

Ford Sludge Treatment Centre Environmental Permit Application

Environmental Risk Assessment

December 2024

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Contents

1	Introduction	1
1.1	Background and scope	1
1.2	Assumptions and limitations	1
2	Site setting	2
2.1	Location	2
2.2	Geology	2
2.3	Hydrogeology	2
2.4	Hydrology	2
2.5	Protected Areas	2
2.6	Other notable features	3
3	Environmental risks	4
3.1	Methodology	4
3.2	Risk assessment	4
A.	Environmental Constraints Maps	12
B.	Environmental Risk Assessment Tables	16
Tables		
	Table 3.1: Severity Index	4
	Table 3.2: Probability Index	4
	Table 3.3: Magnitude of risk	4
	Table 3.4: Results of initial screening of natural habitats and ecology for Ford STC	10

1 Introduction

1.1 Background and scope

This document has been prepared to support the application for the substantial variation of a bespoke waste operation Environmental Permit to a bespoke Waste Installation Environmental Permit (hereafter referred to as 'the Permit'), reference EPR/KP3130KX, for the Ford Wastewater Treatment Works (WTW) and Sludge Treatment Centre (STC) ('the Site') on behalf of Southern Water Services Limited ('Southern Water') or ('the Operator').

As part of the application for an Environmental Permit, operators must assess the risk to the environment and potential harm to human health from the activities they propose to undertake. This document provides the environmental risk assessment (ERA) considered relevant to the Site in accordance with the Environment Agency's 'Risk assessments for your environmental permit'¹.

1.2 Assumptions and limitations

The assessment of effects has been based on information sourced from relevant and applicable legislation, guidance and websites. It is assumed that all guidance documents produced by the Environment Agency are up to date and correct at the time of writing.

¹ Environment Agency (2023) Risk assessments for your environmental permit Available online at: <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

2 Site setting

2.1 Location

Activity address: Ford Road, Arundel, West Sussex, BN18 0DD

National grid reference: SU 9971 0316

A plan showing the boundary of the scheme is provided in 790101_MSD_SiteLayoutPlan_FOR February 2024.

2.2 Geology

The bedrock geology comprises of the Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, and Portsdown Chalk Formation (undifferentiated)

The site is underlain by superficial River Terrace Deposits (undifferentiated) comprising of sand, silt and clay.

There is no artificial ground mapped on or in proximity to the Site.

2.3 Hydrogeology

The River Terrace Deposits underlying the site are classified by the Environment Agency as Secondary A aquifers, the Lewis Nodular Chalk formation is designated as a Principal Aquifer.

The site is located within an area of groundwater flooding capability with potential flooding to property situated below ground level and at the surface.

The site is not located within a Source Protection Zone (SPZ).

The closest groundwater abstraction to the Site is 149m north and operated by Tarmac Ltd which permits the use of water for process water.

No discharges to groundwater are known to occur within 250m of the Site.

2.4 Hydrology

The River Arun is located 850m east of the Site, a drain located 200m south east of the Site flows into the River. There are no further drains located within 500m of the Site areas. The River Arun is listed in the OS Water Network Map as a tidal river; a river influenced by tidal action.

There are seven discharge consents indicated on-site, all issued to Southern Water Services Ltd, all for sewage discharge, although only one is currently active. The earliest discharge consent is 2003, and the most recent (and ongoing) discharge consent was issued in 2010. The receiving water is the English Channel (controlled sea) for each of the discharge consents.

Within 250m of the site area, one further discharge consent is present 150m north of the site, licensed to Tarmac Topblock Ltd for trade discharge – mineral discharge. The receiving water is not listed.

2.5 Protected Areas

The European designated habitat sites located within 10km of the Site include:

- Solent and Dorset Coast, Special Protection Areas (SPA) located 3km from the Site.

There are no national statutory designated sites.

The non-statutory designated sites located within 2km of the Site are listed below:

- Ancient Woodlands 1.4km from the Site.

The priority habitats within 2km of the Site are listed below along with their distance:

- Coastal and floodplain grazing marsh located 0.6km from the Site
- Coastal saltmarsh 1km from the Site
- Deciduous woodland adjacent 0.5km from the Site.
- Mudflats 0.8km from the Site
- Traditional Orchard 0.6km from the Site.

Further discussion on impacts to natural habitats and ecology is provided in section 3.2.9 and Appendix B.

2.6 Other notable features

2.6.1 Properties

As shown in Figure A.4 in Appendix A, there are three sensitive human receptors located within 200m of the Site. An Industrial place of work is located north of the Site, and the Arun Sports Arena and Flying Fortress Family Entertainment are located west of the Site. There is also a residential area within 500m of the Site.

3 Environmental risks

3.1 Methodology

The ERA 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 3.1 and Table 3.2 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 3.3 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 3.1: Severity Index

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

Table 3.2: Probability Index

Likelihood of harm occurring	Probability index
Harm is near certain or very likely to occur	High
Harm is likely to occur	Medium
Harm is unlikely	Low

Table 3.3: Magnitude of risk

Severity index	Probability index		
	Low	Medium	High
Low	Low	Low	Medium
Medium	Low	Medium	High
High	Medium	High	High

3.2 Risk assessment

3.2.1 Introduction

This section of the report identifies the potentially sensitive receptors within the vicinity of the Site and assesses the environmental risks within the following categories:

- Point source and fugitive emissions to air;
- Point source and fugitive emissions to water and land;
- Noise and vibration;
- Odour;
- Litter, mud and debris;
- Vermin and insects (pests);

- Human health and environment safety (i.e. visual impacts, site security, flood risk); and
- Natural habitats and ecology.

The methodology used to assess and screen the environmental risks for each category is discussed in turn in the following subsections. The need for further detailed assessments and/or management plans, where applicable, is also elucidated upon.

An assessment of the overall and residual risk is provided in Appendix B. For each hazard there is the identification of the pathway and receptor and the mitigation proposed in order to reduce the residual risk.

3.2.2 Point source and fugitive emissions risk

3.2.2.1 Air quality

An Air Quality Risk Assessment has been undertaken to assess the impacts from point sources emissions to air from the site (document reference 790101_AQRA_FOR February 2024).

The operation of the flare will be prioritised for during emergencies, such as during CHP maintenance or downtime. In any other scenarios the imports of the biogas to the CHP unit will be controlled to reduce the time of operation of the flare where possible. Maintenance of the flare is undertaken every six months.

Southern Water confirms that the current Ford flare and CHP is not compliant with BAT 15 and 16. The updated BAT is provided as 790101_BAT_GOD December 2024.

Southern Water confirms that they plan to replace the existing CHP and flare at Ford as it does not meet the requirements for biogas combustion. In addition, work will be undertaken to ensure full BAT compliance including for access, ports and measuring/monitoring devices.

Gas modelling shows the site is expected to flare for 11.4% of the time for the current equipment. The planned replacement of the CHP engine will ensure the flare is operated less frequently once the work is completed. The meter at Ford is of an older (mechanical) type and is not able to directly provide flare run hours data.

This meter will be replaced as part of flare replacement and ensure all required signals for data collation and reporting are provided, along with additional considerations regarding monitoring and access for testing.

Air Quality Risk Assessment (AQRA) will be updated for the new CHP and flare once the appropriate design has been completed.

Further information is being collated in line with discussions with the SSD LIA (KS) on 3/12/24 and will be provided in due course (regarding asset replacement plans and timescales).

The existing approaches and relevant procedures presented in the Environmental Management System (EMS) and operational procedures are considered to adequately address the emissions that may present a risk, and, therefore, an Emissions Management Plan (EMP) is not considered to be required.

3.2.2.2 Bioaerosols

According to the Environment Agency guidance 'bioaerosol monitoring at regulated facilities (Jan 2018)', a bioaerosol risk assessment is required if a facility is within 250m of a sensitive receptor.

The sensitive receptors in relation to the Site are shown in Appendix A. The Site lies within 250m of three sensitive human receptors and, therefore, a bioaerosols risk assessment has

been undertaken and is provided with the supporting documents of the permit application (document reference 790101_ERA_BioaRA_FOR February 2024).

