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Peacehaven Sludge Treatment Centre Accident Management Plan

March 2024

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Peacehaven Sludge Treatment Centre Accident Management Plan

March 2024

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Contents

1	Introduction	1
1.1	Scope	1
1.2	Roles and Responsibility	2
1.3	Roles and Responsibility	2
2	Site information	3
2.1	Site location	3
2.2	Summary of Site and sensitive receptors	3
3	Accident Management Techniques	4
3.1	Loss of Containment	7
3.1.1	Gas Escape	7
3.1.2	Liquid Escape	8
3.1.3	Material Storage	8
3.1.4	Odour	9
3.1.5	Vandalism and unauthorised access	9
3.1.6	Physical Protection Measures	10
3.1.7	Overfilling of tanks	10
3.1.8	Fire	11
3.1.9	Arson risks	11
3.1.10	Contingency for Sludge Treatment Issues	11
4	Risk Assessment Methodology	17
5	Reporting and Recording	38
5.1	Reporting	38
5.2	Recording	38
5.3	Post-incident Review	39
5.4	Competence and Training	39
6	Emergency Response Procedures (ERP)	41
6.1	Fire	41
6.2	Explosion	41
6.3	Pollution	42
6.4	Flooding	42
6.5	Road traffic accident impact or collision	42
6.6	Collapse of a structure or building	42
6.7	Spill transferring wastes	43
6.8	Chemical spillage/leak onsite	43

6.9	Sludge spillage on site	43
6.10	Diesel spillage/leak on site	44
6.11	Overfilling vessels	44
6.12	Plant and equipment failures	44
6.13	Containment failure	45
6.14	Failure to contain firewater	45
6.15	Incorrect connection leading to releases to drains and other systems	45
6.16	Incompatible substances coming into contact	45
6.17	Emission of effluent or Biogas before composition checked	46
6.18	Theft & Vandalism	46

A. Grab Pack 47

Tables

Table 1.1: Key contacts and communication in the case of an emergency	2
Table 3.1: Supporting Emergency Procedures – IMP	4
Table 3.2: Raw Material and Process Chemical Storage	10
Table 3.3: Mitigation measures with sludge treatment incidents	12
Table 4.1: Severity Index	17
Table 4.2: Probability Index	17
Table 4.3: Magnitude of risk	17
Table 4.4: Accident risk assessment table	18

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 Peacehaven Sludge Treatment Centre (STC), also referred to as the “Site”. This plan will support the Peacehaven 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 Peacehaven; 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 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. Nominated key personnel and their responsibilities are identified in Table 1.1 below.

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	Elm Grove Brighton BN2 3EW	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 Duty Officer (24 hr) East Sussex County Council 03456080191 option 2	03456080191- select option 2
Borough Council	Brighton and Hove Council 01273 290 000 (24 hr)	01273 290 000 (24 hr)
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
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 northeast of Peacehaven, approximately 1km from the coastline of the English Channel, which is to the southwest. The Site is surrounded by agricultural fields to the north and east and public open space to the south and west, including three recreational playgrounds. Beyond the public open space to the south and west are areas of residential housing. The Site began being built in 2009 and was completed in 2013. The Peacehaven catchment serves the city of Brighton & Hove, Saltdean and Peacehaven.

Activity Site address: Hoyle Road Peacehaven East Sussex BN10 8LW

National grid reference: TQ 42150 01540

2.2 Summary of Site and sensitive receptors

As identified above, the Site is surrounded by agricultural fields to the north and east and public open space to the south and west, including three recreational playgrounds. Beyond the public open space to the south and west are areas of residential housing.

There are 146 sensitive receptors within 500m of the potential emission sources at Peacehaven WTW and STC. The receptor closest to potential emission sources at Peacehaven STC is Cissbury Avenue Residential properties located approximately 160 metres from the cake import bay.

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: <ul style="list-style-type: none"> ● Site details ● Chemical details ● Chemical classification ● Risk activity ● Risks for health, fire/DSEAR¹ 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: <ul style="list-style-type: none"> ● 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 <p>Information on the auditing, training requirements, reporting forms and any associated documents.</p>
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

¹ Dangerous Substances and Explosive Atmosphere Regulations

Procedure Reference	Brief Summary
FEC 322 – Spillage Procedure	<p>Outlines the responsibilities of staff in relation to the procedure. The procedure outlines the process for handling spillages on site including:</p> <ul style="list-style-type: none"> • Spillage assessment • Notifications and escalation • Containment • Awareness and training <p>Information on the auditing, training requirements, reporting forms and any associated documents.</p>
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	<p>Covers the following:</p> <ul style="list-style-type: none"> • 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	<p>Outlines the plan of actions that should be undertaken following severe weather or flood warnings and the responsibilities of the staff under these circumstances. The procedure details checklists for the following scenarios:</p> <ul style="list-style-type: none"> • impending severe weather, • flood watch, • flood warning, • severe flood warning, and • an all-clear checklist. <p>Also includes Information on the auditing, training requirements and any associated documents.</p>
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 Peacehaven 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 fabric², 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 Peacehaven 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 latest DSEAR regulations and guidance to ensure best practice is adopted.

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

² 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 banded to 110% capacity and have been manufactured to the required British Standard using appropriate grade materials
- Where applicable, on-site storage tanks are banded to 110% of their storage capacity in line with environmental good practice and bands 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, bands 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 (H₂S) (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 Peacehaven 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 Peacehaven 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
- CCTV cameras are positioned in key locations around the Site
- Access to the Site and waste is restricted by two perimeter fences, an outer 1m high wooden stake wire fence and an inner 2m high metal palisade fence, and the entrance is secured by a 2m high manual 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.
Diesel Oil	18m ³	Tank
Sludge Cake	<400m ³	Silo
Polymer	6 x 1m ³ /750kg bags	Bags
Gas Cylinders	Welding / burning Equip.	Gas Bottles stored in a locked building overnight.
Ferric Chloride	2 X 60m ³	Storage tanks
Aerosol Leaks of Biogas	Not Known as would be formed by leaks	Gas bag Digesters Pipelines Flare Stack CHP Engine
JCB Loader / MTS Tankers & Chemical Delivery tankers.	<200 ltrs Diesel Fuel tank on machine	Vehicle stored in a locked building overnight.
Lime	30 Tonne	Storage tank

Raw Material / Process Chemical	Maximum storage amount (tonnes or m ³)	Storage
Antifoam	5 X 1m ³	Intermediate Bulk Container (IBC)
Sludge in thickened sludge storage tank	1,500m ³	Tank
Sludge in digesters	3,250m ³	Tanks
Sludge in feed tanks	383m ³	Tank
Sludge at raw cake bay	70m ³	Tank
Sludge in post digestion storage tank	672m ³	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 Peacehaven 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 Peacehaven.

Table 3.3: Mitigation measures with sludge treatment incidents

Incident	Mitigation measures
Strain Press x 4 (imports and indigenous – interchangeable)	<ul style="list-style-type: none"> ● Bypass possible, but if quick fix not possible, mobile plant required. ● Hydro international – [REDACTED] ● Huber SP4.
GBT x 3	<ul style="list-style-type: none"> ● The Gravity Belt Thickeners treat all indigenous sludges and are run as Duty/Assist/Standby. Loss of all units will result in unthickened sludges being transferred to the Digester Feed tanks resulting in reduction of import capacity. ● In the event of 2 x Belts have failed and are not repairable – even with scavenging parts from the downed belts – then a means to transfer the unthickened sludges from the Co Set's to the Digester Feed tanks to enable continued feeding to the Digesters. An increase in feed would need to be made to the digesters as sludges will be a lot thinner. <ul style="list-style-type: none"> – If 2 x thickeners are unable to be repaired in <2 days then cancel import sludge movements. – Consider deploying a temporary thickening unit – utilise a mobile centrifuge but instead of turning to cake you can thicken. – Previous hire equipment needed: <ul style="list-style-type: none"> – DP54 Mobile centrifuge – capable of 26m³/hr – Portable belt conveyor – Generator to power the unit and associated fuel cube – Armoured hose (50m) to feed sludge into the mobile unit. ● Ashbrook Simon Hartley GBT's Duty/Assist/Standby ● Brettex – [REDACTED] ● Seepex BN100-6L Feed Pump, Mono W092 Sludge Transfer Pump.
Centrifuges x 2	<p data-bbox="558 1126 774 1160">Failure of Centrifuge</p> <ul style="list-style-type: none"> ● Centrifuges are run on a Duty/Standby ● In the event of 1x Centrifuge failing raise a job M/E or for contractors to investigate. <p data-bbox="558 1261 1045 1294">In the event of failure of both centrifuges onsite</p> <ul style="list-style-type: none"> ● Raise a P1 emergency job for our framework partner responsible for centrifuge work ● Ascertain the levels within the PDST onsite to see if digester throughput will be affected. Tanks are ideally run at <50% capacity so will normally have 5 days capacity. ● If outage is total and due to be ongoing for >5 days consider mobilising a mobile centrifuge to ensure digester throughput is maintained. ● If both fail, temporary centrifuge would be required. ● Contractors: Brettex – [REDACTED] ● Existing plant: Andritz D6 LXC 30 C HP.
Return Liquors	<p data-bbox="558 1619 869 1653">Return Liquor Treatment Plant</p> <ul style="list-style-type: none"> ● Return liquors from the thickeners and centrifuges are sent to a liquor treatment plant. The WTW has sufficient capacity to treat these return liquors so can be used just to balance the flows. ● Failure of the return liquor pumps will generate a high level which will inhibit the centrifuge and thickeners. ● There are two return liquor pumps configured Duty/Standby – loss of one pump will not impact the sites' ability to deal with sludge although loss of two pumps will lead to high levels and ultimately the plant shutting down. ● In the event of two pump failures then install a hire pump to ensure the treatment plant can continue to operate. Approach Xylem to hire direct (details below)

Incident	Mitigation measures
Digesters	<hr/> <ul style="list-style-type: none"> ● Pump Details: <ul style="list-style-type: none"> – Flygt 3202 – Serial Number: 3202.090-1120002 <hr/> <p>Digester foaming</p> <ul style="list-style-type: none"> ● The most likely causes of digester foaming could be failure of the anti-foam dosing system (if a background dose is applied), high variability in flow and thickness of the feed sludge, and high septicity of the feed sludge. ● If the probe alarm is indicating high foam or high-level sludge it will inhibit digester feed as a precaution to prevent a foam or sludge release to ground. <ul style="list-style-type: none"> – Check digester feed and compare against previous days – Reduce digester feed by 10% from the previous day – If applicable check anti foam dosing pumps and system – Consider manual dose of antifoam to reduce the foam level ● If the foam or sludge level has reached the level where the gas lines are blocked (realised by failure of gas compressors and in catch pits for the gas condensate pots) following the below steps. <ul style="list-style-type: none"> – Stop digester feed immediately – Mobile Biogas service provider as a P1 to clear gas lines / Whessoe Valves to prevent gas release via the Whessoe valves – Escalate & report to the pollutions team on [REDACTED] – Depending upon the extent of the spillage mobilise suitable resources to instigate clean up. – If applicable check anti foam dosing pumps and system – Consider manual dose of antifoam to reduce the foam level – Once gas lines have been cleared then re-start digester feed much reduced digester feed – Please consult Process Scientist or on-call Process Scientist for exact feed rate. <p>Digester loss of heat</p> <ul style="list-style-type: none"> ● Digester feed will inhibit <32 degrees with a normal range of 35-36 degrees. It usually takes around a day before it reaches inhibit levels. The most likely causes will be associated with failure of CHP and boilers (standby to CHP). <ul style="list-style-type: none"> – Check CHP is operational, and heat 3-way valve is operating correctly. If in doubt contact DSL on [REDACTED] – Check boilers are operational. If low gas, then switch to gas oil. – Check recirculation pumps and three-way valves are operating correctly. – Check heat exchanger is receiving the hot water – if not check the isolation valves and jet if required. – Check the sludge inlet and outlet temperatures – normally you would see a 2°C rise across the heat exchanger. If not, it could be scaled up so strip and jet.
Whessoe Release	<ul style="list-style-type: none"> ● Inform as a pollution. Try and get the flare stack or the CHP running asap. Reduce/stop feed to digester to stop foam overs. Get DSL to flush the gas lines.
Power Failure	<ul style="list-style-type: none"> ● No on-site generator, if complete power loss CHP will shut down, Callout to get power back on high priority. ● If unable to get power back on for long period of time generators will have to be hired in. ● There are 6x MCC on site, each would require a certain Generator size. ● MCC1: would require a 4,000KVA Generator MCC1 also power MCC3.

