MOTT MACDONALD

Millbrook Sludge Treatment Centre

Accident Management Plan

September 2024

This page left intentionally blank for pagination.

Mott MacDonald
4th Floor
Mountbatten House
Grosvenor Square
Southampton SO15 2JU
United Kingdom

T +44 (0)23 8062 8800
mottmac.com

Millbrook Sludge Treatment Centre

Accident Management Plan

September 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	March 2024	Amelia Luk	David Dray	Anita Manns	Draft March 2024
B	June 2024	Amelia Luk	Shannon Stone	Anita Manns	For review
C	Sept 2024	Amelia Luk	Shannon Stone	Anita Manns	Submission

Document reference: 790101_MSD_AMP_MIL September 2024 |

Information class: Standard

Contents

Tables

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 the Millbrook Sludge Treatment Centre (STC) and Slowhill Copse Sludge Reception (SHCSR) ('the Site'). This plan will support the SHCSR and Millbrook 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 Slowhill and Millbrook; 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 Millbrook STC is manned during opening hours (7am – 7pm), and staff are on call.

The SHCSR is manned only on weekdays, 07:30-16:00 Monday to Wednesday, and 07:30-15:00 Thursday to Friday.

Both sites operate 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. 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) 03708 506506 (Routine enquiries)
Emergency Services	999	999
Local Police	999	999
Local Hospital	Southampton General Hospital Tremona Road Southampton Hampshire SO16 6YD	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 Environmental enquiries. Southampton City Council 023 8083 4777	023 8023 3344
Borough Council	Southampton City Council 023 8023 3000	Southampton City Council 023 8023 3344 (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	UK Power Networks

Contact	Office Hours	Out of Hours
	08433 102243	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 SHCSR is situated on Bury Road which approximately 1.1km to southeast of the Millbrook STC. The SHCSR is bordered by green spaces to the east, south, west, and River Test.

Sludge & Cess reception in the SHCSR is transferred to Millbrook STC for processing via a pipeline under the river test.

Activity address: Slowhill Copse, Marchwood Wastewater Treatment Works, Bury Road, Marchwood, Southampton, SO40 4UD.

National grid reference: SU 38396, 11159

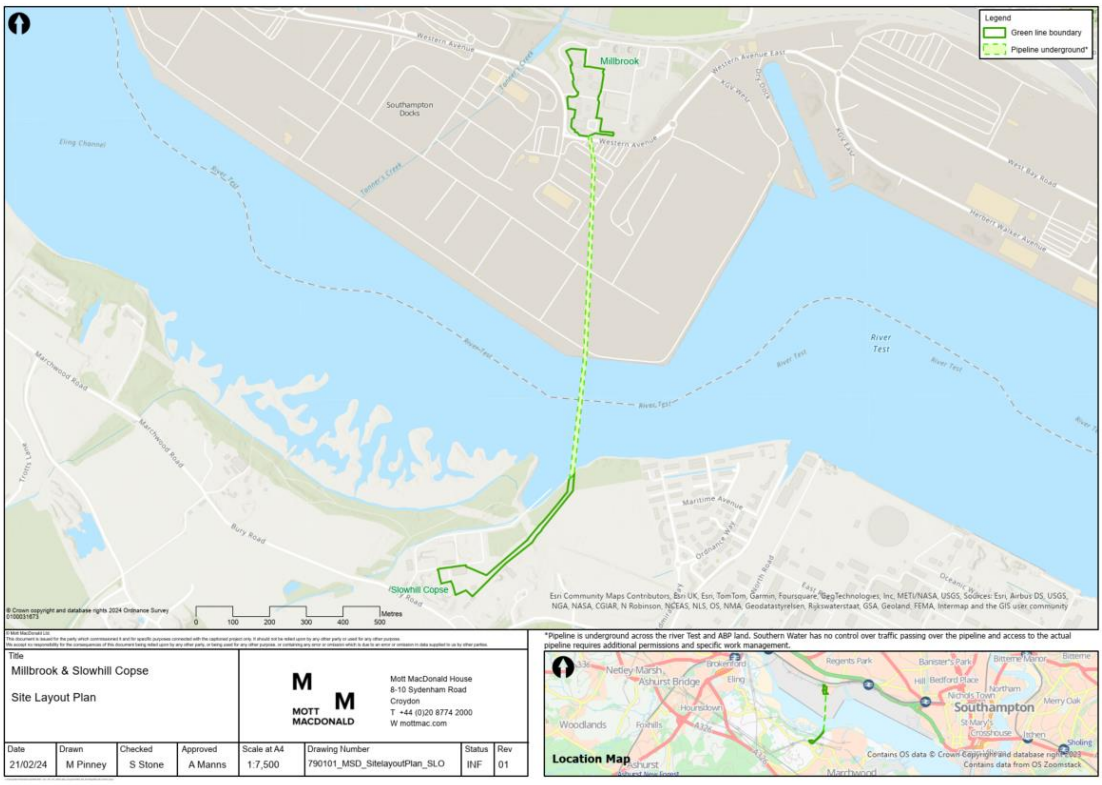
The Millbrook STC is located within the Port of Southampton, approximately 3.4km west of the city of Southampton, Hampshire. The Millbrook facility was built in the 1960s. The STC's catchment serves parts of Southampton City.

Activity Site address: Western Docks, Millbrook, Hampshire, SO15 0HH

National grid reference: SU 38755 12378

The location of the two Sites is shown in Figure 2.1.

Figure 2.1: Locations of Slowhill Copse sludge reception and Millbrook STC



2.2 Summary of Site and sensitive receptors

The Millbrook STC lies within an industrial setting of Southampton Docks, approximately 3.8km west of Southampton city centre. There are no residential receptors in the immediate vicinity of the site. The nearest residential receptors are located at Millbrook Road West (road), approximately 300m north of the Site.

There are a number of sensitive receptors within 250m of the potential emission sources at Millbrook STC. As demonstrated in Figure A.4 in document 790101_ERA_MIL September 2024, the receptors closest to a potential emission source are industrial facilities north of the Site, which are located approximately 40m northeast of the reception site. The receptor closest to a potential emission source for SHCSR is an industrial facility, which is located approximately 30m southeast of the unscreened sludge tanks. There are six areas of sensitive receptors found within 500m of potential emission sources at the SHCSR. Three areas of industrial land use are located to the southeast, west and northwest of the SHCSR, whilst two areas of residential properties are located to the southeast and west. One recreational land use is located to the southeast. The receptor closest to a potential emission source is an industrial facility, which is located approximately 30m southeast of the unscreened sludge tanks.

3 Accident Management Techniques

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

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

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

Table 3.1: Supporting Emergency Procedures – IMP

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

Procedure Reference	Brief Summary
EMS 365 Discharges Procedure	Defines the procedure that must be adopted when managing intermittent discharges. Outlines the responsibilities of staff in relation to the procedure and outlines the procedure where an emergency discharge is foreseeable for both emergency and stormwater and potable water. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 381 Operational Waste Procedures	Specifies the procedure for managing wastes. The procedure addresses the definitions of different waste types and outlines a general procedure for managing waste. Identifies where further procedures should also be followed for specific waste types e.g., asbestos, WEEE and waste oils. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 382 Hazardous Waste Procedures	Specifies the procedure for moving hazardous waste between different sites. The procedure addresses identifying hazardous waste, storage of hazardous waste, consignment notes and record keeping. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 461 Chemical Risk Assessment (Form)	A template for a chemical risk assessment including the following: • Site details • Chemical details • Chemical classification • Risk activity • Risks for health, fire/DSEAR[1] and environment • Handling, usage and storage requirements • Management of spills • Disposal and the safety data sheet.
EMS 480 Waste Descriptions	Provides written descriptions of different waste types covering the following: • Process giving rise to the waste • Waste characteristics • Handling advice • Containment • Disposal • Name of waste • Waste classification • Producer and registered office details • EWC • Controlled Waste Regulations 2012 description • Waste type • Form • Temperature • SIC code Information on the auditing, training requirements, reporting forms and any associated documents.
FEC 307 Reporting of Unauthorised Access, Including Loss, Theft and Vandalism	Outlines the responsibilities of staff in relations to the reporting these incidents, and the procedure to be followed. Also includes Information on the auditing, training requirements and any associated documents.
FEC 320 Process Related Incidents	Specifies the procedures to follow in responding to process-related pollution incidents. Responsibilities of staff are outlined in the procedure, as well as contacting the FEC, FEC actions and reporting procedures. Information on the auditing, training requirements, reporting forms and any associated documents

[1] Dangerous Substances and Explosive Atmosphere Regulations

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

Site-specific Fire Prevention Plans are available for both Millbrook STC and for the SHCSR to reduce the risk of fire and explosion. Please see the site-specific Fire Prevention Plan for full details of corrective measures.

3.1 Loss of Containment

3.1.1 Gas Escape

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

- The gas holders are double-membrane inflatable bag type holders, constructed of a Type IV fabric[2], 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 Millbrook site. The IMP includes actions to be followed in the event of a loss of containment of gaseous materials at the Installation.

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

A Leak Detection and Repair (LDAR) plan is in place for Millbrook STC and the SHCSR (document references 790101_MSD_LDAR_MIL August 2024 and 790101_MSD_LDAR_SHC August 2024)

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

3.1.3 Material Storage

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

The levels of raw materials are checked and recorded.

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

The following are requirements for deliveries on site:

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

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

3.1.4 Odour

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

Sewage, sewage sludges and returned liquors can all contribute to odour on a STC. A number of odour release points/areas have been identified in Millbrook 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 LDAR[3] plan and Odour Management Plan (OMP). Regular site inspections and sniff checks are undertaken by the site team to ensure that no significant fugitive emissions of odour likely to cause pollution of the environment, adversely impact human health or significantly reduce the amenity of the local area are present. In the event of an accidental emission of odorous material from site storage facilities or pipework, the source of the emission will be isolated, investigated and, if required, operation suspended until the source of the emission has been sealed.

3.1.5 Vandalism and unauthorised access

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

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

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

The following measures have also been adopted as security measures:

- For visitors and unauthorised personnel, an intercom system at the Site entrance is used before entry is allowed.
- On arrival at site, visitors must sign the visitor's book and also announce their arrival to staff in the control room.
- The Millbrook STC is manned during opening hours (7am – 7pm), and staff are on call.
- The SHCSR is manned only on weekdays, 07:30-16:00 Monday to Wednesday, and 07:30-15:00 Thursday to Friday.
- CCTV cameras are located at the inlet, gas holder and access gate of the Millbrook STC.

[3] 790101_MSD_LDAR_MIL June 2024 and 790101_MSD_LDAR_SLO June 2024

- CCTV cameras are located at the inlet, diesel tanks and sludge reception points at SHCSR.
- Access to the Millbrook STC and waste is restricted by 8ft chain-link fencing and the entrance to the Site is secured by automatically operated gates which are closed during operating hours.
- Access to the SHCSR is restricted by secure, 6ft perimeter fencing. There is also a padlocked gate which is manually operated, and a locked gate policy is adhered to.
- At both the Millbrook STC and SHCSR, 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

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

Site	Raw Material / Process Chemical	Maximum storage amount (tonnes or m^3)	Storage
Millbrook STC	Biogas	1000m^3	Biogas Holder Digester Headspace
	Diesel Oil	515m^3	Outside Site Reception, By Inlet MCC and By BNR MCC
	Sludge	523m^3	Sludge Reception Tank
	Polymer	6 x 1m^3/750kg bags	Inside centrifuge building
	Lime	30m^3	Lime Plant
	Methanol	70m^3	Storage tank

Site	Raw Material / Process Chemical	Maximum storage amount (tonnes or m^3)	Storage
	Diesel for plant (JCB Loader / MTS Tankers & Chemical Delivery tankers).	<200Ltrs Diesel Fuel tank on machine	Digester headspace
	Antifoam	1m^3	Intermediate Bulk Container (IBC)
	Sludge	10751m^3	Digesters
	Sludge	1070m^3	Thickened sludge storage tanks
	Sodium Hydroxide	27m^3	Tanks
	Sodium Hypochlorite	6m^3	Tanks
	Sludge	2000m^3	Tank
	Cobra - Liquid odorant (Atom N3 Neutraliser)	1000 litres	IBC
	Cobra - Dry vapour Odour and Gas neutraliser (Oxi-max)	25 litres	Mobile tank
	Lubrication oil - Fresh oil (Chevron HDAX 6500 Engine Oil)	4600 litres	5 Gallon Pails
	Coolant (Delo XLC Antifreeze Coolant)	650 litres	Pail container
	Carbon filters (GXB Virgin Carbon)	2 x 2 tonne filters used	Within OCU system
SHCSR	Sludge	1500m^3	Screened sludge storage tanks
	Sludge	3600m^3	Sludge storage tanks

3.1.8 Fire

Operational activities at the Site 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 Site. 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 Millbrook site, plus adherence to a locked gate policy.

3.1.10 Contingency for Sludge Treatment and Reception 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 plans of the Site.

Table 3.3: Mitigation measures with sludge treatment incidents

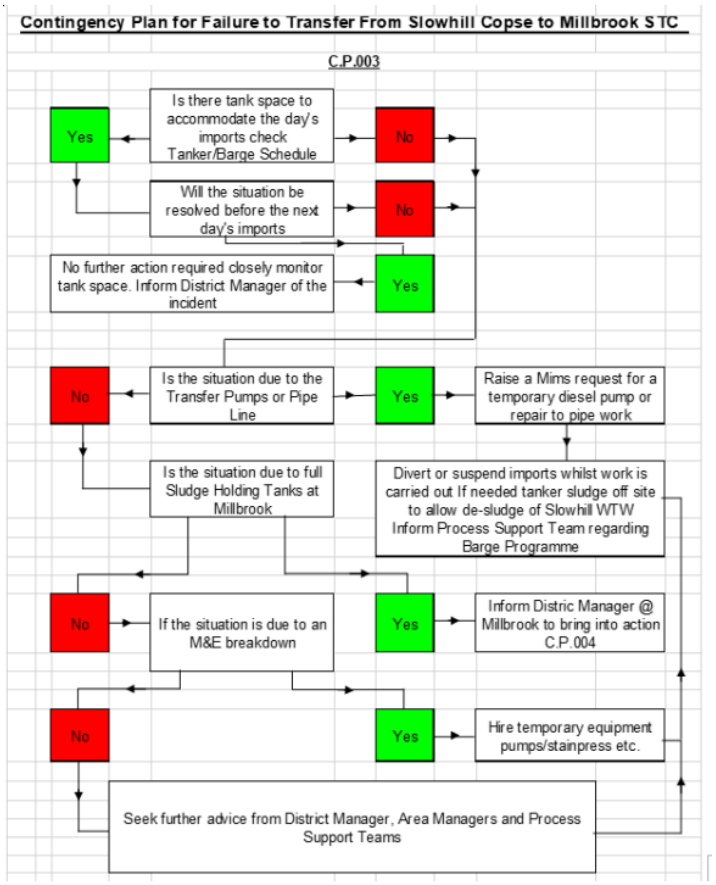
Incident	Mitigation measures
Millbrook STC	
Sludge cake import reception	• Site closure to all cake imports. Sludge team to make arrangements for alternative disposal until the issue has been rectified.
Sludge strainpress	• A standby Strainpress is available by re-routing sludge through one of the other available strainpresses (see SCADA for re-routing plan). MEICA teams repair any non-operational plant as soon as possible.
Screened Sludge Storage Tanks	• MEICA teams repair any non-operational plant as soon as possible. If tanks are at a critical level due to process issues downstream, a mobile centrifuge can be used to produce raw cake for treatment at another STC. • Consider reducing flow from SHCSR.
Gravity belt thickeners (GBT)	• Standby GBT available. MEICA teams repair any non-operational plant as soon as possible. Raise a P1 emergency job for our framework partner responsible for GBT work. • Critical spares are kept in the store by the inlet pumping station.
Polymer Make up systems	• Use temporary polymer make up rig. • Polymer used Kemira superfloc C498 HMW on Centrifuge and C496 on GBTs. • Emulsion equivalent superfloc C6596 for the GBTs and C6598 for the Centrifuge. • MEICA teams repair any non-operational plant as soon as possible.
Thickened Sludge Storage Tanks	• Short-term diversion of all import sludge and halting of indigenous de-sludge. Tankers can be used as a nurse tank to convey sludge from GBTs to Digesters. • Over pumping can be setup for medium/longer term outage.
Digester Feed Pumps	• A standby pump is available in the event of pump failure. MEICA teams repair any non-operational plant as soon as possible.
Digesters 4 No	• Loss of digester throughput will necessitate in the diversion of most/all road imports into SHCSR and cake imports into Millbrook to alternative disposal facilities. Priority must be given to the Millbrook and Slowhill indigenous sludge. **Retention time reducing to CCP limit:**

Incident	Mitigation measures
	• Check that feeding has been stopped automatically if the daily feed volume has been exceeded. • Check for site issues relating to digester feeding with the FPM/Process Scientist and agree action plan to resolve any plant issues and agree subsequent feed plan to increase retention times to target (Ideal minimum14 days retention). • Monitor feed rates in accordance with agreed plan. • Discuss further with FPM/Process Scientist if feed plan is not being adhered to and take further action to address as necessary. • Note: no requirement for producing breach report as CCP limit has not been breached. **7 day rolling average for retention time has exceeded critical limit** • Check that feeding to digester has stopped. • Quarantine cake and divert to an empty cake bay off site to be used solely for storage of quarantined material. • Discuss with FPM/Process Scientist issues over feed rates and agree action plan to resolve and a feeding plan to increase retention times to above minimum CCP limits and then on to target. • Monitor feed rate in accordance with feeding plan. • Identify when retention times are above minimum critical limits as cake can then be diverted away from quarantined cake bay. • Complete breach report. Digester temperature reducing to CCP limit. • Check that feeding has been stopped if temperature is continuing to fall below 32ºC. • Check for site issues relating to digester temperature with the FPM/Process Scientist and agree action plan to resolve any plant issues and agree subsequent feed plan to ensure digester temperature increases to desired levels. • Monitor digester temperatures and feed rates in accordance with agreed plan. • Discuss further with FPM/Process Scientist if feed plan is not being adhered to and take further action to address as necessary. • Note: no requirement for producing breach report as CCP limit has not been breached. **7 day rolling average for digester temperature has exceeded critical limit** • Check that feeding has stopped if the digester temperature 7 day rolling average has fallen below 32ºC. • Quarantine cake and divert to an empty cake bay off site to be used solely for storage of quarantined material. • Discuss with FPM/Process Scientist issues over digester temperature and heating system and agree action plan to resolve and a feeding plan to achieve digester temperature within CCP limits. • Monitor digester temperature and feed rate in accordance with feeding plan. • Identify when digester temperature is back within critical limits as cake can then be diverted away from quarantined cake bay. • Complete breach report. • Sludge Team to make arrangements for alternative disposal until issue rectified. **Digester recirculation** • A spare pump is available from the store by the inlet pumping station. If no spares are available and digester temperatures are dropping, then an available pump can be swapped for the unavailable pump by removing and replacing. Be aware of the temperatures in the digester that has had the pump removed and if this temperature drops then the