For new permits there is a requirement to monitor in accordance with Technical Guidance Note (TGN) M9 'environmental monitoring of bioaerosols at regulated facilities' if the site is within 250m of a sensitive receptor. The TGN lists sources of bioaerosols and refers to ambient and point sources of emissions.

The bioaerosols risk assessment concluded that the Site poses an acceptable level of risk of bioaerosol release and the STC activities do not endanger human health or the environment. This is primarily due to the control measures in place at the Site which are considered to be effective at reducing and containing emissions of bioaerosols, inhibiting the pathway between source and receptor. Subsequently, since the Site is found to be 'low' to 'medium' risk, a Bioaerosol Management Plan is not required.

Best practice methods will be followed, during operation of the Site, to prevent the release of bioaerosols. These include methods and principles outlined in the Environment Agency's "Guidance on the evaluation of bioaerosol risk assessments for composting facilities"² and are described in Appendix B.

3.2.2.3 Abatement of other fugitive emissions to air

Environment Agency best practice guidance methods will be followed, during operation of the facility, to prevent the release of fugitive emissions. These are described in Appendix B.

3.2.3 Point source and fugitive emissions to water and land

An assessment of the risks from potential point source and fugitive emissions to water, sewers, land or groundwater is provided in Appendix B.

No substantiated pollution incidents are recorded within 250m of the Site in the last five years, in relation to the STC.

3.2.3.1 Emissions to water (other than sewers)

The site is not located within a groundwater SPZ. There are two groundwater abstractions located 149m north east of the Site, both operated by Tarmac Ltd permitting the use of water for construction: process water, there are no abstractions present on the Site.

Drainage from the central areas of the Site sends water to the head of the works for treatment. Perimeter drainage currently goes to a soakaway. Although this will be diverted to the site drainage as part of the proposed secondary containment construction works.

There will be no point sources emissions from the Site. There are no direct potentially contaminated discharges to controlled surface waters.

The site lies within an area of groundwater flooding capability with potential flooding to property situated below ground level and at the surface.

Accidental releases of materials to the environment are controlled through adequate containment measures and working procedures.

The existing approaches and relevant procedures presented in the EMS and operational procedures are considered to adequately address the emissions that may present a risk, and, therefore, an EMP is not considered to be required.

² Drew, G.H., Deacon, L.J., Pankhurst, L., Pollard, S.J.T. and Tyrrel, S.F. (2009). Guidance on the evaluation of bioaerosol risk assessments for composting facilities. Environment Agency.

3.2.3.2 Emissions to sewers, effluent treatment plants or other transfers off-site

There will be no point source emissions or direct discharges to controlled waters or public sewers, as part of the permit operation. Drainage from the central areas of the Site sends water to the head of the works for treatment. Perimeter drainage goes to a soakaway.

Any liquid waste will either be reused or discharged to the drainage system of the adjacent Ford WTW and will undergo treatment through the works before being discharged under an existing water discharge permit. On-site WTW effluent will meet the requirements of the existing discharge permit. The water used at the Site will be contained in a closed circuit; all wastewater streams will either be recycled within the process or captured and rerouted to the adjacent WTW.

Discharges will be minimal, typically arising from periodic maintenance/cleaning operations. As such, there are no direct potentially contaminated discharges to controlled surface waters and no significant impacts. All drainage (surface water or foul water) will be captured by the on-site drainage system and returned to the WTW via a return pumping station. A drainage plan of the Site is presented in document reference 790101_MSD_DrainagePlan_FOR.

3.2.3.3 Emissions to land

The soakaway, where the Site perimeter drains, to will be a point source emission to land as part of the activities carried out on-site. Although this will be diverted to the site drainage as part of the proposed secondary containment construction works.

The condensate from the CHP exhaust, gas bag and digester is collected in a sump and returned to the head of the works. Discharges will be minimal, typically arising from periodic maintenance/cleaning operations, and is captured in spill trays.

All raw materials are handled and stored within the confines of the buildings on-site, or in intermediate bulk containers (IBCs) in bunded areas, with the exception of biogas which is contained within the gas handling system. Releases of raw materials to land are considered to be negligible, therefore, due to adequate containment of the materials within suitable storage vessels, the provision of bunding and the presence of a contained drainage system.

3.2.4 Noise and vibration

The Site has not received any noise complaints in the last five years.

Initial screening has been carried out for the Site. Since the Site is not undergoing changes to equipment and vehicle movements prior to application submission, a Noise Impact Assessment (NIA) is not considered to be required. Appropriate mitigation for noise and vibration impacts are provided in Appendix B. The sensitive receptors located within 1km of the Site are shown in Figure A.4 of Appendix A.

Since noise and vibration impacts are considered to be appropriately mitigated in the ERA, a Noise and Vibration Management Plan is also not considered to be required.

3.2.5 Odour

A review of the nearest human receptors has been undertaken to establish the level of odour risk to the receptors before and after mitigation. Sensitive receptors to odour are users of the adjacent land, which may vary in their sensitivity to odour. Three are located within 500m and are shown in Figure A.4 in Appendix A.

Current odour mitigation measures to prevent and reduce odours from receipt of waste, transfer across the Site, treatment and storage of waste have been assessed and are detailed in Appendix B.

Since 2018, the Site has received three complaints relating to odour, the latest being in 2022. It is understood that the most common source of odour complaints is the cake silo.

There are no proposed works to be undertaken on the Site in respect of this permit application, therefore, the activities on-site are not anticipated to increase the off-site impact or result in adverse impact upon nearby sensitive receptors or the amenity of the area surrounding the Site.

The Site has an Odour Management Plan (OMP), amended in February 2024, which identifies potential odour emissions from site operations and procedures to manage, control and minimise odour impacts. It sets out the procedures for engaging with neighbours and how the Operator will manage complaints, and the actions to be taken in the case of pollution events. The OMP also describes the monitoring and maintenance procedures to maintain the control measures.

The OMP was written in accordance with the Environment Agency's H4 Odour Management guidance (2011). The level of odour risk from the Site is considered to be Medium, as shown in Appendix B and the OMP provides sufficient mitigation.

The Odour Management Plan can be found in document reference 790101_ERA_OdourMP_FOR February 2024.

3.2.6 Particulate matter, litter, mud and debris

Appendix B describes the aspects of the Site that generate litter, mud and debris within and outside the site boundary and assesses their risk to the environment. Current waste management and site cleaning procedures (EMS308) have been assessed in the ERA table in Appendix B to justify whether additional measures could be required. Measures to prevent debris and dust leaving the Site have also been addressed, in addition to the sensitivity of nearby receptors and the effectiveness of existing measures to reduce the escape of dust.

The need for a dust management plan is triggered if the keeping and/or treating of biowaste in the open, including the finished material, is located:

- In, or within 2km of, an air quality management area for PM10;
- Within 500m of a sensitive receptor such as a home, school, hospital or nursing home, food preparation facility or similar; and
- Within 250m of a sensitive receptor when treating biowaste.

The key sludge and wastewater treatment processes of the Site are enclosed. Sludge cake is understood to be stored in a silo, and mitigation is in place to prevent dust emissions from presenting a risk (see Appendix B). Although the Site has been screened as being within 500 metres of sensitive receptors (see Appendix A), a Dust Management Plan is not considered to be required since operations and waste types used on-site cause minimal dust emissions and appropriate mitigation is in place.

3.2.7 Pests

Discussions with the site operator during a site visit have addressed whether the site activities are likely to attract pests, what measures are in place to deter pests and how effective these are. These are covered in Appendix B.

A new contract for pest control is in place at the Site and pest control is undertaken through the use of rat bait boxes.

Pests are not considered to be an issue since the waste types handled on-site do not attract them, contractors regularly check the Site for pests and appropriate mitigation is in place. Since the residual risk is considered to be low, a Pest Management Plan is not considered to be necessary.

3.2.8 Human health and environment safety

3.2.8.1 Visual impacts

The Site has been in the current location since 2001. The Site boundary is mostly surrounded by trees and agricultural land.

Since no changes to the Site will occur prior to submission of this permit application, there will not be any changes in heights and configuration of the placement of equipment which could be noticed by nearby receptors. Visual impacts from the Site are, therefore, considered to be low.