Incident	Mitigation measures
	<ul style="list-style-type: none"> ● MCC2: would require a 1,600KVA Generator. ● MCC4: would require a 2,000KVA Generator MCC4 also powers MCC6. ● MCC5: would require a 1,600KVA Generator. ● Cabling and extras would have to be scoped by contractors/ Generator companies. ● Outline for electrical reset on ACB's if power is lost to Peacehaven, Portobello and Marine Drive WPS. ● Please note these sites do not have to be done in this particular order and can be reset in any order however it may be beneficial to start with Peacehaven as once MCC1 has been restored this brings power back to the SCADA room where an Op can then assist with Manually resetting also nothing will start in auto until Peacehaven is back online. ● Peacehaven order of resetting <p>MCC1</p> <ul style="list-style-type: none"> ● Start by turning of the BAF dirty back wash and inlet transfer pumps and any starter panel with an inverter, this is to avoid from power surges when restarting. Ensure BUS coupler ACB is open and ensure the two incoming supplies have been restored (mains healthy light is on), put ACB controls to manual. IF the BUS coupler is closed open it and then put ACB control back into auto. ● If we have both supplies restored make sure BUS section is open and make sure both main supply lights are on, put controls to manual then close incomer 1 then close incomer 2 then put controls back to auto, turn on all starter panels that were turned off one at a time. ● If we have one supply restored do the following (same as above but slight difference) - check which section is restored – close that ACB incomer, then close the BUS section. <p>MCC2</p> <ul style="list-style-type: none"> ● No inverter drives to turn off, follow same instructions as above - check BUS section is open, check mains healthy light is on and then close incomer 1 then close incomer 2, put ACB control back into auto. (same as above if only one supply is restored etc.) <p>MCC3</p> <ul style="list-style-type: none"> ● Same as MCC1 <p>MCC4</p> <ul style="list-style-type: none"> ● Same as MCC1 - to note there are 2 breakers on this MCC that feed MCC6 you must make sure these are closed before working on MCC6. <p>MCC5</p> <ul style="list-style-type: none"> ● Same as MCC1 <p>MCC6</p> <ul style="list-style-type: none"> ● There is a Panel above ACBs make sure these are turned on, then go to PLC panel and make sure the red light on the panel is not on (if this red light is on reset PLC panel), turn off panels that have drives to avoid power surge like MCC1, then close one of the two ACBS (so one is shut and one is open), then turn all panels back on one by one. ● Portobello resetting ● Making sure mains has restored. ● If BUS section is open you would need to make sure the supply has been restored to the open ACB, if this hasn't been restored you would make sure incomer is closed and showing healthy supply and then put controls to manual and shut the bus coupler. If the open ACB has got mains healthy light on make sure bus section is open and close the open incomer. If it is not showing healthy then check to make sure the other incomer that is closed is showing healthy then you would close the bus coupler.

Incident

Mitigation measures

- If you get to site and the 1 incomer is closed and showing mains healthy and BUS section is closed this means site is on and powered and does not need the above steps.

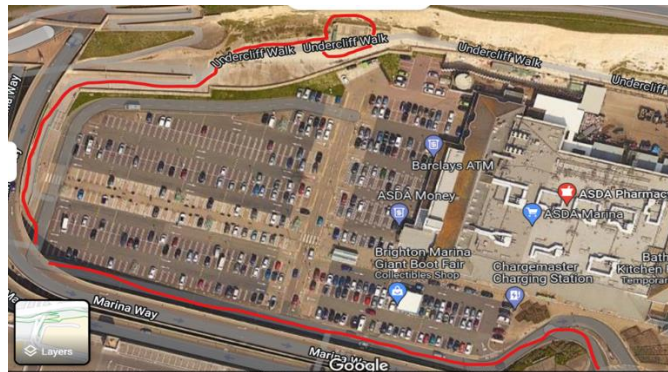
Marine Drive WPS resetting

- Follow the same steps as Portobello.

Brighton Marina GDS

- In an event of a Power Failure at Peacehaven STC Portobello WPS or Marine Drive WPS
- Please do the following.
- On HMI log in and put Inlet Penstock (DRNVP0107) in hand and close. This will stop flows coming into the GDS and back up into Black Rock Storm Tunnel. Storm tunnel capacity 150,000m³ approx x3 DWF if empty.
- HMI – Password [REDACTED] - For HMI log in to be able to operate valve in hand mode.
- If Valve does not close you will require a 2nd man to open Hatches x 3 to go down fixed ladder (approx. 4 steps) Put Penstock (DRNVP0107) in local hand and close.
- Kiosk Key D3
- Gate Key up to hatches to access Penstocks D3
- Hatches to access penstocks Large Allen Key and D3 padlock
- HMI – Password [REDACTED]

Located in Asda car park next to the cliffs.

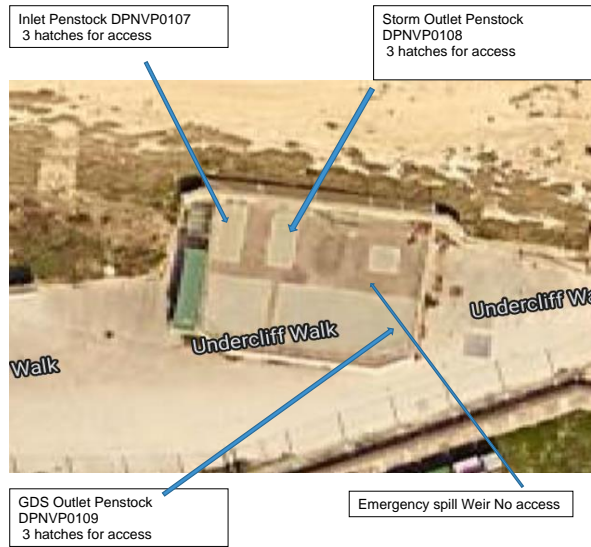


Appendix Terminology

- Inlet Penstock DRNVP0107 (Flows from Brighton & Hove)
- Storm Outlet Penstock DRNVP108 (Spills when Marine Drive WPS is 9.3m to Telscombe lower beach storm Station where it is screened only, and gravity fed out LSO 1.5km approx.
- GDS Outlet Penstock DRNVP109 (flow to marina drive WPS)
- Emergency Storm Weir is Open concrete hole. Spills when Marine drive WPS is at 12m Telscombe lower beach storm Station where it is screened only, and gravity fed out LSO 1.5km approximately

Incident

Mitigation measures



Contaminated Trade	<ul style="list-style-type: none"> • None known in the catchment that could have an impact on the works.
Reduced Sludge Disposal	<ul style="list-style-type: none"> • Site will not run at optimum production and less biogas will be produced.
Odour Control	<ul style="list-style-type: none"> • Odour extraction good on site. Ensure any spills are cleaned up, shutter doors are closed and hatch covers are sealed down. All process is covered over and odour extracted.

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

Severity index	Probability 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.	<p>Tank failure, spillages of digestate and/or liquids including oil.</p> <p>Damage to drainage system.</p> <p>Spillage of raw materials of sludge/liquor during delivery/storage.</p> <p>Contaminated run off from cake storage e.g. containing suspended solids.</p>	Aquatic or chronic effects to aquatic life, contamination, and water deterioration of water quality.	<p>Direct run-off from the Site across ground surface, via surface water drains, ditches etc.</p> <p>Indirect run-off via the soil layer.</p> <p>Transport through soil/groundwater then extraction / abstraction at borehole or intake.</p>	Medium	High	High	<p>Potential for leaks from digestion tanks, storage vessels / bays and drainage systems which may cause contamination or deterioration of surface water quality.</p> <p>The general Site infrastructure is in good condition. The Site is underlain by concrete, and all drains lead to the works return.</p> <p>Condition of the pumps and seals of the cake silo are not in good condition. These are due to be replaced once the silo has been emptied.</p> <p>There is no bunding on tanks other than on the ferric tank.</p> <p>Quantities of liquids stored are generally low.</p> <p>The English Channel is located approximately 1km to the southwest of the site. There are no other watercourses or drains within 250m of the</p>	<p>The Site drainage plan is documented and all staff are trained in the event of emergency or accident.</p> <p>Impermeable surfacing 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. Bunding will also be implemented for all raw material storage.</p> <p>All skips and bins are stored on a hardstanding area.</p> <p>As part of the BAT requirements and in accordance with the recommendations of the Construction Industry Research and Information Association (CIRIA) standard 736 risk assessment, damaged bunding and hardstanding are to be repaired throughout the Site.</p> <p>All transfer of digestate and material takes place under</p>	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
							<p>site. Surface water collects in a depression in the south of the site during rainfall, however this pond is ephemeral in nature.</p> <p>No substantiated pollution incident to water, air, or land has been recorded within 250m of the Site.</p>	<p>supervision and with flow rate control.</p> <p>All tanks undergo a delegated inspection regime and the process parameters are monitored and understood by site operatives.</p> <p>Digestion tanks are built to appropriate standards and require appropriate bunding.</p>	
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	<p>Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off.</p> <p>No groundwater abstractions are present on-site.</p> <p>No substantiated pollution incident to water, air or land has been recorded within 250m of the Site.</p>	<p>There is one cake silo and six ro-ro bins on site. The silo is located within the main building and the ro-ro bins are covered. Cake bays on site are located within the main building. Cake is imported and exported from Site in sealed the ro-ro bins.</p> <p>IBC's are stored under cover and in a bunded area, bags are stored under cover and on pallets.</p>	Low
Groundwater, land and surface water	Spillages of liquids, contaminated rainwater run-off from wate e.g. containing suspended solids.	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or	Transport through soil/groundwater then extraction at borehole or intake.	Low	Medium	Low	<p>Potential for leaks from digestion tanks and storage vessels.</p> <p>Site infrastructure and hardstanding is</p>	<p>The diesel and lime tanks are stored outside, but in bunded areas.</p> <p>Activities are managed and operated in accordance with the EMS. Spill procedures are in place under EMS363</p>	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
	Sludge/liquid spillages as a result of loss of tank/pipe integrity carelessness during transfer or overfilling	<p>closure of abstraction intakes.</p> <p>Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.</p> <p>Pollution of water or land.</p>					<p>generally in good condition.</p> <p>There is no bunding on tanks other than on the ferric tank.</p> <p>Quantities of liquids stored are generally low.</p>	<p>and 364 as well as a pollution prevention procedure EMS360 All spillages are recorded in the site diary including actions taken.</p> <p>The Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is implemented effectively to minimise the probability of equipment malfunction.</p> <p>Control of substances hazardous to health (COSHH) assessments are undertaken for all raw materials.</p> <p>Both clean and contaminated surface water is directed to a pumping station which recirculates it back into the system.</p> <p>The surface drainage of potentially contaminated areas from within the Site boundary is routed to the works return with no discharge outside of the Site boundary.</p> <p>Regular inspections of the Site drainage systems and other equipment are</p>	