Incident	Mitigation measures
	pump will need to be replaced. Pumps can be moved around, as required, until the full number is available.
Post Digestion Storage Tanks	• Temporary tank storage to be brought on to site as a medium to long term arrangement. • If tanks are full and process is inhibited ensure centrifuge is running at max throughput, if centrifuges are unavailable see below.
Centrifuges Feed Pumps 3 No.	• A Duty / Assist / Standby centrifuge flow stream is available in the event of pump failure. Standby centrifuge must be available due to dedicated feed from each feed pump. MEICA teams repair any non-operational plant as soon as possible.
Centrifuges 3 No.	• A Duty / Assist / Standby centrifuge flow stream is available in the event of a centrifuge failure. Standby feed pump must be available due to dedicated feed to each centrifuge. MEICA teams repair any non-operational plant as soon as possible. **Failure of Centrifuges** In the event of failure of all centrifuges onsite • Raise a P1 emergency job for our framework partner responsible for centrifuge work. • Ascertain the levels within the PDST's onsite to see if digester throughput will be affected. • If outage is total and due to be ongoing for >1 days mobilise a mobile centrifuge to ensure digester throughput is maintained. • Short term; Reduce imports and tanker digested sludge to another STC for treatment, seek further information for disposal site.
Lime dosing system Dosing Pumps	• A standby lime dosing pump is available in the event of a pump failure. Dedicated lime dosing to each centrifuge flow stream. Standby centrifuge and feed pump must therefore remain fully operational. – If lime rig fails to operate investigate issues with FPM/Process Scientist and agree action plan to address. – If pH <8.5 halt removal of cake from site and implement quarantine procedures. – Check lime dose rate and lime dosing operation. Ensure pipework is not blocked and lime is being discharged into the centrifuge feed pipework. – Turn up dose rate and re-check cake pH. If pH still <8.5 continue to quarantine cake produced. HACCP Process Scientist to discuss options to increase pH with site FPM and agree plan. – Implement plan to correct pH and continue to monitor pH of sludge until back within range. – Quarantine off spec cake and store for a maturation period. – Complete breach report.
Biogas / Flare stack / CHP / Boilers	**In the event of a gas leak – Complete a personal Risk Assessment** • Locate and close associated ECV which will isolate the gas line to the affected area. • In the event of a fire locate and isolate associated ECV if safe to do so. • Activate any emergency stops as applicable. • Inform site FPM (in hours) or Duty Manager (out of hours). • Raise emergency P1 for gas service provider to attend and resolve the issue. • Significant Whessoe release - Inform as a pollution. This is a secondary defence to stop over pressure in the digesters and Post digesters. Try and get the flare stack or the CHP running ASAP. Reduce/stop feed to digester to stop foam overs. Get Gas Service Provider to flush the gas lines if required. **Failure of Flare Stack**

Incident	Mitigation measures
	• A flare stack failure along with the CHP failure will result in safety release of biogas from the Whessoe Valves located on the roofs of the digesters, PDSTs and the Whessoe valves located in the gas holder compound. This is to prevent over pressurisation of the digesters and gas systems. • Raise a P1 emergency job for our framework partner responsible for biogas work. • Restrict access completely to the gas holder compound, to the roofs of all digesters and PDSTs. Erect warning signs and replace padlocks with single key padlocks to prevent unintentional access. • Escalate & report to the pollutions team on 07557 152385. • Reduce or inhibit the digester feed to reduce the biogas generation and the volume being released. **CHP NB: monitored/responded by Service Provider** • STC to contact Service Provider and provide correct quantity/quality of biogas information. Gas bag volume and pressure is visible on SCADA/Prism.
PLC Failure	• UPS will run SCADA for a limited time. Long term loss of power will result in no sludge throughput and compliance issues to the catchment. • May need to power essential PLCs with a mobile generator.
Power Failure	• Automatic changeover to standby generation of inlet works and remaining WTW. • No STC generator –SCADA will run and essential biogas areas will be powered for a limited time. • Long term loss of power will result in no sludge throughput and compliance issues to the site and sludge catchment. **To run the BNR Generator** • Go to Main BNR MCC. • Above the main incomer ACB there are two switches. • The left hand Switch will be in the Auto Position. • This will need to be placed into the Hand Position. • The right hand switch will need to be placed in the Open Position. • Once this is completed the main incomer ACB will open and the Generator will start and then close the generator Main ACB. • To put the system back onto the Main Power Supply the following should be done: – Above the main incomer ACB there are two Switches. – The right hand switch will need to be placed in the Close Position. – The left hand Switch will be in the Hand Position, this will need to be placed into the Auto Position. – The main incomer ACB will close and the generator will run on for 15 minute then the generator main ACB will open. – The site will now be back on the main incoming supply.
Contaminated Trade	• No commercial tankered waste imports. In the event of an injurious substance entering the process, the Process Scientist is to decide the best course of action to take as per the individual circumstances.
Reduced Sludge Disposal	• Diversion of all road imports into SHCSR and Millbrook STC to alternative disposal facilities. Priority must be given to Millbrook and Slowhill indigenous sludge. • Sludge team to make arrangements for alternative disposal until issue rectified.
Odour Control	• MEICA teams repair any non-operational plant as soon as possible.

Incident	Mitigation measures
	• Ensure any spills are cleaned up, shutter doors are closed and hatches / covers are sealed down. • Follow odour management plan. • In the event of a total failure of the unit raise a P1 emergency job for our framework partner responsible for Odour Control work.
SHCSR	
Sludge Reception	In the event of failure, hire pumps will be required MEICA teams repair any non-operational plant as soon as possible.
Sludge Holding Tanks	• If tanks are full Increase flow across to Millbrook STC if required and investigate the reason why. • MEICA teams repair any non-operational plant as soon as possible. • If tanks are at a critical level due to process issues downstream, a mobile centrifuge can be used to produce raw cake for treatment at another STC. Imports will need to be diverted. • Tankers can be used to transport sludge to Millbrook STC
Sludge Strainpress	• A standby Strainpress is available. MEICA teams repair any non-operational plant as soon as possible. • If both strainpresses fail a temporary unit will need to be brought in for longer term issues. • Tankers can be used to transport sludge to Millbrook STC
Screened Sludge Storage Tanks	• If tanks are full Increase flow across to Millbrook STC if required and investigate the reason why. • One tank can be used in isolation, and tank levels will need to be monitored closely on SCADA with tankering to Millbrook as contingency if the remaining one tank struggles with flow. • If both tanks fail then temporary tank storage to be brought on to site and diversion of all imports, and the requirement to tanker indigenous sludge to Millbrook STC.
Sludge Transfer Pumps	• Hired pumps will be required is both pumps fail. Tankers can be used to transport sludge to Millbrook STC
Transfer Pipeline to Millbrook	• Only one pipe is connected. Failure of pipe can only be identified on • SCADA as loss of transfer flow at Millbrook STC or major pollution in • Southampton Water. Access to the change over pit is located on the way to the old barge loading dock, over the fence to the field on the right, turn left and follow the tree line until concrete plinth and manhole covers can be seen. • 2nd pipeline will have to be connected, Tankers can be used to transport sludge to Millbrook STC if required in the short term and storage on site will be compromised. • Details can refer to CP.003 – Contingency Plan for failure to transfer from SHCSR to Millbrook STC if required in the short term and storage on site will be compromised

Incident	Mitigation measures
	
Power Failure	• Automatic changeover to standby generation – UPS will run SCADA for a limited time. Long term loss of power will result in compliance issues to the catchment and no sludge transfer to Millbrook.
Hydraulic overload	• FFT flow control valve will restrict flows to maximum FFT whilst remaining flows pass directly to the storm tanks. Valve to be manually operated to achieve maximum FFT in the event of valve failure.
Site Flooding	• FFT to automatically send all flows to storm in the event of the ASP feed pumping station failure. However, this will result in non-compliant discharge.
Storming	• Storm tanks will fill as per the permit conditions. The tanks will need to be manually cleaned after any storm event. • Maintained 24-hour response telemetry alarm system to notify SWS of overflow operating.
Contaminated Trade	• In the event of an injurious substance entering the process, the Process Scientist is to decide the best course of action to take as per the individual circumstances.
Reduced Sludge Disposal	• Diversion of all road imports into SHCSR and Millbrook STC to alternative disposal facilities. Priority must be given to Slowhill indigenous sludge. • Sludge team to make arrangements for alternative disposal until issue rectified.
Odour Control	• Standby plant to operate in the event of plant failure. MEICA teams repair any non-operational plant as soon as possible. • Ensure any spills are cleaned up, shutter doors are closed and hatches / covers are sealed down.

Incident	Mitigation measures
	• Follow odour management plan • Raise a P1 emergency job for our framework partner responsible for • Odour Control work

4 Risk Assessment Methodology

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

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

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

Table 4.1: Severity Index

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

Table 4.2: Probability Index

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

Table 4.3: Magnitude of risk

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

Table 4.4: Accident risk assessment table

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
All surface waters close to and downstream of the Site.	Tank failure, spillages of digestate and/or liquids including oil. Damage to drainage system. Spillage of raw materials of sludge/liquor during delivery/storage. Contaminated run off from cake storage e.g. containing suspended solids.	Aquatic or chronic effects to aquatic life, contamination, and water deterioration of water quality.	Direct run-off from the Site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Medium	High	High	Potential for leaks from digestions tanks, storage vessels/bays and drainage system which may cause contamination or deterioration of surface water quality. The hardstanding and pavement across the site are in reasonable condition. Parts of the site are bunded including storage areas for raw materials and waste stored on-site, and as hardstanding is in place, all water flows to the drainage network which diverts all water to the head of works. Quantities of liquids stored are generally low. The nearest watercourse is the River Test 350m south east of Site.	The Site drainage plan is documented and all staff are trained in the event of emergency or accident. Impermeable surface and secondary containment, in the form of constructed bunds or portable bunds, is in place around storage areas of all wastes and raw materials surrounding the Site. There is a waste area where all skips and bins are stored on a hardstanding area. Additional containment around digesters and other storage vessels is subject to a risk assessment and will be undertaken as part of the BAT requirements and in accordance with the Construction Industry Research and Information Association (CIRIA) standard 736. All transfer of digestate and material takes place under supervision and with flow rate control. All tanks undergo a delegated inspection regime and the process parameters are monitored and understood by Site operatives. Digestion tanks are built to appropriate standard and require appropriate bunding. Cake is stored in an enclosed silo on-site. Cake is moved around the site by eight 20t tippers per day when cake is stored in the alternative cake bay (skip) and when the silo is not in use. Activities are managed and operated in accordance with the EMS. Spill procedures are in place under EMS363 and 364 as well as a pollution prevention procedure EMS360 All spillages are recorded in the site diary including actions taken. The Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is implemented effectively to minimise the probability of equipment malfunction.	Medium
Abstraction from watercourse downstream of facility (for agricultural or potable use).	Spillage of liquids, contaminated rainwater run-off from waste e.g. containing suspended solids.	Acute effects, closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains etc. then abstraction.	Low	Medium	Low	Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off. No groundwater abstractions are present on-site.		Low
Groundwater, land and surface water	Spillages of liquids, contaminated rainwater run-off from wate e.g. containing suspended solids. Sludge/liquid spillages as a result of loss of tank/pipe integrity carelessness during transfer or overfilling	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction at borehole or intake.	Low	Medium	Low	Potential for leaks from digestion tanks and storage vessels. Site infrastructure is generally in good condition. The hardstanding and pavement across the key areas of the site is in generally good condition, with only minor cracks. Quantities of liquids stored are generally low.		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**
								Control of substances hazardous to health (COSHH) assessments are undertaken for all raw materials. Both clean and contaminated surface water is directed to a pumping station which recirculates it back into the system. The surface drainage of potentially contaminated areas from within the Site boundary is routed into the head of the works with no discharge outside of the Site boundary. Regular inspections of the Site drainage systems and other equipment are undertaken, with any repairs and maintenance carried out if necessary. All complaints and other incidents are recorded in the site diary including actions taken. The condensate is clean, uncontaminated water and is small in quantity.	
Groundwater, land and surface water	Spillages of sludge/liquids during transfer of imported and indigenous/unknown sludge and liquids from tankers.	Acute or chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Low	Medium	Low	Potential for spillage during transfer of liquid/sludge from tankers. Five lorries a day of cake is imported to the Site from other Southern Water sites. Imported sludge is piped directly to the Site from SHCSR. Sludge cake is delivered in sealed containers. Cake is transported around the site via 20t tippers. Cake is dropped directly from the silo into the trucks.	Impermeable surface required for storage of all waste. Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented to reduce spills when transferring liquids/sludges from tankers. Established procedures are in place for the acceptance of tinkered trade waste (EMS387), waste duty of care (EMS380), operational waste procedures (EMS381) and waste rejection (EMS488). Compliance with the waste duty of care requirements to ensure waste accepted meets the permit conditions and relevant legislation. All liquid run off will be captured in the drainage network and returned to head of works.	Low
Groundwater, land and surface water	Flooding of site	If waste is washed off-site it may contaminate natural habitats downstream.	Flood waters	Low	Medium	Low	Permitted waste types are sludges/bio-solids, which may contain pathogens, so any waste washed off-site will add to the volume of the local post-flood clean up and may be hazardous to human health. Area is at risk of flooding, but there are no historical floods on record.	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	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
							The drains did experience backing up of water from the river during a high tide event in 2021.	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 local environment.	Flooding of the site.	If waste is washed off-site it may contaminate buildings / gardens / natural habitats downstream.	Flood waters	Low	Medium	Low	Permitted waste types are sludges/bio-solids, which may contain pathogens, so any waste washed off-site will add to the volume of the local post-flood clean up and may be hazardous to human health. The Site is located in 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, to the east of the site, a section of Southampton docks is located within a Zone 3 flooding risk area due to the proximity of the River Test. Areas within flood Zone 3 have been shown to be at a 1% or greater probability of flooding from rivers or 0.5% or greater probability of flooding from rivers/ the sea. Area is at risk of flooding, but there are no historical floods on record. The drains did experience backing up of water from the river during a high tide event in 2021.	The drainage network sends water to the head of the works for treatment. There are no direct potentially contaminated discharges to controlled surface waters. Activities to be managed and operated in accordance with a management system and management plans and procedures implemented, including the removal of spilled waste and other pollutants (such as use of spill kits and mobile bunds) before these could enter any flood waters if an event was to occur.	Low
Local human population and / or livestock after gaining unauthorised access to the installation.	All on-site hazards: machinery, wastes and vehicles.	Bodily injury, death.	Direct physical contact.	Low	Medium	Low	Potential injury to on-site personnel as a result of vehicle movements or equipment malfunction or misuse. Direct physical contact is minimised by activity being carried out within enclosed digesters so a low magnitude risk is estimated. Contact with waste is minimal with the exception of leaks or spills from unloading of tanker and transfer of filter cake.	Overall management of the site is overseen by an experienced member of staff holding an appropriate Certificate of Technical Competence (CoTC) awarded by the Waste Management Industry Training and Advisory Board. This competent person delegates responsibilities to appropriately experienced and trained site operatives throughout the operating hours. All operational staff are fully trained in the site operating procedures and Southern Water's safety and environmental management procedures and are kept up to date on changes. Training includes awareness raising of the potential on-site hazards and health and safety measures to adhere to.	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**
								Preventative measures will be under continuous review as part of the EMS procedures. Activities are managed and operated in accordance with the EMS – this includes site security measures to prevent unauthorised access. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Access to the Site and waste is restricted by automatically operated gates which are closed during operating hours. The Site perimeter is comprised of 8ft chain-link fencing. The Millbrook STC is manned during opening hours (7am – 7pm), and staff are on call. The There is CCTV at the inlet, gas holder and access gate. The SHCSR is manned only on weekdays, 07:30-16:00 Monday to Wednesday, and 07:30-15:00 Thursday to Friday. Authorised personnel can gain access to the Site using a fob system. For visitors and unauthorised personnel there is an automatic gate with an intercom system at the site entrance, and a visitor signing-in book is used. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements. Key sludge treatment and wastewater treatment activities undertaken within enclosed systems. 5 lorries a day of sludge are imported to the Site, seven days a week. Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is moved to cake bays once a trailer is full. Cake is removed from the site daily. The cake is dropped directly from the silo into tippers. Waste is removed as required. Therefore, frequent vehicle	

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**
								movements are typically undertaken only by site staff and maintenance contractors. 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.	
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. All sludge storage tanks are covered and enclosed. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals – this includes site security measures to prevent unauthorised access. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their roles in an emergency. The EMS includes procedures relating to maintenance and inspection of bunding of tanks. 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. Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site. The main site entrance is secured by an automictically operated gate. Furthermore, an 8ft chain-link fence surrounds the entire site	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 fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.		Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke, fumes and material released from tanks may cause irritation, illness or nuisance to local residents and site staff. Impact from the tank explosion may cause external damages to other equipment, buildings located close to the epicentre of the explosion.		

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**
								boundary to prevent unauthorised access of pedestrians. The Site also benefits from a CCTV system. There are CCTV cameras. All cameras are monitored and controlled from a control room. The Millbrook STC is manned 12 hours a day, 7 days a week, with 24/7 call out. The Slowhill site is manned only on weekdays, 07:30-16:00 Monday to Wednesday, and 07:30-15:00 Thursday to Friday.	
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 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	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 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.	The key sludge treatment and WTW processes are undertaken within enclosed systems Storage tanks are enclosed and covered. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals including, fire and spill management. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. A Fire Prevention Plan is not required to be submitted for the permit application as the biowaste process on-site is wet anaerobic digestion. However, fire prevention and environmental fire risk assessment procedures are provided in the EMS, H&S manual and Safety Instruction Book (SIB) (EMS362, H&S204, H&S440, and SIB603). There is also Safety zoning of areas under DSEAR/PEXA on-site and smoking is only permitted in designated areas. Firewater within a newly bunded area will be contained by the bund and allow for appropriate disposal. There will be no gravity hydraulic connection from the bund to the drainage system/return to head of works. Manual intervention by an operator will be required to start the pumps and remains subject to the pre-acceptance (sample/test) procedure to ensure the water is	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**
								appropriate for discharge to head of works. In the event of an incident, depending on the nature of the contamination (firewater in this context) the product will be held within the bund and be subject to alternative disposal methods. Depending on the scale and nature of the incident this may include temporary holding in road tankers to facilitate safe recovery activities. The detail regarding this procedure remains subject to further evaluation as solutions are designed and implemented. Firewater use on other process/equipment areas (which either have existing, or will be provided with new, impermeable surfaces) will drain to site drainage systems. A robust means of isolating the site drainage from returning to the head of works is required. Where sites have pumped return to head of works stopping the pump and ensuring no hydraulic link (syphoning) is required. Where return to head of works is (or could be) gravity returned, a new isolation valve is required which is to be shut in the event of an incident. Implementation of these measures will ensure no firewater returns to the WtW without appropriate controls including sampling/testing. Further design development is underway to determine the most appropriate solution to address this requirement and ensure complianceTraining 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. 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.	

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Hazard**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site.	
Local human population and local environment.	Arson and/or vandalism causing the release of pollution materials to air (smoke and fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or vandals/arsonists. Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination of land and water quality.	Air transport. Spillages and contaminated firewater by direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/ groundwater then abstraction.	Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Risk of accidental combustion of waste is minimal. Permitted waste types limited to sludges and liquids	The key sludge treatment and WTW processes are undertaken within enclosed systems such as AD and biogas systems. Storage tanks are covered and enclosed. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals – this includes site security measures to prevent unauthorised access, fire explosions and spill management. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. A Fire Prevention Plan is not required to be submitted for the permit application as the biowaste process on-site is wet anaerobic digestion. However, fire prevention and environmental fire risk assessment procedures are provided in the EMS and H&S manual (EMS362, H&S204 and H&S440). There is also Safety zoning of areas under DSEAR/PEXA on-site and smoking is only permitted in designated areas. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their roles in an emergency. The EMS includes procedures relating to maintenance and inspection of bunding of tanks, spills and environmental incidents. The Site Manager shall ensure the programme of PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment.	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**
								All equipment is checked and calibrated as per the manufacturers' instructions. Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site. Access to the Site and waste is restricted by automatically operated gates which are closed during operating hours. The Site perimeter is comprised of 8ft chain-link fencing. The Millbrook STC is manned during opening hours (7am – 7pm), and staff are on call. The Site has CCTV at the inlet, gas holder and access gate. The Slowhill site is manned only on weekdays, 07:30-16:00 Monday to Wednesday, and 07:30-15:00 Thursday to Friday. Authorised personnel can gain access to the Site using a fob system. For visitors and unauthorised personnel, there is an automatic gate with an intercom system at the site entrance, and a visitor signing-in book is used. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to the Site. Repairs are undertaken in accordance with the EMS requirements.	
Local human population and local environment.	Operator Error.	Pollution to air, land, surface water and groundwater and human health	Air transport Direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/ groundwater then abstraction.	Low	Medium	Low	Possible contamination to air, land, groundwater and surface water. Given the level of operator controls which are in place and management plans, it is considered the probability and magnitude will be low.	Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented. All equipment is checked under preventative maintenance plans and is checked and calibrated as per the manufacturers' instructions. Overall management of the Site is overseen by an experienced member of staff holding an appropriate Certificate of Technical Competence (CoTC) awarded by the Waste Management Industry Training and Advisory Board. This competent person delegates responsibilities to appropriately experienced and trained site	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**
								operatives throughout the operating hours. 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. Training includes awareness raising of the potential implications of failure to control operations and the potential impact on the environment. Preventative measures will be under continuous review as part of the EMS procedures. Emergency operating procedures are in place and detailed in the Site's Operational Contingency Plan. Senior site-based management have direct responsibility for implementing risk management measures.	

