A. Introduction

This EAMP has been prepared as part of a suite of documents submitted to the EA that make up an Environmental Permit variation application for an anaerobic digestion Installation facility at Hayle WWTW, Station approach, St Erth, Hayle, TR27 6LA, United Kingdom (the 'Site'). The Site, which forms part of the wider Sewage Treatment Works (STW), exceeds the 100t/day throughput limit and therefore requires an Environmental Permit. Activities carried out under this Environmental Permit will include anaerobic digestion activities used to treat sludge on the Site.

This EAMP has been prepared in accordance with prevailing Environment Agency (EA) guidance and Best Available Techniques (BAT), with further details provided in Table 1 Guidance and BAT

Table 1 Guidance and BAT

Guidance / BAT	Details
How to develop a management system: Environmental Permits[1]	<u>Accident prevention and management plan</u> The plan must identify potential accidents, for example equipment breakdowns, enforced shutdowns, fires, vandalism, flooding, or any other incident which causes an unexpected change to normal operations, such as bad weather. For each potential incident, it must also state the: • Likelihood of the accident happening; • Consequences of the accident happening; • Measures you'll take to avoid the accident happening; and • Measures you'll take to minimise the impact if the accident does happen. Your accident plan must also say how you will record, investigate and respond to accidents or breaches of your permit. Your accident plan must also include: • The date it was reviewed; • When it will next be reviewed; • A list of emergency contacts and how to reach them; • A list of substances stored at your site, and your storage facilities; and • Forms to record accidents on. The EAMP must also include: • Information on online security to protect your business; and • Contact information for the public.
BAT Conclusions for Waste Treatment, under Directive 2010/75/EU (Industrial	Emissions from Accidents and Incidents a) Protection measures b) Management of incidental/accidental emissions c) Incident/accident registration and assessment system

[1] How to develop a management system: Environmental Permits, August 2021. Available at: https://www.gov.uk/guidance/develop-a-management-system-environmental-permits#accident-prevention-and-management-plan

Guidance / BAT	Details
Emissions Directive), BAT Conclusion 21[2]	

As identified in Table 1, prevailing EA Guidance[1] requires that potential environmental incidents are identified and an environmental risk assessment approach is adopted to determine; the likelihood of the incident occurring, the consequences of the incident occurring and the mitigation measures that will be implemented to both avoid the accident happening and to minimise the impact to the environment in the event the incident does occur. This assessment is provided in the Environmental Risk Assessment (Report No. 7237.Stantec..HayleZZ.Report.Z.10044), which therefore forms part of this EAMP.

This EAMP will form part of the wider SWW Environmental Management System which has been prepared in accordance with prevailing EA Guidance[1] and accounting for relevant BAT Conclusions, both of which are referenced in Table 1.

Additional documents that make up this EAMP, including management plans and procedures, are outlined in Section E

1.1 Purpose of this EAMP

The purpose of this EAMP is to outline how SWW identify and manage the risks posed to the environment from the permitted operations that are carried out on the Site. The EAMP is implemented through the identification and assessment of incidents / accidents on the Site and adopting of mitigation measures to reduce the likelihood of an incident / accident occurring, and mitigation measures to reduce the impact should an incident / accident occur.

This EAMP, specifically the mitigation measures and actions taken in the event of an incident / accident, are implemented via other SWW management plans and procedures. This EAMP and other supporting documents should all be readily accessible for reference in the event of an incident / accident.

1.2 Document Control

Document Control Ref:	Version 2

1.3 Review Process

Version	Date	Revised By	Reviewed By	Amendment Details
1	03/09/2021	Josh Parsons	Peter Duncan	Version 1.0
2	15/12/2023	Chloe Austin-Bangs	Josh Parsons	Version 2.0

[2] EU Commission, Commission Implementing Decision 2018 / 1147 – establishing BAT conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council, August 2018.