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
								<p>undertaken, with any repairs and maintenance carried out if necessary.</p> <p>All complaints and other incidents are recorded in the site diary including actions taken.</p> <p>The condensate is clean, uncontaminated water and is small in quantity.</p>	
Groundwater, land and surface water	Spillages of sludge / liquids during transfer of imported and indigenous / unknown sludge and liquids from tankers.	<p>Acute or chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes.</p> <p>Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.</p> <p>Pollution of water or land.</p>	Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Low	Medium	Low	<p>Potential for spillage during transfer of liquid/sludge from tankers.</p> <p>Sludge cake is currently imported into site from Newhaven only.</p> <p>Sludge cake is delivered in sealed ro-ro containers and is unloaded inside the main building.</p> <p>Cake is removed from Site in sealed ro-ro containers.</p>	<p>Impermeable surface required for storage of all waste.</p> <p>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.</p> <p>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).</p> <p>Compliance with the waste duty of care requirements to ensure waste accepted</p>	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
								meets the permit conditions and relevant legislation. All liquid run off will be captured in the drainage network and returned to works return.	
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 not known to flood, and there have been no previous floods recorded on the Site.	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 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	The drainage network sends water to the works return. There are no direct potentially contaminated discharges to controlled surface waters. Activities to be managed and operated in accordance	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
							<p>may be hazardous to human health.</p> <p>The infrastructure present on site is within an Environment Agency Zone 1 flood risk area. Areas within zone 1 have 1 in a 1,000 chance of river or sea related flooding. However, the pond's that are close to the southern boundary of the site are located within a Zone 2 which is associated with areas of land that have between 0.1% – 1% chance of flooding from rivers / the sea per year.</p>	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.	
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	<p>Potential injury to on-site personnel as a result of vehicle movements or equipment malfunction or misuse.</p> <p>Direct physical contact is minimised by activity being carried out within enclosed digesters, so a low magnitude risk is estimated.</p> <p>Contact with waste is minimal with the exception of leaks or</p>	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	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
							spills from unloading of tankers and transfer of filter cake.	<p>throughout the operating hours.</p> <p>All operational staff are fully trained in the site operating procedures and Southern Water's safety and environmental management procedures and are kept up to date on changes.</p> <p>Training includes awareness raising of the potential on-site hazards and health and safety measures to adhere to.</p> <p>Preventative measures will be under continuous review as part of the EMS procedures.</p> <p>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.</p> <p>There is an electrical barrier located at the far end of the access road with an intercom system which is connected to the control</p>	

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
								<p>room. A 2m high manual gate is located at the entrance to the bunded area, which is where the WTW and STC are located. The Site is fully enclosed by two perimeter fences, an outer 1m high wooden stake wire fence and an inner 2m high metal palisade fence. There are 21 CCTV and one ANPR cameras located around the Site, five of which are currently not working. However, these are to be fixed. Entry to the buildings is controlled via phones and cards with magnetic locks on doors and manual locks, the buildings are secured by an intruder alarm.</p> <p>The Site is staffed during shift times (Monday-Friday: 7am-7pm.</p> <p>Sat-Sun the Site is unmanned. Standby operatives attend site to take samples and undertake site checks.</p> <p>Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not</p>	

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
								<p>been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements.</p> <p>Key sludge treatment and wastewater treatment activities undertaken within enclosed systems.</p> <p>Under current conditions 9-10 ro-ro's of cake are imported to Site weekly, and approximately 25 ro-ro's of cake are removed weekly.</p> <p>Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is moved to cake bays once a trailer is full. Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by site staff and maintenance contractors.</p> <p>The operator has produced hazard review and risk assessment documents relating to this and other types of potential incidents, within the EMS, H&S and O&M manuals.</p>	

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
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. Permitted waste types limited to sludges and liquids.	The key sludge treatment and WTW processes are undertaken within enclosed systems such as the AD and biogas systems. Sludge storage tanks are sealed, and most are enclosed within the building. 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 activates 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.	Low
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		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	Training and regular toolbox talks are given to operatives on-site and all operators and	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
		<p>fugitive emissions of gaseous, liquid or solid materials to air, water or land.</p> <p>Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.</p>					<p>irritation, illness or nuisance to local residents and site staff.</p> <p>Impact from the tank explosion may cause external damages to other equipment, buildings located close to the epicentre of the explosion.</p>	<p>staff understand their roles in an emergency.</p> <p>The EMS includes procedures relating to maintenance and inspection of bunding of tanks.</p> <p>The 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 manufacturers' instructions.</p> <p>Emergency operating procedures are in place.</p> <p>Adequate firefighting measures are implemented on-site.</p> <p>There is an electrical barrier located at the far end of the access road with an intercom system which is connected to the control room. A 2m high manual gate is located at the entrance the bunded area which is where the WTW and STC are located. The Site is fully enclosed by two perimeter fences, an outer 1m high wooden stake wire</p>	

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
								fence and an inner 2m high metal palisade fence. There are 21 CCTV and one ANPR cameras located around the Site, five of which are currently not working. However, these are to be fixed. Entry to the buildings is controlled via phones and cards with magnetic locks on doors and manual locks, the buildings are secured by an intruder alarm. The Site is staffed during shift times (Monday-Friday: 7am-7pm). Sat-Sun the Site is unmanned. Standby operatives attend site to take samples and undertake site checks.	
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 solid	Air transport. Direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer	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	The key sludge treatment and WTW processes are undertaken within enclosed systems. All infrastructure is enclosed and Sludge storage tanks sealed, and most are enclosed within the building.	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
		materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.	Transport through soil / groundwater then abstraction				physical contact is minimised by activities 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.	Activities are managed and operated in accordance with the EMS, H&S and O&M manuals including, fire and spill management. Fire detection equipment is installed in the CHP containers and the boiler building which activates 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	

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
								<p>smoking is only permitted in designated areas.</p> <p>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.</p> <p>Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their roles 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.</p> <p>The 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 manufacturers' instructions.</p> <p>Emergency operating procedures are in place.</p>	

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
								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. All infrastructure is enclosed and Sludge storage tanks sealed, and most are enclosed within the building. 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 qualifications. Fire detection equipment is installed in the CHP containers and the boiler building which activates an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to	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
								<p>prevent any fuel being supplied to the CHP engines or boilers.</p> <p>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.</p> <p>Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their roles in an emergency. The EMS includes procedures relating to maintenance and inspection of bunding of tanks, spills and environmental incidents.</p> <p>The Site Manager shall ensure the programme of PPM is implemented effectively to minimise the probability of fire through</p>	

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
								<p>faulty plant and equipment. All equipment is checked and calibrated as per the manufacturers' instructions.</p> <p>Emergency operating procedures are in place.</p> <p>Adequate firefighting measures are implemented on-site.</p> <p>There is an electrical barrier located at the far end of the access road with an intercom system which is connected to the control room. A 2m high manual gate is located at the entrance the bunded area which is where the WTW and STC are located. The Site is fully enclosed by two perimeter fences, an outer 1m high wooden stake wire fence and an inner 2m high metal palisade fence. There are 21 CCTV and one ANPR cameras located around the Site, five of which are currently not working. However, these are to be fixed. Entry to the buildings is controlled via phones and cards with magnetic locks on doors</p>	

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
								<p>and manual locks, the buildings are secured by an intruder alarm.</p> <p>The Site is staffed during shift times (Monday-Friday: 7am-7pm.</p> <p>Sat-Sun the Site is unmanned. Standby operatives attend site to take samples and undertake site checks.</p> <p>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.</p> <p>Firewater is diverted through the drainage system to the head of the works or to storm overflow allowing for contaminated fire water to be contained on-site and treated through the wastewater treatment system.</p>	

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
Local human population and local environment.	Operator Error.	Pollution to air, land, surface water and groundwater and human health	<p>Air transport, direct run-off from site across ground surface, via surface water drains, ditches etc.</p> <p>Indirect run-off via the soil layer.</p> <p>Transport through soil/groundwater then abstraction.</p>	Low	Medium	Low	<p>Possible contamination to air, land, groundwater and surface water.</p> <p>Given the level of operator controls which are in place and management plans, it is considered the probability and magnitude will be low.</p>	<p>Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented.</p> <p>All equipment is checked under preventative maintenance plans and is checked and calibrated as per the manufacturers' instructions.</p> <p>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.</p> <p>All operational staff are fully trained in the Site operating procedures and Southern Water's safety and environmental management</p>	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
								<p>procedures and are kept up-to-date on changes.</p> <p>Training includes awareness raising of the potential implications of failure to control operations and the potential impact on the environment.</p> <p>Preventative measures will be under continuous review as part of the EMS procedures.</p> <p>Emergency operating procedures are in place and detailed in the Site's Operational Contingency Plan.</p> <p>Senior site-based management have direct responsibility for implementing risk management measures.</p>	

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 <ul style="list-style-type: none"> 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.
		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. On site sampling to be carried out and microscopy slides to be viewed.

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 pipe <ul style="list-style-type: none"> Isolate the sludge pipeline and either end. Contain the spilled sludge with sandbags/barriers to prevent spread to the environment.

N/A	Done	The Incident controller will: -
		<ul style="list-style-type: none"> • 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. • Depending upon the size of the spillage, organise 1 x Super sucker and 1 x 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. • If the repair is likely to take >1 day instigated tankering from PST Tanks until the repair can be made

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 <ul style="list-style-type: none"> • Contain the affected area – utilise spillage kits/pads to absorb the diesel. • If diesel has made its way to the site drains, consider isolating dirty water run off pumping station and remove contents with 2 x 4k tankers (if at full capacity)
		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. On site sampling to be undertaken and microscopy slides to be viewed

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

N/A	Done	The Incident controller will: -
		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.
		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.

N/A	Done	The Incident controller will: -
		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.
		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

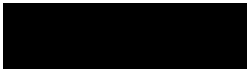
Peacehaven WTW/STC

Emergency Grab pack.

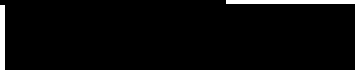
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Final Draft

Author:



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Contents

1. EMERGENCY CONTACT NUMBERS	3
2. SITE PLANS	4
3. MATERIALS & CHEMICALS STORAGE ON SITE	7
4. LOCATION OF FIRE EXTINGUISHERS ON SITE	11
5. WASHATER MAINS & FIRE HYDRANTS	14
6. DSEAR DRAWINGS	15
7. FIRE RISK ASSESSMENT	38
8. COSHH DATA SHEET	39

1. EMERGENCY CONTACT NUMBERS

Management

RCC – 0330 3030261

[REDACTED]

[REDACTED]