5 Reporting and Recording

5.1 Reporting

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

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

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

The permit sections typically include:

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

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

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

5.2 Recording

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

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

- Immediate measures taken to minimise environmental impacts

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

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

5.3 Post-incident Review

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

This review will assess:

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

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

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

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

5.4 Competence and Training

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

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

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

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

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

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

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

6 Emergency Response Procedures (ERP)

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

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

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

6.1 Fire

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

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

6.2 Explosion

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

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

6.3 Pollution

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

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

6.4 Flooding

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

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

6.5 Road traffic accident impact or collision

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

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

6.6 Collapse of a structure or building

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

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

6.7 Spill transferring wastes

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

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

6.8 Chemical spillage/leak onsite

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

N/A	Done	The Incident controller will: -
		Identify source and look to isolate the affected tank/pipework to prevent further leaks.
		Escalate & report to the pollutions team on 07557 152385
		Instigate mitigation or remedial work • Contain the affected area – utilise spillage kits/pads to absorb the chemical • If chemical has made its way to the site drains, please confirm if they return to the works return or the environment. If they go to works return, consider isolating and tankering this as contaminated waste rather than returning through the process. If this drains to the environment, consider bunging the outfall and tankering the contaminated waste from site.
		Check the notice board to see if the site is located within a SPZ (source protection zone) or SSSI. If unsure, ask the Pollution Team who can check. Out of hours please ask RCC/Duty Manager. This will provide guidance on remedial actions needed to be taken.
		Collect evidence (photographs, samples & keep any parts of failed assets that will be needed as evidence)
		Assess the condition of the downstream processes to determine the level of contamination present and whether they will be adversely affected.

6.9 Sludge spillage on site

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

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

N/A	Done	The Incident controller will: -
		• Contain the spilled sludge with sandbags/barriers to prevent spread to the environment. • If the area has drains, please check the site drainage plan to ensure that these drain to the works return. If they do not, or there is no plan, assume they drain to the environment. In this case, seal the drains to prevent sludge draining into it. Check the surface water drainage ponds if sludge has escaped into these drains. Tanker and remove as required. • Depending upon the size of the spillage, organise 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. • If this is the only sludge tank onsite, consider other options for removal of sludge from the process whilst the tank is offline.
		Spill from pipe • Isolate the sludge pipeline and either end. • Contain the spilled sludge with sandbags/barriers to prevent spread to the environment. • If the area has drains, please check the site drainage plan to ensure these drain to the works return. If they do not or there is no plan assume they drain to the environment. In this case seal the drains to prevent sludge draining into it. • Depending upon the size of the spillage, organise 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.

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 07557 152385
		Instigate mitigation or remedial work • Contain the affected area – utilise spillage kits/pads to absorb the diesel. • If diesel has made its way to the site drains, please confirm if they return to the works return or the environment. If they go to works return, consider isolating and tankering this as contaminated waste rather than returning through the process. If this drains to the environment, consider bunging the outfall and tankering the contaminated waste from site. • If diesel has escaped from site, instigate remedial works, which could include booming watercourses.
		Check the notice board to see if the site is located within a SPZ (source protection zone) or SSSI. If unsure, ask the Pollution Team who can check. Out of hours please ask RCC/Duty Manager. This will provide guidance on remedial actions needed to be taken.
		Collect evidence (photographs, samples & keep any parts of failed assets that will be needed as evidence)
		Assess the condition of the downstream processes to determine the level of contamination present. Instigate remedial action, if necessary, which could include skimming of tanks, draining of tanks or re-seeding if the biological process has been severely affected.
		If diesel has worked its way through the entire process, then deploy a boom for the outfall to capture any further diesel and remove accordingly.
		Inform the Process Scientist or on call Process Scientist to make a condition of the works to determine the impact and whether flows can be restored.

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

6.11 Overfilling vessels

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

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

6.12 Plant and equipment failures

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

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

6.13 Containment failure

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

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

6.14 Failure to contain firewater

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

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

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

6.15 Incorrect connection leading to releases to drains and other systems

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

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

6.16 Incompatible substances coming into contact

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

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

6.17 Emission of effluent or Biogas before composition checked

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

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

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

6.18 Theft & Vandalism

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

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

A. Grab Packs for Slowhill Copse and Millbrook

Southern Water

Slowhill Copse WTW/STC

Emergency Grab pack.

Feb 2024.

Final Draft

Author: Paul Goring.
Sponsor: Aurelien Perrault.
Approved and signed off by: Neil Whittington.

Version 1.0 Feb 2024

Contents

1. EMERGENCY CONTACT NUMBERS

Management

RCC – [redacted]

FPM Jamie Newell – [redacted]

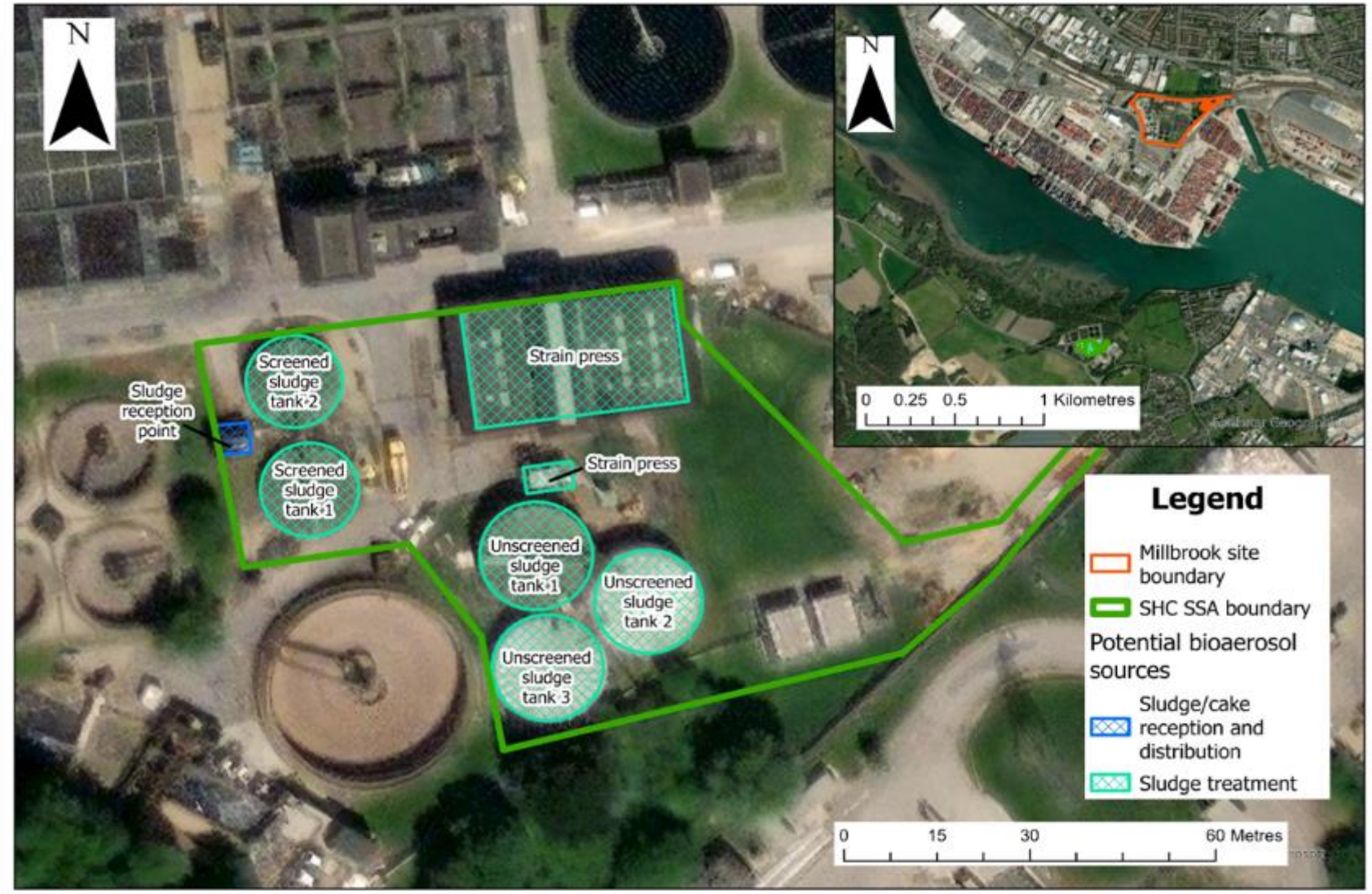
AM Darren Oxborough – [redacted]

SITE OPS

Samual Mintram - [redacted]

2. SITE PLANS

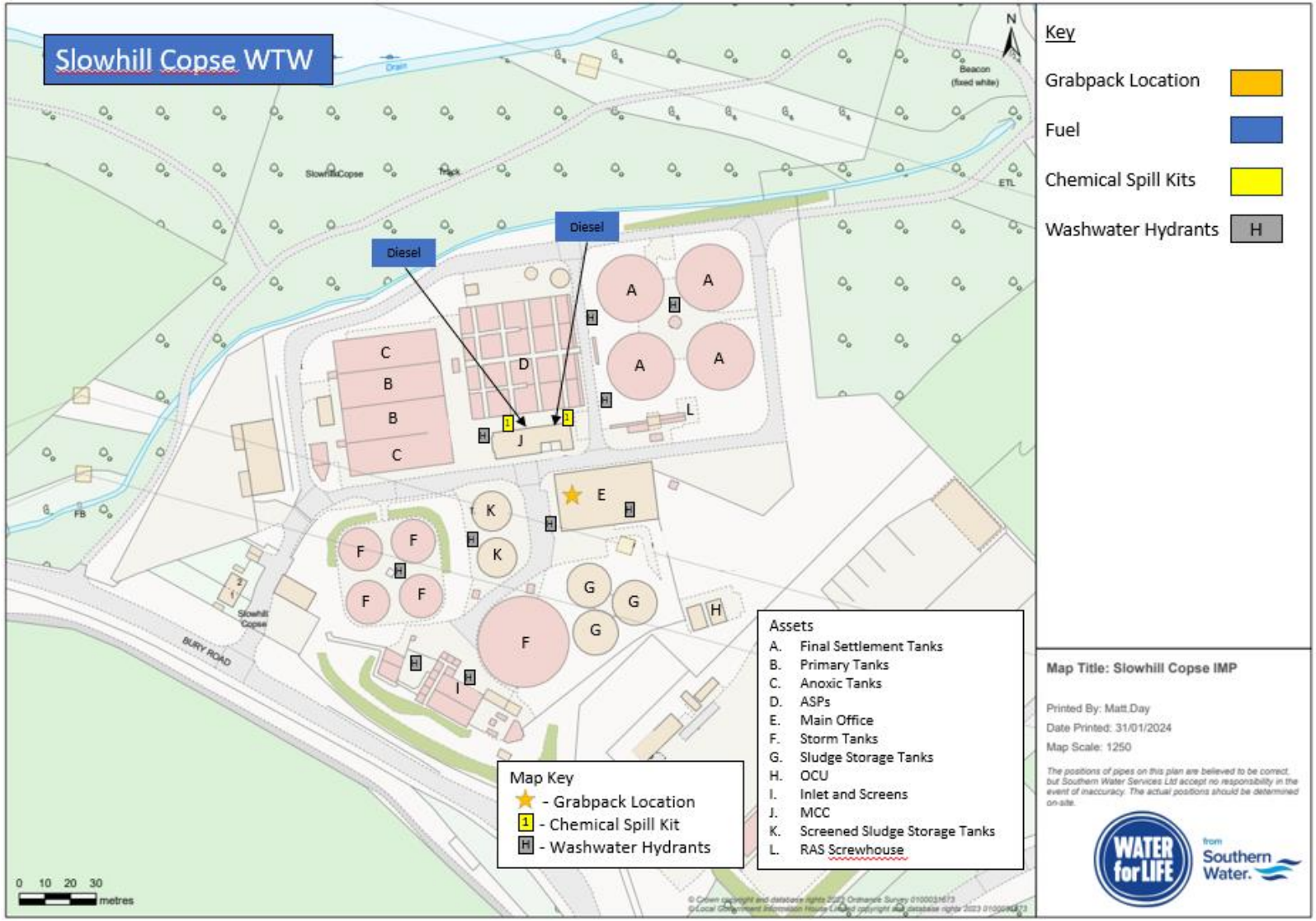
Map of Processes for Slowhill Copse.



Map of Sludge Pipeline to Millbrook STC.

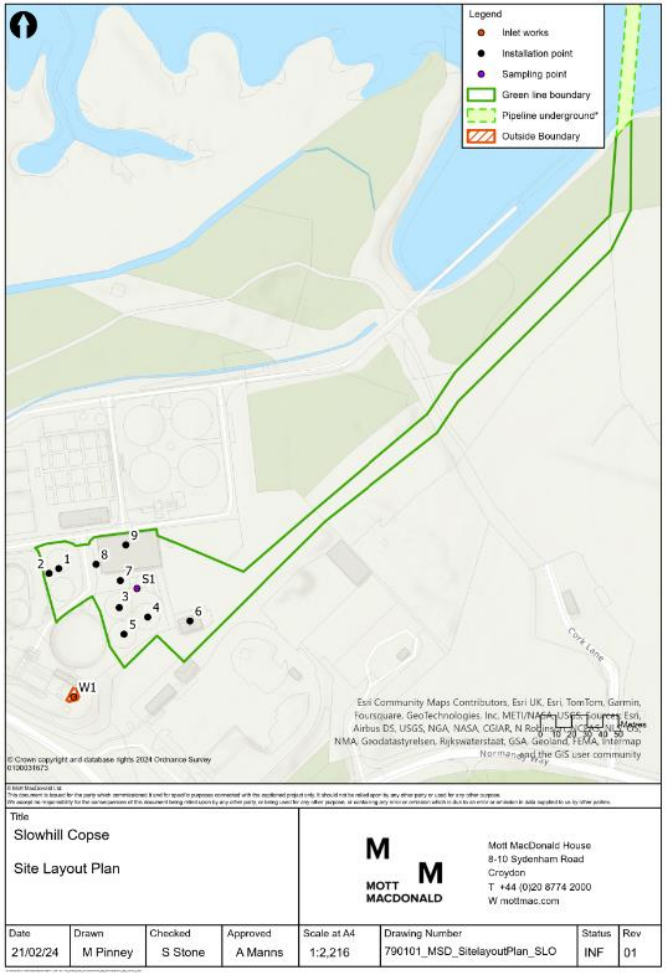
Good communication is required between the two sites plus there are Flow meters on either end of the transfer line that Alarms out if there is a discrepancy of flows sent to received – This Alarm must be actioned.

Map of flammable substances and fire hydrants.(H)



Map of site lay out plans.

<u>There is no Biogas tanks on the Slowhill Copse site – site latout plan below for Info.</u>



Emissions Ref	Emissions Points	Assets Ref	Assets	X	Y
		1	Screened sludge storage tank	438371	111171
		2	Sludge strain press	438365	111168
		3	Unscreened sludge tank 1	438410	111146
		4	Unscreened sludge tank 2	438428	111140
		5	Unscreened sludge tank 3	438413	111129
		6	OCU	438456	111137
		7	Grit and screening unit	438411	111163
		8	Sludge recpetion point	438395	111174
		9	Skudge strainpress & main transfer line pumps	438414	111186
W1	Inlet works			438381	111089
S1	Bund drainage sampling point			438422	111158

*Pipeline is underground across the river Test and ABP land. Southern Water has no control over traffic passing over the pipeline and access to the actual pipeline requires additional permissions and specific work management.

3. MATERIALS & CHEMICALS STORAGE ON SITE

List of combustible materials stored on site.

WASTE INVENTORY (See EMS 480)					
Trade Name/ Substance	**Solid/liquid/ gas/powder**	**UN Number**	**Max Stored on Site**	**Location Marked on Site Plan**	**Type of Containment**
Diesel Oil	Liquid	UN1202	515m3	Two positions by MCC J on site Map.	Tanks
Gas Cylinders	Gas	N/A	Welding / burning Equip.	Stored in Workshop.	Gas Bottles stored in a locked building overnight.
JCB Loader / MTS Tankers & Chemical Delivery tankers.	Diesel Powered	UN1202	<200ltrs Diesel Fuel tank on machine	Stored outside control room but may be anywhere on site.	Vehicle stored outside the control building overnight.

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 pumped over to Millbrook STC.
- Mixed waste containing any combustible wastes – Via Sealed bins.
- WEEE – Managed via Locked Wee containers.
- Wood – Pallets are stored on site.

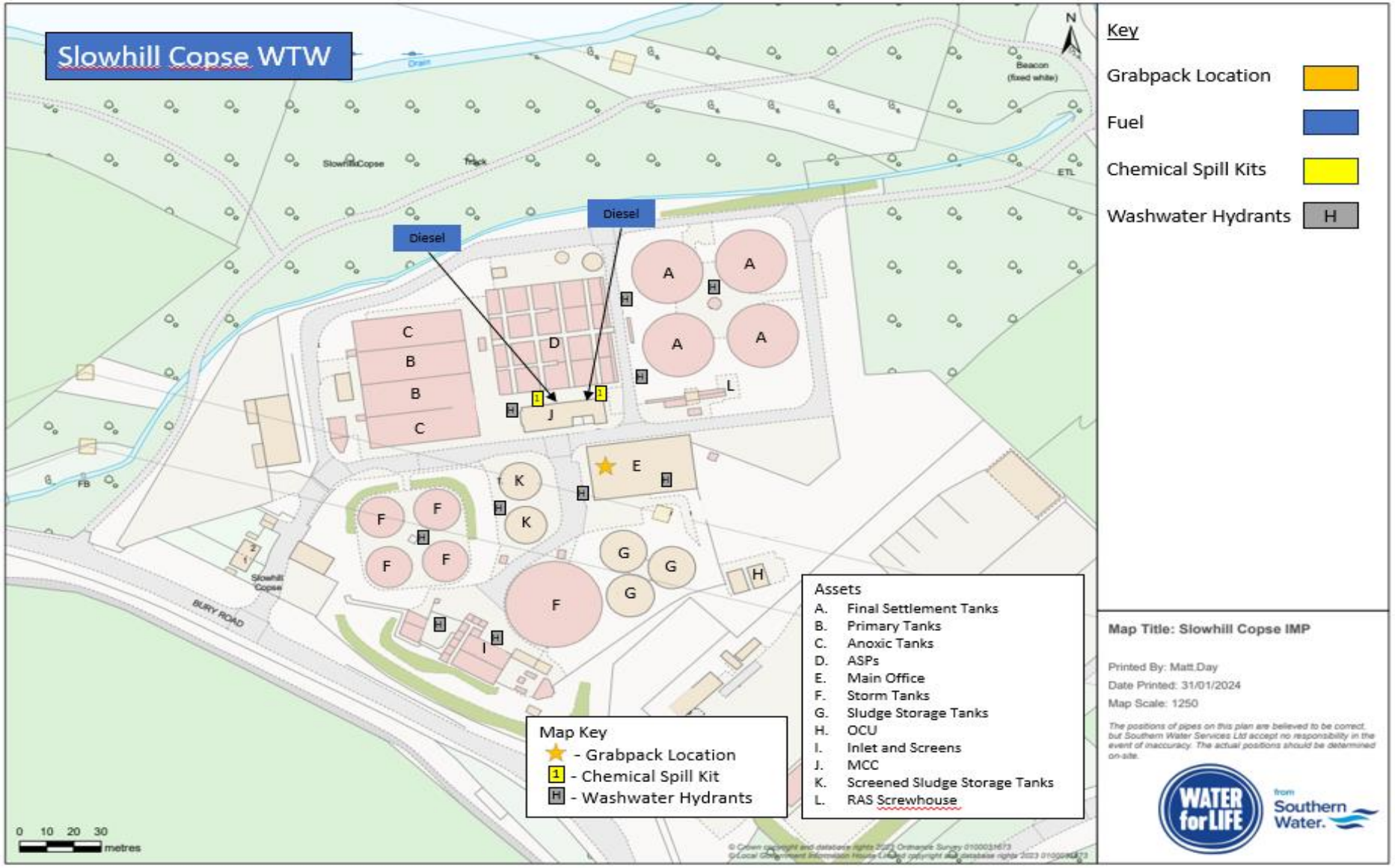
Non-Combustible .