B. CONTENTS

C. PERMITTED OPERATIONS

Permitted operations include biological treatment activities, namely the following:

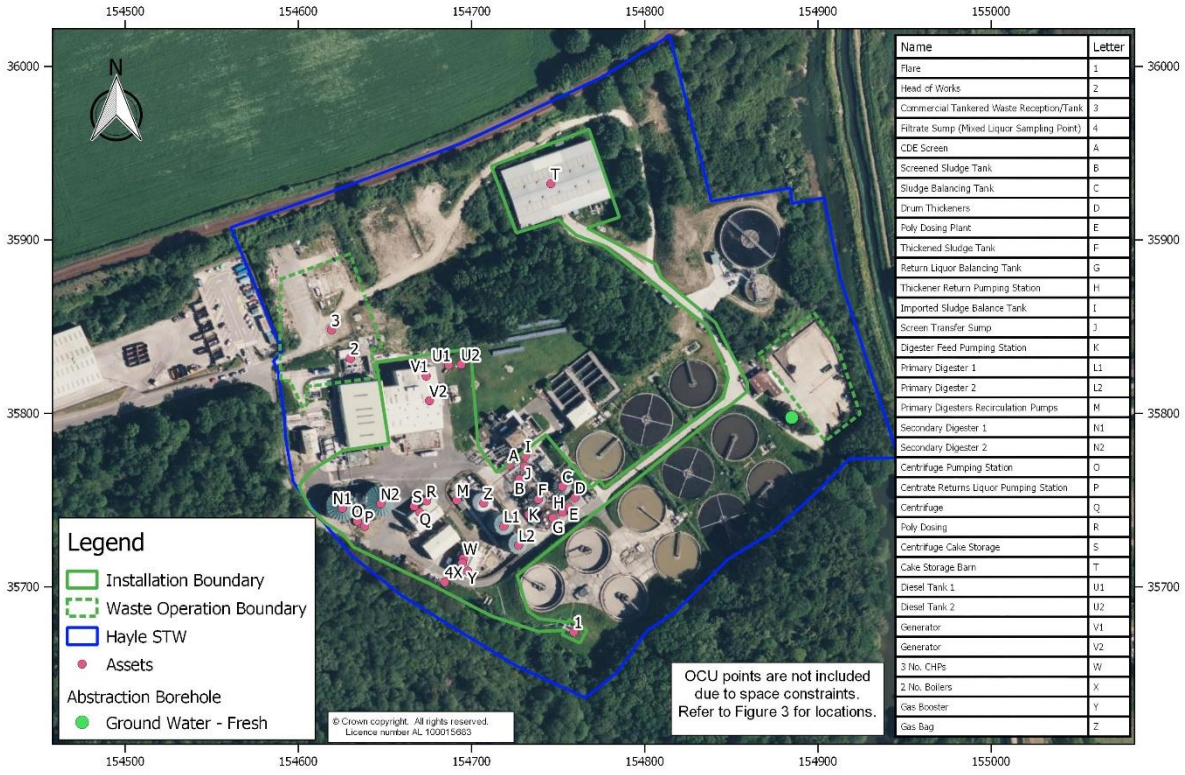
- Anaerobic digestion of sludge (both indigenous and non-indigenous), including storage of liquors and the generation of biogas; and
- Storage of biogas and use in a Combined Heat and Power (CHP) facility.

The location of assets on the Site that make up the permitted operations is shown on **Figure 1**. The anaerobic digestion processes carried out on the Site are displayed pictorially in the Process Flow Diagram (PFD) in **Figure 2** .

A more detailed summary of the permitted operations can be found in the Non-Technical Summary of the Environmental Permit Variation Application.

The sewage treatment process consists of inlet screening, grit removal, primary settlement, secondary (biological) treatment, sludge removal, final settlement and then discharge via a long sea outfall to St Ives Bay. The site also has storm storage with settlement. Treatment tanks are above ground in areas of grass and concrete. The site roads are mainly surfaced in concrete, with some tarmac roads. There is one entrance to the site from the lane off Station Approach.

