



Environmental Site Management Plan

Accident Prevention and Management Plan: Wargrave STW



Using this standard

This standard is controlled and managed by EMS & Air and Waste Permitting Teams, and a copy is held on SharePoint at the following location: [Environmental Management Systems](#)

If you have any feedback please send this to: airandwaste.permitting@thameswater.co.uk

This standard works in combination with other corporate documents including the Asset Standards, Site Operating Manuals, site Odour Management Plans, Health and Safety Standards, and regulatory permits.

Document Control & Procedures

0 Contents

Document Control & Procedures	2
0 Contents.....	2
0 Document Confidentiality.....	3
1 Glossary of Terms.....	3
2 Executive Summary	4
3 Process Responsibility.....	4
4 Accident Prevention	4
4.1 Spill Prevention	5
4.2 Off Site Receptors	5
4.3 Stored Substances.....	6
5 Assessment	7
6 Reporting and Recording	20
6.1 Reporting	20
6.2 Recording	20
Appendix A	22
Site Specific Key Contacts.....	22
Appendix B	23
Notification Forms	23

Figures and Tables:

No table of figures entries found.

0 Document Confidentiality

This document and its associated sections will only be disclosed to those of the recipient's employees and contractors who have a need to see it as part of their duties.

This document must be destroyed when the recipient has no further use for it or when otherwise requested to do so by Thames Water Utilities Limited (TWUL).

Title and copyright in the document vest in TWUL.

Reproduction of the whole or part of the document(s) shall not be made without the express permission of TWUL.

Title and copyright is vested in Thames Water. This is a controlled document.

Copying is permitted, provided any copy made is clearly marked as 'Uncontrolled Copy'.

1 Glossary of Terms

TERM	DESCRIPTION
AD	Anaerobic Digestion
CHP	Combined Heat and Power
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EMS	Environmental Management System
EPR	Environmental Permitting Regulations
FFT	Flow to Full Treatment
ICA	Instrumentation Control & Automation
IED	Industrial Emissions Directive
LNR	Local Nature Reserve
LWS	Local Wildlife Site
NNR	National Nature Reserve
OCU	Odour Control Unit
OMC	Operational Management Centre
OMP	Odour Management Plan
PFT	Picket Fence Thickener
PM	Process Manager
PS	Pumping Station
PST	Primary Settlement Tank
Receptors	Sensitive receptors are any fixed buildings or installations where odour annoyance may occur, such as residential homes, schools, hospital, offices, shops or garden centres. Open areas such as playgrounds and public footpaths should also be listed where these are known to have been affected by odour.
SAP	Thames Water's enterprise resource and planning system
SAC	Special Area of Conservation
SCADA	Supervisory Control and Data Acquisition
SOM	Site Operating Manual
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
TW	Thames Water
UWWTD	Urban Waste Water Treatment Directive

2 Executive Summary

In accordance with the consolidated IED Environmental Permit for Wargrave; Waste BAT, specifically BAT1; and associated written management systems, this is the site management plan covering accident prevention and management. Thames Water Utilities Ltd is required to review this plan at least every 4 years, unless there are incidents, operational or managerial changes at the site which would require an earlier review.

The prime function of the sludge treatment facility at Wargrave Sewage Treatment Centre is to capture the energy potential from the treatment of sewage sludges. The plant is run 24/7 due to the continuous supply of sewage received at the treatment works either from the surrounding catchment, or via tanker discharge.

This document forms part of the Thames Water Environmental Management System (EMS) for the permitted Sludge Treatment Centre (STC) within Wargrave Sewage Treatment Works.

Thames 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.

This site management plan for accident prevention and management follows relevant guidance produced by the Environment Agency¹ and includes the following sections:

- This plan provides a list of off-site receptors (refer to Section 4.2);
- This plan provides details of the potentially polluting substances located at the site (refer to Section 4.3);
- This plan identifies potential accidents and states the likelihood and consequence of each accident (refer to Section 5);
- This plan states the measures taken to avoid accidents and measures taken to minimise the impacts of accidents on the environment (refer to Section 5);
- This plan outlines the reporting, recording and review steps to be taken should a potentially polluting incident occur (refer to Section 6); and,
- This plan includes reporting forms that should be used in the event of incident occurring (refer to Appendix B).