3.2.8.2 Site security

Activities are managed and operated in accordance with the management system. Access to site and waste is restricted by a 2.8m high chain link security fence. An 8ft high steel palisade gate secures the main access and is automatically operated. The Site is staffed 24 hours a day, 7 days a week. For visitors and unauthorised personnel an intercom system at the Site entrance is used. The Site also benefits from a CCTV system. 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.

Other risks relating to human health and the environment are presented in Appendix B.

3.2.8.3 Flood risk

Initial screening was undertaken to determine the flood risk for the Site. The data utilised for this study was published online by the Environment Agency and relates to the flood risk from surface water, rivers and the sea.

The site is located within an area of groundwater flooding capability with potential flooding to property situated below ground level and at the surface. There is limited potential for groundwater flooding to occur, however there is the potential for groundwater flooding of property situated below ground level at the south west part of the Site.

The majority of the site is located within a low risk flood extent area (less than 0.1% probability of flooding) with small areas within a low risk zone (0.1% - 1% chance of flooding) including the site entrance road.

Activities are managed and operated in accordance with a management system and management plans and procedures implemented, including (but not limited to) the removal and clean-up of spilled waste material, including sludge, cake etc. and other pollutants (this may also include removal of used spill kits and mobile bunds) before these could enter any flood waters if an event was to occur.

Previous flooding at the Site has occurred behind the centrifuge building due to the soakaways.

Since no changes to the Site are planned prior to application submission, and no impacts to flood pathways or sensitive receptors are anticipated, a full FRA (defined here as a detailed assessment involving bespoke hydraulic modelling work) is unlikely to be required. When proposed changes to the Site do occur these are understood to be either of a relatively minor nature or are unlikely to significantly alter existing development footprints.

3.2.9 Natural habitats and ecology

Ecological features that are situated within set distances of the site boundary have been identified and screened. For the following ecological features, the Study Area was defined as the following:

- Statutory designated European sites: Special Areas of Conservation (SAC), candidate Special Areas of Conservation (cSAC), Special Protection Areas (SPA), potential Special Protection Areas (pSPA), Sites of Community Importance (SCI) and Ramsar sites within 10km of the site boundary;
- Statutory designated national sites: Sites of Special Scientific Interest (SSSIs), Marine Conservation Zones (MCZs), National Nature Reserves (NNRs), Local Nature Reserve (LNRs), Areas of Outstanding Natural Beauty (AONB) within 2km of the site boundary;
- Non-statutory designated sites: Local Wildlife Sites (LWS), Ancient Woodlands, Country Parks, Sites of Importance for Nature Conservation (SINC), Sussex Wildlife Trust Reserves within 2km of the site boundary;
- Priority habitats: within 2km of the site boundary. Priority habitats are those listed under Section 41 of the Natural Environment and Rural Communities Act (2006) and include deciduous woodland, grassland, heathland, reedbed, vegetated shingle, wood-pasture and parkland, marshes, mudflats and fens; and
- Granted European Protected Species (EPS) licences available on Multi-Agency Geographic Information for the Countryside (MAGIC), within 2km of the site boundary. Geographic Information for the Countryside (MAGIC), data from Sussex Wildlife Trust Reserves. Accurate to within the nearest 100-200m depending on local council survey data accuracy.

No ecological field surveys have been completed to inform this screening. This screening identifies the likelihood of ecological features being present or further investigation being required.

Initial screening has been carried out for the Site, the high-level results of which are shown in Table 3.4. Where habitat sites are situated within the study area surrounding the Site, the relevant cells are highlighted in red and indicate the number of habitats sites located therein. Cells highlighted in green indicate that relevant habitat sites are not located within the specified study area. For cells highlighted in orange, there is potential for these protected species to be present within the study area.

Table 3.4: Results of initial screening of natural habitats and ecology for Ford STC

Natural habitats and ecology	Ford STC
Statutory designated European sites within 10km of the site boundaries	
Special Areas of Conservation (SAC)	
Special Protection Areas (SPA)	1
Sites of Community Importance (SCI)	
Ramsar sites	
Statutory designated national sites within 2km of the Site boundary	
Sites of Special Scientific Interest (SSSIs)	
Marine Conservation Zones (MCZs)	
National Nature Reserves (NNRs)	
Local Nature Reserve (LNRs)	
Areas of Outstanding Natural Beauty (AONBs)	
Non-statutory designated sites within 2km of the Site boundary	
Local Wildlife Sites (LWS)	
Ancient Woodlands	1
Country Parks	
Sites of Importance for Nature Conservation (SINC)	
Sussex Wildlife Trust Reserves	
Priority habitats within 2km of the Site boundary	

Natural habitats and ecology	Ford STC
Priority habitats	6
Protected species	
Granted European Protected Species (EPS) licences: within 2km of the site boundaries	
Common nesting birds, common reptiles, terrestrial and aquatic invertebrates, common amphibians: within a 10m buffer of the site boundaries	
Wintering birds: within a buffer of up to 500m of the site boundaries	
Species of nesting birds within a 200m buffer of the site boundaries	
Bats: within a 50m buffer of the site boundaries	
Badgers: within a 30m buffer of the site boundaries	
Hazel dormice: within a 20m buffer of the site boundaries	
Great crested newts - ponds within a 500m buffer of the site boundaries and terrestrial habitat within 10m	

There is one SPA located within 10km of the Site. However, it is considered unlikely that a Habitats Regulations Assessment (HRA) would be required for the Site because Environment Agency best practice methods will be followed, during the operation of the facility to prevent significant effects to designated habitats. These are described in Appendix B.

Any potential impacts to statutory designated European and national habitat sites have been considered in the ERA following review of the following site-specific information:

- Discharges to water and groundwater, emissions to air and land, and from dust, noise and vibration, from all activities on-site, particularly from the anaerobic digestion processes;
- Pollution prevention and mitigation measures, including for emissions and spills; and
- Site plans detailing storage arrangements and drainage plans.

One ancient woodland is located within 2km of the Site. It is considered unlikely that Site activities will impact these habitat sites, however. This is covered in Appendix B along with appropriate mitigation.

It is considered unlikely that Site activities would lead to the disturbance or removal of terrestrial habitats, and therefore protected species surveys are not considered to be required for the Site.

The proposal for a varied permit does not involve the removal of vegetation, or structural modification to built structures therefore, a Preliminary Ecological Appraisal is not considered to be required for the Site.

The application is to permit anaerobic digestion activities in order to meet the Industrial Emissions Directive (IED). The site has been operating in its current capacity for a number of years and mitigation measures already in place directly or indirectly prevent or limit harm to existing habitats and species, as shown in Appendix B. No changes to operations are proposed and therefore the current risks posed to these habitats and species are likely to improve upon granting of the permit.