Figure 1: Asset location plan

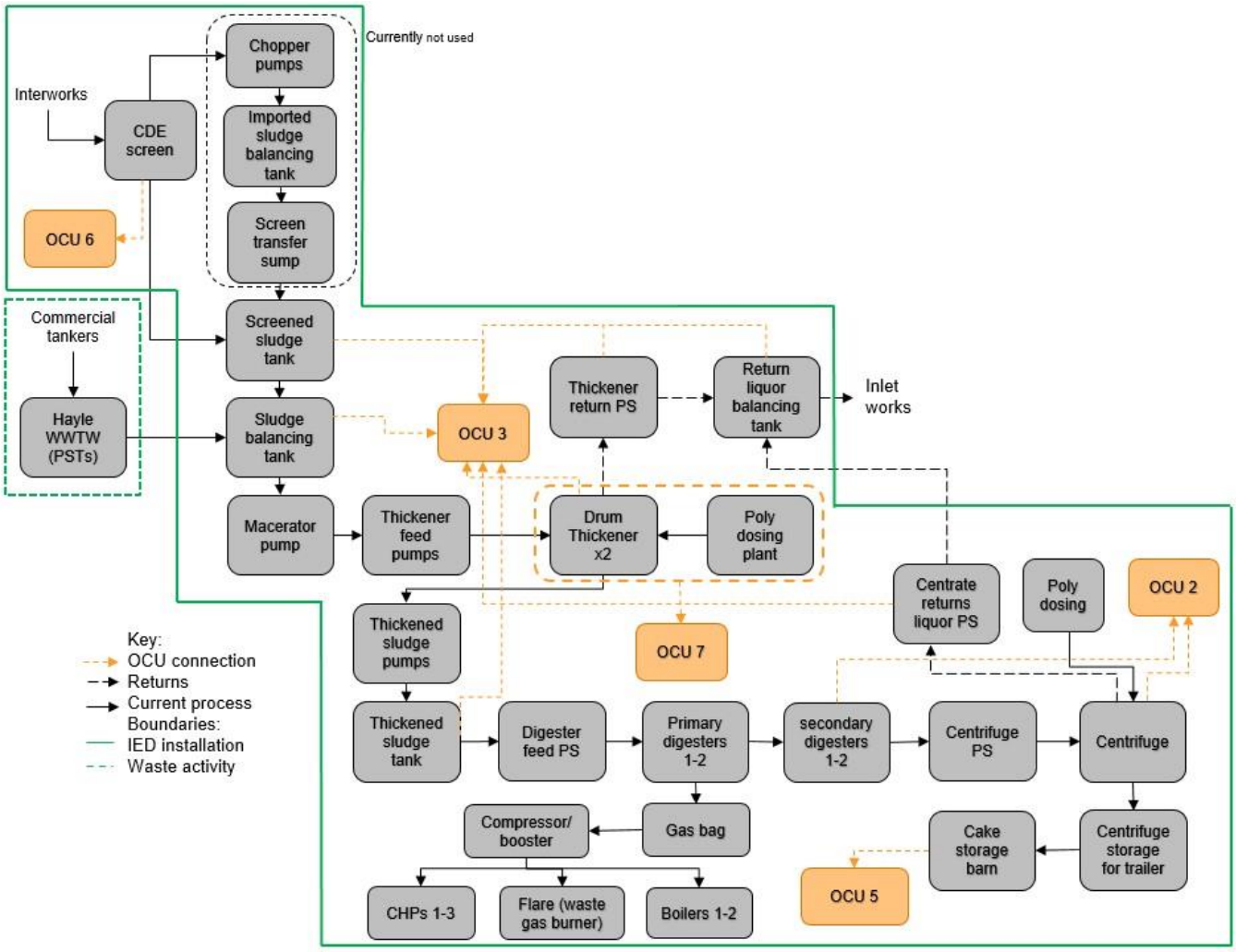


All flows from the anaerobic digestion activities are directed to the head of works

For clarity, this EAMP relates to the anaerobic digestion activities and Directly Associated Activities (DAA's) identified shown on **Figure 2**.

