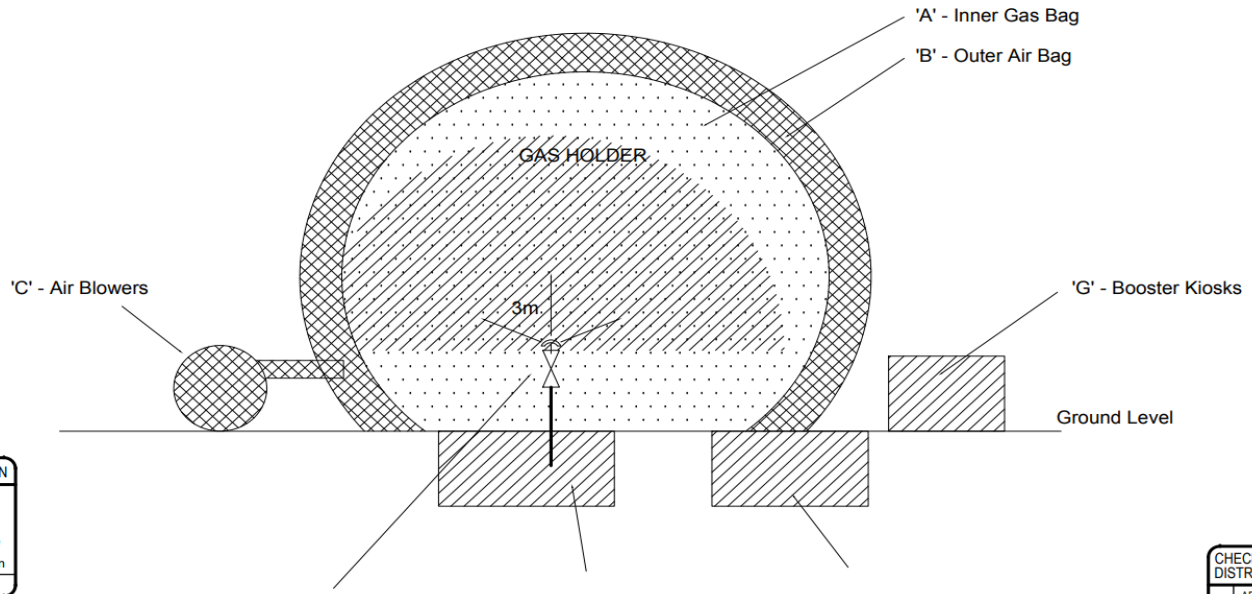
SHEET 2 OF 11

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC — SITE UNIT NO.: 108912

PRN: 639382 — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2902.A — REVISION A

AREA : 3+4+5. GAS HOLDER - GAS HOLDER AIR BLOWERS -CONDENSATE TRAP PIT



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ZONE LEGEND	REF	SITE AREA DESCRIPTION	ZONE	T CLASS	EXTENT OF ZONE (V-VERTICAL, H-HORIZONTAL) MEASURED FROM POINT OF POSSIBLE RELEASE
ZONE 0	A	INNER AIR BAG	0	2	INTERNALLY
	B	OUTER AIR BAG	1	2	INTERNALLY
	C	AIR BLOWERS	1	2	INTERNALLY
ZONE 1	D	PRESSURE RELIEF VALVE	2	2	EXTERNALLY V+H - 3m
	E	GAS HOLDER CONDENSATE CHAMBER	2	2	INTERNALLY
	F	GAS BOOSTER CONDENSATE CHAMBER	2	2	INTERNALLY
ZONE 2	G	BOOSTER KIOSKS	2	2	INTERNALLY

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SOUTHMOOR LANE, BUDDS FARM, HAVANT,
HAMPSHIRE, PO9 1JW.

DRAWING TITLE: DSEAR
POTENTIALLY EXPLOSIVE ATMOSPHERES
CLASSIFICATION DRAWING

SHEET 3 OF 11

SITE UNIT MNEMONIC: BUDDS FARM HAVANT STC
SITE UNIT NO.: 108912

PRN: 639382
SCALE: NTS
MASTER SIZE: A3

DRAWING NO. KH. 639382.030.2Z2903.A REVISION A

5.6.3 CHP

The existing CHP plant is not allocated a zoned area. The air flow through the CHP plant was sufficient to ensure a flammable atmosphere is highly unlikely to develop. The CHP plant equipment located externally is catalogued below.

The new CHP plant is yet to be commissioned and handed over. The new CHP plant will not require hazardous zoning if it is identical to the existing CHP plant.

Although the biogas area, near the CHP is not classified according to Southern Water's MED 4004 April 2015,[3] the equipment in the biogas area has been catalogued.

Figure 16: Existing CHP plant

Figure 17: New CHP plant

5.6.4 Flare stack area

According to Southern Water's MED 4004 April 2015,[3] the flare stack area is unclassified.

BRE concludes the area should be unclassified, however internally the pipework will be allocated a zone 0 classification.

The equipment in the flare stack area was catalogued and is mostly Ex certified equipment.

Figure 18: Flare stack compound

7. FIRE RISK ASSESSMENT

Need a copy of the Fire risk assessment stored with this Grab Pack.

Electronic link to Risk assessment - FRA - Budd's Farm STC 13-09-22 PS276 Rev B.pdf

6. COSHH DATA SHEET

COSHH data sheets for chemicals used on site should be Kept in a folder with the Grab Pack.

Electronic link to the Southern Water COSHH data sheets - COSHH (southernwater.co.uk)