A. Environmental Constraints Maps

Figure A.1: Statutory designated habitat sites within 10km of the Site

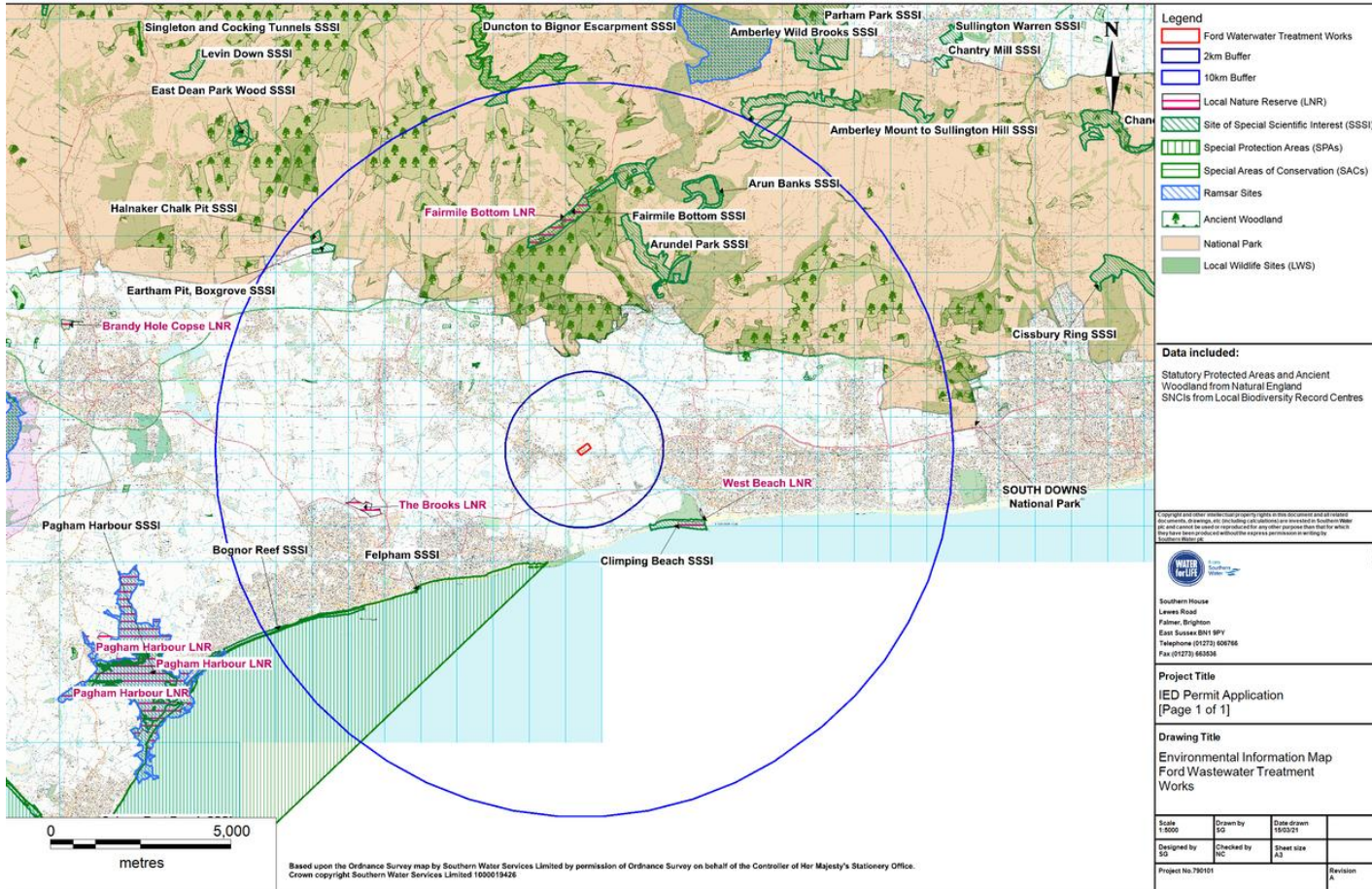


Figure A.2: Non-statutory designated habitat sites within 2km of the Site

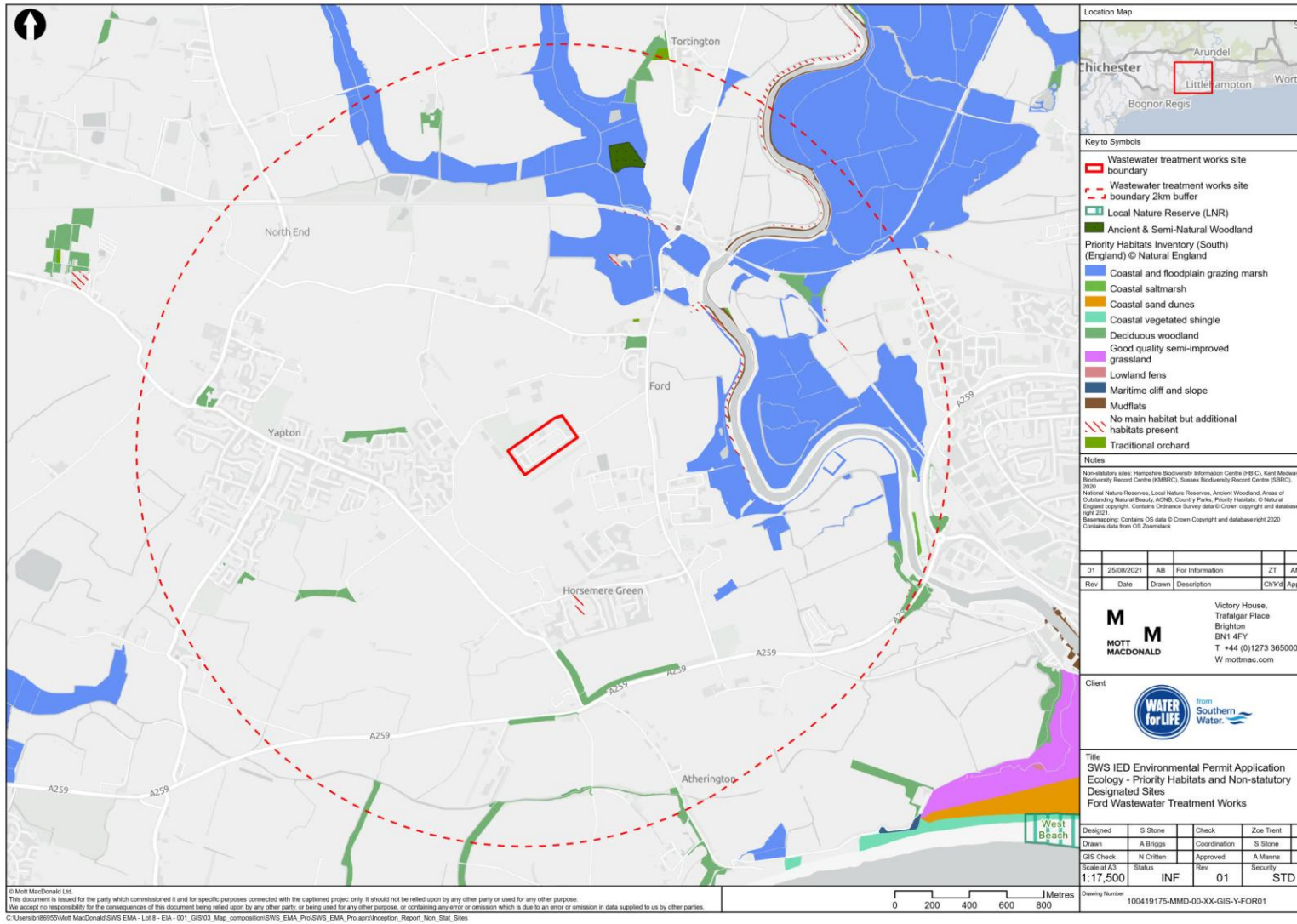


Figure A.3: Designated heritage sites within 1km of the Site

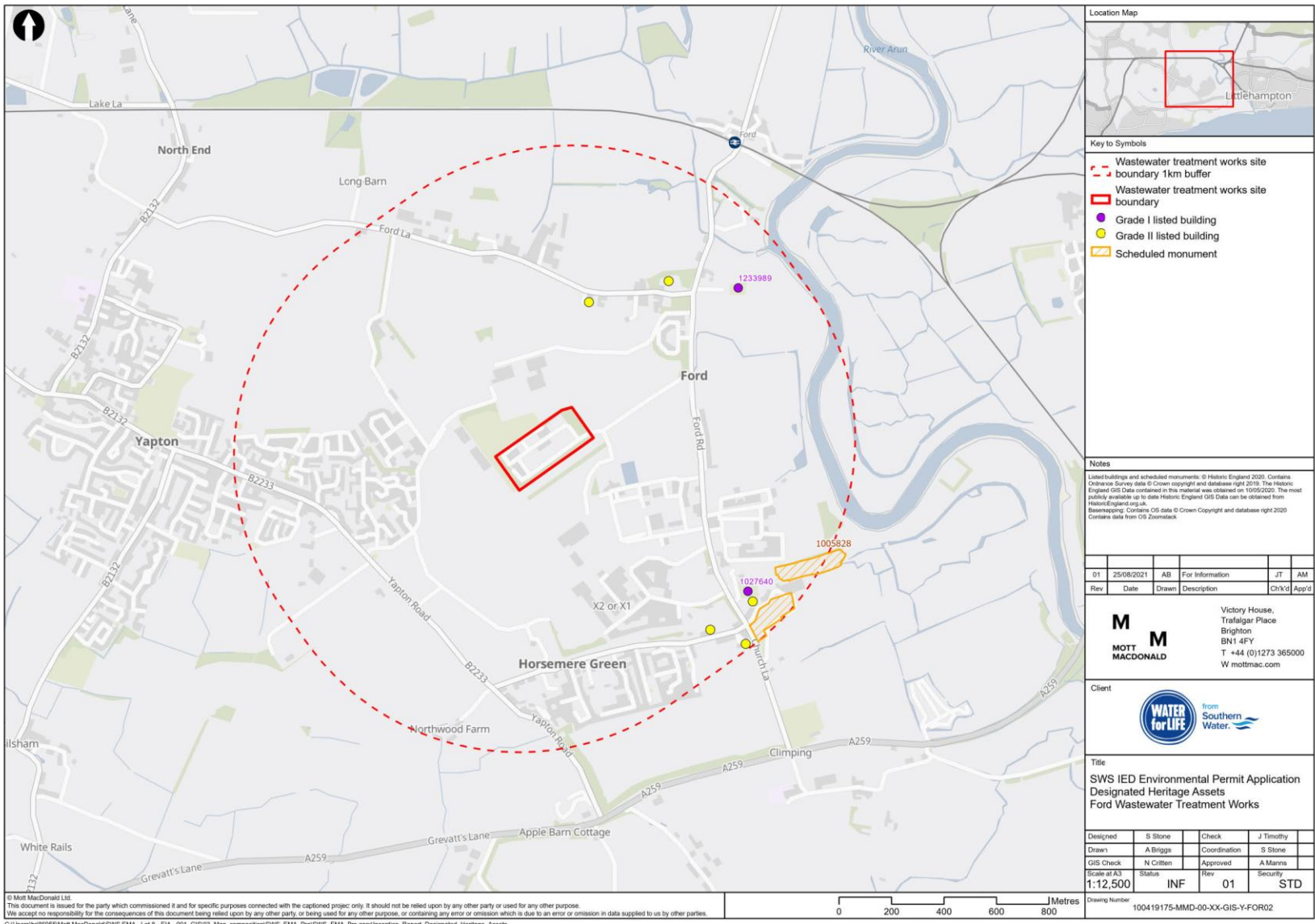
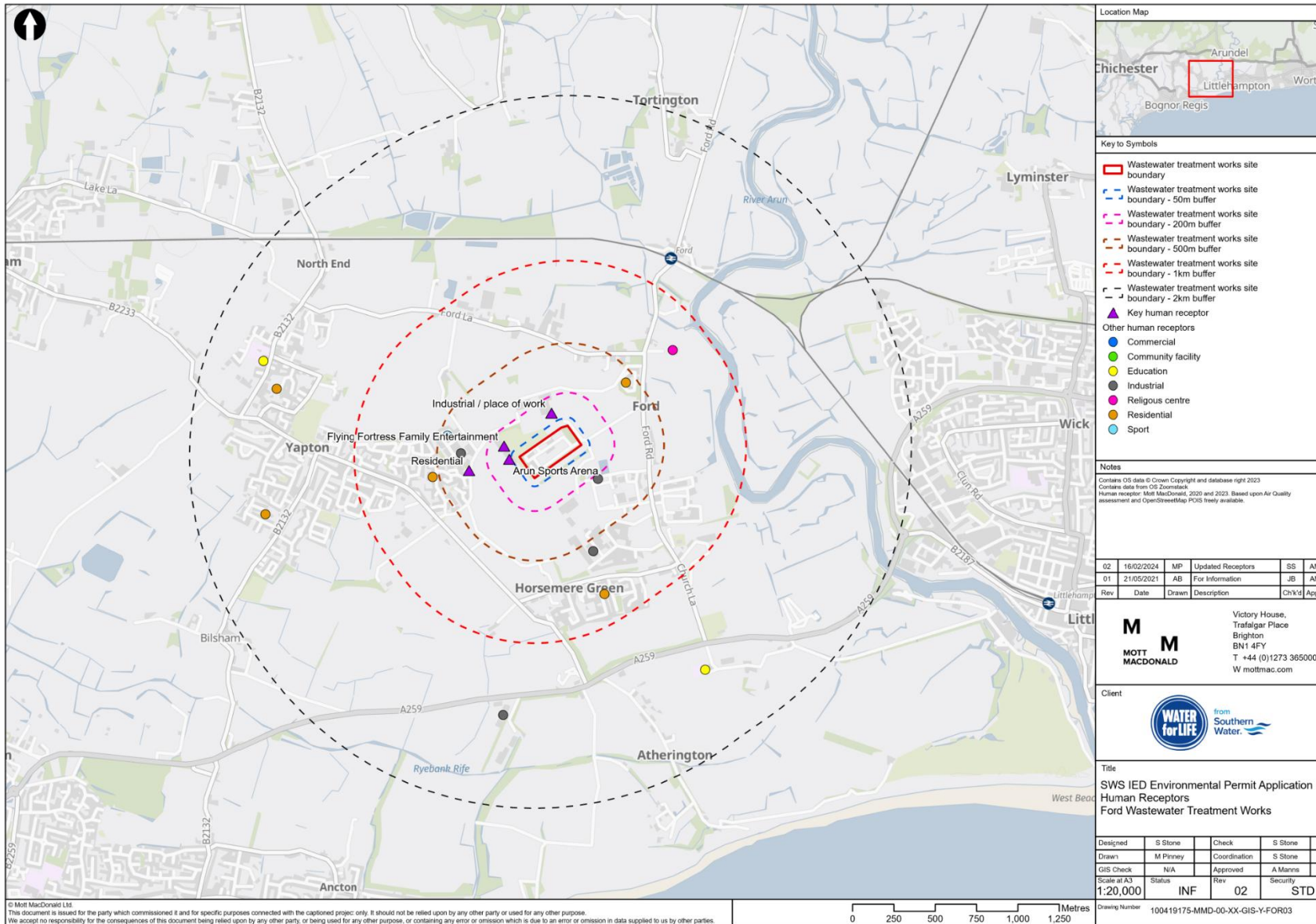


Figure A.4: Sensitive receptors within 2km of the Site



B. Environmental Risk Assessment Tables

Emissions to air									
Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Local human population.	Releases of NO ₂ , SO ₂ , CO, NH ₃ and other gases	Harm to human health - respiratory irritation and illness.	Air transport then inhalation.	Low	Medium	Low	There is potential for exposure to anyone living close to the Site or at locations where members of the public might be regularly exposed.	Activities will be managed and operated in accordance with the EMS. This will include regular inspection and maintenance of associated equipment. Point source emissions to air will be monitored in line with the permit requirements and any relevant TGNs including M2 and will meet Monitoring Certification Scheme (MCERTS) standards, where suitable and available. NO _x and GHG emissions are controlled by emission limits. Storage of high ammonia bearing material will be covered at all times. Any emissions of substances harmful to human health not controlled by emission limits (excluding odour and noise) shall not cause pollution.	Low
Local human population	Release of unburnt biogas	Harm to human health - respiratory irritation and illness. Release of potent climate change gases.	Air transport	Low	High	Medium	There is potential for exposure to anyone living close to the Site or at locations where members of the public might be regularly exposed. There is one flare present on-site, maintenance of the flare is undertaken annually.	Activities shall be managed and operated in accordance with the EMS and will include measures covering inspection and maintenance of equipment, including engine management systems. Point source emissions to air will be monitored to ensure emission limits for biogas are not exceeded, in accordance with permit requirements and any relevant TGN's including M2. There are pressure release valves on: 2 x per digester (6 total) 2 x gas holder (2 total) Operational record including date, time duration of pressure relief events and calculated annual mass release. Linked to SCADA. There are plans to replace the existing CHP and flare at Ford to ensure full BAT compliance is achieved.	Low