A number of substances are used as part of the anaerobic digestion activities. A list of these substances, along with maximum capacity, are provided in Appendix A.

Figure 2: Process flow diagram



Note - Chopper pumps, imported sludge balancing tank, and screen transfer sump not in use

D. ENVIRONMENTAL RISK ASSESSMENT

An Environmental Risk Assessment is required by prevailing EA Guidance to assess the risk posed to the environment by potential incidents that could occur on the Site. This Environmental Risk Assessment is based upon the methodology detailed within the H1 Guidance Document. Although now withdrawn, it is considered that the H1 Guidance approach is still the most relevant for assessing potential environmental risk. This assessment is provided in the Environmental Risk Assessment (Report No. 7237.Stantec.HayleZZ.Report.Z.10044), which forms part of this EAMP.

The Environmental Risk Assessment should be read in conjunction with this EAMP, as potential incidents are identified and assessed in this document. The Environmental Risk Assessment identified potential environmental incidents / accidents that could occur on the Site in relation to the permitted activities, which for simplicity have been grouped as follows:

- Leaks, spillages and loss of containment of hazardous liquids stored on the Site, which could result in pollution of groundwater and nearby surface water features;
- Failure of equipment – leaks/punctures due to faulty pipework, valves, over-pressure, blockages, corrosion, severe weather and pest/vermin infestation etc.;
- Fire, for example from a fault in plant / equipment or from arson;
- Flooding, due to ingress of watercourse floodwater, blocked drains, use of firewater, loss of containment from operations or burst pipes;
- Nuisance such as odour and noise from operations on the Site;
- Amenity impacts from other fugitive emissions such as litter, dust and mud, as well as pest and vermin infestation;
- Failure of services i.e., gas, water and electricity which could result in the failure of plant e.g., from overheating, which could in turn lead to a fire and/or explosion; and
- Unauthorised entry, vandalism and malevolent attacks e.g., to plant and equipment.

Information is provided in the Environmental Risk Assessment for each potential incident identified for the Site and mitigation measures that SWW will implement to reduce the risk of the incident occurring and to reduce the impact of the incident should it occur.

In addition to this list, prevailing EA Guidance for EAMP's requires that operators of Environmental Permits take steps to protect the business against online security threats, which could lead to pollution. SWW have the following cyber-security measures to protect the business:

> *South West Water are committed to protecting the organisation from online cyber threats. SWW have held ISO27001 information security accreditation for a number of years and our policies, procedures and controls are subject to annual independent audit. The organisation has an Information Security team, with a security operations function dedicated to monitoring and responding to security events and incidents. SWW utilise enterprise-grade malware detection and prevention solutions for all of its externally facing interfaces and services, as well as on corporate*

clients and servers. All employees are required to complete online data protection and cyber security training.

The Environmental Risk Assessment and online security measures provided above outlines how SWW meet Best Available Techniques with regard to prevention measures (point 'a – protection measures' of BAT Conclusion 21, which is reproduced below for quick reference).

"a) *Protection measures*

These include measures such as: — protection of the plant against malevolent acts; —fire and explosion protection system, containing equipment for prevention, detection, and extinction; —accessibility and operability of relevant control equipment in emergency situations."

3.1 Summary of Environmental risk assessment

Accounting for the information in the Environmental Risk Assessment and details on online security measures, it is considered that the risks posed to the environment from the operations are low and that the mitigation measures implemented by SWW for the Site are appropriate to reduce the risk posed to the environment. Specifically, the mitigation measures outlined in the Environmental Risk Assessment are considered to meet point 'a - protection measures' aspect of BAT Conclusion 21.