WASTE INVENTORY (See EMS 480)					
Trade Name/ Substance	Solid/liquid/ gas/powder	UN Number	Max Stored on Site	Location Marked on Site Plan	Type of Containment
Wastewater	Liquid	N/A	4284m3	5 X Storm Tank	Tanks
Wastewater	Liquid	N/A	3054m3	2 X Primary Settlement Tanks	Tanks
Wastewater	Liquid – Non-Buoyant	N/A	6188m3	4 Aeration Lanes	Lanes
Wastewater	Liquid	N/A	3054m3	2 x Anoxic tanks	Tanks
Wastewater	Liquid	N/A	5756m3	4 x Final Settlement Tanks	Tanks
Sludge	Liquid	N/A	1500m3	2 x Screened Sludge Storage Tanks	Tank
Sludge	Liquid	N/A	3600m3	3 x Sludge storage Tanks	Tank
Sodium Hypochlorite	Liquid	N/A	6m3	Odour Control Unit H	Tanks

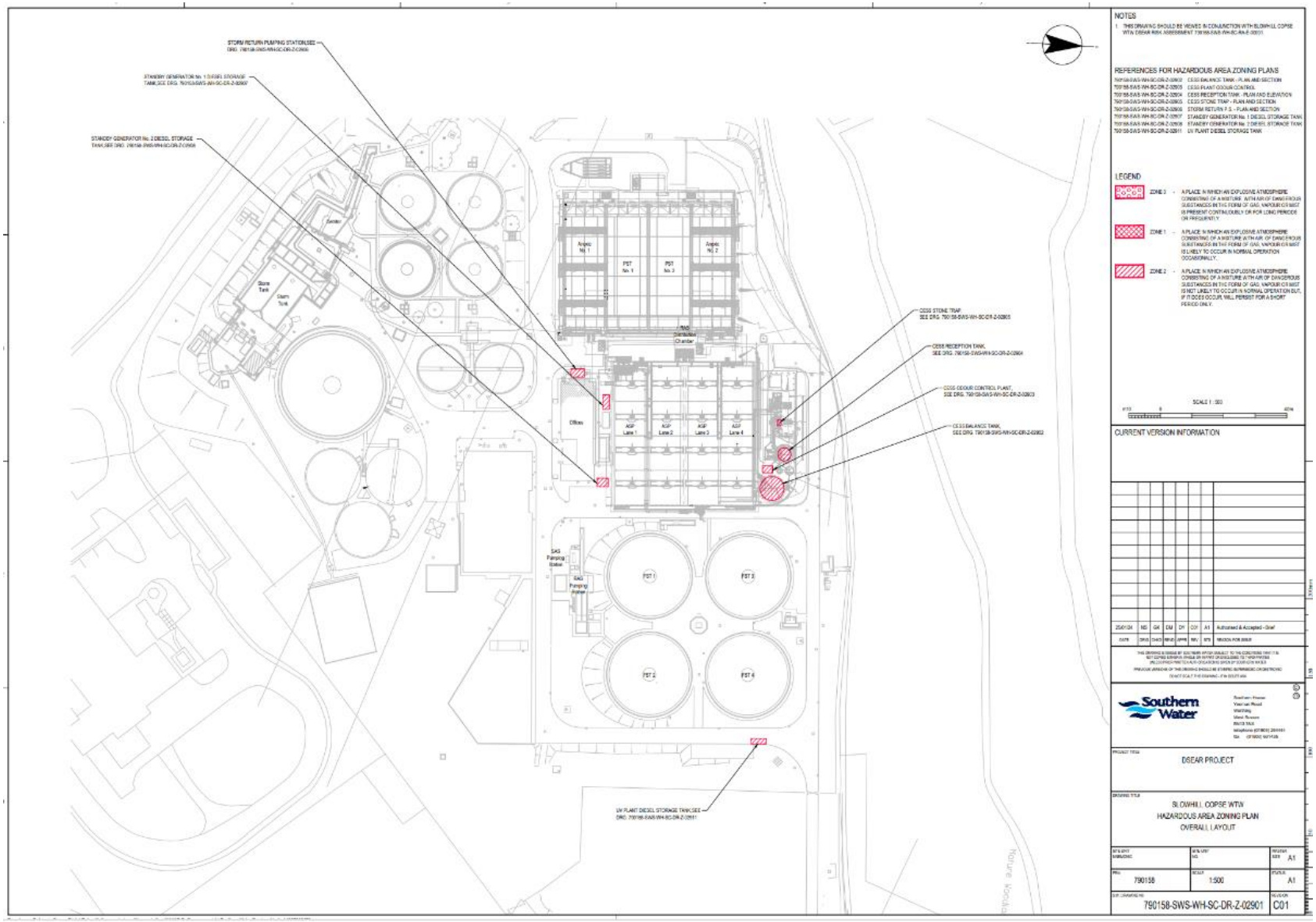
4. LOCATION OF FIRE EXTINGUISHERS ON SITE.

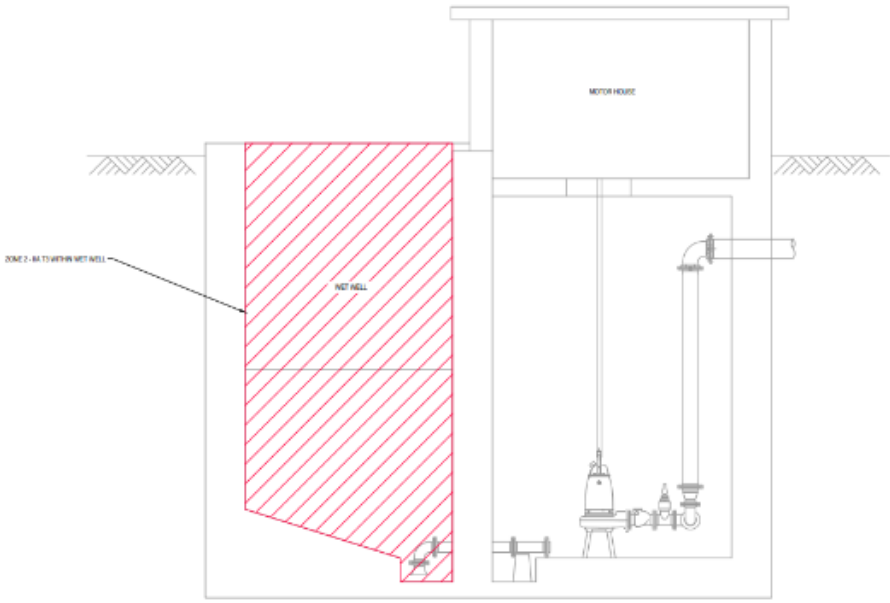
POLLUTION PREVENTION EQUIPMENT INVENTORY (ON AND OFF-SITE RESOURCES) ILLUSTRATED ON SLOWHILL COPSE IMP MAP			
Type	Location	Amount	Staff Contact
Fire Extinguishers	Engineering building Mess Room	2	Jamie Newell [redacted]
Fire Extinguishers	First floor MCC	1	Jamie Newell [redacted]
Fire Extinguishers	Ground floor	2	Jamie Newell [redacted]
Fire Extinguishers	Ground floor MCC	4	Jamie Newell [redacted]
Fire Extinguishers	Sludge gallery	1	Jamie Newell [redacted]
Fire Extinguishers	Stores	8	Jamie Newell [redacted]
Fire Extinguishers	Sludge gallery MCC	2	Jamie Newell [redacted]
Fire Extinguishers	Office foyer	2	Jamie Newell [redacted]
Fire Extinguishers	BNR MCC	2	Jamie Newell [redacted]
Fire Extinguishers	RAS MCC	1	Jamie Newell [redacted]
Fire Extinguishers	PST MCC	2	Jamie Newell [redacted]
Fire Extinguishers	Inlet MCC ground floor	2	Jamie Newell [redacted]
Fire Extinguishers	Inlet MCC 1st floor	2	Jamie Newell [redacted]
Fire Extinguishers	Offices	1	Jamie Newell [redacted]
Fire Extinguishers	Offices Confrence Room	1	Jamie Newell [redacted]

5. WASHATER MAINS & FIRE HYDRANTS (H).

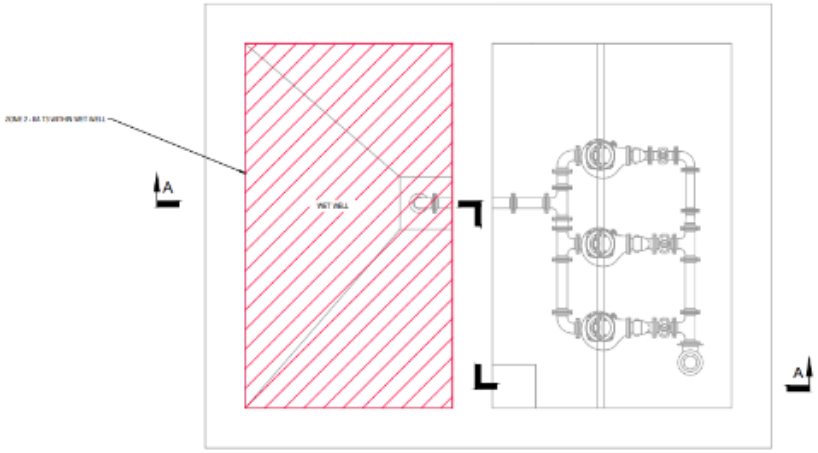


6. DSEAR DRAWINGS.





SECTION A-A



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001.

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 - HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 25

CURRENT VERSION INFORMATION

25/01/24	NG	GK	DR	GY	C01	A1	Authorised & Accepted - Brief
DATE	ORIG	CHKD	REVD	APPD	REV	STS	REASON FOR ISSUE

Southern Water

Southern House
Yeoman Road
Worthing
West Sussex
BN13 3NX
Telephone (01903) 264444
Fax (01903) 691138

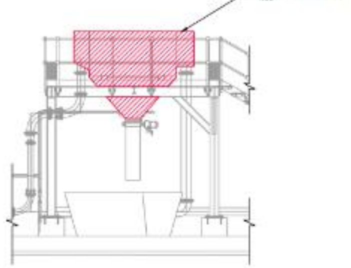
PROJECT TITLE

DSEAR PROJECT

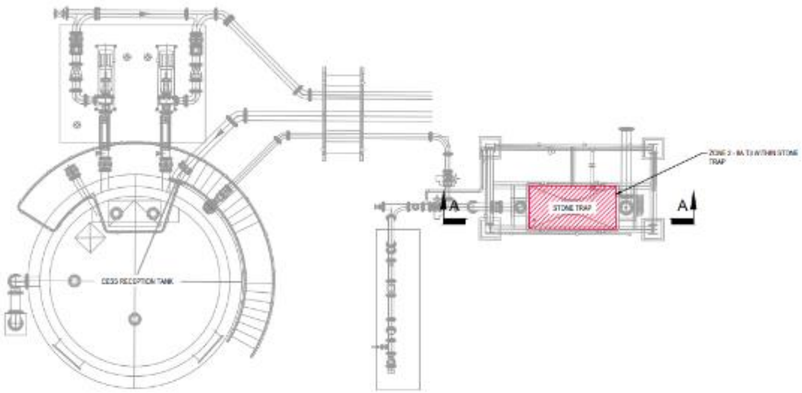
DRAWING TITLE

SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
STORM RETURN PUMPING STATION
PLAN AND SECTION

ORIGINATOR	CHECKED	PAPER SIZE
	DO	A1
DRN	**SCALE**	**STATUS**
790158	1:25	A1
DRAWING NO		**REVISION**
790158-SWS-WH-SC-DR-Z-02906		C01



SECTION A-A



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1:25

CURRENT VERSION INFORMATION

DATE	DRWD	CHKD	REVD	APPR	REV	STS	REASON FOR ISSUE
25/01/24	NS	GK	DM	DY	C01	A1	Authorised & Accepted - Brief

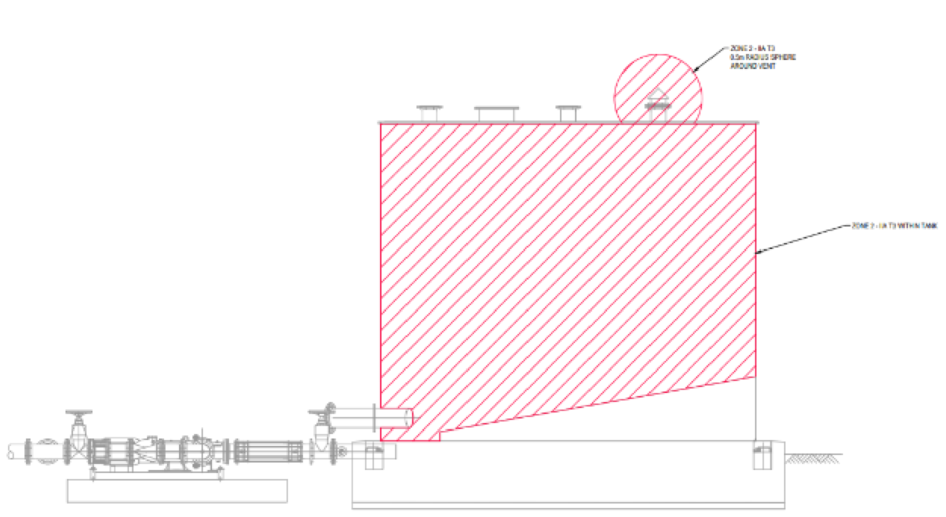
DO NOT SCALE THIS DRAWING - IF IN DOUBT ASK

Southern Water

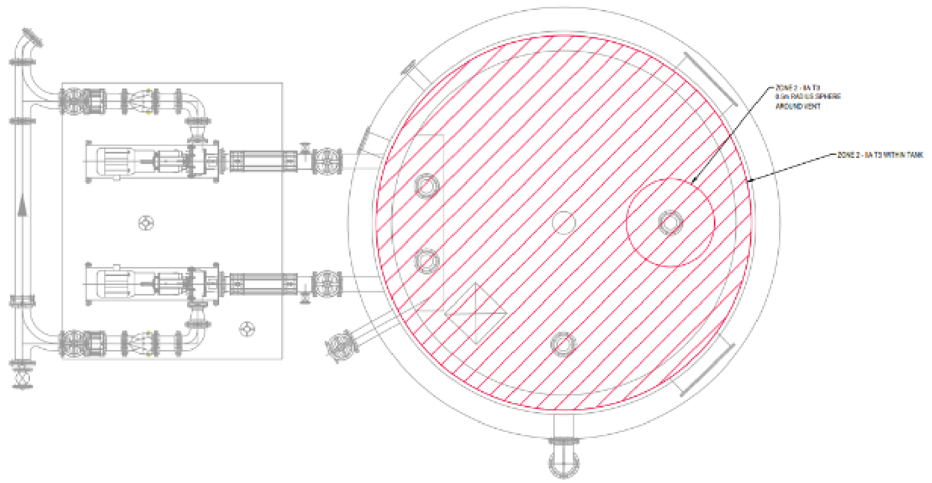
PROJECT TITLE: DSEAR PROJECT

DRAWING TITLE:
SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
CESS STONE TRAP
PLAN AND SECTION

SITE UNIT	SITE UNIT NO	PAPER SIZE A1
PRN 790158	SCALE 1:25	STATUS A1
SW DRAWING NO 790158-SWS-WH-SC-DR-Z-02905		REVISION C01



ELEVATION



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001.

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 25

CURRENT VERSION INFORMATION

DATE	DRG	CHKD	REVD	APPR	REV	STS	REASON FOR ISSUE
25/01/24	NS	GK	DM	DY	C01	A1	Authorised & Accepted - Client

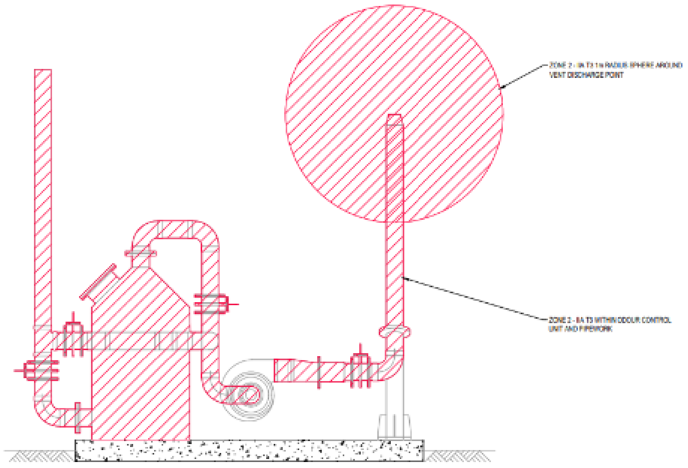
PROJECT TITLE

DSEAR PROJECT

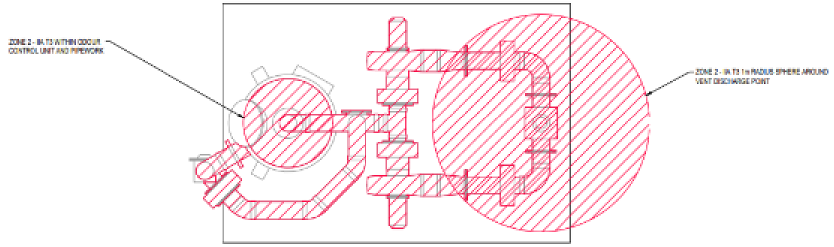
DRAWING TITLE

SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
CESS RECEPTION TANK
PLAN AND ELEVATION

PRN: 790158	SCALE: 1:25	STATUS: A1
SW DRAWING NO: 790158-SWS-WH-SC-DR-Z-02904		REVISION: C01



ELEVATION



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 20

CURRENT VERSION INFORMATION

DATE	DRG	CHKD	REVD	APPR	REV	STS	REASON FOR ISSUE
25/01/24	NS	GK	DM	DY	C01	A1	Authorised & Accepted - Brief

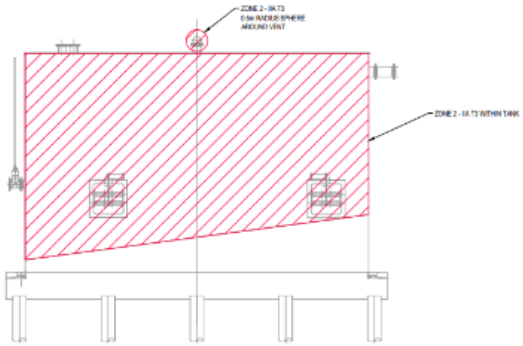
Southern Water

Southern House
Yeoman Road
Worthing
West Sussex

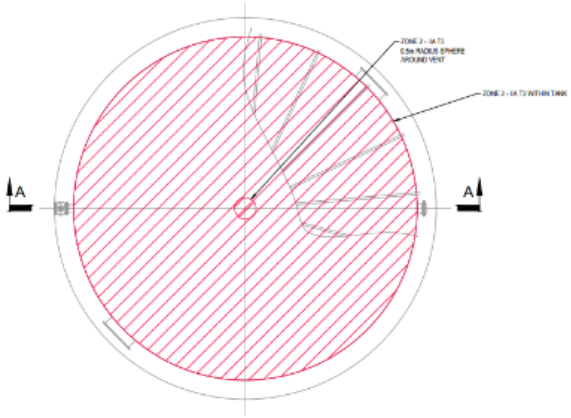
PROJECT TITLE: DSEAR PROJECT

DRAWING TITLE:
SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
CESS ODOUR CONTROL PLANT
PLAN AND ELEVATION

SITE UNIT MNEMONIC	SITE UNIT NO.	PAPER SIZE A1
PIN 790158	SCALE 1:20	STATUS A1
SW DRAWING NO 790158-SWS-WH-SC-DR-Z-02903		REVISION C01



SECTION A-A



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW D&SEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 100

CURRENT VERSION INFORMATION

25/01/24	NS	GK	DM	DY	CO'	A1	Authorised & Accepted - Brief
DATE	DRWD	CHKD	REVWD	APPR	REV	STS	REASON FOR ISSUE

Southern Water
Southern House
Yeoman Road
Worthing
West Sussex
BN13 3NX
Telephone (01903) 264444
Fax (01903) 691149

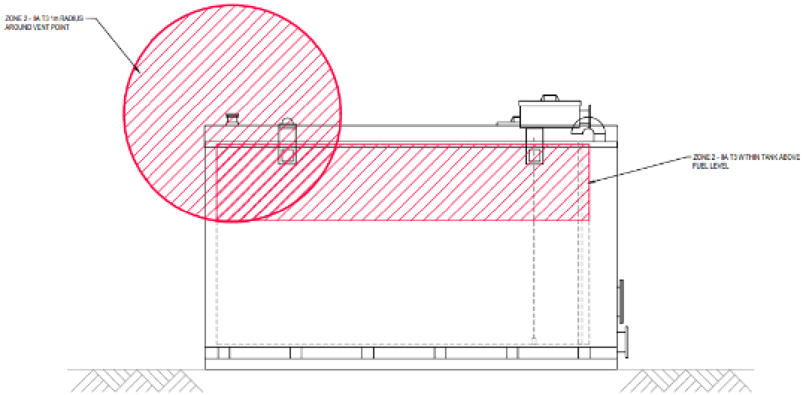
PROJECT TITLE

D&SEAR PROJECT

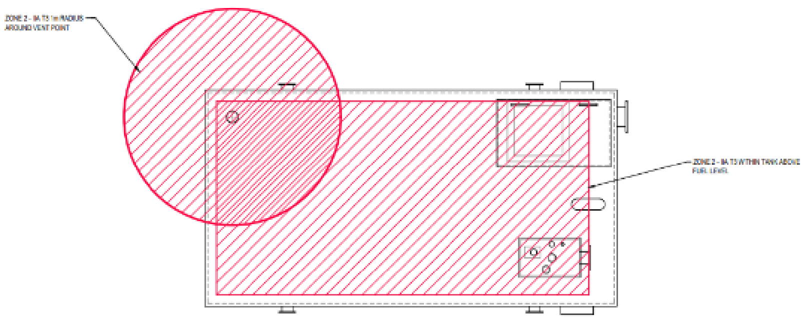
DRAWING TITLE

SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
CESS BALANCE TANK
PLAN AND SECTION

SITE UNIT MNEMONIC	SITE UNIT NO.	REVISION SIZE
		A1
PROJ 790158	SCALE 1:100	STATUS A1
SOP / DRAWING NO 790158-SWS-WH-SC-DR-Z-02902		REVISION C01



SECTION A-A



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH BLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001.