SITE OPS

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

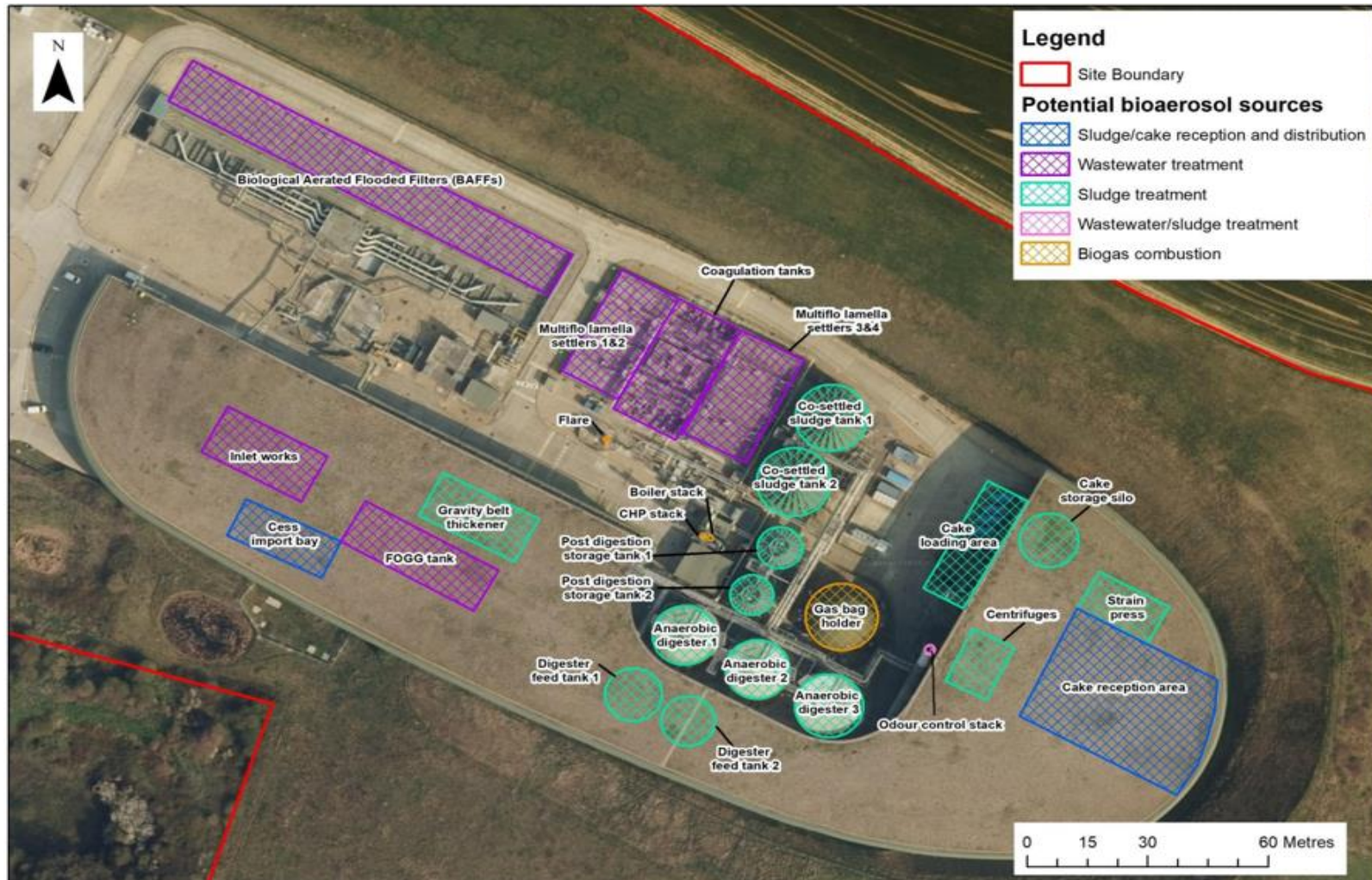
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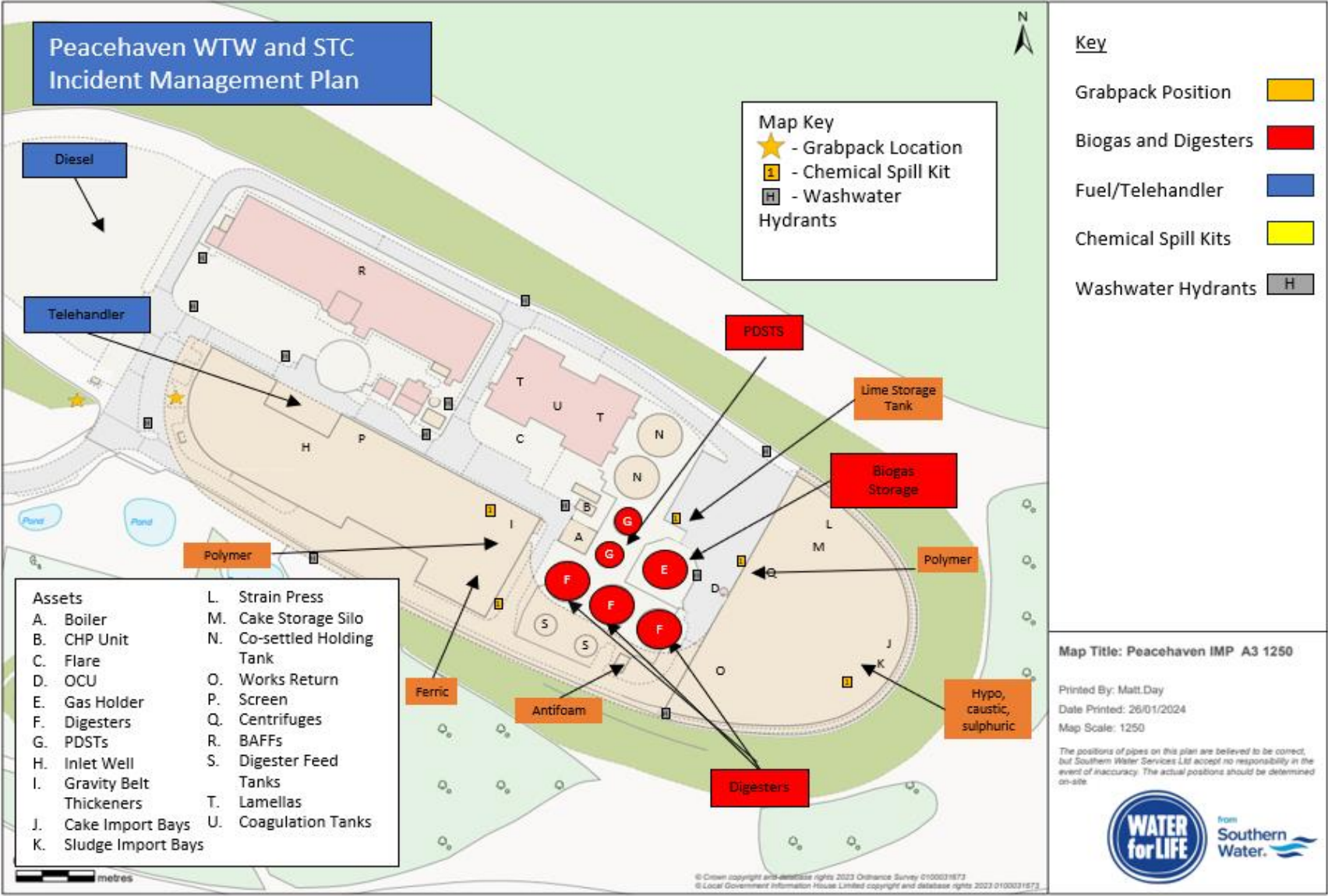
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2. SITE PLANS

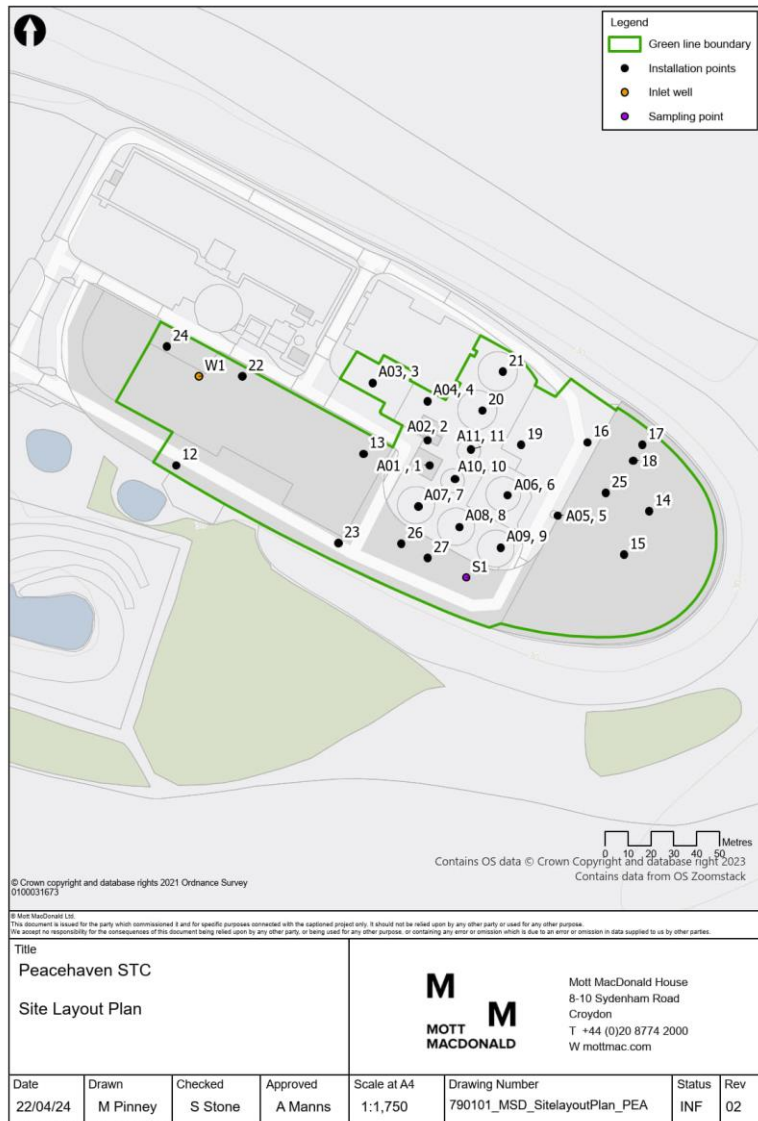
Map of Processes



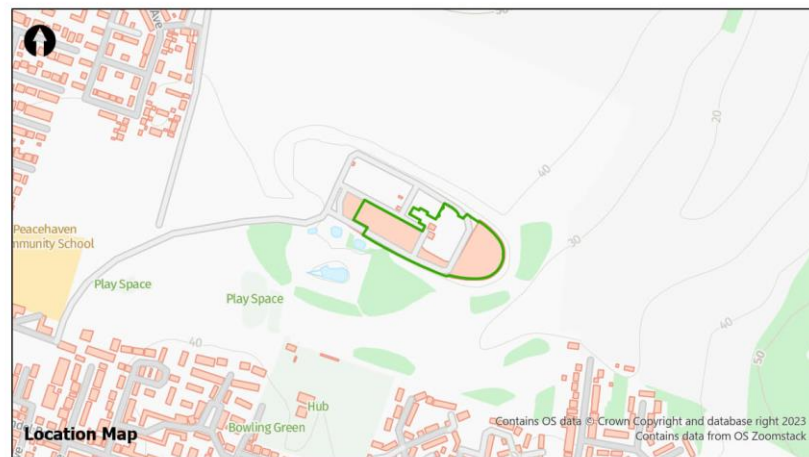
Map of flammable substances and fire hydrants (H).



Map of biogas systems



Emissions Ref	Emissions Points	Assets Ref	Assets	X	Y
A01	Boiler House Exhaust Stack and Boiler Flue	1	Boiler House	542158	101500
A02	CHP Exhaust and CHP Heat Exchange Stack	2	CHP Unit	542157	101511
A03	Flare	3	Flare	542133	101536
A04	Vented Air Burner	4	Vented Air Burner	542157	101528
A05	OCU Stack	5	OCU	542214	101478
A06	Whessoe Valves x2	6	Gas Holder	542192	101487
A07	Whessoe Valves x2	7	Digester 1	542153	101482
A08	Whessoe Valves x2	8	Digester 2	542171	101473
A09	Whessoe Valves x2	9	Digester 3	542189	101464
A10	Whessoe Valves x2	10	Post Digestion Storage Tank 1	542169	101494
A11	Whessoe Valves x2	11	Post Digestion Storage Tank 2	542176	101507
W1	Inlet Well			542057	101539
S1	Liquor sample point			542174	101451
		12	Cess Imports	542047	101500
		13	Gravity Belt Thickeners	542129	101505
		14	Cake Import Bay	542254	101480
		15	Sludge Import Bay	542243	101461
		16	Cake Storage Skips	542227	101510
		17	Strain Press	542251	101509
		18	Cake Storage Silo	542247	101502
		19	Lime Storage Tank	542198	101509
		20	Co-Settled Holding Tank 1	542181	101524
		21	Co-Settled Holding Tank 2	542190	101541
		22	Screens	542076	101539
		23	Ferric Store	542118	101466
		24	Waste storage area	542043	101552
		25	Centrifuges	542235	101488
		26	Digester feed tank 1	542146	101466
		27	Digester feed tank 2	542157	101460



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	<3000 m3 max	Biogas Holder Digester Headspace Sludge cake silo Headspace	Gas bag Digesters Pipelines Flare Stack CHP Engine.
Diesel Oil	Liquid	UN1202	18m3	Next to the boiler and blower house	Tank
Sludge Cake	Dried Cake	Cake Non – Hazardous Biogas Headspace UN1971	<400m3	Sludge Cake Silo	Silo
Polymer	Powder	UN2923	6 X 1m3/750kg bags	Inside centrifuge building	Bags
Gas Cylinders	Gas	N/A	Welding / burning Equip.	Workshop marked as building 4 on plan.	Gas Bottles stored in a locked building overnight.
Ferric Chloride	Liquid	UN2582	60 m3	Next to digester	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	<200 ltrs Diesel Fuel tank on machine	Stored outside out of hours but may be anywhere on site.	Vehicle stored in a locked building overnight.
Polymer	Liquid	UN2923	6 x 1050 kg as liquid in IBC	Inside garages next to offices	IBC
Lime	Liquid	UN1956	30 Tonne	Tank is situated outside marked on Site map.	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.
- 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	1m3	Inside centrifuge building.	Intermediate Bulk Container (IBC)
Wastewater	Liquid	N/A	1164m3	Storm Tank	Tank
Sludge	Liquid	N/A	1500m3	Thickened Sludge Storage Tank	Tank
Wastewater	Liquid	N/A	375m3	3 X FOGG lanes	Tank
Wastewater	Liquid	N/A	1573m3	4 X Lamellas	Tanks
Wastewater	Liquid – Non- Buoyant	N/A	995m3	10 X BAFFS	Lanes
Wastewater	Liquid	N/A	2060m3	2 X CO-SET	Tanks
Sludge	Liquid	N/A Biogas Head space UN1971	3250m3	3 X Digesters	Tanks