E. SWW PROCEDURES

BAT also refers to managing incidental/accidental emissions and implementing a registration and assessment system for incidents/accidents. The relevant aspects of BAT Conclusion 21 are reproduced below:

> *b) Management of incidental/accidental emissions*
>
> *Procedures are established and technical provisions are in place to manage (in terms of possible containment) emissions from accidents and incidents such as emissions from spillages, firefighting water, or safety valves.*
>
> *c) Incident / accident registration and assessment system*
>
> *This includes techniques such as: — a log/diary to record all accidents, incidents, changes to procedures and the findings of inspections; — procedures to identify, respond to and learn from such incidents and accidents.*

The following sections outline how SWW meets the requirements of BAT for both 'Point B' and 'Point C', in Sections 0 and 0 respectively.

4.1 Management

4.1.1 Management Systems

The SWW Environmental Management System (EMS) has been produced in accordance with prevailing EA Guidance (specifically 'How to develop a management system: environmental permits') and in accordance with relevant BAT Conclusions, which can be found in Directive 2010/75/EU (Industrial Emissions Directive).

The SWW EMS is accredited to ISO:14001 and is made up of over 5,000 individual documents. Documents within the EMS include procedures and forms related to the management of environmental incidents / accidents, which are summarised in this EAMP.

4.1.2 Contact Information for the Public

A Site Notice Board is present on the Site to allow the public to provide relevant contact information. The Site Notice Board includes the following information:

- The permit holder's name (company name at least);
- An emergency contact name and telephone number;
- A statement that the site is permitted by the Environment Agency;
- The permit number; and
- Environment Agency telephone number 03708 506506 and the incident hotline 0800 807060 (or another number we subsequently tell you about in writing).

4.1.3 Emergency Procedures

SWW have numerous procedures relating to emergencies, which include the documents listed in **Table 2**. These documents implement the mitigation measures outlined in the Environmental Risk

Assessment and therefore include information on the measures taken by SWW to reduce the impact of an incident/accident in the event one occurs.

Table 2: Emergency procedures

SWW Document Title	SWW Document No.	Details (i.e., incidents/accidents covered	Location of Document
Environmental Permitting WWSPR – Hayle STW	WWSPR	Site management, environmental risk assessment	ISO documents library online
Spill plan	QWW-HAYLE-0710	Spill prevention and spill response	ISO documents library online
Fire emergency plan	FM-QWW-HAYLE-0623	Fire	ISO documents library online
Site safety action plan	FM-QWW-HAYLE-0621	Incident response, safety instructions	ISO documents library online
Contingency plan	QWW-HAYLE-0700	PS failure risks, chemical risks, spills, fire, flooding, power failure, site security, pollution.	ISO documents library online
Biosolids WWSPR – Crisis Management Plan	WWSPR	Service disruption	ISO documents library online
Diesel / oil discharge to WWTW	QWW-700	Actions and responsibilities	ISO documents library online
Sludge WWSPR – Interworks Sludge Tankering – management of gas exposure	WWSPR	Noxious and explosive gases, detection, Dynamic Risk Assessments, Near Miss Investigations	ISO documents library online
On Site Task Instructions	QWW-SM-0001	Maintenance procedures, monitoring procedures, pollution procedures	ISO documents library online

4.1.4 Other Key Documents

The following table summarises other key operational documents required for the effective management of the Site, and their location.