Domestic properties, local human population, local amenity, site staff, visitors and offices. Haul roads, public highways.	Releases of particulate matter (dust) from cake storage bays and Transport off-site	Nuisance, loss of amenity.	Air transport then deposition	Low	Low	Low	Local residents and surrounding environment are often sensitive to dust. Dust may be produced from dirt deposits from vehicles or other users of the haul road and treatment and storage of cake. There are no cake bays on-site, cake is stored in a 100m ³ silo. There are also two emergency cake storage areas on-site which are two 16 tonne ro-ro skips. The waste types used on-site are unlikely to cause dust emissions. Therefore, the magnitude of risk is considered to be low.	No wastes consisting solely of dusts are accepted. General operations at the Site do not create dusty materials. Cake is stored in an enclosed silo or in ro-ro skips (as an alternative). Vehicles, equipment and impermeable surfaces are swept and washed down when necessary. Internal roads are swept, as required, to reduce the likelihood of any dust becoming airborne. There are no additional dust suppression techniques e.g. mist spray etc employed on-site as this is not considered necessary. Vehicles removing cake from site are kept covered, whilst in transport to prevent the escape of waste. All key sludge and wastewater treatment processes of the Site are enclosed, only the aeration lanes and final settlement tanks are open. Lime treatment is undertaken on-site, liquid lime solution is added to the cake prior to the centrifuge, it is therefore not dusty by nature.	Low
Local human population.	Release of microorganisms (bioaerosols).	Harm to human health - respiratory irritation and illness.	Air transport then inhalation.	Low	Medium	Low	The permitted waste is non-hazardous sludge in liquid and cake form. The nature of waste and the 'wet' processes	Multiple control measures are in place at the Site which reduce and contain emissions of bioaerosols from the processes on-site by inhibiting the pathway between source and receptor.	Low