3 Process Responsibility

The Operational Manager for the site has overall responsibility for reviewing the processes on the site to minimise the risk of accidents and reduce the impact of any such accidents that occur. This document is reviewed 4-yearly, but the review process is ongoing as part of the regular performance monitoring for the site. This plan was prepared in September 2022 and is next scheduled for review in September 2026.

4 Accident Prevention

In accordance with Thames Water's health and safety obligations and commitments, the STC is to be operated in a manner designed to reduce the risk of accidents to staff, the site and the wider environment.

¹ Guidance 'Develop a management system: environmental permits' published 1st February 2016, last updated 4th August 2021.

As part of the design process for any new plant or equipment on site, a HAZOP review is undertaken to ensure that the risk of accidents and their impacts is reduced through design. The site has been assessed under DSEAR and appropriate zoning applied, with clear signage indicating the zones.

Regular maintenance of the installation, is carried out in accordance the sites preventative maintenance programme, and the SOM. This ensures that the failures of plant are minimised over time and early remedial action implemented for any identified faults noted during maintenance.

4.1 Spill Prevention

The site is equipped with a number of spill kits and drain covers, located close to chemical and oil storage areas and tanks. Staff are trained in the use of these items to minimise the impact of spillages and risks to the works of chemicals or oils entering the site drainage system.

4.2 Off Site Receptors

The site is located in a mainly semi-rural location with the edges of the settlements of Twyford and Wargrave located approximately 490 m and 960 m to the South-East and North-East of the site respectively. The nearest residential dwellings are static homes at Sheeplands Farm, Herons Reach, Riverways Farm, Loddon Park Farm located approximately 195m, 280m, 295m and 315 m to the North-East, West and South of the site respectively. The nearest commercial premises are located approximately 25m to the South and include a furniture installation company and a sketch studio. The Piggott School is also located approximately 290m to the East.

The River Loddon, a designated Main River and tributary of the River Thames, is located approximately 40 m to the West of the wider Wargrave STW. An un-named drain runs along the southern boundary of the site and outfalls into the River Loddon. A further drain runs along part of the western and northern boundaries of the wider Wargrave STW and connects into a further drain, which flows in a northerly direction outfalling into the River Loddon.

The STC and associated assets are located predominately within Flood Zone 2 (area with medium risk of flooding, with between a 1:100 and 1:1,000 annual probability of river flooding). The western area of the wider Wargrave STW are located within Flood Zone 3 (area with high risk of flooding indicating a 1:100 or greater annual probability of river flooding or 1:200 or greater annual probability of sea flooding).

The site is not located within or adjacent to the boundaries of an Air Quality Management Area (AQMA). The nearest AQMA to the site is located approximately 1.3km to the South-East of the site within the settlement of Twyford. The AQMA has been declared in December 2015 for the following pollutants: Nitrogen dioxide (NO₂) – Annual Mean.

For designated habitat sites, the relevant distances for consideration are: International designations (Special Area of Conservation (SAC), Marine Protection Area (MPA), Special Protection Area (SPA) and Ramsar - 10km); National designations (Site of Special Scientific Interest (SSSI) – 2km); Local Nature Reserve (LNR) and National Nature Reserve (NNR), Local Wildlife Sites (LWS) and Ancient Woodland (2km).

Chilterns Beechwoods SAC is the only statutory designated nature conservation site located within 10km of the site situated approximately 9.7km to North-East of the STW. There are no SPA's, MPA's or Ramsar sites within 10 km of the site. There are no SSSIs, Local or National Nature Reserves within 2km of the Wargrave STW. There are six non-statutory designated LWS's within 2 km of the site, the closest of which is located within 50m of the western boundary of the Wargrave STW and is associated with the River Loddon. There are no areas of Ancient Woodland within 2 km of the site.