Table 3: Other key documents

Document	Purpose	Location	Person responsible for reviewing and updating
Odour Management Plan	The OMP considers a range of issues including: • Details of the site management responsibilities and procedures for reporting faults, identifying maintenance needs, replenishing consumables and handling complaints.	ISO documents library online (once approved as part of this permit application)	Dave Swiggs

Document	Purpose	Location	Person responsible for reviewing and updating
	• Odour-critical plant operation and management procedures (e.g. correct use of plant, process, materials; checks on plant performance, maintenance and inspection). • Maintenance and inspection of plant (both routine and emergency response) • Spillage management procedures; • Emergency breakdown and incident response planning including responsibilities and mechanisms for liaison with the relevant authorities.		
Operating the Sludge Centrifuge	Operational tasks and risk assessment	ISO documents library online	Dave Swiggs
Transportation of Sludge from Processing Plant to Sludge Barn	Operational tasks and risk assessment	ISO documents library online	Dave Swiggs
Cleaning the Conveyor Units in Sludge Centrifuge Building	Operational tasks and risk assessment	ISO documents library online	Dave Swiggs
General Engine Checks for the CHP Engines	Operational tasks and risk assessment	ISO documents library online	Dave Swiggs
Access to the Top of the Digesters	Operational tasks and risk assessment	ISO documents library online	Dave Swiggs
Task Safety Instruction: Sludge Tanker Unloading: Hayle	Operational tasks and risk assessment	ISO documents library online	Matt Price
Stacking of Biosolids	Safety instructions	ISO documents library online	Dave Swiggs
Centrifuge Room Inspection	Operational tasks and safety instructions	ISO documents library online	Dave Swiggs
CHP Room Inspection	Operational tasks and safety instructions	ISO documents library online	Dave Swiggs
Empty Trailer of Biosolids	Operational tasks and safety instructions	ISO documents library online	Dave Swiggs
Sludge Treatment Log: Hayle Waste Water Treatment Works	Operational tasks and safety instructions	ISO documents library online	Alan Hobbs
Secondary Digestion Procedure	Anaerobic Digestion, sludge treatment	ISO documents library online	Dave Swiggs
Sludge WWSPR – HACCP Plan – Hayle Waste Water Treatment Works	HACCP, sludge treatment	ISO documents library online	Alan Hobbs
Chemical Storage / COSSH Areas	Lists the chemicals and materials that have the	ISO documents library online	Dave Swiggs

Document	Purpose	Location	Person responsible for reviewing and updating
	potential to cause pollution if spilt on site		
Gregory's Distribution Limited: Aspects and Impacts Register	Environmental risk assessment for GDL sludge tankering for SWW	Gregory's (and copy held by SWW Bioresources Contract Manager)	Gregory's Distribution Limited
Gregory's Distribution Limited: Spillage Procedure	Action to protect environment and people	Gregory's (and copy held by SWW Bioresources Contract Manager)	Gregory's Distribution Limited
Gregory's Distribution Limited: Waste Management	To ensure that waste is disposed of correctly	Gregory's (and copy held by SWW Bioresources Contract Manager)	Gregory's Distribution Limited

4.2 Accident Investigation and Reporting

SWW will implement a system that meets the requirements of BAT Conclusion 21, as reproduced in Section E.