							<p>undertaken on-site are not likely to cause a release of bio-aerosols.</p> <p>The aeration lanes and FSTs are uncovered.</p> <p>Emergency situations such as a failure of the flare or CHP/boilers could result in uncontrolled emissions of bioaerosols.</p> <p>There are three sensitive receptors found within 250m of potential bioaerosol emission sources at the Site. Therefore, the magnitude of risk is considered to be 'low' to 'medium'.</p>	<p>Most of the key operations take place within a closed system, including covered centrifuges, pipework and machinery. The anaerobic digestion vessels are sealed and biogas is extracted from the vessels. This minimises the risk of bioaerosols affecting operational staff. The activated sludge lanes and FSTs are uncovered, however these involve 'wet' processes so the risk of resuspension of bioaerosols is minimised.</p> <p>Any emergency event would be temporary and infrequent due to the extensive monitoring and maintenance programmes undertaken at the Site as well as the emergency procedures and warning systems in place.</p> <p>Odour control unit is airtight and treats air released to remove bioaerosols. The process is monitored and regularly maintained.</p> <p>Gas holder is air-tight to prevent uncontrolled release of bioaerosols. SCADA system in place to detect leaks.</p> <p>Combustion of biogas occurs at very high temperatures in the CHP, boilers and flare, which would destroy bioaerosols.</p> <p>Stringent loading and unloading procedures are in place for receipt of sludge and liquor.</p> <p>Lorry and tanker drivers are required to hose down any spillage after each loading or unloading and clean contaminated wheels before leaving site.</p> <p>A Bio-aerosol Risk Assessment has been undertaken to assess the risks of bio-aerosols from the site. This identifies that bio-aerosol risks are 'low' to 'medium'.</p>
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Emissions to water and land									
Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
All surface waters close to and downstream of the Site.	<p>Tank failure, spillages of digestate and/or liquids including oil</p> <p>Damage to drainage system.</p> <p>Spillage of raw materials or sludge/liquor during delivery/storage</p> <p>Contaminated run off from cake storage e.g. containing suspended solids.</p>	Acute or chronic effects to aquatic life, contamination and deterioration of water quality.	<p>Direct run-off from the Site across ground surface, via surface water drains, ditches etc.</p> <p>Indirect run-off via the soil layer</p> <p>Transport through soil/groundwater then extraction/ abstraction at borehole or intake.</p>	Low	High	Medium	<p>Potential for leaks from digestions tanks, storage vessels/bays and drainage system which may cause contamination or deterioration of surface water quality.</p> <p>Some of the underground pipework is in poor condition and does not have leak detection, where the underground pipework was damaged it has now been changed to above ground in these areas.</p> <p>Pavement and hardstanding across the Site has cracks in some places, but is generally in good condition.</p> <p>Raw materials are stored in bunded areas.</p> <p>Permeable gravel surfacing surrounding digesters and then concrete.</p> <p>Quantities of liquids stored are generally low.</p> <p>The River Arun is located 850m east of the Site, a drain located 200m south east of the Site flows into the River. There are no further drains located within 500m of the Site areas. The River Arun is listed in the OS Water Network Map as a tidal river; a river influenced by tidal action.</p>	<p>The site drainage plan is documented and all staff are trained in the event of emergency or accident.</p> <p>Impermeable surface and secondary containment, in the form of constructed bunds or portable bunds, is in place around storage areas of all wastes and surrounding the STC and WTW. Bunding will also be implemented for all raw material storage.</p> <p>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.</p> <p>Hardstanding is potentially planned to be constructed (in line with the recommendations of the CIRIA risk assessment) around the digesters.</p> <p>All transfer of digestate and material takes place under supervision and with flow rate control.</p> <p>All tanks undergo a delegated inspection regime and the process parameters are monitored and understood by site operatives.</p> <p>Digestion tanks are built to appropriate standard and require appropriate bunding.</p> <p>Cake is stored in a 100m³ silo, there are also two emergency cake storage areas consisting of two 16 tonne ro-ro skips.</p> <p>The silo is emptied every Saturday and has the capacity for 1-5 days of cake storage.</p> <p>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</p> <p>All spillages are recorded in the site diary including actions taken.</p> <p>Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is implemented</p>	Low
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, ditches etc. then abstraction.	Low	Medium	Low	<p>Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off.</p> <p>No abstraction is undertaken from nearby watercourses.</p>	<p>The silo is emptied every Saturday and has the capacity for 1-5 days of cake storage.</p> <p>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</p> <p>All spillages are recorded in the site diary including actions taken.</p> <p>Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is implemented</p>	Low
Groundwater, land and surface water	Spillage of liquids, contaminated rainwater run-off from waste e.g.	Chronic effects: contamination of groundwater, requiring treatment of water or	Transport through soil/groundwater then extraction at borehole or intake.	Low	Medium	Low	<p>Potential for leaks from digestion tanks and storage vessels.</p> <p>There is permeable gravel surfacing surrounding the digesters and then</p>	<p>Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is implemented</p>	Low

	containing suspended solids. Sludge/liquid spillages as a result of loss of tank/pipe integrity/carelessness during transfer or overfilling	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.					concrete. Site infrastructure is generally in good condition with cracks in some places in the hardstanding and concrete. Underground pipework is in poor condition, and does not have leak detection. Quantities of liquids stored are generally low.	effectively to minimise the probability of equipment malfunction. Control of substances hazardous to health (COSHH) assessment undertaken for all raw materials. Drainage from the central areas of the Site sends water to the head of the works for treatment. Perimeter drainage goes to a soakaway. 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	Spillage 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. Sludge is imported in tankers. On average 300m ³ is imported daily. Cake is removed from site every Saturday, approximately three tankers (20 tonnes each). Site infrastructure is generally in good condition with cracks in some places in the hardstanding and concrete.	Impermeable surface required for storage of all waste. Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented to reduce spills when transferring liquids/sludges from tankers. Established procedures in place for 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. Drainage from the central areas of the Site sends water to the head of the works for treatment. Perimeter drainage goes to a soakaway.	Low
Groundwater, land and surface water	Damage to drainage system	Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction/abstraction at borehole or intake.	Low	Medium	Low	Drainage system is all underground except for the centrate line which is now above ground due to the line being blocked.	Site Manager ensures the programme of PPM is implemented effectively and inspections are carried out frequently to minimise the probability of damage to the drainage system.	Low
Groundwater, land and surface water	Flooding of site.	If waste is washed off site it may contaminate natural habitats downstream.	Flood waters	Medium	Medium	Medium	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 majority of the site is located within a low risk flood extent area (less than 0.1% probability of flooding) with small areas within a low-risk zone (0.1% - 1% chance of flooding) including the site entrance road. Previous flooding at the Site has occurred behind the centrifuge building due to the soakaways.	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