Sludge	Liquid	N/A	383m3	2 X Feed Tanks	Tank
Sludge	Liquid	N/A	50m3	1 X Raw Cake Bay	Tank
Sludge	Liquid	N/A Biogas Head space UN1971	672m3	2 X Post Digestion Storage Tank	Tank

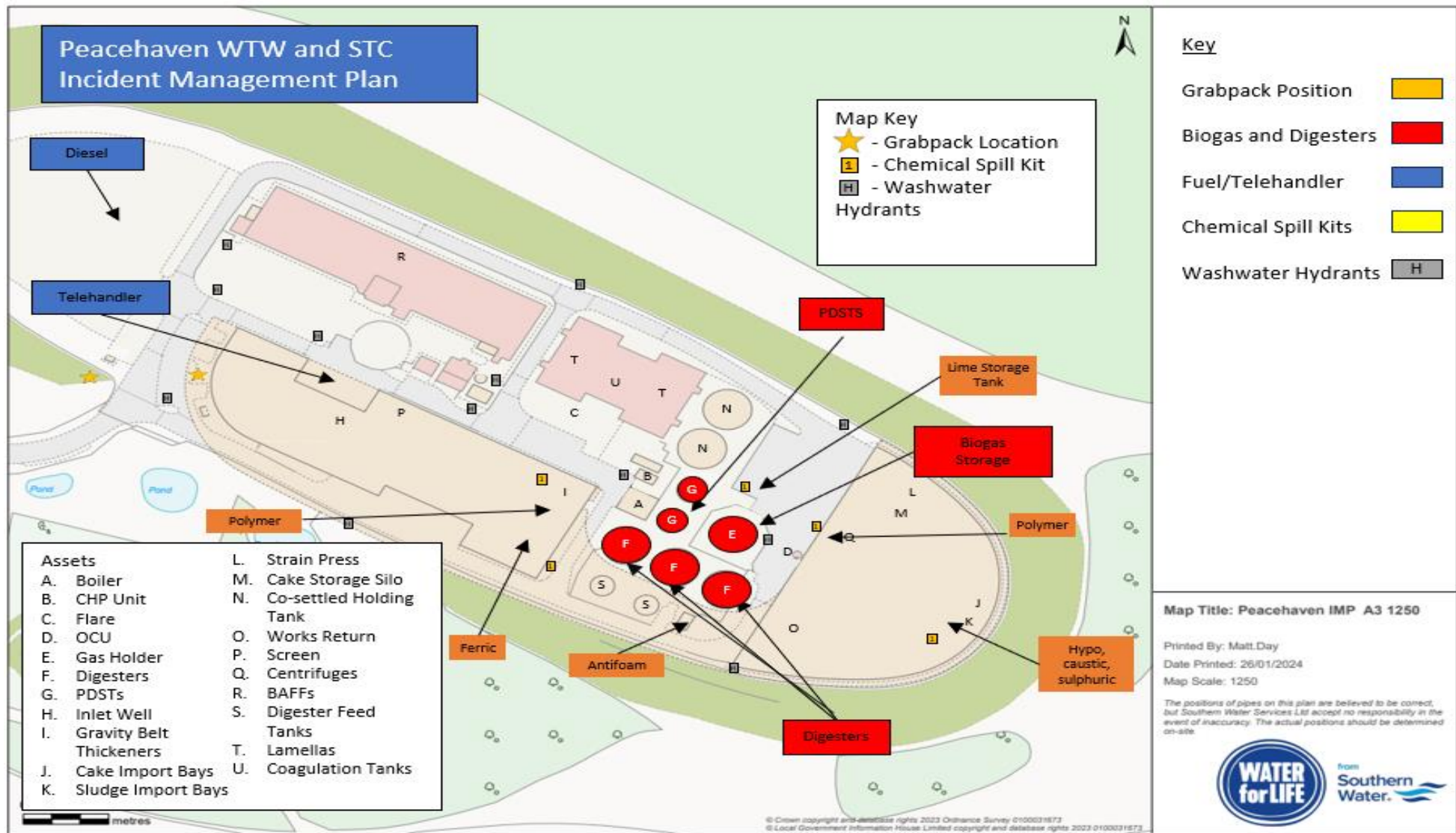
3. LOCATION OF FIRE EXTINGUISHERS ON SITE.

POLLUTION PREVENTION EQUIPMENT INVENTORY (ON AND OFF-SITE RESOURCES) ILLUSTRATED ON PEACEHAVEN IMP MAP			
Type	Location	Amount	Staff Contact
Fire Extinguishers	Outside Inlet Building	5	[REDACTED]
Fire Extinguishers	Bagging Room	4	
Fire Extinguishers	Cake Storage area	3	
Fire Extinguishers	Vehicle Circulation area	12	
Fire Extinguishers	Stairwell	2	[REDACTED]
Fire Extinguishers	Sludge Skip Room	4	
Fire Extinguishers	HVAC 6 Mezz Floor	2	
Fire Extinguishers	West End of Baffs	2	
Fire Extinguishers	East End of Baffs	1	
Fire Extinguishers	Inside pumphouse	3	
Fire Extinguishers	Top of Eastern stairwell	4	
Fire Extinguishers	Baff Sampling Kiosk	2	
Fire Extinguishers	Wash water Booster Kiosk	2	[REDACTED]
Fire Extinguishers	Lamella Tanks	5	[REDACTED]
Fire Extinguishers	Boiler House	3	
Fire Extinguishers	CHP plant room	2	
Fire Extinguishers	Sludge tank 3	1	
Fire Extinguishers	Digester 1	2	
Fire Extinguishers	Digester 2	2	
Fire Extinguishers	Digester feed Area	1	
Fire Extinguishers	Anti – Foam Room	2	
Fire Extinguishers	Outside Inlet Building	1	
Fire Extinguishers	Between Skip Bays	2	
Fire Extinguishers	Lay down area Roller Shutter door	2	
Fire Extinguishers	Grit & screen collection	2	
Fire Extinguishers	MCC1 corridor	2	[REDACTED]
Fire Extinguishers	Cess Reception	3	[REDACTED]
Fire Extinguishers	Grit Galley	4	[REDACTED]

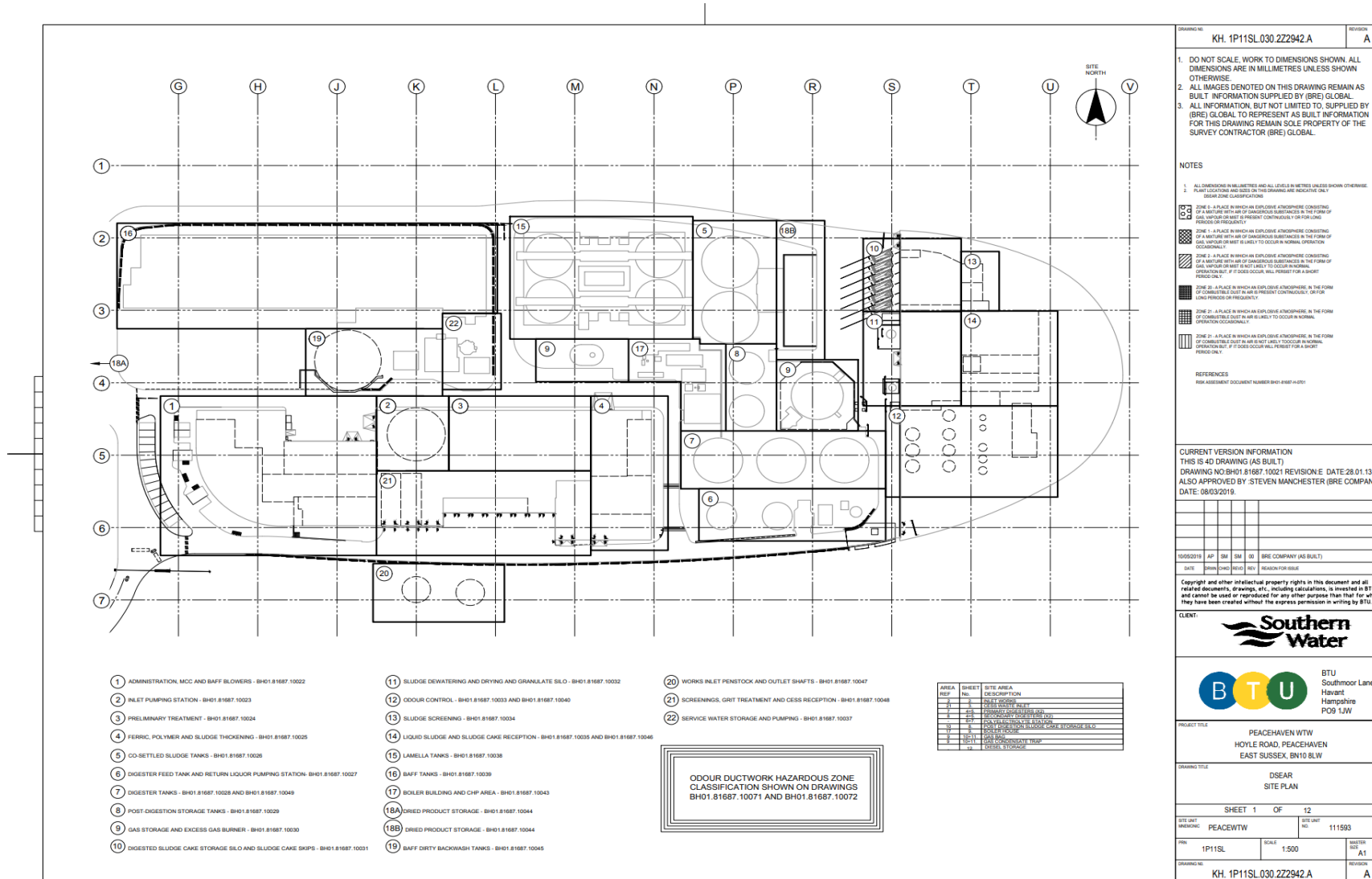
Fire Extinguishers	Fog Lanes	2	
Fire Extinguishers	Screen Area	3	
Fire Extinguishers	Level 7 Stairs	1	
Fire Extinguishers	Level 6 Stairs	2	
Fire Extinguishers	Top of Baffs	4	
Fire Extinguishers	Blower room	1	
Fire Extinguishers	MCC1	4	
Fire Extinguishers	HV room	0	
Fire Extinguishers	Inlet PS	5	
Fire Extinguishers	Sludge Thickener room	5	
Fire Extinguishers	Ferric Tanks	1	
Fire Extinguishers	Poly Tank	1	
Fire Extinguishers	MCC 2	3	
Fire Extinguishers	Outside Poly Tank	2	
Fire Extinguishers	Outside Sludge Thickener	1	
Fire Extinguishers	Outside Workshop Sludge Thickeners	1	
Fire Extinguishers	Workshop & Roller Shutter door	5	
Fire Extinguishers	Left of Skip Bay 6	1	
Fire Extinguishers	Shower room	2	
Fire Extinguishers	Mess Room	2	
Fire Extinguishers	Corridor & control room	4	
Fire Extinguishers	Main Reception	2	
Fire Extinguishers	Kitchen	1	
Fire Extinguishers	Office Corridor	1	
Fire Extinguishers	Outside offices	2	
Fire Extinguishers	Outside and Blower room	8	
Fire Extinguishers	HVAC 1 & Storeroom	3	
Fire Extinguishers	Storeroom	1	
Fire Extinguishers	Fire escape Stairwell	2	
Fire Extinguishers	Sludge cake reception Lower Ground floor	4	
Fire Extinguishers	Top Stairs to Roof	2	
Fire Extinguishers	Transformer room 1	4	
Fire Extinguishers	Gas Meter Cabinet	2	
Fire Extinguishers	HVAC 2 Cabinet	3	

Fire Extinguishers	HVAC 3 Cabinet	2	
Fire Extinguishers	Service Water Pumping Station	2	
Fire Extinguishers	Dryer Room & Corridor	5	
Fire Extinguishers	Dryer Mezz L/G Floor	2	
Fire Extinguishers	Dryer Mezz L/G Floor 1	2	
Fire Extinguishers	Dryer Mezz L/G Floor 2	2	
Fire Extinguishers	Dryer Mezz L/G Floor 3	2	
Fire Extinguishers	HVAC 4 Area	3	
Fire Extinguishers	HVAC 5 Area	3	
Fire Extinguishers	Transformer Room 2	2	
Fire Extinguishers	MCC 3	4	
Fire Extinguishers	Sludge Press Room	2	
Fire Extinguishers	Odour Control Area	10	
Fire Extinguishers	Sludge Cake Reception	4	
Fire Extinguishers	Liquid Sludge Reception 1	2	
Fire Extinguishers	Liquid Sludge Reception 2	2	
Fire Extinguishers	Liquid Sludge Computer Room	2	
Fire Extinguishers	Corridor by WC	2	
Fire Extinguishers	Corridor and Drying Room	5	

4. WASHATER MAINS & FIRE HYDRANTS.(H)



5 DSEAR DRAWINGS



DRAWING NO.	KH. 1P11SL.030.222942.A	REVISION	A
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 3. SEE THE DSEAR DOCUMENT.