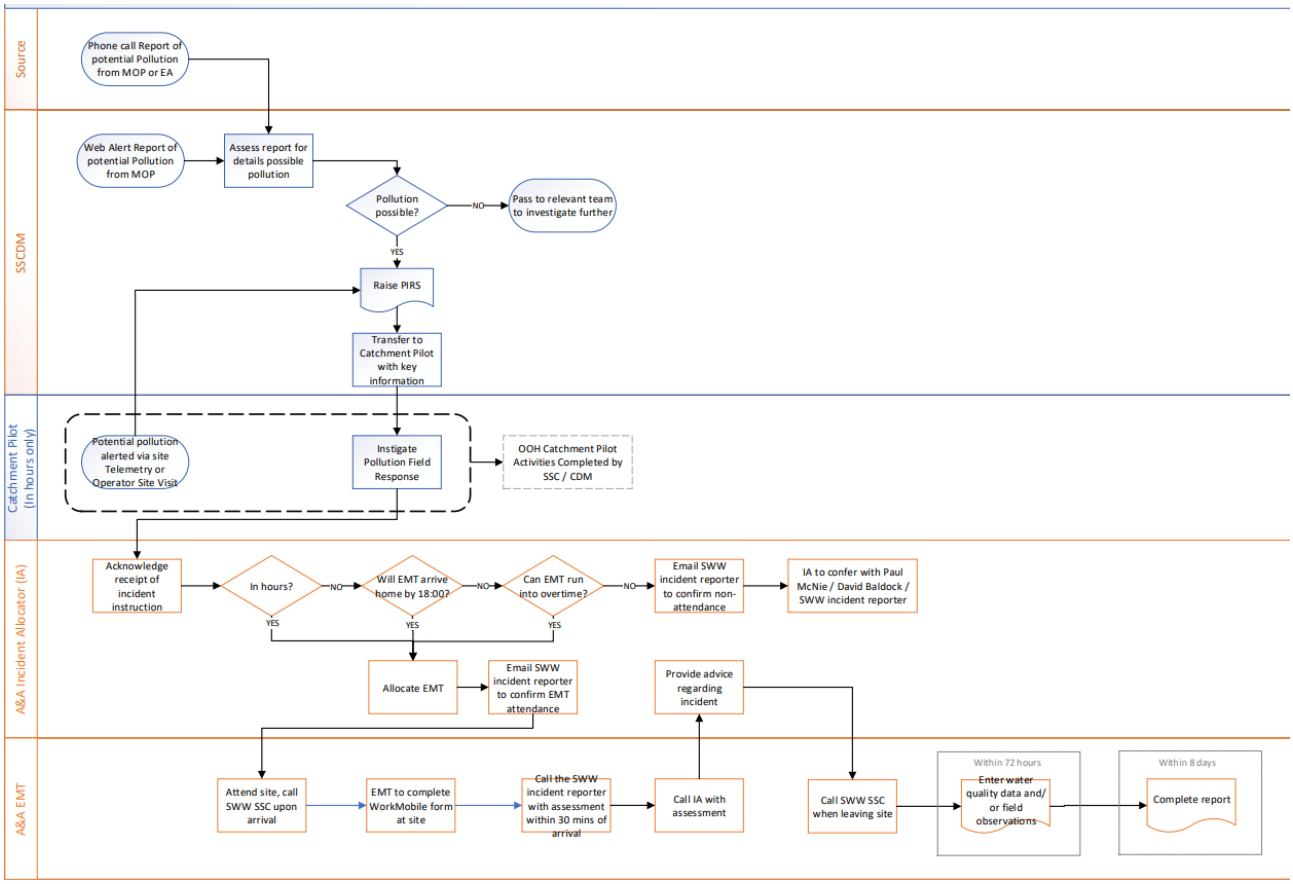
Environmental incidents / accidents that occur on the Site will follow the procedure below:

- Environmental incidents / accidents will be recorded;
- The incident / accident will be added to the log;
- Once the incident / accident is resolved:
    - The incident / accident record will be updated to identify any areas where procedures could be improved to reduce the likelihood of repeat incidents.
    - The EAMP will be reviewed and updates made if necessary.

SWW utilise a system called PIRS (Pollution incident Reporting System) to record environmental incidents. This is complemented with a suite of documents within the SWW QMS system titled Pollution Management. Responsibility is defined within a process guide and illustrated below:

Action	Responsible Manager	User
Opening A New PIRS	Service Support Centre Manager	Central Duty Manager
Updating Field Response Data	Local Pollution Event Manager	Catchment Pilot (In Hours)
		Pollution Technician
		Asset Manager
		Central Duty Manager (Out of Hours)
Entering Sampling Data	Environmental Manager	Adler & Allen
		Pollution Technician
Event Categorisation	Waste Water Network Improvement Manager	Environmental Advisor
Root Cause Analysis Actions	Waste Water Network Improvement Manager	Environmental Advisor

The process flow chart below is an extract from one of the documents illustrating Incident Instruction:



The Key Contacts table (Table 4) below contains emergency contacts which should be contacted in the event of an incident / accident. Table 4 also contains other useful contacts which may need to be contacted. In the event that the public identify an incident / accident, an individual would be able to find contact details on the Site sign and via the SWW 24-hour Emergency Helpline which is available on the SWW website (https://www.southwestwater.co.uk/contact-us/).