There are no protected habitat records within the specified screening distance (within 500m) of the site. There are however records of protected species within the specified screening distance (within 500m) of the site, namely the adjacent river is designated as a migratory route for both European eels and Atlantic salmon and there are also records of water vole present.

Designated site review

Site Name	Designation	Direction from site	Distance from site
Chilterns Beechwoods	SAC	North-east	9,700 m
n/a	SSSI	n/a	n/a
n/a	LNR	n/a	n/a
n/a	MPA	n/a	n/a
n/a	Ramsar	n/a	n/a
n/a	SPA	n/a	n/a
n/a	Ancient Woodland	n/a	n/a
List of Local Wildlife Sites			
Ruscombe and Vale Woods (Ruscombe Wood) Ruscombe Village Pond Twyford Gravel Pits (Loddon Reserve & Charvil Country Park) Loddon River (part) Shiplake Marsh Warren Wood			All sites <2,000 m

4.3 Stored Substances

Site tank inventory

Tank Purpose	Number	Operational Volume (m ³)	Construction
Waste Import Tank	1	58	Concrete
Sludge Import Tank	1	58	Steel
Screened Sludge Buffer Tank	1	7.5	Steel
Sludge Holding (Ageing) Tank	2	343	Concrete

Tank Purpose	Number	Operational Volume (m ³)	Construction
SAS Buffer Tank	2	497	2x Steel
VFA Tank	1	223	Steel
Digester Feed Tank	1	343	Concrete
Primary Digester Tank	2	2,200	2x Steel
Secondary Digester Tank	4	733	4x Steel
Diesel Tank	1	23,150	Steel
Diesel Tank	1	8,000	Steel
Diesel Tank (boiler)	1	6,181	Steel

5 Assessment

Risk Matrix and Terminology for Accident for Risk Assessment

Likelihood ↓	Consequence		
	Low	Medium	High
Low	Low	Low	Medium
Medium	Low	Medium	High
High	Medium	High	High

Classification of Likelihood

Classification	Definition
Low	Probability of an event is low and likely only to occur in the long-term (a yearly basis or less frequent).
Medium	It is probable that an event will occur periodically in the medium-term (twice yearly basis).
High	An event is very likely to occur in the short-term (monthly or weekly basis) and is almost inevitable over the long-term OR there is evidence at the receptor of harm or pollution.

Classification of Consequences

Classification	Definition
Low	<p>Impact is low or a minor, short-term nuisance.</p> <p>Minor release to a non-sensitive receptor or pollution of water course.</p> <p>Non-permanent health effects to human health (easily prevented by appropriate use of PPE).</p> <p>Minor surface damage to a building, structure, service or the environment which can be repaired immediately.</p>
Medium	<p>Impact is noticeable in the short to medium-term.</p> <p>Large release impacting on the receiving media which kills flora and fauna and requires remediation.</p> <p>Nuisance causing non-permanent health effects to human health.</p> <p>Damage to buildings, structures and services which prevents use in the short-term and/or requires a specialist repair.</p>
High	<p>Impact is significant, wide-ranging and long-lasting effect.</p> <p>Has either a chronic or acute impact on human health.</p> <p>Very large release that has a major impact on flora and fauna which may be very difficult to remediate.</p> <p>Significant damage to a single or multiple building, structure and service which prevents use over a long-term and may require complete replacement.</p> <p>May cause a long-term impact or contribute towards a global issue due to releases of greenhouse gases.</p>

The following categorisation of risk has been developed and the terminology adopted as follows:

Term	Definition
Low	A level of harm is possible although this may not be noticeable to a receptor and would be a short-term event without lasting effects. Level of harm can be reduced using industry best practice and appropriate measures and techniques.
Medium	A level of harm may arise to a receptor which is noticeable although not long-lasting and may require some remedial actions in order to prevent re-occurrences.
High	A level of harm is likely to arise to a receptor that is severe causing significant harm to human health or the environment without appropriate remedial and mitigation measures being implemented. Remedial works to infrastructure and processes is required in the long-term.