Noise and Vibration									
Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Local human population.	Noise and vibration from the following activities: Vehicles delivering/ removing wastes and materials Vehicles arriving/ leaving the Site.	Nuisance, loss of amenity, loss of sleep.	Noise through the air and vibration through the ground.	Low	Low	Low	Local residents and site staff often sensitive to noise and vibration. There are three sensitive receptors within 250m of the Site. No noise complaints have been received in the last five years and therefore the magnitude of risk is low.	Site will only accept imports within existing operating hours established in current Environmental Permit (fully complying with site's planning conditions). Vehicles do not exceed the site speed limit of 10mph and will not generate a great amount of noise. The main truck movements are away from residential housing and other sensitive receptors. Noise and vibration shall be minimised and not cause nuisance. Noise kept to a minimum during operating hours. Noisy operations at the Site are all enclosed.	Low

								Exceptional noisy operations e.g. construction – inform residents. Noise complaints to be investigated and actioned and remedial measures will be undertaken. All complaints are recorded in the site diary including actions taken.	
Local human population.	Noise and vibration from the following activities: Waste treatment, processing. Plant boilers and engines.	Nuisance, loss of amenity, loss of sleep.	Noise through the air and vibration through the ground.	Low	Low	Low	Local residents and site staff often sensitive to noise and vibration. Majority of site operations are fully enclosed. There are three sensitive receptors within 250m of the Site. No noise complaints have been received in the last five years and therefore the magnitude of risk is low.	Limitation of operating hours established in current Environmental Permit (fully complying with site's planning conditions). Fans and condensate traps will be checked for water and fans and extraction systems checked. Noisy operations at the Site are all enclosed. Flare usage is kept to a minimum to reduce noise impact. The design has been developed to minimise noise off-site. All equipment is maintained either in house or by a sub-contractor such that noise and vibration are maintained within the required limits and to manufacturers recommendations. Where equipment is to be replaced, preference will be given to procuring quiet plant and silencing equipment. Proper maintenance of plant and equipment. There is no equipment on-site that can cause vibration nuisance at the local receptors. Nonetheless, equipment is turned off when not in use, where appropriate. Any complaints received are investigated and actioned in line with the complaint's procedure. All complaints are recorded in the site diary including actions taken.	Low

Odour									
Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Local human population.	Odour from site activities	Nuisance, loss of amenity (e.g. disruption during outdoor activities)	Air transport then inhalation.	Medium	Medium	Medium	Local residents often sensitive to odour. Wide range of waste may cause odour issues at reception from wastes, release of biogas and from digestate hence control measures adopted. Since 2018 the Site has received three complaints relating to odour. It is understood that the most common source of odour complaints is around the cake silo. Doors are kept open during unloading of imported sludge when it arrives in 6k tankers due to the length of the tankers.	Odours are likely to be generated and released due to the nature of the wastes. There are two odour control units (OCU) on-site, one wet chemical scrubber OCU treats air from the PSTs, inlet works, sludge reception, the lime silo and centrifuges. The granular activated carbon OCU treats air from the sludge building. There are several H ₂ S monitors around Site, with six perimeter monitors, and three in the centre of the Site and around the OCU. Odour is monitored to ensure emissions are free of odorous compounds. The Site's Odour Management Plan, which was reviewed and updated in February 2024, identifies potential odour emissions from site operations and procedures to manage, control and minimise odour impacts. Using appropriate measures, non-point source emissions of biogas shall be minimised. All available measures and Best Available Techniques will be implemented. All abatement systems are designed, monitored and maintained to treat specified emissions and off gases. Any emissions of substances not controlled by emission limits (excluding odour and noise) shall not cause pollution. Sludge is processed immediately to reduce the risk of odour. All processes on the Site are enclosed with the exception of the activated sludge lanes, and the FSTs, however these should not emit malodours. Doors are kept closed during unloading of imported sludge when it arrives in 4k tankers, however they are left open for 6k tankers. Cake is stored in one 100m ³ silo, the silo is emptied every Saturday. Approximately three 20tonne tankers are required to empty the silo. The cake silo is understood to be the most common source of previous odour complaints, Southern Water have installed a Cobra System on the cake	Medium

								<p>silo to reduce odour. Currently the odour is managed through the OMP.</p> <p>All waste is imported and exported in covered lorries or contained in tankers.</p> <p>Any complaints received are investigated and actioned in line with the complaint's procedure.</p>	
Local human population, domestic properties, site offices.	Spillage of odorous materials including oils, fuels, chemicals. Failure to clean up spillages. Contaminated spill equipment not disposed of appropriately.	Nuisance, loss of amenity.	Air transport then inhalation.	Low	Medium	Low	Local residents and staff often sensitive to odour.	<p>Procedures for dealing with spillages are covered in the EMS under EMS363 and 364 for the Site. There is also a Field Event Co-ordinators (FEC) Manual which provides spillage procedures for EP sites (FEC322).</p> <p>The Site Manager shall ensure all relevant staff are appropriately trained to use the spill kits and that all spillages are cleaned up immediately.</p> <p>All areas of the Site are to be cleaned regularly; Site Manager to oversee regular cleaning schedule, all staff trained on importance of good housekeeping and site cleanliness.</p> <p>All spills are recorded in the site diary including actions taken.</p>	Low
Local human population, domestic properties, site offices	Fugitive release of H ₂ S	Nuisance, loss of amenity	Air transport then inhalation.	Low	Medium	Low	Local residents and staff often sensitive to odour. Fugitive release, not expected to occur under normal operating conditions.	<p>Activities are managed and operated in accordance with the EMS (and include inspection and maintenance of equipment, including engine management systems).</p> <p>H₂S point source emissions to air are controlled in accordance with emission limits. Dosing with ferric chloride is undertaken at the inlet works.</p>	Low

Litter, mud and debris

Data and information									
Receptor	Source	Hazard	Pathway	Judgement			Justification for magnitude	Action (by permitting)	Residual risk
				Probability of exposure	Consequence	Magnitude of risk		Risk management	
Local human population, livestock and wildlife, domestic properties and local amenity.	Waste and litter on local and internal roads. Vehicles entering and leaving Site.	Nuisance, loss of amenity and road traffic accidents.	Air transport then deposition.	Low	Low	Low	Local residents, surrounding environment and animals sensitive to litter. There is some potential for litter to be generated from general site activities but limited potential for it to leave the site boundary. Sludge that is delivered to the Site is transported in tankers.	<p>All vehicles leaving the Site which are transporting waste are to be covered to prevent waste/materials escaping from them.</p> <p>All waste produced from general site activities is kept in enclosed containers, or inside a building, prior to removing from site. All waste is removed by an external contractor when required.</p> <p>Regular inspections for litter and debris are undertaken.</p> <p>Nuisance management measures are included in the EMS and the site-specific management plan. Details of the procedures SWS follows with regards to the control of mud and debris and potentially polluting leaks and spillages can be found in EMS 360 and EMS 381.</p>	Low
Local human population.	Vehicles depositing mud and debris arriving/ leaving the Site.	Nuisance, loss of amenity, road traffic accidents.	Vehicles entering/ leaving the Site.	Low	Low	Low	Road safety issues - local residents often sensitive to mud on the road. Limited potential for mud and debris.	<p>Activities shall be managed and operated in accordance with a site-specific management plan with overarching procedures set out in the EMS. Details of the procedures SWS follows with regards to the control of mud and debris and potentially polluting leaks and spillages can be found in EMS 360 and EMS 381.</p> <p>Any mud or sludge arising from activities on-site is cleared up promptly.</p> <p>There are no wheel wash facilities on the site, but vehicles can be washed down and, equipment and impermeable surfaces are swept and washed down, when necessary.</p> <p>Any emissions of substances not controlled by emission limits (excluding odour and noise) shall not cause pollution.</p> <p>Vehicle routes are to be inspected regularly and swept when necessary.</p> <p>All vehicles leaving the Site, transporting waste/ cake are to be covered to prevent waste/materials being blown from them.</p>	Low