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 20

CURRENT VERSION INFORMATION

25/01/24	NS	GK	DM	DY	C01	A1	Authorised & Accepted - Brief
DATE	DRG	CHKD	REVD	APPR	REV	STS	REASON FOR ISSUE

Southern Water

Southern House
Yeoman Road
Worthing
West Sussex
BN13 3NX

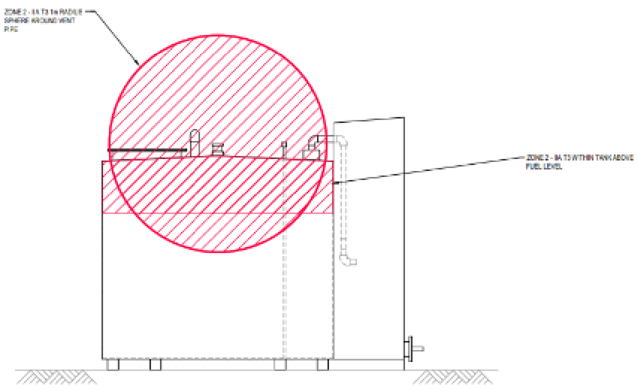
PROJECT TITLE

DSEAR PROJECT

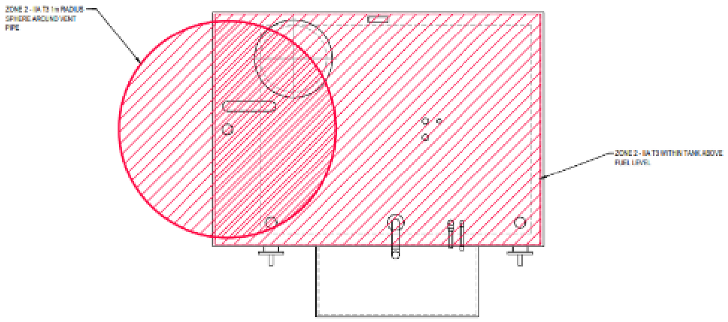
DRAWING TITLE

BLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
UV PLANT DIESEL STORAGE TANK
PLAN AND ELEVATION

SITE & UNIT MNEMONIC	SITE UNIT NO.	ORIGINAL SIZE A1
PIN 790158	SCALE 1:20	STATUS A1
SW DRAWING NO 790158-SWS-WH-SC-DR-Z-02911		REVISION C01



END ELEVATION



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001.

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 20

CURRENT VERSION INFORMATION

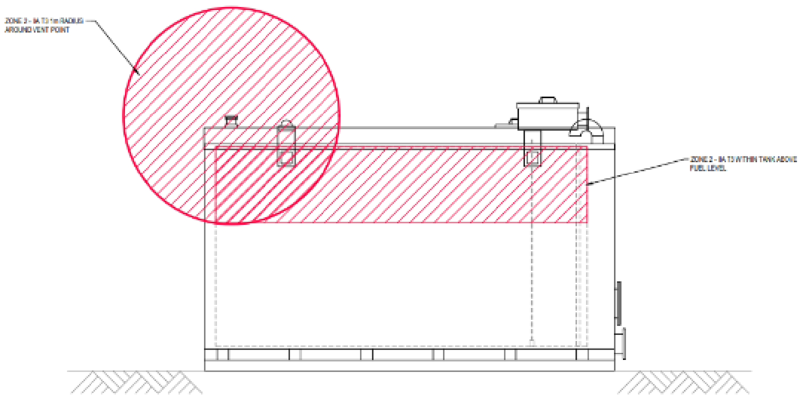
DATE	DRG	CHKD	REVD	APPR	REV	STS	REASON FOR ISSUE
25/01/24	NS	GK	DM	DY	C01	A1	Authorised & Accepted - Grief

Southern Water
Southern House
Yeoman Road
Worthing
West Sussex
BN13 3NX
telephone (01903) [illegible]
fax (01903) [illegible]

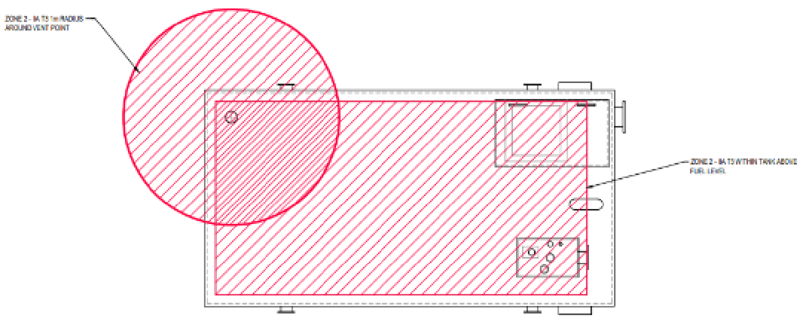
PROJECT TITLE: DSEAR PROJECT

DRAWING TITLE:
SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
STANDBY GEN. No. 2 DIESEL STORAGE TANK
PLAN AND ELEVATION

SITE UNIT MNEMONIC	SITE UNIT NO.	MASTER SIZE A1
PRN 790158	SCALE 1:20	STATUS A1
SW DRAWING NO 790158-SWS-WH-SC-DR-Z-02908		REVISION C01



SECTION A-A



PLAN

NOTES

1. THIS DRAWING SHOULD BE VIEWED IN CONJUNCTION WITH SLOWHILL COPSE WTW DSEAR RISK ASSESSMENT 790158-SWS-WH-SC-RA-E-00001.

REFERENCES FOR HAZARDOUS AREA ZONING PLANS

790158-SWS-WH-SC-DR-Z-02901 HAZARDOUS AREA ZONING PLAN OVERALL LAYOUT

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 OR 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 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.

APPARATUS REQUIRED

GAS GROUP - IIA
TEMP CLASS - T3

SCALE 1 : 20

CURRENT VERSION INFORMATION

25/01/24	NS	GK	DM	DY	C01	A1	Authorised & Accepted - Brief
DATE					REV		REASON FOR ISSUE

Southern Water

PROJECT TITLE

DSEAR PROJECT

DRAWING TITLE

SLOWHILL COPSE WTW
HAZARDOUS AREA ZONING
STANDBY GEN. No. 1 DIESEL STORAGE TANK
PLAN AND ELEVATION

SITE UNIT MNEMONIC	SITE UNIT NO.	SIZE A1
PRN 790158	SCALE 1:20	STATUS A1
SW DRAWING NO 790158-SWS-WH-SC-DR-Z-02907		REVISION C01

7 FIRE RISK ASSESSMENT

We need to place a copy of the site Fire Risk Assessment in the grab pack.

Electronic link to copy of Fire Risk Assessment - Slowhill Copse WTW 2022 FRA.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)

Southern Water

Millbrook WTW/STC

Emergency Grab pack.

Nov 2023.

Final Draft

Author: Paul Goring.
Sponsor: Aurelien Perrault.
Approved and signed off by: Neil Whittington.

Version 2.0 Nov 2023

Contents

1. EMERGENCY CONTACT NUMBERS

Management

RCC – [redacted]

FPM Jamie Newell – [redacted]

AM Darren Oxborough – [redacted]

SITE OPS

Lee Mintrim (STC) – [redacted]

Joseph Hevicon – [redacted]

Graham Bell (STC) – [redacted]

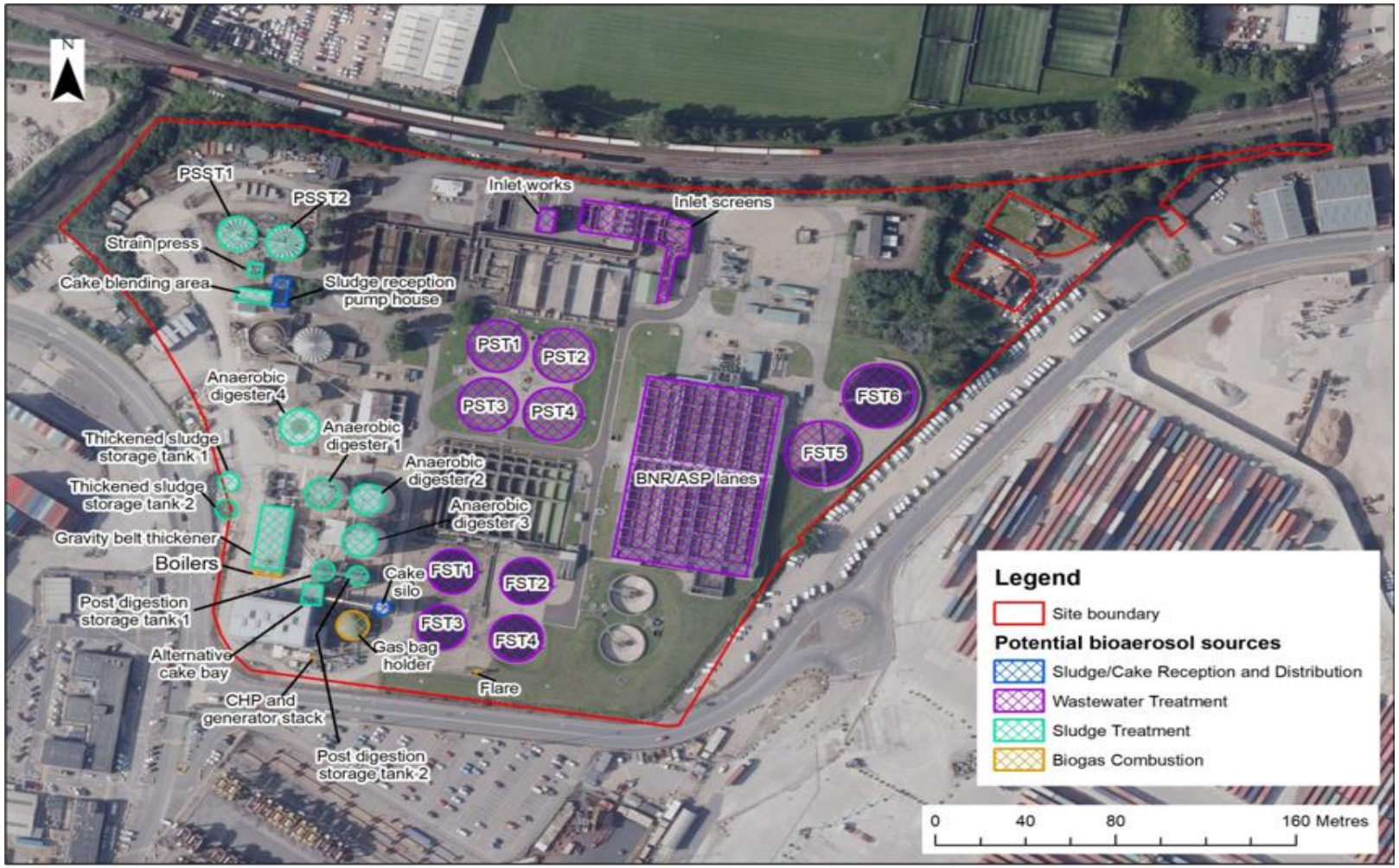
Ian Thomas – [redacted]

Martin Scanlon – No number

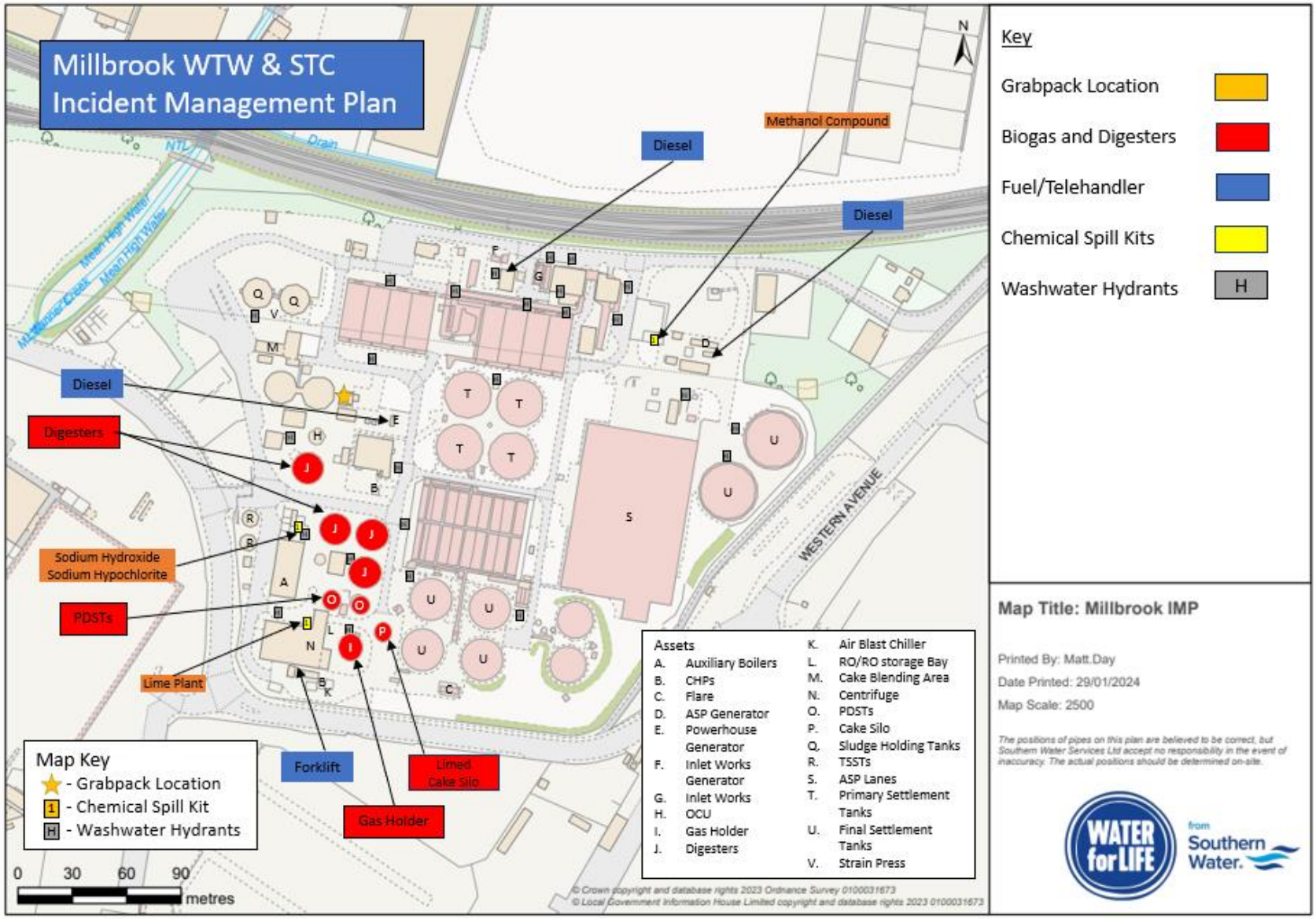
Carl Redford (STC) – No number

2. SITE PLANS

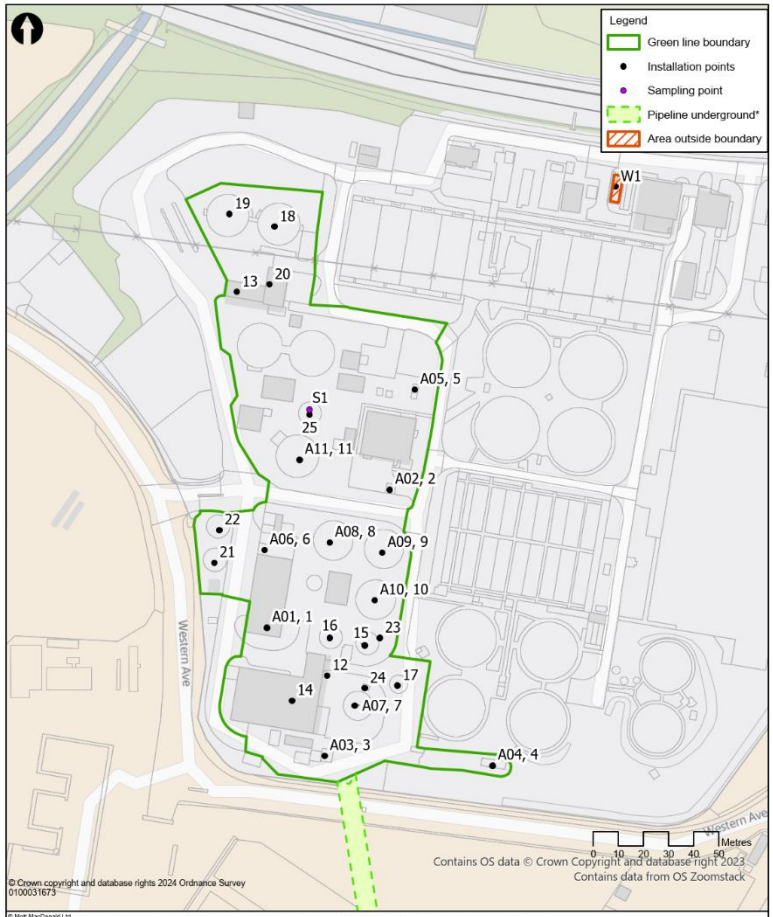
Map of Processes



Map of flammable substances and fire hydrants (H).