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Major fire and/or explosion causing the release of polluting materials to air, water or land.	<p>Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population</p> <p>Emissions to ground and ground water of digestate contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and fauna and chronic effect on water quality.</p> <p>Injury to staff, fire fighters or arsonists/vandals.</p>	Low	High	Medium	<p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>Management systems requires DSEAR assessment which is adhered to by site operations.</p> <p>Designated ATEX zones on site and lightning protection system in place around gas holder. Fire alarm systems installed and maintained.</p> <p>Biogas contained within a closed system and monitored for safety. Automatic cut off valve to biogas supply to stop gas flows, electric temperature sensor, pressure monitors, flame arrestors, etc.</p> <p>Warning signs clearly displayed, and staff wear gas alarms to alert to the presence of biogas. All visitors subject to site inductions and accompanied. Permit-to-work system in place.</p> <p>Preventative maintenance programme and maintenance plans are in place in order to maintain equipment effectively.</p> <p>Smoking only permitted in designated areas of site.</p>	Low
Minor fire causing the release of polluting materials to air, water or land	Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population.	Low	Medium	Low	<p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>Management systems requires DSEAR assessment which is adhered to by site operations.</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
	<p>Emissions to ground and ground water of digestate contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and fauna and chronic effect on water quality.</p> <p>Injury to staff, fire fighters or arsonists/vandals.</p>				<p>Designated ATEX zones on site and lightning protection system in place around gas holders. Fire alarm systems installed and maintained.</p> <p>Biogas contained within a closed system and monitored for safety. Automatic cut off valve to biogas supply to stop gas flows, electric temperature sensor, pressure monitors, flame arrestors, etc.</p> <p>Warning signs clearly displayed, and staff wear gas alarms to alert to the presence of biogas. All visitors subject to site inductions and accompanied. Permit-to-work system in place.</p> <p>Preventative maintenance programme and maintenance plans are in place in order to maintain equipment effectively.</p> <p>Smoking only permitted in designated areas of site.</p>	
Failure to contain firefighting water	<p>Emissions to ground and ground water of contaminated firefighting water entering soil and/or groundwater. Run-off from site to surface water courses.</p> <p>Harm to aquatic flora and fauna.</p> <p>Chronic effect on water quality.</p>	Low	Medium	Low	<p>Likelihood of firefighting water being generated is low as the risk of fire is low.</p> <p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>All drainage at the site goes to the Wet Well and returns to the inlet of the STW.</p> <p>Arrange for off-site tankering of firefighting water, if required.</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Accidental explosion of biogas	<p>Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population.</p> <p>Injury to staff, fire fighters or arsonists/vandals.</p> <p>Pollution of water or land.</p>	Low	High	Medium	<p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>Management systems requires DSEAR assessment which is adhered to by site operations.</p> <p>Designated ATEX zones on site and lightning protection system in place around gas holders. Fire alarm systems installed and maintained.</p> <p>Biogas contained within a closed system and monitored for safety. Automatic cut off valve to biogas supply to stop gas flows, electric temperature sensor, pressure monitors, flame arrestors, etc. Lightning protection system installed.</p> <p>Likelihood reduced by availability of onsite uses of biogas in the CHP engine, boiler and emergency flare (as required) and use of pressure release valves as a safety measure.</p>	Low
Significant leak of biogas to atmosphere	<p>Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population.</p> <p>Global warming potential of greenhouse gases.</p>	Low	High	Medium	<p>Site assets are protected by physical means to prevent vehicle strike and exposed pipework is guarded.</p> <p>Regular proactive and preventative maintenance and regular visual checks.</p> <p>PRVs are present to avoid over-pressurisation of biogas system.</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Leaks of emission to air, but principally NOx.	<p>Emissions to air and dispersion leading to harm to protected nature conservation sites – SSSIs, SAC and SPA.</p> <p>Harm to protected site through toxic contamination, nutrient enrichment, disturbance etc.</p>	Medium	Low	Low	<p>The site is not located within an AQMA.</p> <p>Chilterns Beechwoods SAC is located approximately 9.7km to the North-East of the site. There are no SSSI's within 2km of the site and no SPA's, MPA's or Ramsar sites within 10 km of the site. There are no designated Local or National Nature Reserves within 2 km of the Wargrave STW.</p> <p>There are six non-statutory designated LWS's within 2 km of the site, the closest of which is located within 50m of the western boundary of the Wargrave STW and is associated with the River Loddon. There are no areas of Ancient Woodland within 2 km of the site.</p> <p>Emissions modelling to be submitted.</p> <p>Site operations will be subject to emission limits under current Regulations with infrastructure designed to minimise uncontrolled releases. Checks, monitoring and preventative maintenance will further minimise fugitive emissions.</p>	Low
Spillage of raw materials (e.g. diesel, polymer) during use, transfer and disposal operations.	<p>Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.</p> <p>Harm to aquatic flora and fauna.</p> <p>Chronic effect on water quality.</p>	Low	High	Medium	<p>The site sits within the boundaries of Source Protection Zones (SPZ) 2 and 3.</p> <p>Raw materials are stored on made ground, within bunded containers/silos or on bunds to contain spillages of 110% of the volume.</p> <p>Regular inspections for leaks and damage, with remedial action as required. Contents of bunds are regularly checked during environmental audits and</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
					<p>after periods of heavy rainfall and emptied, as required.</p> <p>In event of a spillage, follow site spillage response plan and inform relevant site personnel. COSHH data sheets available.</p> <p>Deliveries to site are made by approved suppliers. Use of raw materials is carried out by trained personnel or automatically controlled processes.</p> <p>In the event of a minor spillage, spill kits are provided around the site which can be used to contain a spillage and direct it towards site drainage if suitable.</p>	
<p>Spillage of sludges or liquid during tanker transfer operations e.g. pipework leaks</p>	<p>Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.</p> <p>Harm to aquatic flora and fauna.</p> <p>Chronic effect on water quality</p>	<p>Low</p>	<p>Medium</p>	<p>Low</p>	<p>The site sits within the boundaries of Source Protection Zones (SPZ) 2 and 3.</p> <p>All pipework is standardised, including tanker couplings.</p> <p>Tanker offloading area for sludge import is of concrete construction with kerbing and connected to the site drainage to prevent release to ground.</p> <p>In event of a spillage, follow site spillage response plan and inform relevant site personnel and relevant authorities.</p> <p>Spill kits are provided around the site which can be used to contain a spillage and direct it towards site drainage.</p>	<p>Low</p>