LEGEND

Zone 0 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS PRESENT CONTINUOUSLY FOR LONG PERIODS OR FREQUENTLY.
 Zone 1 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS LIKELY TO OCCUR IN NORMAL OPERATION.
 Zone 2 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS NOT LIKELY TO OCCUR IN NORMAL OPERATION, BUT IF IT DOES OCCUR, WILL PERSIST FOR A SHORT PERIOD ONLY.
 Zone 21 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE IN THE FORM OF COMBUSTIBLE DUST IS LIKELY TO OCCUR CONTINUOUSLY, OR FOR LONG PERIODS OR FREQUENTLY.
 Zone 22 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE IN THE FORM OF COMBUSTIBLE DUST IS NOT LIKELY TO OCCUR IN NORMAL OPERATION, BUT IF IT DOES OCCUR WILL PERSIST FOR A SHORT PERIOD ONLY.

REFERENCES
 RISK ASSESSMENT DOCUMENT NUMBER BH01.81687.10071

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CLIENT:
 Southern Water
 BTU Southmoor Lane
 Havant Hampshire
 PO9 1JW

PROJECT TITLE:
 PEACEHAVEN WTW
 HOYLE ROAD, PEACEHAVEN
 EAST SUSSEX, BN10 8LW

DRAWING TITLE:
 DSEAR
 SITE PLAN

SHEET	1	OF	12
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SITE UNIT	PEACEWTV	DWG NO.	111593
PROJ.	1P11SL	SCALE	1:500
DRAWING NO.	KH. 1P11SL.030.222942.A	SHEET NO.	A1
		DRAWING NO.	A

ENG-FM-210-01-00



5 Risk assessment

For each hazardous area a risk assessment table has been compiled, 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 Inlet works

The inlet works at Peacehaven STC are completely enclosed. Waste is pumped to enclosed screens and then on to enclosed fog lanes, shown in Figure 1, Figure 2 & Figure 3.



Figure 1: Inlet works.

According to Southern Water's MED 4004 2015²⁴, the inlet works have been allocated a zone 2 classification within the channel area. Therefore, the inlet works are zoned above the liquid surface internally in the pipework, screens and fog lanes.



Figure 2: Inlet screening.



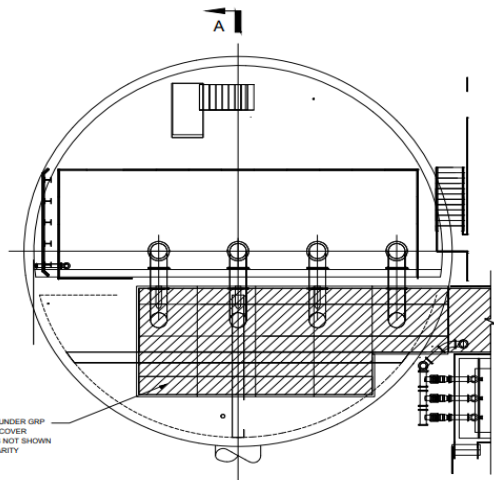
Figure 3: Inlet fog lanes.



Raw sewage inlet works

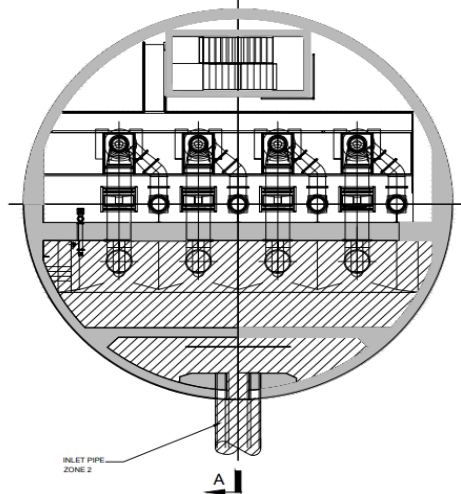
Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones 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

NB. Any equipment in the hazardous zone was not accessible due to BRE staff not having confined space training.



ZONE 2 UNDER GRP
ODOUR COVER
COVERS NOT SHOWN
FOR CLARITY

PLAN ON 1-1

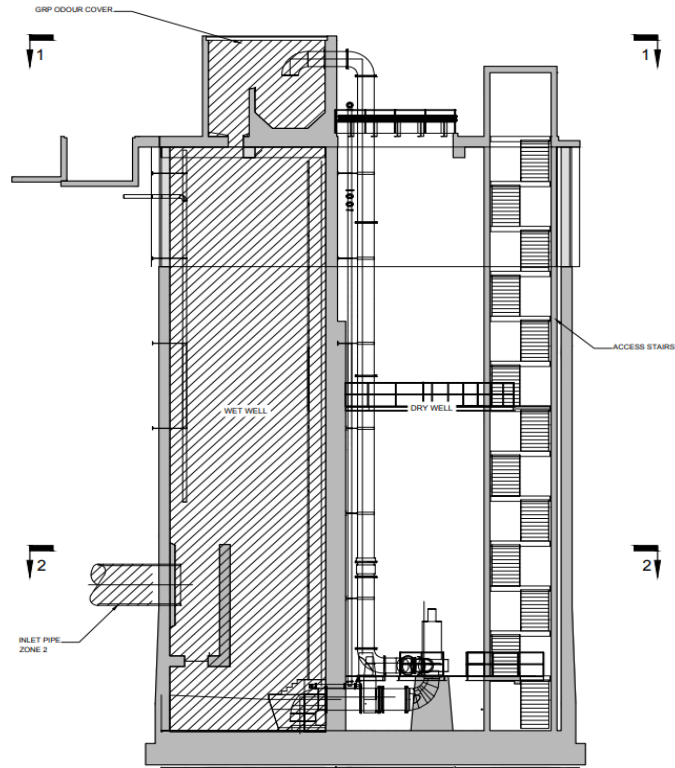


INLET PIPE
ZONE 2

PLAN ON 2-2

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FOR HAZARDOUS ZONE CLASSIFICATION
WITHIN DUCTS



SECTION A-A



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 - ZONE 1 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS LIKELY TO OCCUR IN NORMAL OPERATION OCCASIONALLY.
 - ZONE 2 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS NOT LIKELY TO OCCUR IN NORMAL OPERATION BUT, IF IT DOES OCCUR, WILL PERSIST FOR A SHORT PERIOD ONLY.
 - ZONE 20 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE IN THE FORM OF COMBUSTIBLE DUST IN AIR IS PRESENT CONTINUOUSLY, OR FOR LONG PERIODS OR FREQUENTLY.
 - ZONE 21 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE IN THE FORM OF COMBUSTIBLE DUST IN AIR IS LIKELY TO OCCUR IN NORMAL OPERATION OCCASIONALLY.
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- CLASSIFICATION TEMPERATURE CLASS T3
- REFERENCES
RISK ASSESSMENT DOCUMENT NUMBER BHM-41067-10071
BHM-8887-0001 - HAZARDOUS ZONES KEY PLAN

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PROJECT TITLE
PEACEHAVEN WTW
HOYLE ROAD, PEACEHAVEN
EAST SUSSEX, BN10 8LW

DRAWING TITLE
DSEAR
INLET PUMPING STATION

SHEET 2 OF 12

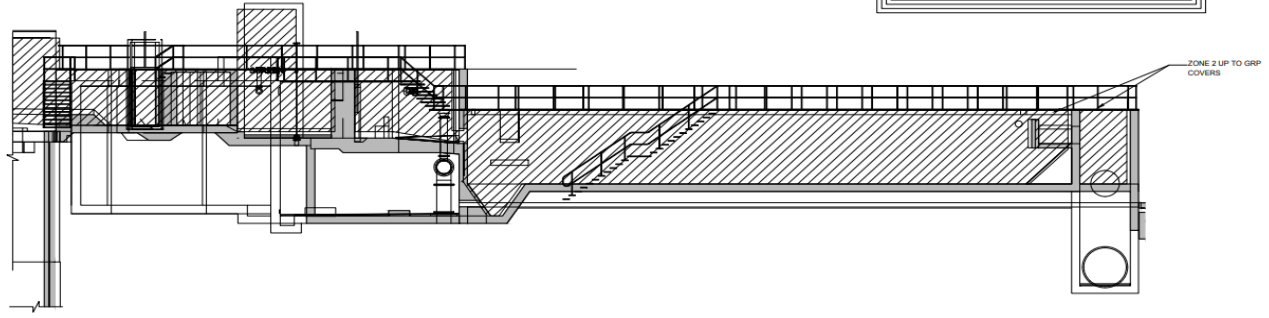
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PRN 1P11SL SCALE 1:100 MASTER SIZE A1

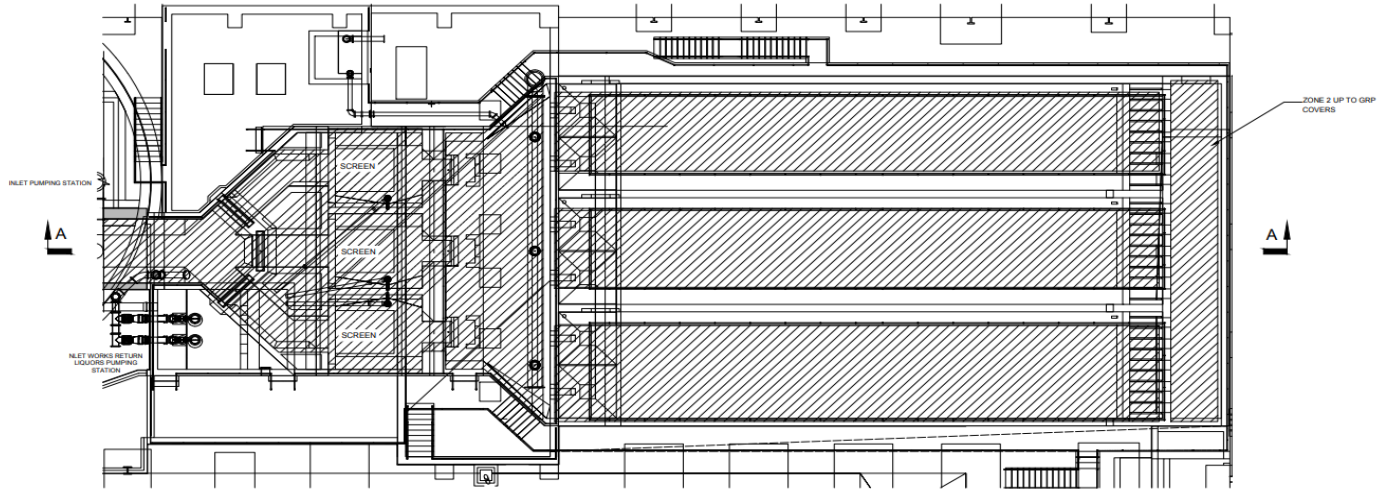
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DRAWING NO. KH.1P11SL.030.222961.A REVISION A

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SECTION A-A



PLAN

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 - ZONE 1: A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS LIKELY TO OCCUR IN NORMAL OPERATION BUT, IF IT DOES OCCUR, WILL PERSIST FOR A SHORT PERIOD ONLY.
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 - ZONE 21: A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE IN THE FORM OF COMBUSTIBLE DUST IN AIR IS LIKELY TO OCCUR IN NORMAL OPERATION OCCASIONALLY.
 - ZONE 22: A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE IN THE FORM OF COMBUSTIBLE DUST IN AIR IS NOT LIKELY TO OCCUR IN NORMAL OPERATION BUT, IF IT DOES OCCUR, WILL PERSIST FOR A SHORT PERIOD ONLY.
- GAS GROUP/AN TEMPERATURE CLASS 13
- REFERENCES
RHS ASSESSMENT DOCUMENT NUMBER BH01.81687.10071
BH01.81687.10071 - HAZARDOUS ZONES KEY PLAN

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PROJECT TITLE
PEACEHAVEN WTW
HOYLE ROAD, PEACEHAVEN
EAST SUSSEX, BN10 8LW

DRAWING TITLE
DSEAR
PRELIMINARY TREATMENT

SHEET 3 OF 12

SITE UNIT REFERENCE: PEACEWTW SITE UNIT NO: 111593

PROJ: 1P11SL SCALE: 1:100 MASTER SIZE: A1

DRAWING NO. KH.1P11SL.030.222961.A REVISION A



5.1.2 Cess inlet

Cess is imported from tankers in a large empty tanker bay. The cess pipework is allocated a zone 2 internally and is pumped directly to the inlet works.