Map of biogas systems

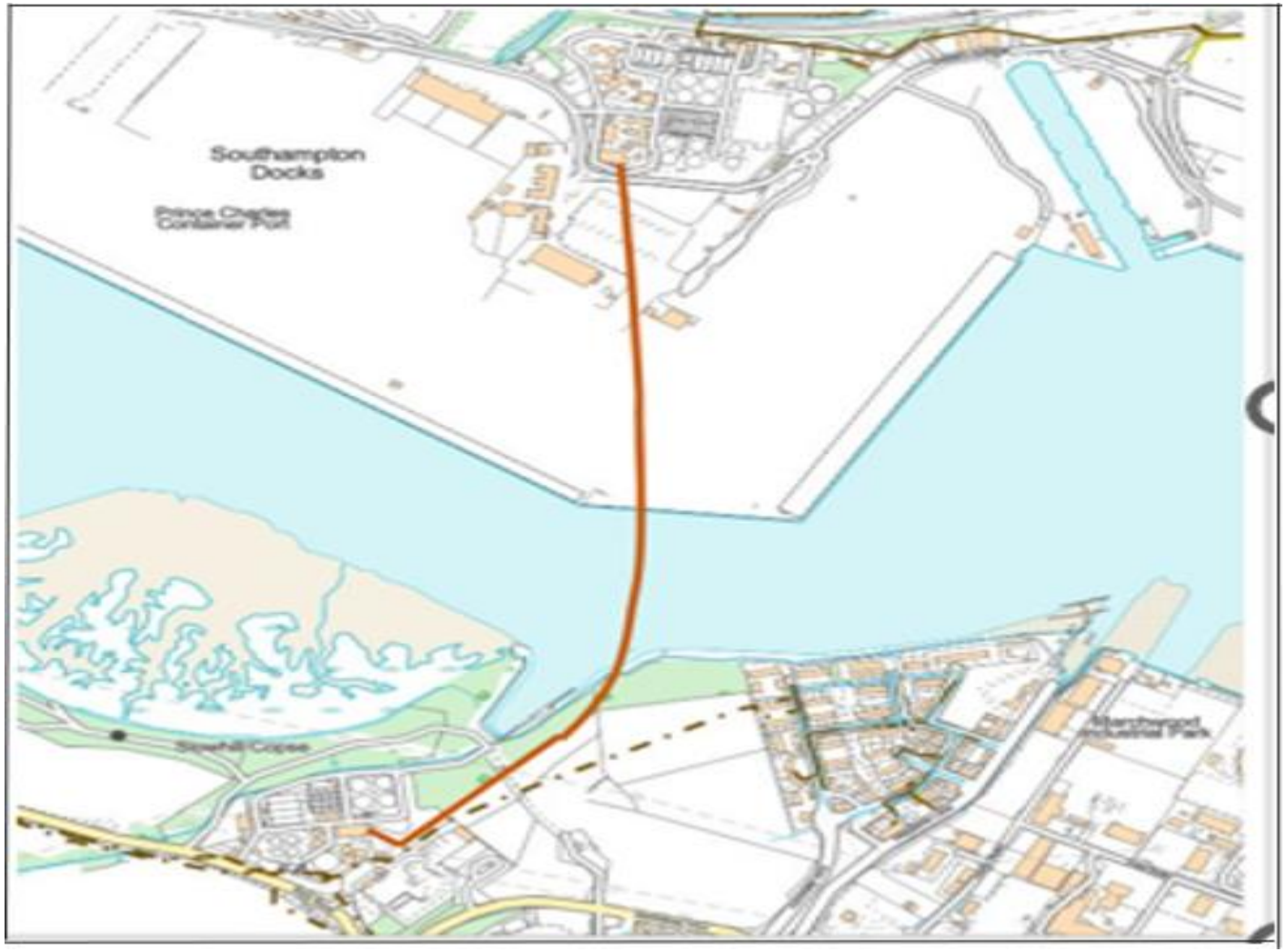


Title							
Millbrook STC Site Layout Plan				MOTT MACDONALD Mott MacDonald House 8-10 Sydenham Road Croydon T +44 (0)20 8774 2000 W mottmac.com			
Date	Drawn	Checked	Approved	Scale at A4	Drawing Number	Status	Rev
27/02/24	M Pinney	S Stone	A Manns	1:1,600	790101_MSD_SitelayoutPlan_MIL	INF	01

Emissions Ref	Emissions Points	Assets Ref	Assets	X	Y
A01	Boiler exhaust stack	1	Auxiliary boilers	438739	112424
A02	CHP exhaust stack 1	2	CHP 1	438788	112479
A03	CHP exhaust stack 2	3	CHP 2	438762	112373
A04	Flare	4	Flare	438829	112369
A05	Generator exhaust 2	5	Power House generator and diesel tank	438798	112519
A06	OCU stack	6	OCU	438738	112455
A07	Whessoe valve 1	7	Gas Holder	438774	112393
A08	Whessoe valve 2	8	Digester 1	438764	112458
A09	Whessoe valve 3	9	Digester 2	438785	112454
A10	Whessoe valve 4	10	Digester 3	438782	112435
A11	Whessoe valve 5	11	Digester 4	438752	112491
W1	Inlet			438878	112600
S1	Liquor sampling point			438756	112511
		12	Alternative cake bay	438763	112405
		13	Cake blending area	438727	112558
		14	Dryer building (mothballed) and centrifuges	438749	112395
		15	Post-digestion sludge storage tank 1	438778	112417
		16	Post-digestion sludge storage tank 2	438764	112420
		17	Cake Silo	438791	112401
		18	Sludge holding tank 1	438742	112584
		19	Sludge holding tank 2	438724	112589
		20	Sludge reception pump house	438740	112561
		21	Thickened sludge storage tank 1	438718	112450
		22	Thickened sludge storage tank 2	438720	112463
		23	Condensate Pot 1	438784	112420
		24	Condensate Pot 2	438778	112400
		25	Liquor buffer storage tank	438756	112509

Map of Sludge Pipeline Slowhill Copse to Millbrook STC.

Good communication is required between the two sites plus there are Flow meters on either end of the transfer line that Alarms out if there is a discrepancy of flows sent to received – This Alarm must be actioned.



3. MATERIALS & CHEMICALS STORAGE ON SITE

List of combustible materials stored on site.

WASTE INVENTORY (See EMS 480)					
Trade Name/ Substance	**Solid/liquid/ gas/powder**	**UN Number**	**Max Stored on Site**	**Location Marked on Site Plan**	**Type of Containment**
Biogas	Biogas	UN1971	1000m3	Biogas Holder Digester Headspace	Gas bag Digesters Pipelines Flare Stack CHP Engine.
Diesel Oil	Liquid	UN1202	515m3	Outside Site Reception, By Inlet MCC and By BNR MCC	3 x Tanks
Sludge	Liquid	Non - Hazardous	523m3	Sludge Reception Tank	Tank
Polymer	Powder	UN2923	6 X 1m3/750kg bags	Inside centrifuge building	Bags
Lime	Liquid	UN1956	30m3	Lime Plant	Tanks
Gas Cylinders	Gas	N/A	Welding / burning Equip.	Stored in workshop.	Gas Bottles stored in a locked building overnight.
Methanol	Liquid/ Gas	UN1230	70m3	Marked on site Map.	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	N/A	<200Ltrs Diesel Fuel tank on machine	Stored outside control building on plan out of hours but may be anywhere on site.	Vehicle stored outside overnight.

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 Limed Sludge cake Silo.
- WEEE – Managed via Locked WEEE containers.
- Wood – Pallets are stored on site.

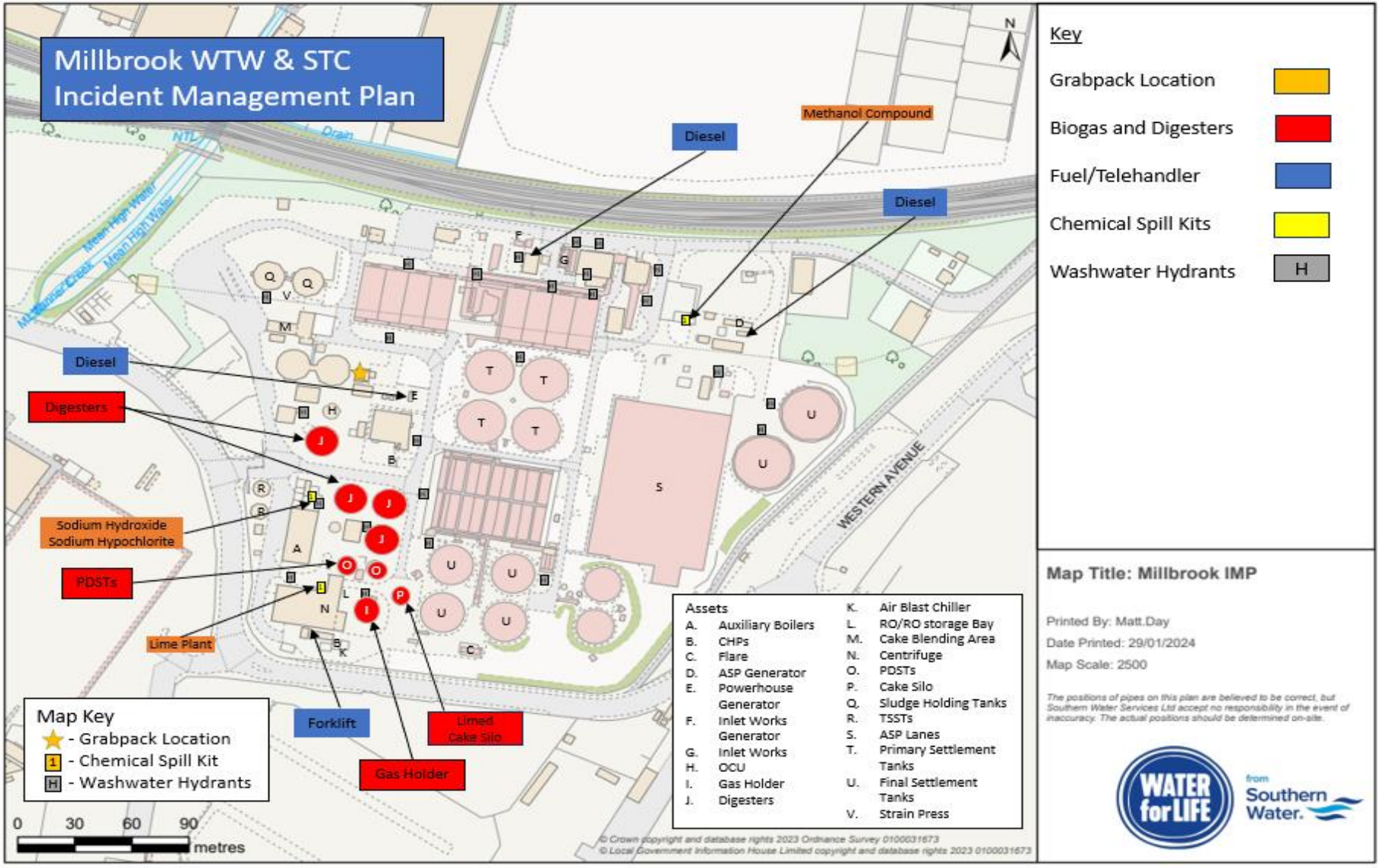
Non-Combustible

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	3272m3	Storm Tank	Tank
Wastewater	Liquid	N/A	1536m3	4 X Primary Settlement Tanks	Tanks
Wastewater	Liquid – Non-Buoyant	N/A	30873m3	Aeration Lanes	Lanes
Wastewater	Liquid	N/A	11340m3	6 X Final Settlement Tanks	Tanks
Sludge	Liquid	N/A	10751m3	4 X Digesters	Tanks
Sludge	Liquid	N/A	1070m3	2 x Thickened Sludge Storage Tank	Tanks
Sodium Hydroxide	Liquid	N/A	27m3	Odour Control Unit	Tanks
Sodium Hypochlorite	Liquid	N/A	6m3	Odour Control Unit	Tanks
Sludge	Liquid	N/A	2000m3	2 x Sludge Reception Tank	Tank

4. LOCATION OF FIRE EXTINGUISHERS ON SITE

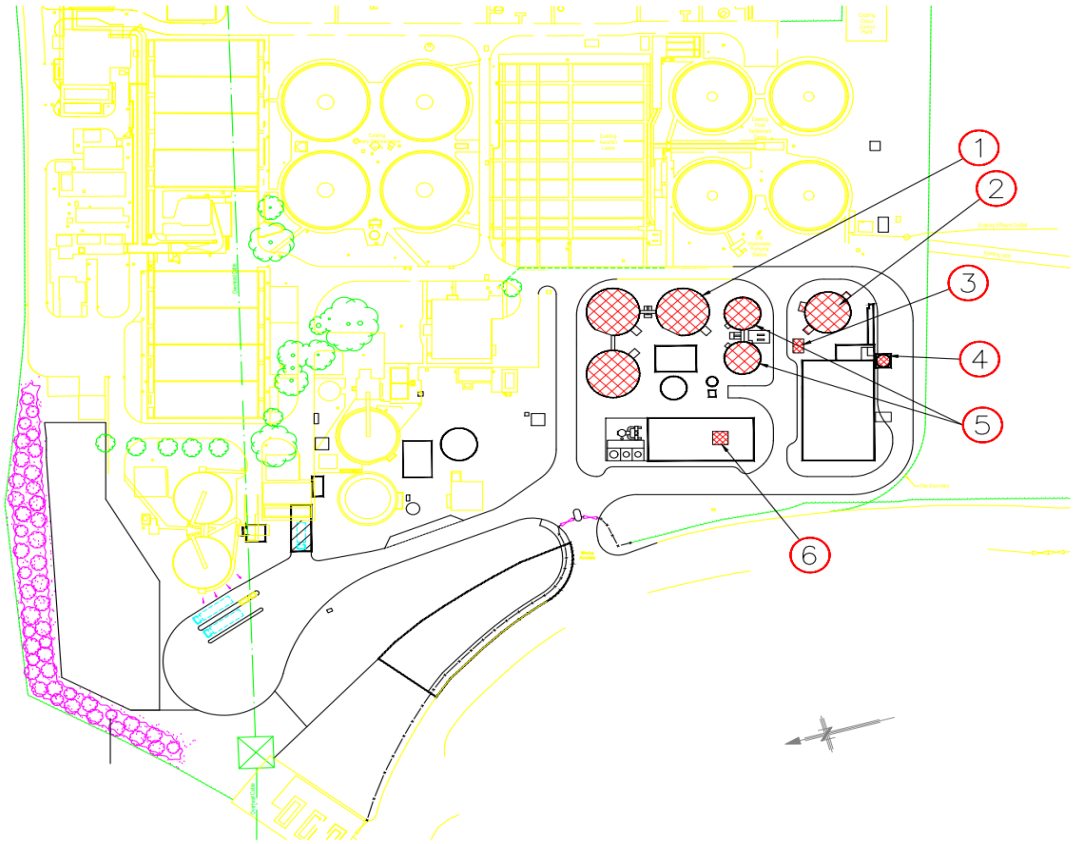
POLLUTION PREVENTION EQUIPMENT INVENTORY (ON AND OFF-SITE RESOURCES) ILLUSTRATED ON MILLBROOK IMP MAP			
Type	Location	Amount	Staff Contact
Fire Extinguishers	WTW Messroom	1	Jamie Newell [redacted]
Fire Extinguishers	WTW Lab	1	Jamie Newell
Fire Extinguishers	Storm Pumphouse	2	Jamie Newell
Fire Extinguishers	Inlet MCC	4	Jamie Newell
Fire Extinguishers	Inlet Stores	2	Jamie Newell
Fire Extinguishers	BNR Generator	1	Jamie Newell
Fire Extinguishers	BNR MCC	2	Jamie Newell
Fire Extinguishers	BNR Blower Room	2	Jamie Newell
Fire Extinguishers	Main Office	2	Jamie Newell
Fire Extinguishers	Powerhouse	5	Jamie Newell
Fire Extinguishers	Cake Reception	2	Jamie Newell
Fire Extinguishers	Sludge Reception	2	Jamie Newell
Fire Extinguishers	Cake Reception MCC	2	Jamie Newell
Fire Extinguishers	SBR Room	2	Jamie Newell
Fire Extinguishers	GBT Building	6	Jamie Newell
Fire Extinguishers	Boiler Room	2	Jamie Newell
Fire Extinguishers	Digester Heat Exchanger	1	Jamie Newell
Fire Extinguishers	STC Dryer Building	18	Jamie Newell
Chemical Spill Kits	WTW Lab	1	Jamie Newell
Chemical Spill Kits	STC Lab	1	Jamie Newell
Chemical Spill Kits	Odour Control Unit	2	Jamie Newell
Oil Spill Kits	Generators	3	Jamie Newell
Oil Spill Kits	Oil Store	1	Jamie Newell

5. WASHATER MAINS & FIRE HYDRANTS (H)



6. DSEAR DRAWINGS

AREA REF	SHEET No.	SITE AREA DESCRIPTION
1	4 + 5.	PRIMARY DIGESTERS
2	10 + 11.	GAS HOLDER
3	10 + 11.	GAS HOLDER CONDENSATE CHAMBER
4	8.	POST DIGESTION SLUDGE CAKE STORAGE
5	4 + 5.	POST DIGESTION STORAGE TANKS
6	6 + 7.	POLYELECTROLYTE STATION



CHECK PRINT DISTRIBUTION

	ARC	
	CIV	
	ELE	
	MEC	
	PRO	
	SER	
	STR	
	PPL	
	HYD	

Tick for Distribution

CHECK PRINT INFORMATION

RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:
PRELIMINARY CAD CHECKED BY (if required):
CAD CHECKED BY: ..... DATE: .....
CHECKED BY: ..... DATE: .....
REVIEWED BY: ..... DATE: .....
REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:
AUTHORISED BY: ..... DATE: .....

ENG-FM-210-01-00

DRAWING NO: KH. IP11SL.030.2Z2922.B
REVISION: B

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS MORRISON DRAWING (DSEAR)
DRAWING NO:73863.0119 REVISION:00 DATE: 07-10/11/05
ALSO APPROVED BY :STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	B	BRE COMPANY
15/05/2018	KA	SM	SM	00	BRE COMPANY (AS BUILT)

Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK, HAMPSHIRE, SO150JX.

DRAWING TITLE
DSEAR
SITE PLAN

SHEET 1 OF 12

SITE UNIT MNEMONIC: MILLBROOK
SITE UNIT NO: 100368
PRN: IP11SL
SCALE: NTS
MASTER SIZE: A3
DRAWING NO: KH. IP11SL.030.2Z2922.B
REVISION: B

bre

5 Risk assessment

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

5.1 Preliminary treatment

5.1.1 Inlet works

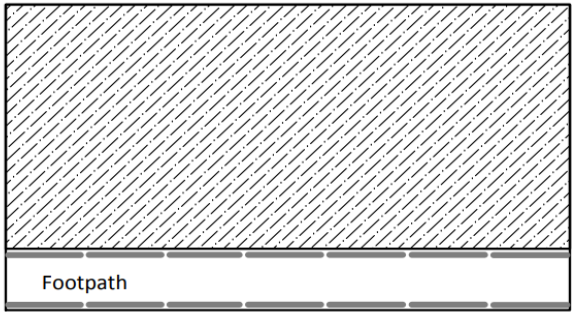
The wet well for the raw sewage is approximately 6m (deep) x 3m x12m and open to the atmosphere. The maximum flowrate expected is 850 L/s.

The inlet works are assumed to include flammable liquids such as petrol according to Southern Water's MED 4004 April 2015[3] and has therefore been allocated a zone 2 classification internally. The hazardous zone extends from the liquid surface up to the ground level as can be seen in the hazardous zoning diagram of the inlet works.