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
					Dewatering liquors are returned to the treatment works, some via holding tanks, for additional treatment. The cake pad has drainage holes that gravitate to a drainage channel and are returned to the inlet.	
<p>Spillage of sludges (e.g. raw sludge, digested sludge) during processing and transfer operations e.g. tank overtopping, pipework leaks</p>	<p>Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.</p> <p>Harm to aquatic flora and fauna.</p> <p>Chronic effect on water quality</p>	Low	Medium	Low	<p>Processing and transfer operations of waste materials is largely an automatic process controlled by the Process Controllers and parameters set within the SCADA system.</p> <p>Storage and Digestion Tanks are fitted with sensors to monitor levels within a tank and can inhibit additional pumping if high alarms activate.</p> <p>Primary and Secondary Digester Tanks are all above ground with the aging tanks (x2) and Digester Feed Tank below ground and the Filtrate Balancing Tank below ground due to the presence of an earth bank that encloses this tank. As some of the storage tanks are predominantly subsurface or below ground, it may not always be possible to identify leaks promptly which could lead to significant releases over a medium time period.</p> <p>Preventative maintenance programme and maintenance plans are in place in order to maintain equipment effectively and minimise the risk of spillages.</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
					<p>In event of a spillage, follow site spillage response plan and inform relevant site personnel and relevant authorities.</p> <p>Spill kits are provided around the site which can be used to contain a spillage and direct it towards site drainage. Staff are trained in their use. Some of the storage tanks are within unmade ground.</p>	
<p>Failure of sludge storage tanks / digester tanks</p>	<p>Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.</p> <p>Harm to aquatic flora and fauna.</p> <p>Chronic effect on water quality.</p>	<p>Low</p>	<p>High</p>	<p>Medium</p>	<p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>Regular infrastructure inspections for tanks and pipework and planned preventive maintenance system in place. Regular visual inspections for tanks and pipework where this is aboveground and visible, and reactive maintenance.</p> <p>In-line flow monitoring in key locations and tank level monitoring would identify losses and enable a quick response. The Primary and Secondary Digester Tanks are all above ground with small concrete bases which give way to unmade ground. Other tanks, such as the Aging Tanks (x2), Digester Feed Tank and the Filtrate Balancing Tank are all below ground.</p> <p>Spillages to unmade ground are removed as soon as possible to minimise infiltration. Spillages to made ground connect to the site drainage system, which returns to the inlet for treatment.</p>	<p>Low</p>