SWW operate an Incident Management Procedure; QEP–001. This procedure is designed to complement the knowledge and experience possessed by South West Water Ltd personnel and used as the framework within which the Company manages all incidents. This procedure is intended for use in conjunction with the relevant Functional Procedures and Instructions, which have been prepared for particular locations and work activities and relevant Health Safety & Security documents.

Table 4: Key contacts

SITE EMERGENCY CONTACTS	Name	Contact No.(s)
Operations Manager:		0800 781 1403
Site Manager		0800 781 1403
OTHER EMERGENCY SWW CONTACTS	Name	Contact No.(s)
Head Office		
24-Hour SWW Emergency Helpline		0344 346 2020
EMERGENCY SERVICES		Contact No.(s)
Emergency:		999
Police:		999
Fire:		999
REGULATORS		Contact No.(s)
Health and Safety Executive (HSE); Incident Contact Centre:		0345 300 9923
Local Authority (Cornwall Council)		0300 555 1375
Environment Agency: Floodline		03708 506506 0345 988 1188
EA (24 hour emergency hotline):		0800 80 70 60
Natural England:		0845 600 3078

F. DOCUMENT REVIEW

This EAMP will be reviewed every four years (as part of an EMS review), unless in the event of an environmental accident or change in operations. By association, the Environmental Risk Assessment will also be reviewed. Depending on the nature of the review, it may also be appropriate to review management plans and procedures.

The date of last review is included in the version control table at the start of this document. This table will briefly include details of reasons for the review i.e., regular review or review as a result of an incident / accident.

SWW procedures are in place to be followed once a review is completed. These procedures are included as part of the Environmental Management System and cover how SWW learn from incidents / accidents that have occurred on Site i.e., adapt processes following a review carried out as a result of an incident / accident.

G. APPENDIX 1 LIST OF SUBSTANCES

Appendix 1

Raw Material / Substance	Maximum amount stored at any one time	Annual throughput	Description of use for raw material / substance
Diesel	80,000 litres	Variable. Minimal, generators no longer used for Triads so only in power cuts. A power cut would use roughly 1000 litres per day.	Diesel for site generators, also used for tractor and telehandler.
Stabilised Chlorine Dioxide (TT.OX)	Managed by an outside company "Taytech".	Variable.	Used for quelling H2S. Only used if H2S reaches a certain level on the WWTW inlet or in Waste Water Treatment Works.
Polyelectrolyte (Poly)	4,000 kg	Variable.	Sludge thickener and sludge dewatering. To aid sludge thickening pre digesters and in dewatering post digested sludge into digestate cake for recycling.
Polyaluminium Chloride	30 tonnes	Not using currently, as using ferric sulphate instead.	Coagulant. Aids sludge settlement in WWTW.
Ferric Sulphate	30 tonnes	Variable. Mainly used in summer.	Coagulant. Aids sludge settlement in WWTW.
Methane gas	330m^3	Variable, most in summer as connected population doubles.	By-product of digestion; used to drive CHP engines. Heat used to keep digesters warm. Also produces green energy which is used on site for treatment processes in both WWTW and WWTW.
Propane	9,200 litres	Topped up once a year, when down to 20% full	Used if process fails and cannot use methane / CHPs. Used in boilers which keep digesters warm.
Antifoam	1m3 (1 IBC)	Variable	Used for preventing foaming in centrifuge centrate.
Lubrication Oils	680 L	Variable	For CHP maintenance.