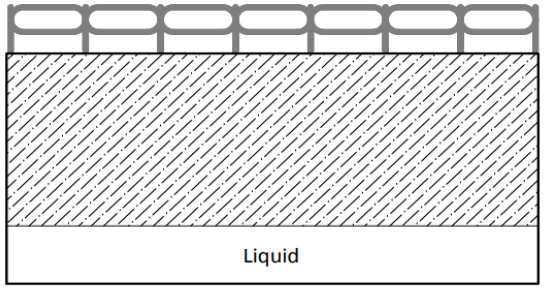
Raw sewage wet well

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

INLET WORKS - PLAN



INLET WORKS - ELEVATION



CHECK PRINT REF: A1	
PREPARED BY:	DATE:
PRELIMINARY CAD CHECKED BY (if required):	
CAD CHECKED BY:	DATE:
CHECKED BY:	DATE:
REVIEWED BY:	DATE:
REASON FOR ISSUE:	
AUTHORISE FOR ISSUE:	
AUTHORISED BY:	DATE:

CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT DISTRIBUTION	
	ARC
	CIV
	ELE
	MEC
	PRO
	SER
	STR
	PPL
	HYD
Tick for Distribution	

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

ENG-FM-210-01-00

DRAWING NO. KH. 1P11SL.030.2Z2927.B REVISION B

1. DO NOT SCALE. WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS BRE COMPANY DRAWING
APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	B	BRE COMPANY
30/10/2018	KA	SM	SM	00	BRE COMPANY (AS BUILT)

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK,
HAMPSHIRE, SO150JX.

DRAWING TITLE
DSEAR
INLET WORKS

SHEET 2 OF 12

SITE UNIT MNEMONIC: MILLBROOK
SITE UNIT NO.: 100368
PBN: 1P11SL
SCALE: NTS
MASTER SIZE: A3

DRAWING NO. KH. 1P11SL.030.2Z2927.B REVISION B

5.2 Secondary treatment

The drawing illustrating the extent of the hazardous zoning of the methanol compound is included at the end of section 5.2.

5.2.1 Methanol Fill Point Skid 1

Zone 2 extending across entire fill point skid area.

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

5.2.2 Methanol Fill Point Skid 2

Zone 2 extending across entire fill point skid area.

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

bre

5.2.3 Methanol Safety Shower

The zone 2 from the methanol tanks does not appear to extend as far as the safety shower.

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

bre

5.2.4 Methanol dosing pump rig

Zone 1 extending across entire dosing pump rig area.

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

The methanol dosing pump rig is serviced by contractors.

5.2.5 Methanol storage tank 1

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

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

5.2.6 Methanol storage tank 2

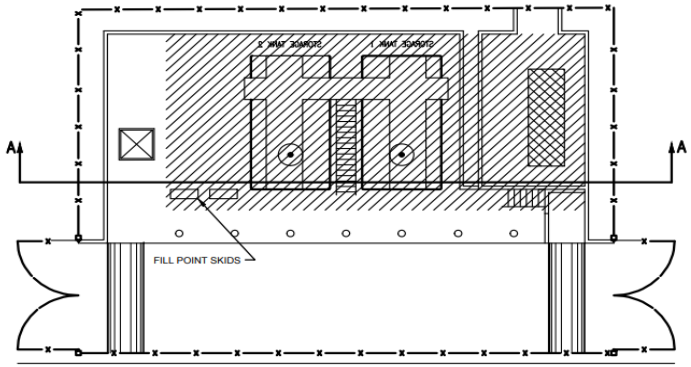
Zone 0 internally and zone 1 externally. The allocated zonings are based on the original hazardous areas specified by Southern Water and 4D[4]

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

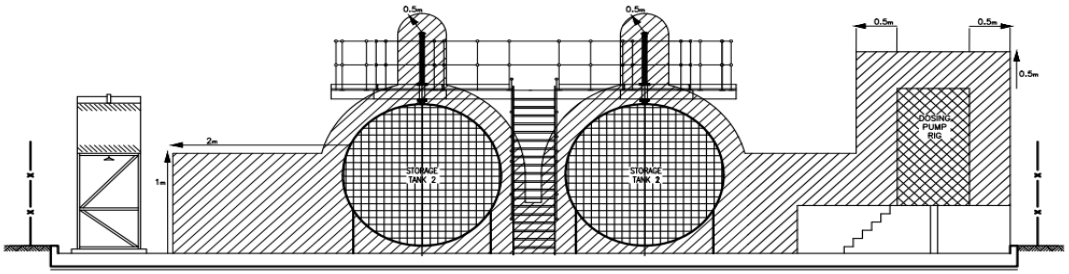
5.2.7 Methanol bund area

Zone 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	1	2	2



PLAN
SCALE 1:100



SECTION A–A
SCALE 1:50

CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: ..... DATE: .....

CHECKED BY: ..... DATE: .....

REVIEWED BY: ..... DATE: .....

REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:

AUTHORISED BY: ..... DATE: .....

CHECK PRINT DISTRIBUTION		
	ARC	
	CIV	
	ELE	
	MEC	
	PRO	
	SER	
	STR	
	PPL	
	HYD	

Tick for Distribution

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	METHANOL STORAGE TANK	0		INTERNALLY
	B	METHANOL STORAGE TANK	2		EXTERNALLY
ZONE 1	C	DOSING PUMP RIG	1		INTERNALLY
	D	DOSING PUMP RIG	2		EXTERNALLY
ZONE 2					

DRAWING NO. KH. 1P11SL.030.2Z2926.B — REVISION B

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS BRE COMPANY DRAWING
APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	B	BRE COMPANY
30/10/2018				A	BTU
27/02/2008	SK	ACC	RGA	00	SOUTHERN WATER / 4D (BUDDS FARM)

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK,
HAMPSHIRE, SO150JX.

DRAWING TITLE
DSEAR
METHANOL STORAGE AREA

SHEET 3 OF 12

SITE UNIT MNEMONIC: MILLBROOK — SITE UNIT NO: 100368

PIN: 1P11SL — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. 1P11SL.030.2Z2926.B — REVISION B

5.3 Sludge treatment

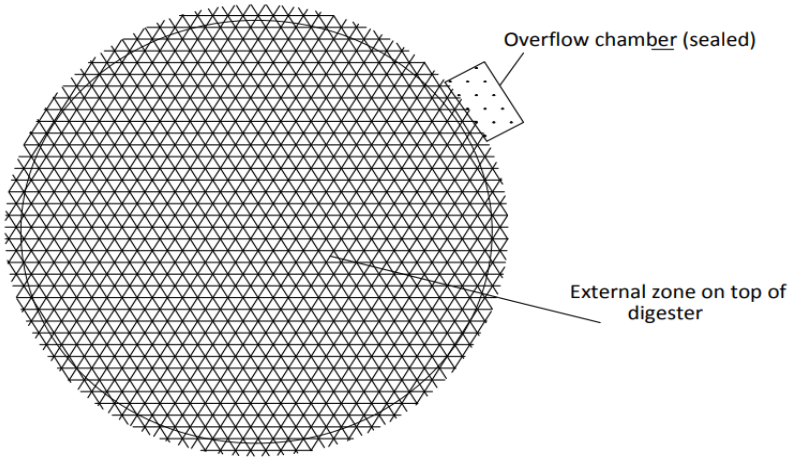
5.3.1 Digester 1

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

The digester tanks are open to atmosphere due to two previous digesters imploding.

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

DIGESTER & POST-DIGESTER PLAN



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: ..... DATE: .....

CHECKED BY: ..... DATE: .....

REVIEWED BY: ..... DATE: .....

REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:

AUTHORISED BY: ..... DATE: .....

CHECK PRINT DISTRIBUTION	
ARC	
CIV	
ELE	
MEC	
PRO	
SER	
STR	
PPL	
HYD	
Tick for Distribution	

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
ZONE 1	B	EXTERNAL ZONE ON TOP OF DIGESTER	1		EXTERNALLY
ZONE 2					

ENG-FM-210-01-00

DRAWING NO. KH.IP11SL.030.2Z2928.A REVISION A

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS (BRE COMPANY) DRAWING (NOT AS BUILT)
APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	A	BRE COMPANY
10/10/2005	SM	PF	PF	00	BRE COMPANY

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK
HAMPSHIRE, SO15 0JX.

DRAWING TITLE
DSEAR
DIGESTER PLAN

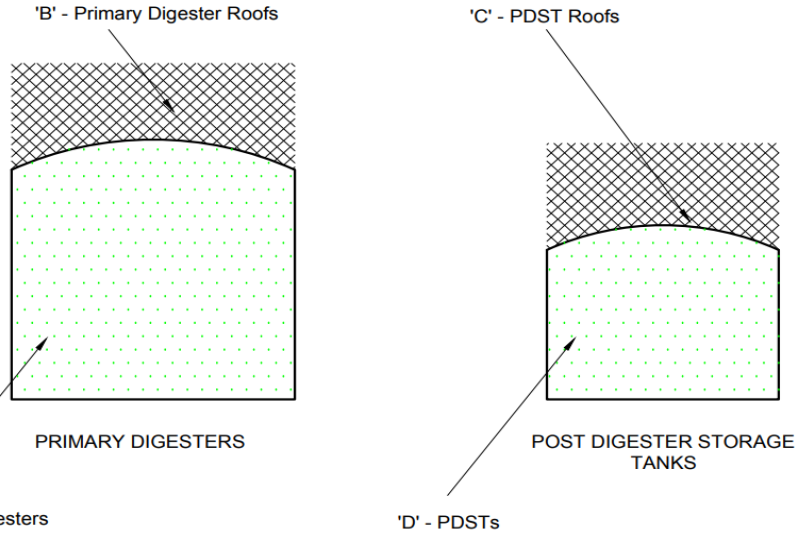
SHEET 4 OF 12

SITE UNIT MNEMONIC: MILLBROOK | SITE UNIT NO.: 100368

PRN: IP11SL | SCALE: NTS | MASTER SIZE: A3

DRAWING NO. KH.IP11SL.030.2Z2928.A REVISION A

DIGESTER & POST DIGESTER - ELEVATION



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: ..... DATE: .....

CHECKED BY: ..... DATE: .....

REVIEWED BY: ..... DATE: .....

REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:

AUTHORISED BY: ..... DATE: .....

CHECK PRINT DISTRIBUTION	
ARC	
CIV	
ELE	
MEC	
PRO	
SER	
STR	
PPL	
HYD	
Tick for Distribution	

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	PRIMARY DIGESTERS	0	2	INTERNALLY
ZONE 1	B	PRIMARY DIGESTER ROOFS	1	2	EXTERNALLY - 3M 'V' AND 'H' TO EDGE OF ROOFS
ZONE 2	C	POST DIGESTER STORAGE TANK ROOFS	1	2	EXTERNALLY - 3M 'V' AND 'H' TO EDGE OF ROOFS
	D	POST DIGESTER STROAGE TANKS	0	2	INTERNALLY

ENG-FM-210-01-00

DRAWING NO. KH. IP11SL.030.2Z2925.B — REVISION B

1. DO NOT SCALE. WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS MORRISON DRAWING (DSEAR)
DRAWING NO:73863.0119 REVISION:00 DATE: 07-10/11/05
ALSO APPROVED BY :STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	BRE		COMPANY
15/05/2018	KA	SM	SM	00	BRE COMPANY (AS BUILT)

Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK,
HAMPSHIRE, SO150JX.

DRAWING TITLE
DSEAR
DIGESTER ELEVATION

SHEET 5 OF 12

SITE UNIT MNEMONIC: MILLBROOK — SITE UNIT NO.: 100368

PRN: IP11SL — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. IP11SL.030.2Z2925.B — REVISION B

5.3.2 Digester 2

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

The digester tanks are open to atmosphere due to two previous digesters imploding.

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 5.3.1.

5.3.3 Digester 3

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

The digester tanks are open to atmosphere due to two previous digesters imploding.

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 5.3.1.

5.3.4 Post digestion storage 1

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

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	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 5.3.1.

5.3.5 Post digestion storage 2

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

Hazards	Control measures	Likelihood	Severity	Risk rating
Naked flames	No smoking policy on site except in designated areas. Signs present.	1	2	2
Welding / cutting: sparks and hot surfaces	Permit to work required before maintenance works can be undertaken.	1	2	2
Sparks from mobile phones	Mobile phones are not allowed to be taken into zoned areas. Signs present	1	2	2
Lightning	Exposed zoned areas fitted with protection.	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 5.3.1.

bre

5.3.6 Polyelectrolyte

There are two polyelectrolyte hoppers on site at Millbrook, one next to the redundant dryer and the other is next to the mixing tanks.

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

Figure 1: Polyelectrolyte hopper, dryer building.

Figure 2: Polyelectrolyte hopper, next to mixing tanks.

bre

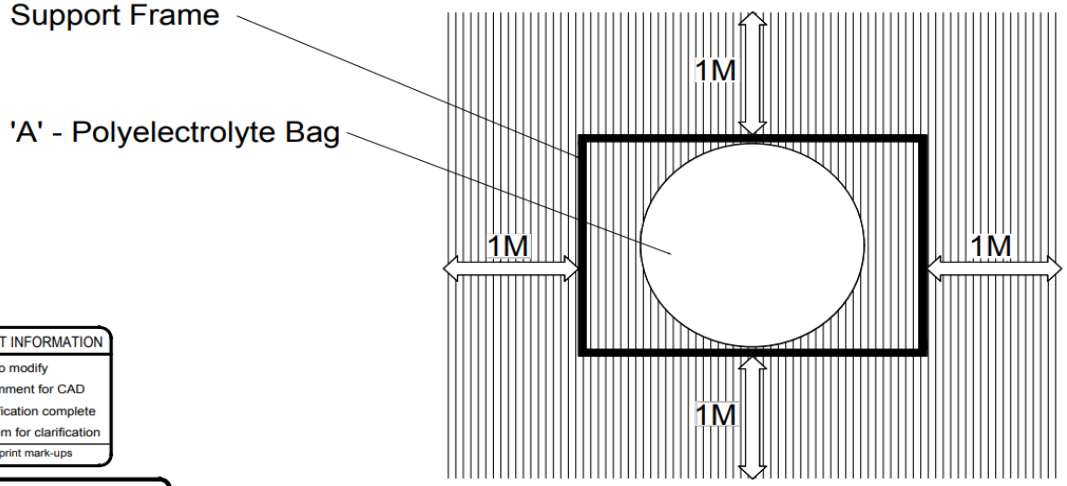
Polyelectrolyte hopper 1 (dryer)

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 hopper 1 (mixers)

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

POLYELECTROLYTE STATION - PLAN



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: ..... DATE: .....

CHECKED BY: ..... DATE: .....

REVIEWED BY: ..... DATE: .....

REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:

AUTHORISED BY: ..... DATE: .....

CHECK PRINT DISTRIBUTION		
	ARC	
	CIV	
	ELE	
	MEC	
	PRO	
	SER	
	STR	
	PPL	
	HYD	
Tick for Distribution		

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

ENG-FM-210-01-00

DRAWING NO. KH.IP11SL.030.2Z2929.A REVISION A

1. DO NOT SCALE. WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS MORRISON DRAWING (NOT AS BUILT)
DRAWING NO:73863.0115 / 0116 REVISION:00 DATE:18-22/07/05
ALSO APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	A	BRE COMPANY
10/10/2005	SM	PF	PF	00	BRE COMPANY

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE: MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK,
HAMPSHIRE, SO15 0JX.

DRAWING TITLE: DSEAR
POLYELECTROLYTE STATION PLAN

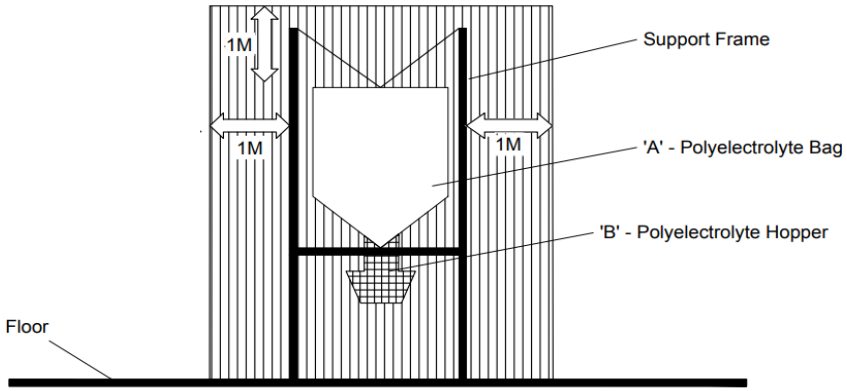
SHEET 6 OF 12

SITE UNIT MNEMONIC: MILLBROOK | SITE UNIT NO: 100368

PRN: IP11SL | SCALE: NTS | MASTER SIZE: A3

DRAWING NO: KH.IP11SL.030.2Z2929.A REVISION A

POLYELECTROLYTE STATION - ELEVATION



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: ..... DATE: .....

CHECKED BY: ..... DATE: .....

REVIEWED BY: ..... DATE: .....

REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:

AUTHORISED BY: ..... DATE: .....

CHECK PRINT DISTRIBUTION		
	ARC	
	CIV	
	ELE	
	MEC	
	PRO	
	SER	
	STR	
	PPL	
	HYD	
Tick for Distribution		

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

ENG-FM-210-01-00

DRAWING NO: KH.IP11SL.030.2Z2930.A REVISION: A

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS MORRISON DRAWING (NOT AS BUILT)
DRAWING NO:73863.0115 / 0116 REVISION:00 DATE:18-22/07/05
ALSO APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	A	BRE COMPANY
10/10/2005	SM	PF	PF	00	BRE COMPANY

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE: MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK,
HAMPSHIRE, SO15 0JX.

DRAWING TITLE: DSEAR
POLYELECTROLYTE DRAWING ELEVATION

SHEET 7 OF 12

SITE UNIT MNEMONIC: MILLBROOK
SITE UNIT NO.: 100368
PRN: IP11SL
SCALE: NTS
MASTER SIZE: A3

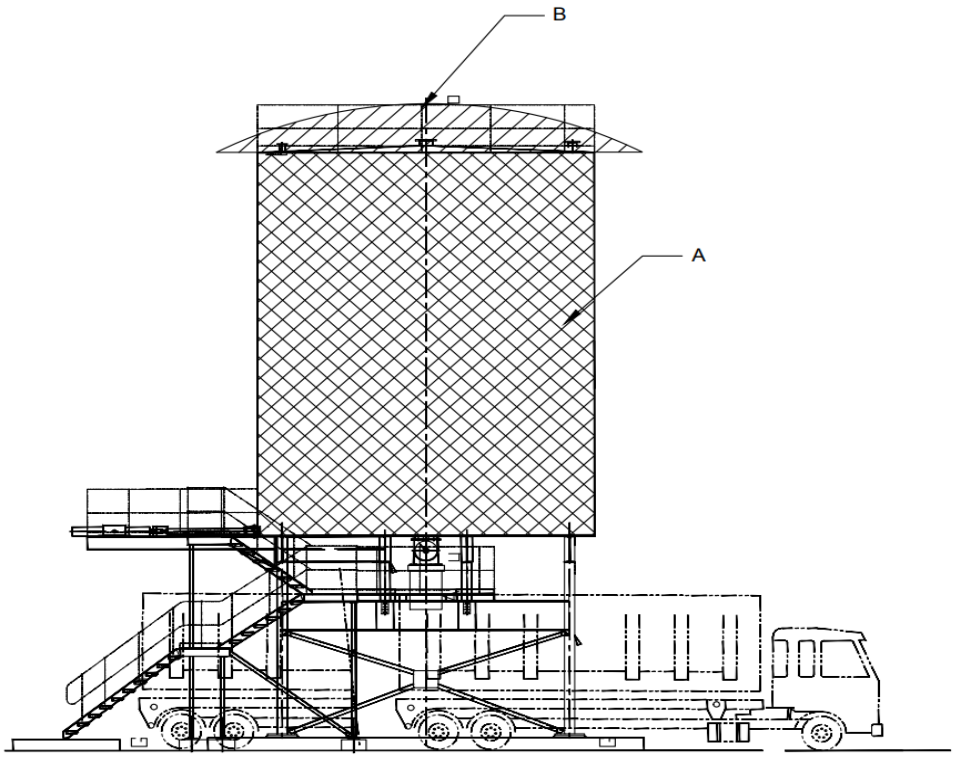
DRAWING NO: KH.IP11SL.030.2Z2930.A REVISION: A

5.3.7 Post digestion sludge cake storage

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

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

POST-DIGESTION STORAGE SILO



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1	
PREPARED BY:	DATE:
PRELIMINARY CAD CHECKED BY (if required):	
CAD CHECKED BY:	DATE:
CHECKED BY:	DATE:
REVIEWED BY:	DATE:
REASON FOR ISSUE:	
AUTHORISE FOR ISSUE:	
AUTHORISED BY:	DATE:

CHECK PRINT DISTRIBUTION	
	ARC
	CIV
	ELE
	MEC
	PRO
	SER
	STR
	PPL
	HYD
Tick for Distribution	

ZONE LEGEND	
ZONE 0	
ZONE 1	
ZONE 2	

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

ENG-FM-210-01-00

DRAWING NO: KH.IP11SL.030.2Z2931.A — REVISION: A

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

CURRENT VERSION INFORMATION

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	A	BRE COMPANY
30/06/2016	HP	MO	RS	Z	AS BUILT
26/11/2015	EY	MO	RS	Z	FA345C- 102480-67186668-005 (AS BUILT)
02/07/2015	EY	MO	RS	P0	FIRST ISSUE

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE: MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK, HAMPSHIRE, SO15 0JX.