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
					Sludge is relatively viscous and not highly mobile limiting the distance it can spread in a short time period.	
Acceptance of non-conforming wastes and wastes that are incompatible with the waste treatment process	<p>Impacts on the normal performance of site treatment processes leading to emissions to ground and ground water contaminating soil and/or groundwater.</p> <p>Harm to aquatic flora and fauna and chronic effect on water quality. Harm to aquatic flora and fauna</p>	Low	Medium	Low	<p>Waste materials subject to waste pre-acceptance checks prior to delivery to site and subject to waste acceptance checks prior to discharge.</p> <p>Site has physical security measures to prevent unauthorised access to the site and all discharge points.</p> <p>Waste can only be accepted at the site if it is suitable for the biological treatment process.</p> <p>Site processes are monitored automatically with alarms to alert staff in the event of abnormal situations.</p> <p>Staff conduct regular monitoring of all plant and equipment during routine site activities.</p>	Low
All on-site hazards: machinery	<p>Direct physical contact with human population and /or livestock after gaining unauthorised access to the installation</p> <p>Bodily injury</p>	Low	High	Medium	<p>Direct physical contact is minimised by activity being carried out within enclosed digesters.</p> <p>Site activities are managed and operated in accordance with a management system. Site physical security measures to prevent unauthorised access include perimeter fence and access control to prevent unauthorised access.</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
					<p>Assets are protected by various physical means including fencing, kerbing and bollards to prevent vehicle strikes.</p> <p>Site has a traffic management system to minimise the need to reverse. Use of banksmen as appropriate.</p> <p>Vehicles equipped with reversing alarms.</p>	
Vandalism causing the release of polluting materials to air (smoke or fumes), water or land.	<p>Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population</p> <p>Emissions to ground and ground water of digestate contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and fauna and chronic effect on water quality.</p> <p>Injury to staff, fire fighters or arsonists/vandals.</p>	Low	High	Medium	<p>Unauthorised access is unlikely to happen and minimised by physical site security measures and effective management systems.</p> <p>Site physical security measures to prevent unauthorised access include perimeter fence and access control to prevent unauthorised access.</p> <p>Additional security fences around some assets and other assets are kept within locked containers or buildings. Warning signs are displayed.</p>	Low
Flooding from rivers, streams and groundwater	Emissions to surface water course and harm to aquatic flora and fauna. Infiltration to ground and groundwater. Harm to	Low	Medium	Low	The site is located predominately within Flood Zone 2 (area with medium risk of flooding, with between a 1:100 and 1:1,000 annual probability of river flooding).	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
	aquatic flora and fauna and chronic effect on water quality.				<p>General wider works designed to minimise risk of localised works flooding due to storm surges.</p> <p>Potentially polluting substances stored within suitable containers and provided with bunds to contain spillages.</p> <p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>Take appropriate corrective and preventative actions to minimise environmental impact.</p>	
Flooding due to drain blockages and/or excessive rainfall causing localised on-site surface water flooding	Emissions to surface water course and harm to aquatic flora and fauna. Infiltration to ground and groundwater. Harm to aquatic flora and fauna and chronic effect on water quality.	Low	Low	Low	<p>Site wide drainage system linked to main sewage works, which includes additional capacity in storm tanks within the works to manage additional flows.</p> <p>Follow site Incident Response Plan and inform relevant authorities.</p> <p>Take appropriate corrective and preventative actions to minimise environmental impact.</p>	Low
Loss of mains power leading to failure of pumps / control systems and possible leaks and escape of sludge.	Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses. Harm to aquatic flora and fauna.	Low	Medium	Low	<p>Emergency generators provide back-up power / contingency plans to provide power to critical operations in the event of an electrical outage.</p> <p>Failsafe systems in place to ensure sludge remains in situ in the event of a loss of power and that systems are promptly returned into operation.</p>	Low