Figure 4: Cess tanker inlet.

Cess inlet

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



5.2 Storm treatment

The storm treatment is unclassified.

5.3 Primary treatment

According to Southern Water's MED 4004 April 2015,⁽⁶⁾ the primary treatment process is unclassified.



5.4 Sludge treatment

5.4.1 Digester 1

There are three digesters at Peacehaven STC.

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



Figure 5: Digester 1.

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.	3	2	6



5.4.2 Digester 2

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



Figure 6: Digester 2.

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.	3	2	6

The drawing illustrating the extent of the hazardous zoning around the digesters and post-digesters is included in section 5.4.1.



5.4.3 Digester 3

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

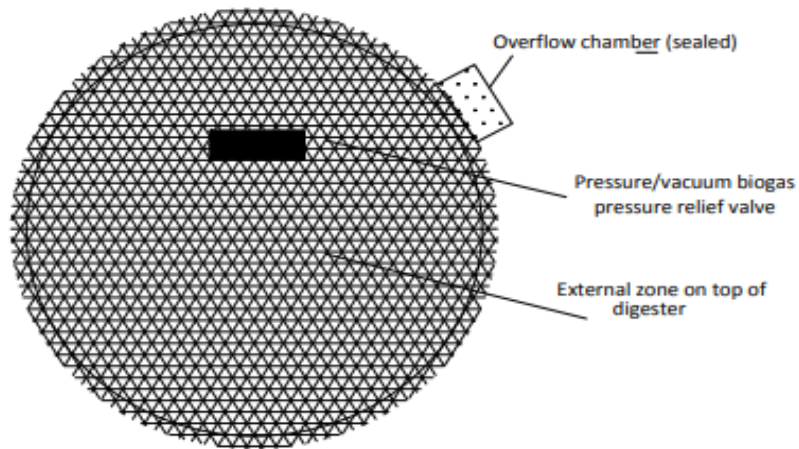


Figure 7: Digester 3.

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 & 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.	3	2	6

The drawing illustrating the extent of the hazardous zoning around the digesters and post-digesters is included in section 5.4.1.

DIGESTER (X3) & POST-DIGESTER PLAN (X2)



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DSEAR
 DIGESTER & POST-DIGESTER PLAN

SHEET 4 OF 12

PROJECT: PEACEWTW DRAWING NO: 111593

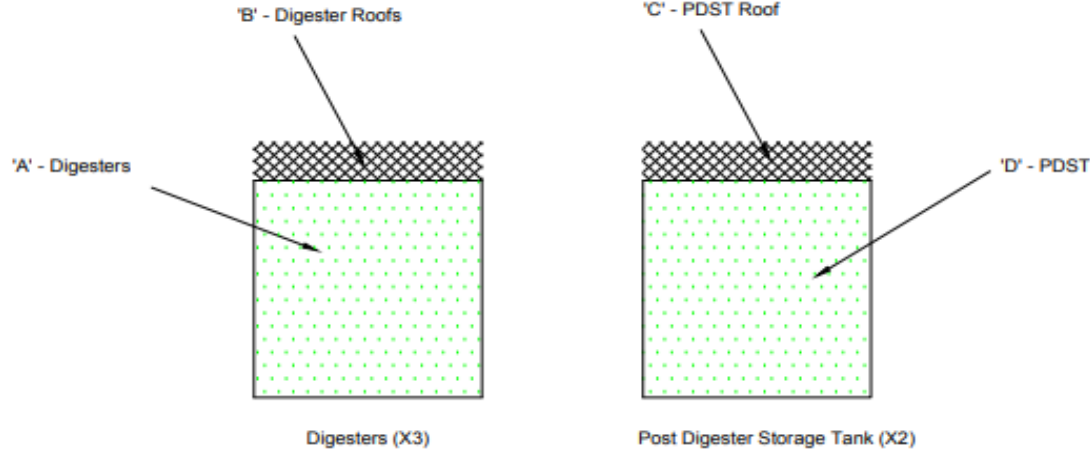
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	A	OVERFLOW CHAMBER (SEALED)	0		INTERNALLY
	B	EXTERNAL ZONE ON TOP OF DIGESTER	1		EXTERNALLY
					EXTERNALLY 'V' + 'H' - 3m

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DIGESTERS (X3) & POST-DIGESTERS ELEVATION (X2)



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ZONE 0	A	DIGESTERS (X2)	0	2	INTERNALLY
	B	DIGESTERS ROOFS (X2)	1	2	EXTERNALLY - 3m V + H TO THE EDGE OF ROOFS
	C	POST DIGESTER STORAGE TANK ROOF	1	2	EXTERNALLY - 3m V + H TO THE EDGE OF ROOF
ZONE 1	D	POST DIGESTER STORAGE TANK	0	2	INTERNALLY
ZONE 2					

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DSEAR DIGESTER ELEVATION

SHEET 5 OF 12

PROJECT: PEACHTW DRAWING NO: 111093

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5.4.4 Post digester 1 (secondary digester)

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



Figure 8: Post-digester 1.

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

The drawing illustrating the extent of the hazardous zoning around the digesters and post-digesters is included in section 5.4.1.



5.4.5 Post digester 2 (secondary digester)

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



Figure 9: Post digester 2.

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

The drawing illustrating the extent of the hazardous zoning around the digesters and post-digesters is included in section 5.4.1.



5.4.6 Polyelectrolyte

There are three polyelectrolyte dust hopper / dispenser units on site.

Following Southern Water's MED 4004 April 2015^{PL}, the receiving vessel is allocated a zone 21 classification internally and the external area is allocated a zone 22 classification for 1m.



Figure 10: Polyelectrolyte dispensers 1 & 2.

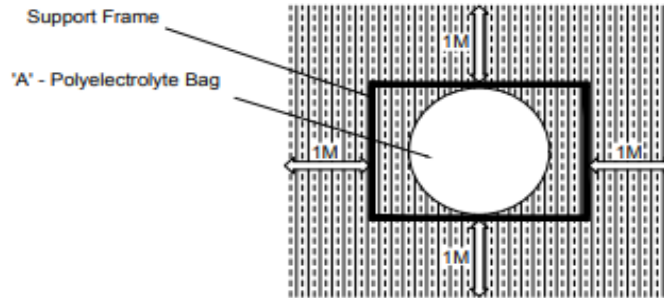


Figure 11: Polyelectrolyte dispenser 3.



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 or IP5x must be used as a minimum – see catalogued equipment.	2	2	4

POLYELECTROLYTE DISPENSER PLAN



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 POLY DISPENSER PLAN

SHEET 6 OF 12

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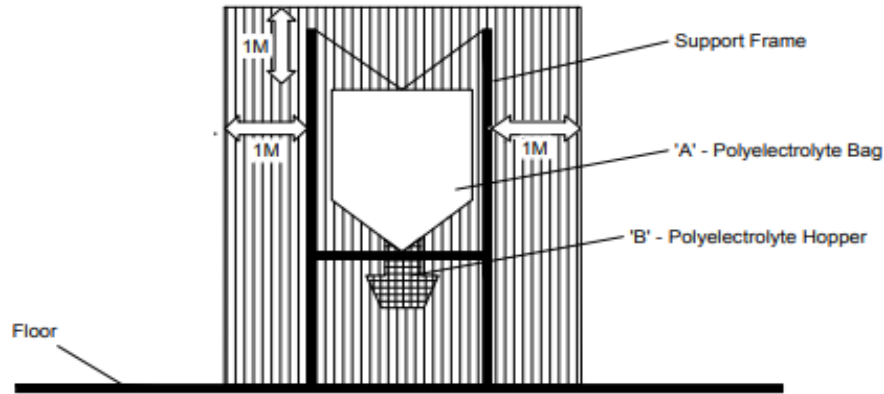
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ZONE 20	A	POLYELECTROLYTE DISPENSER	22	4	EXTERNALLY - 1M 'H' AND 1M 'V' EXTENDING TO FLOOR
ZONE 21					
ZONE 22					

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POLYELECTROLYTE DISPENSER ELEVATION (X3)



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	A	POLYELECTROLYTE DISPENSER	22	4	EXTERNALLY - 1M 'H' AND 1M 'V' EXTENDING TO FLOOR

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OSCAR
 POLYELECTROLYTE DISPENSER ELEVATION

SHEET 7 OF 12

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5.4.7 Post digestion sludge cake storage silo

The sludge storage silo at Peacehaven STC is located inside and appeared to be causing multiple, large sludge spillages, see Figure 14.

Based on Southern Water's MED 4004 April 2015³, 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 12: Storage silo.



Figure 13: Equipment below silo.

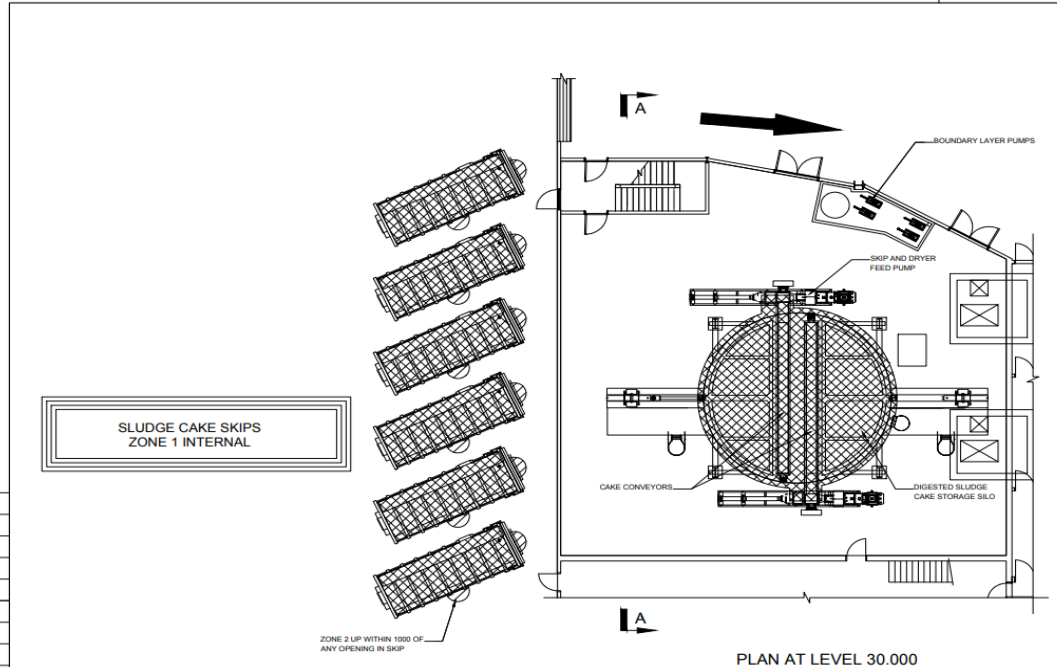


Figure 14: Ex sign & spillage from silo.