DRAWING TITLE: DSEAR
POST-DIGESTION STORAGE SILO

SHEET 8 OF 12

SITE UNIT MNEMONIC: MILLBROOK — SITE UNIT NO.: 100368

PRN: IP11SL — SCALE: NTS — MASTER SIZE: A3

DRAWING NO: KH.IP11SL.030.2Z2931.A — REVISION: A

5.4 Gas storage

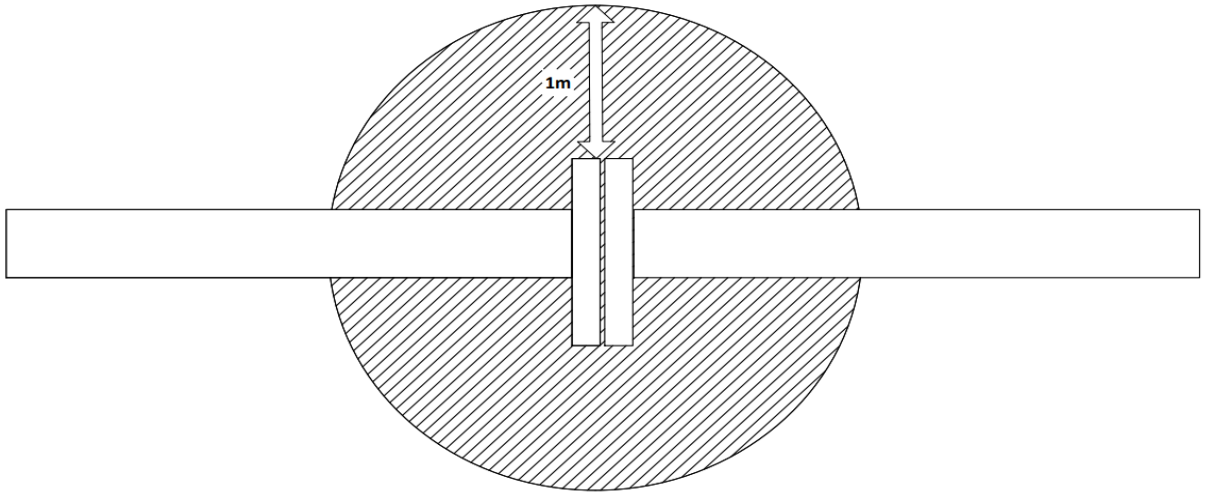
5.4.1 Boiler house

There are two boilers on site at Millbrook.

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

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 PIPELINE - INTERNAL PIPEWORK ONLY



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (If required):

CAD CHECKED BY: DATE:

CHECKED BY: DATE:

REVIEWED BY: DATE:

REASON FOR ISSUE:

AUTHORISE FOR ISSUE:

AUTHORISED BY: DATE:

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

CHECK PRINT DISTRIBUTION		
	ARC	
	CIV	
	ELE	
	MEC	
	PRO	
	SER	
	STR	
	PPL	
	HYD	

Tick for Distribution

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

ENG-FM-210-01-00

DRAWING NO. KH.IP11SL.030.2Z2932.A REVISION A

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS (BRE COMPANY) DRAWING (NOT AS BUILT)
APPROVED BY : STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	A	BRE COMPANY
11/09/2018	KA	SM	SM	00	BRE COMPANY

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS,
HAMPSHIRE, SO15 0JX.

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

SHEET 9 OF 12

SITE UNIT MNEMONIC: MILLBROOK
SITE UNIT NO.: 100368
PRN: IP11SL
SCALE: NTS
MASTER SIZE: A3

DRAWING NO. KH.IP11SL.030.2Z2932.A REVISION A

5.4.2.2 Gas condensate pit

Based on Southern Water's MED 4004 April 2015,[3] zone 2 internally.

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

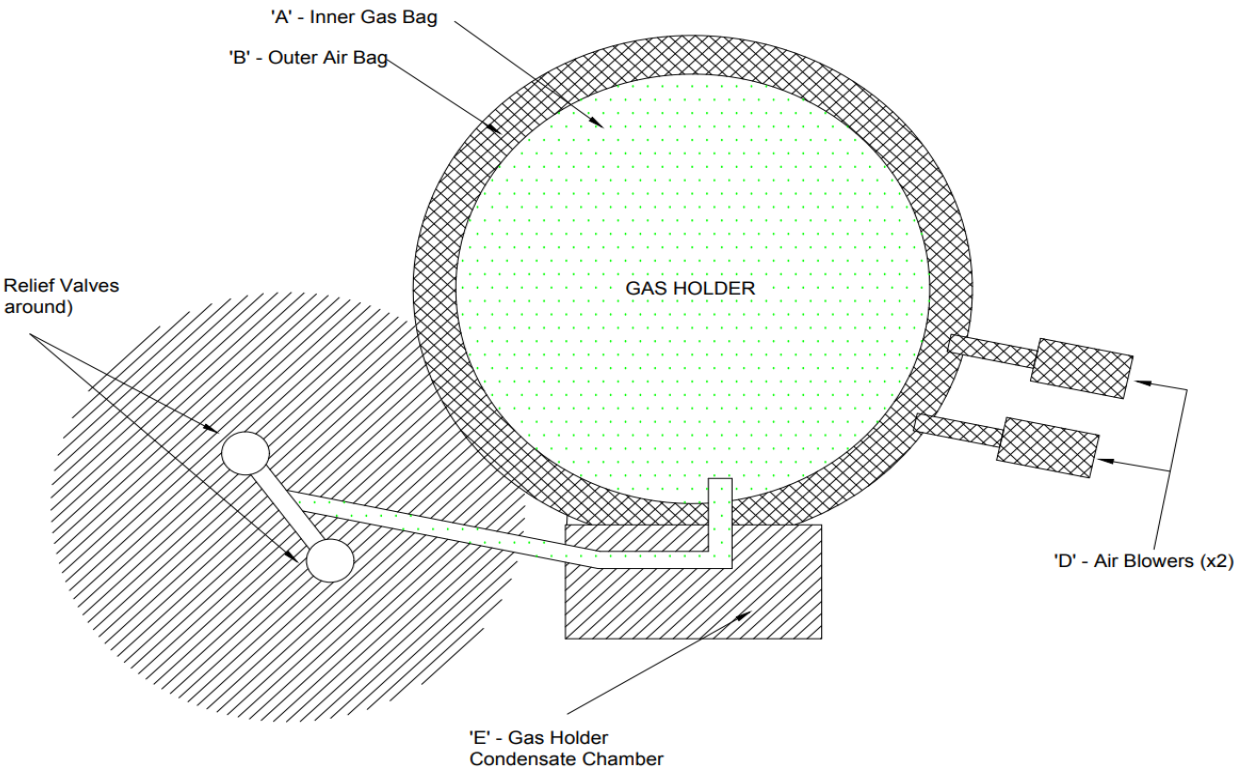
5.4.2 Gas storage area

5.4.2.1 Double membrane gas bag

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

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

GAS HOLDER COMPOUND - PLAN



CHECK PRINT DISTRIBUTION		
	ARC	
	CIV	
	ELE	
	MEC	
	PRO	
	SER	
	STR	
	PPL	
	HYD	
Tick for Distribution		

CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: ..... DATE: .....

CHECKED BY: ..... DATE: .....

REVIEWED BY: ..... DATE: .....

REASON FOR ISSUE: .....

AUTHORISE FOR ISSUE:

AUTHORISED BY: ..... DATE: .....

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	PRESSURE RELIEF VALVES	2	2	EXTERNALLY 3M, 'V' AND 'H'
ZONE 1	D	AIR BLOWERS	1	2	INTERNALLY
	E	GAS HOLDER CONDENSATE CHAMBER	2	2	INTERNALLY
ZONE 2					

ENG-FM-210-01-00

DRAWING NO. KH. IP11SL.030.2Z2923.B — REVISION B

1. DO NOT SCALE. WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS MORRISON DRAWING (DSEAR)
DRAWING NO:73863.0119 REVISION:00 DATE: 07-10/11/05
ALSO APPROVED BY :STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	B	BRE COMPANY
15/05/2018	KA	SM	SM	00	BRE COMPANY (AS BUILT)

Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK,
HAMPSHIRE, SO150JX.

DRAWING TITLE
DSEAR
GAS HOLDER COMPOUND PLAN

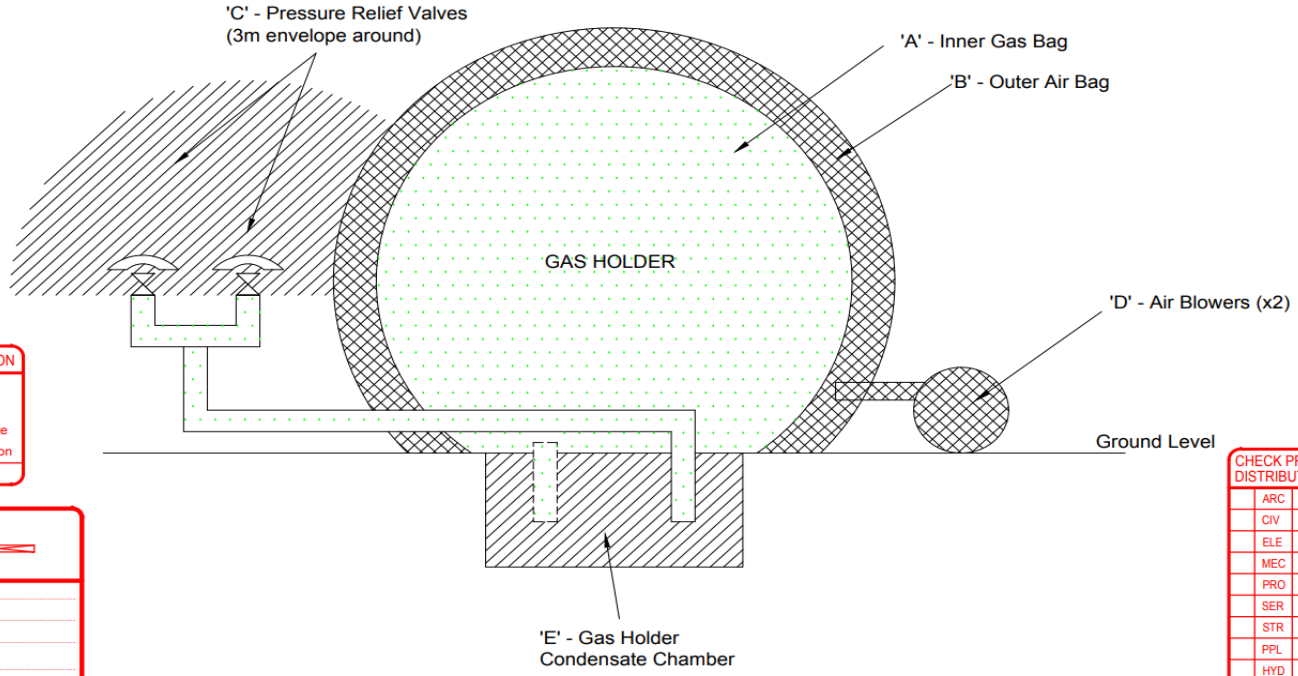
SHEET 10 OF 12

SITE UNIT MNEMONIC: MILLBROOK — SITE UNIT NO.: 100368

PRN: IP11SL — SCALE: NTS — MASTER SIZE: A3

DRAWING NO. KH. IP11SL.030.2Z2923.B — REVISION B

GAS HOLDER COMPOUND - ELEVATION



CHECK PRINT INFORMATION
RED - Item to modify
GREEN - Comment for CAD
BLUE - Modification complete
YELLOW - Item for clarification
Pen colours for print mark-ups

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: DATE:

CHECKED BY: DATE:

REVIEWED BY: DATE:

REASON FOR ISSUE:

AUTHORISE FOR ISSUE:

AUTHORISED BY: DATE:

CHECK PRINT DISTRIBUTION	
	ARC
	CIV
	ELE
	MEC
	PRO
	SER
	STR
	PPL
	HYD
Tick for Distribution	

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
ZONE 1	C	PRESSURE RELIEF VALVES	2	2	EXTERNALLY 3M, 'V' AND 'H'
	D	AIR BLOWERS	1	2	INTERNALLY
ZONE 2	E	GAS HOLDER CONDENSATE CHAMBER	2	2	INTERNALLY

ENG-FM-210-01-00

DRAWING NO. KH. IP11SL.030.2Z2924.B REVISION B

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS MORRISON DRAWING (DSEAR)
DRAWING NO:73863.0119 REVISION:00 DATE: 07-10/11/05
ALSO APPROVED BY :STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	B	BRE COMPANY
15/05/2018	KA	SM	SM	00	BRE COMPANY (AS BUILT)

Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK, HAMPSHIRE, SO150JX.

DRAWING TITLE
DSEAR
GAS HOLDER COMPOUND ELEVATION

SHEET 11 OF 12

SITE UNIT MNEMONIC: MILLBROOK
SITE UNIT NO.: 100368
PRN: IP11SL
SCALE: NTS
MASTER SIZE: A3

DRAWING NO. KH. IP11SL.030.2Z2924.B REVISION B

5.5 CHP

There are currently two CHP plants at Millbrook, one existing plant and a new plant that is currently offline.

The existing CHP plant is not allocated a zoned area. The CHP plant appeared to be identical to that at Budds Farm and therefore the air flow through the CHP plant is sufficient to ensure a flammable atmosphere is highly unlikely to develop.

The new CHP plant will not require hazardous zoning if it is identical to the existing CHP plant.

NB. An equipment catalogue was not taken for the equipment in the CHP plant area, however a flame arrestor and gas detection was observed around the CHP plant area at the time of the site visit.

Figure 3: CHP plant

5.6 Flare stack area

Figure 4: Flare stack compound

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

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

The equipment in the flare stack area was not catalogued, however, a flame arrestor and control panel were observed in the flare stack compound at the time of the site visit. There were also fire extinguishers present and the equipment was earth-bonded.

5.7 Diesel storage

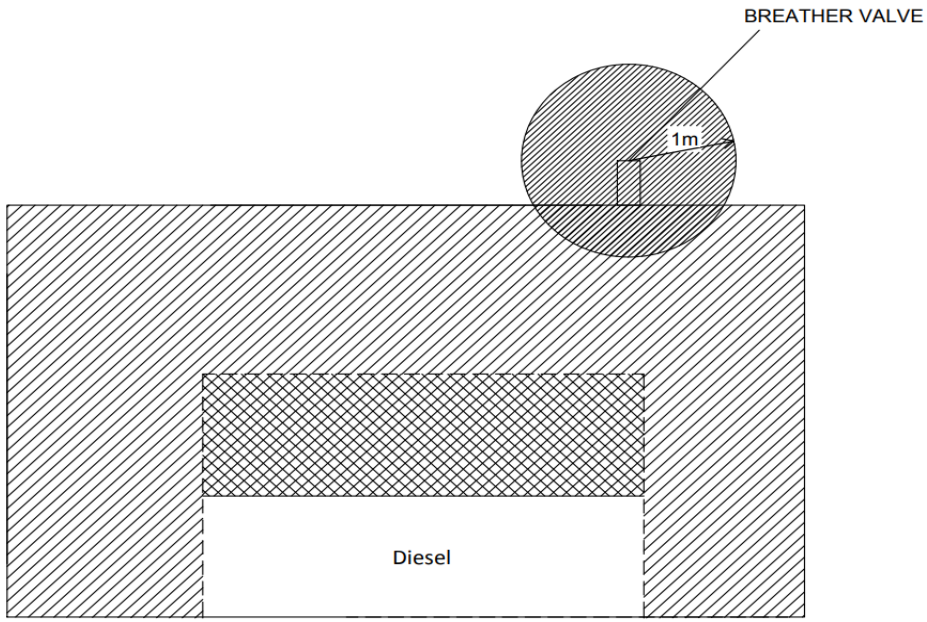
There are three diesel generators on site at Millbrook STC.

According to guidance given in the "*Energy Institute: Model code of safe practice Part 15 – Area classification code for installation handling flammable fluids*"[4] the diesel tanks were allocated a zone 1 internally above the liquid level. The tanks are double-skinned and therefore the tanks are unclassified externally.

Figure 5: Diesel generator.

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



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	ABOVE LIQUID SURFACE	1		INTERNALLY
	B	WITHIN SECOND SKIN	2		INTERNALLY
ZONE 1	C	AROUND BREATHER VALVE	2		EXTERNALLY
ZONE 2					

CHECK PRINT REF: A1

PREPARED BY: DATE:

PRELIMINARY CAD CHECKED BY (if required):

CAD CHECKED BY: DATE:

CHECKED BY: DATE:

REVIEWED BY: DATE:

REASON FOR ISSUE:

AUTHORISE FOR ISSUE:

AUTHORISED BY: DATE:

CHECK PRINT INFORMATION

RED - Item to modify

GREEN - Comment for CAD

BLUE - Modification complete

YELLOW - Item for clarification

Pen colours for print mark-ups

CHECK PRINT DISTRIBUTION

ARC	
CIV	
ELE	
MEC	
PRO	
SER	
STR	
PPL	
HYD	

Tick for Distribution

DRAWING NO. KH. IP11SL.030.2Z2933.A REVISION A

1. DO NOT SCALE, WORK TO DIMENSIONS SHOWN. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. ALL IMAGES DENOTED ON THIS DRAWING REMAIN AS BUILT INFORMATION SUPPLIED BY (BRE) GLOBAL.
3. ALL INFORMATION, BUT NOT LIMITED TO, SUPPLIED BY (BRE) GLOBAL TO REPRESENT AS BUILT INFORMATION FOR THIS DRAWING REMAIN SOLE PROPERTY OF THE SURVEY CONTRACTOR (BRE) GLOBAL.

CURRENT VERSION INFORMATION
THIS IS (BRE COMPANY) DRAWING (NOT AS BUILT)
APPROVED BY :STEVEN MANCHESTER (BRE COMPANY)
DATE: 30/10/2018.

DATE	DRWN	CHKD	REVD	REV	REASON FOR ISSUE
30/10/2018	KA	SM	SM	A	BRE COMPANY
11/09/2018	KA	SM	SM	00	BRE COMPANY (NOT AS BUILT)

CLIENT: Southern Water

BTU
Southmoor Lane
Havant
Hampshire
PO9 1JW

PROJECT TITLE
MILLBROOK STC
WESTERN AV, WESTERN DOCKS, MILLBROOK
HAMPSHIRE, SO15 0JX.

DRAWING TITLE
DSEAR
DIESEL TANK - DOUBLE SKINNED

SHEET 12 OF 12

SITE UNIT MNEMONIC: MILLBROOK
SITE UNIT NO.: 100368
PRN: IP11SL
SCALE: NTS
MASTER SIZE: A3

DRAWING NO. KH. IP11SL.030.2Z2933.A REVISION A

7 FIRE RISK ASSESSMENT

We need to place a copy of the site Fire Risk Assessment in the grab pack.

Electronic link to copy of Fire Risk Assessment - FRA - Millbrook STC 09-11-22 PS287 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)