Activity/Hazard	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
					Site wide drainage system linked to main sewage works in the event of a spillage.	
Vandalism	Damage to plant or equipment on site due to unauthorized access to the site.	Low	Medium	Low	Site accessed restricted at all times, including electronically controlled gates and 2 metre fencing. CCTV present at site. During normal operating hours, there is a culture of challenge around non-staff on site	Low
Extreme weather conditions leading to abnormal conditions / release of potentially polluting substances	Emissions to air and dispersion leading to inhalation by local human receptors and impacts on local ecological receptors. Respiratory irritation, illness and nuisance to local population. Harm to flora and fauna. Emissions to ground and ground water contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and fauna and chronic effect on water quality.	Low	Medium	Low	The treatment process can be controlled from off-site locations in the event of the site being inaccessible due to extreme weather e.g. snow, flooding. Storage tanks for potentially polluting substances have been designed to relevant industry standards at the time of construction. Lightning protection is installed at relevant locations to protect assets from lightning strike. Potentially polluting substance are stored in accordance with MSDS requirements and away from sensitive receptors. Follow site Incident Response Plan and inform relevant authorities. Take appropriate corrective and preventative actions to minimise environmental impact.	Low

6 Reporting and Recording

6.1 Reporting

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

Details of the information that should be reported to the Environment Agency are found in the most recent variation of the site's Environmental Permit but is reproduced as Appendix B of this document.

6.2 Recording

The procedure employed by TWUL for 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.

In the event of an accident, a Schedule 5 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; and
- Immediate measures taken to minimise environmental impacts.

A copy of the Schedule 5 notification form is provided in Appendix B. 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 installation. The associated actions arising will be held on Sharepoint. 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.

6.3 Post-incident Review

Following an incident where potentially significant environmental effects occur, and the nature of the incident warrants it, an investigation will take place to determine both the root cause of the incident and how to prevent the incident reoccurring. The findings of the investigation will be reported to TWUL's management and shared with all relevant employees to enable the incorporation of good practice into future works.

A formal 'event learning' review of all on site processes and procedures will be undertaken by TWUL following any incident with potentially significant environmental consequences, if the processes are determined to be contributory to the cause of the incident. Any changes to processes or procedures required as a result of the formal review will be communicated to TWUL 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 TWUL management and employees.

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

6.4 Contacts

The key emergency contacts in the event of an accident or incident are:

Contact	Number
Thames Water Utilities Limited Customer Services	08459 200800
Environment Agency	0800 807060 (incident number) 03708 506506 (normal number)
Emergency services	999

Appendix A

Site Specific Key Contacts

Role	Name	Email address	Phone Number
Area Operations Manager			
Site Performance Manager			
Technically Competent Manager			
Customer Centre			
Thames Water Environmental Compliance Manager			
Thames Water Health and Safety Manager			

Appendix B

Notification Forms

To be inserted from relevant permit document.