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.	2	2	4
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 ³

³ According to Southern Water, there is no equipment located on top of the post digestion sludge cake storage silo.



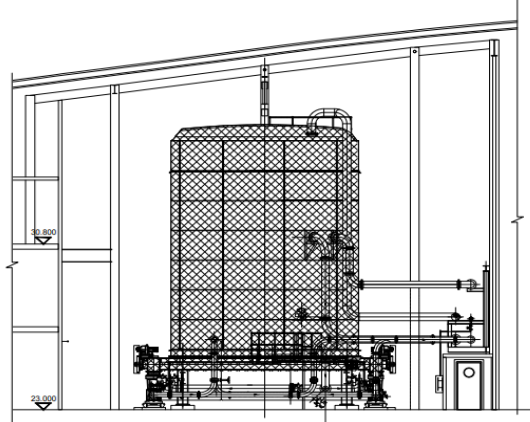
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SKIP AND DRYER FEED PUMPS HOPPER - ZONE 1 INTERNAL.

SLUDGE CAKE SKIPS
ZONE 1 INTERNAL

ZONE 2 UP WITHIN 1000 OF
ANY OPENING IN SKIP

PLAN AT LEVEL 30.000



SECTION A-A



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 - ZONE 2 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE CONSISTING OF A MIXTURE WITH AIR OF DANGEROUS SUBSTANCES IN THE FORM OF GAS, VAPOUR OR MIST IS LIKELY TO OCCUR IN NORMAL OPERATION BUT IF IT DOES OCCUR, WILL PERSIST FOR A SHORT PERIOD ONLY.
 - ZONE 20 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE, IN THE FORM OF COMBUSTIBLE DUST IN AIR IS PRESENT CONTINUOUSLY, OR FOR LONG PERIODS OR FREQUENTLY.
 - ZONE 21 - A PLACE IN WHICH AN EXPLOSIVE ATMOSPHERE, IN THE FORM OF COMBUSTIBLE DUST IN AIR IS LIKELY TO OCCUR IN NORMAL OPERATION OCCASIONALLY.
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DIGESTED SLUDGE CAKES STORAGE SILO
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SHEET 8 OF 12

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5.5 Gas storage

5.5.1 Boiler house

There are two boilers at Peacehaven STC. They are located in 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 15: Boiler house.



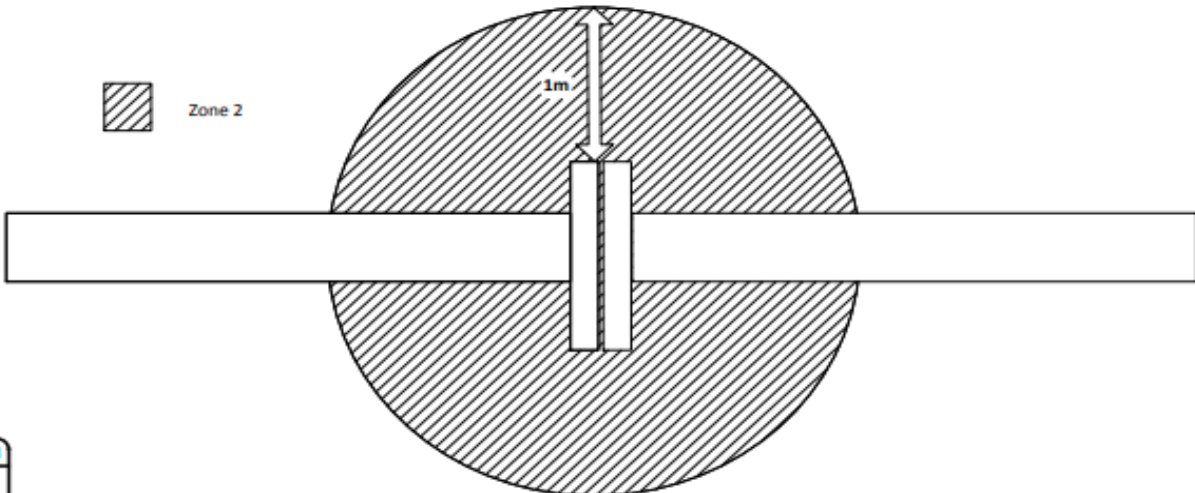
Figure 16: Boiler 1.



Figure 17: Boiler 2.

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

Biogas and Natural Gas pipe flange



 Zone 2



1m

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5.5.2 Gas storage area

5.5.2.1 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 2015¹².



Figure 18: 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	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



5.5.2.2 Gas condensate pit

The gas condensate pit in the gas holder compound was below a grid and therefore open to atmosphere.

Based on Southern Water's MED 4004 April 2015¹², zone 2 internally.

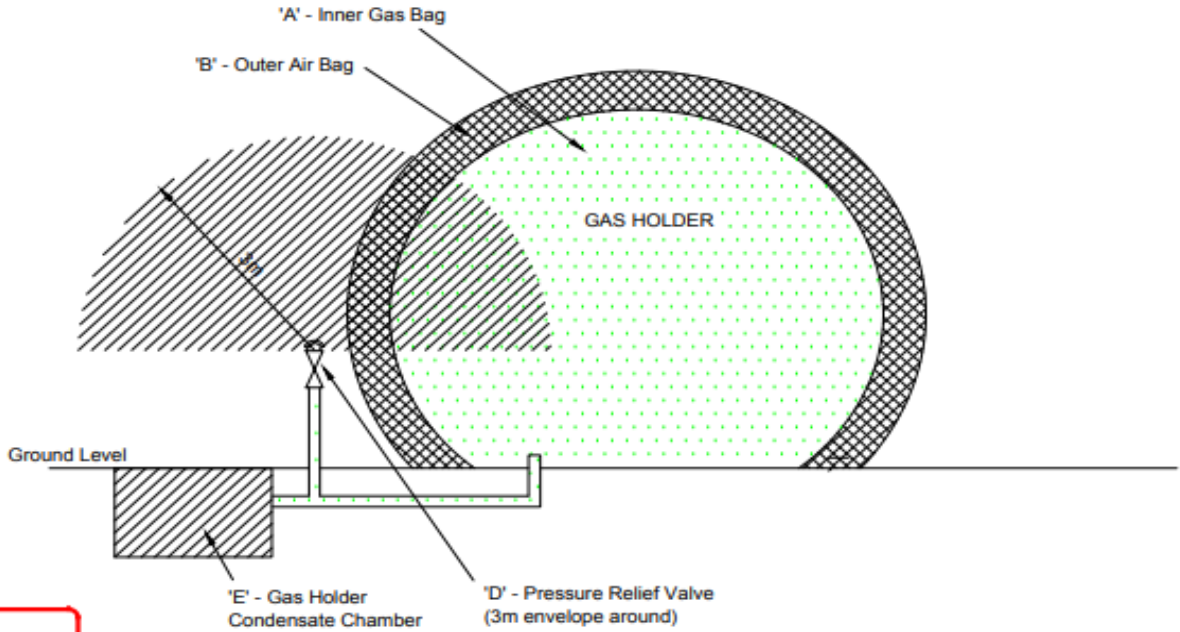
The equipment in the condensate trap was not catalogued as BRE aren't contracted to work in confined spaces.'



Figure 19: Condensate trap, gas holder compound.

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

GAS HOLDER AREA 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 0		A	INNER GAS BAG	0	2	INTERNALLY
		B	OUTER AIR BAG	1	2	INTERNALLY
		C	AIR BLOWERS (X2)	1	2	INTERNALLY
ZONE 1		D	PRESSURE RELIEF VALVE	2	2	EXTERNALLY -3M, 'V' AND 'H'
		E	GAS HOLDER CONDENSATE CHAMBER	2	2	INTERNALLY
ZONE 2						

PEACOCKWEN WTW
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DSSAR
 GAS BAG ELEVATION

SHEET 11 OF 12

PEACE WTW
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5.5.3 CHP

The existing CHP plant is not allocated a zoned area. The CHP plant appeared to be similar to those at Budds Farm, Millbrook and Ashford and therefore the air flow through the CHP plant is sufficient to ensure a flammable atmosphere is highly unlikely to develop. The zone is based on the continual operation of the ventilation system.



Figure 20: CHP plant, Finning Power Systems.

5.5.4 Flare stack area

According to Southern Water's MED 4004 April 2015,¹⁴ 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 to determine Ex certification.



Figure 21: Flare stack compound.



5.5.5 Gas condensate traps

There are two stand-alone gas condensate receivers at Peacehaven STC. The first is located outside the disused dryer building and the second is located near the flare stack compound.

Based on Southern Water's MED 4004 April 2015,¹⁴ the condensate receiver is allocated a zone 2 externally 3m around the condensate outlet in all directions.



Figure 22: Condensate receiver, dryer building.



Figure 23: Condensate receiver, flare stack.

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



5.6 Diesel storage

There are two double-skinned diesel storage tanks on site at Peacehaven STC. One is located near the main reception building (Figure 25) and the second is a temporary generator and tank next to the disused, dryer building (Figure 24).

According to guidance given in the 'Energy Institute: Model code of safe practice Part 15 – Area classification code for installation handling flammable fluids' the diesel tanks were allocated a zone 1 internally above the liquid level.



Figure 24: Temporary generator & diesel tank.

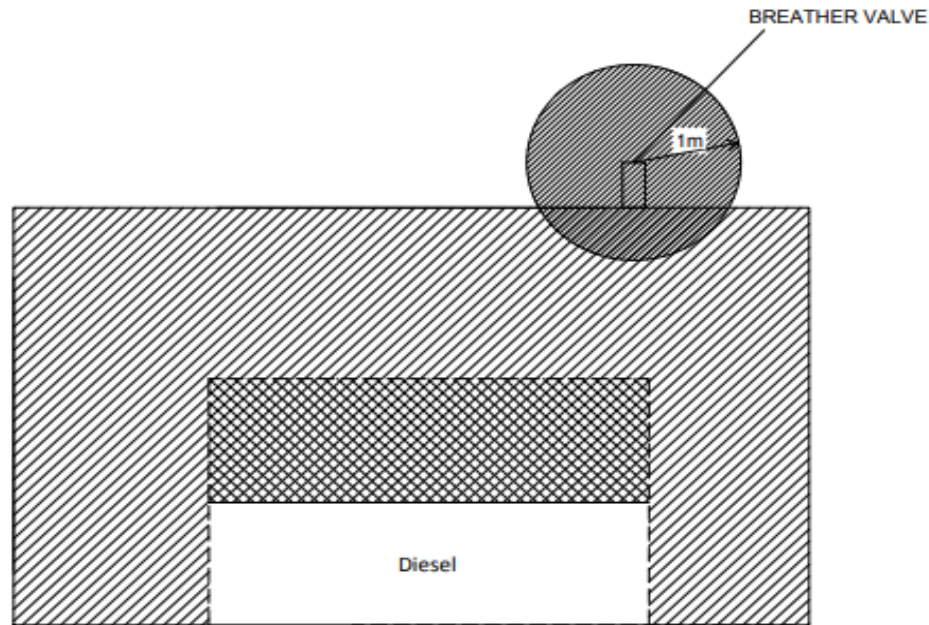


Figure 25: Permanent diesel tank.

As both diesel tanks are double skinned, no hazardous area classification exists outside the tanks.

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

DIESEL TANK - DOUBLE SKINNED (X2)



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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 					

PEACEHAVEN WTR,
 HOYLE ROAD, PEACEHAVEN,
 EAST SUSSEX, BN10 8LW

DIESEL
 DIESEL TANK - DOUBLE SKINNED

SHEET 12 OF 12

PROJECT: PEACE WTR
 DATE: 11/03/19

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7 FIRE RISK ASSESSMENT

A copy of the site Fire Risk Assessment needs to be stored with this Grab Pack.

Electronic link to Site Fire Risk Assessment. [FRA - Peacehaven STC 05-10-22 PS281 Rev B.pdf](#)

8 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 \(southernwater.co.uk\)](https://www.southernwater.co.uk/coshh)