Pests									
Data and information									
Receptor	Source	Hazard	Pathway	Judgement			Justification for magnitude	Action (by permitting)	Residual risk
				Probability of exposure	Consequence	Magnitude of risk		Risk management	

Local human population.	Vermin, birds and insects	Harm to human health from wastes carried off-site and faeces. Nuisance and loss of amenity.	Air transport and over land.	Low	Low	Low	Permitted wastes are unlikely to attract scavenging animals and birds but certain areas may become nesting / breeding sites. The waste types handled on-site do not attract pests and contractors regularly check the Site for pests. Therefore, the magnitude of risk is considered to be low.	Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented. Pest control measures are implemented under EMS227. A new contract is in place and the new service provider will review the current planned schedule for pest control for the site and provide an updated plan. Bait boxes are used around the site. All reports of pests are sent to the contractor who will investigate and report findings and outcomes and detail any actions required. Ensure waste cannot be accessed by scavengers. All waste produced from general site activities are kept in enclosed containers, or inside a building, prior to removing from site. Doors of buildings are to remain closed at all times when not in use. Regular inspection and maintenance of boundary fencing and buildings is carried out to prevent access to the Site. Well established and proven operational controls and procedures are in place, including regular inspection and monitoring of the Site for pests by contractors.	Low
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Human health and environmental safety

Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Local human population and local environment.	Flooding of the Site.	If waste is washed off-site it may contaminate buildings / gardens / natural habitats downstream.	Flood waters	Medium	Medium	Medium	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 within an area of groundwater flooding capability with potential flooding to property situated below ground level and at the surface. There is limited potential for groundwater flooding to occur, however there is the potential for groundwater flooding of property situated below ground level at the south west part of the Site. The majority of the site is located within a low risk flood extent area (less than 0.1% probability of flooding) with small areas within a low risk zone (0.1% - 1% chance of flooding) including the site entrance road. Previous flooding at the Site has occurred behind the centrifuge building due to the soakaways.	Most of the site can be isolated by penstocks or isolation valves. The drainage for the central areas of the Site goes to domestic pumping station and to the head of the works for treatment. Perimeter drains go to soakaways. 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.	Medium
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 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 SWS' safety and environmental management procedures and are kept up to date on changes. Training includes awareness raising of the potential on-site hazards and health and safety measures to adhere to. Preventative measures will be under continuous review as part of the EMS procedures. Activities are managed and operated in accordance with the EMS – this includes site security measures to prevent unauthorised access. No maintenance work or contractor is	Low

							<p>permitted on-site without a suitable permission to work and qualification.</p> <p>Access to site and waste is restricted by a 2.8m high chain link security fence. An 8ft high steel palisade gate secures the main access and is automatically operated. The Site is staffed 24 hours a day, 7 days a week. For visitors and unauthorised personnel an intercom system at the Site entrance is used. The Site also benefits from a CCTV system.</p> <p>Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements.</p> <p>Key sludge treatment and wastewater treatment activities undertaken within enclosed systems.</p> <p>On average 300m³ of sludge imports a day in either 27m³ (6k) tankers, 18m³ (4k) tankers.</p> <p>Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is moved to cake bays once a trailer is full. Cake is removed from the silo every Saturday; it requires three tankers to empty the silo. Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by site staff and maintenance contractors.</p> <p>Operator has produced a hazard review and risk assessment documents relating to this and other types of potential incidents, within the EMS, H&S and O&M manuals.</p>		
Local human population and local environment.	Explosion of biogas causing the 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 Spillages and contaminated firewater by direct run-off from site 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	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff.</p> <p>An explosion could cause injury to local residents and site staff from flying debris.</p> <p>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.</p> <p>Permitted waste types limited to sludges and liquids.</p>	<p>The key sludge treatment and WTW processes are undertaken within enclosed systems such as the anaerobic digestion (AD) and biogas systems. STC storage tanks are covered and are not considered a fire risk.</p> <p>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.</p> <p>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.</p> <p>Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency.</p> <p>The EMS includes procedures relating to maintenance and inspection of bunding of tanks.</p> <p>Site Manager shall ensure the programme PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment. All equipment is checked and calibrated as per the manufacturer's instructions.</p> <p>Emergency operating procedures are in place.</p> <p>Adequate firefighting measures are implemented on-site.</p> <p>Access to site and waste is restricted by a 2.8m high chain link security fence. An 8ft high steel palisade gate secures the main access and is automatically operated. The Site is staffed 24 hours a day, 7 days a week. For visitors and unauthorised personnel an intercom system at the Site entrance is used. The Site also benefits from a CCTV system. 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.</p>	Low
Local human population and local environment	Explosion of pressurised tanks due to equipment and/or process failure.			Low	Medium	Low	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke, fumes and material released from tanks may cause irritation, illness or nuisance to local residents and site staff.</p> <p>Impact from the tank explosion may cause external damages to other equipment, buildings located close to the epicentre of the explosion.</p>		Low
Local human population and local environment	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land. Equipment failure			Low	Medium	Low	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff.</p> <p>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.</p> <p>Risk of accidental combustion of waste is minimal.</p>		Low

<p>Local human population and local environment.</p>	<p>Arson and/or vandalism causing the release of pollution materials to air (smoke and fumes), water or land</p>	<p>Low</p>	<p>Medium</p>	<p>Low</p>	<p>Permitted waste types limited to sludges and liquids</p> <p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff.</p> <p>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.</p> <p>Risk of accidental combustion of waste is minimal.</p> <p>Permitted waste types limited to sludges and liquids</p>	<p>A Fire Prevention Plan is not required to be submitted for the permit application as the biowaste process on site is wet anaerobic digestion. However, fire prevention and environmental fire risk assessment procedures are provided in the EMS, 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. Adequate firefighting measures are implemented on-site.</p> <p>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 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.</p> <p>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.</p> <p>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 compliance.</p> <p>There is also safety zoning of areas under the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)/ Potentially Explosive Atmospheres (PEXA) on-site and smoking is only permitted in designated areas. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS and Safety Instruction Book (SIB) includes procedures relating to maintenance and inspection of bunding of tanks, spills and environmental incidents.</p> <p>Site Manager shall ensure the programme of PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment. All equipment is checked and calibrated as per the manufacturer's instructions.</p>	<p>Low</p>
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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.	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 manufacturer's instructions. Overall management of the Site is overseen by an experienced member of staff holding an appropriate Certificate of Technical Competence (CoTC) awarded by the Waste Management Industry Training and Advisory Board. This competent person delegates responsibilities to appropriately experienced and trained site operatives throughout the operating hours. All operational staff are fully trained in the Site operating procedures and SWS' safety and environmental management procedures and are kept up-to-date on changes. 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.	Low
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Natural habitats and ecology									
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
Protected nature conservation sites - European and national designated sites	Any, but principally NOx.	Harm to protected site through toxic contamination, nutrient enrichment, disturbance etc.	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	Low	Low	Physical disturbance and emissions to air, water or land may cause harm to and deterioration of nature conservation sites. One SPA lies within 10km of the Site. One ancient woodland is located within 2km of the Site, as well as six priority habitats. However, impacts to these sites are considered to be unlikely.	Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented. Emissions of substances not controlled by emission limits (excluding odour and noise) shall not cause pollution. Storage of high ammonia bearing material will be covered at all times. Emission limits for stack gases are specified. BAT and appropriate additional mitigation measures set out in the EMS (EMS323, EMS223, EMS228 and EMS220), have been taken to prevent or where that is not practicable, to minimise, those emissions.	Low
Protected species, including nesting birds, wintering birds, common reptiles, terrestrial and aquatic invertebrates, common amphibians, bats, badgers, hazel dormice and great crested newts	Any, but principally NOx.	Harm to protected species through the disturbance or removal of habitats		Low	Low	Low	Physical disturbance and emissions to air may cause harm to protected species. The proposal for the Permit does not involve the removal of vegetation, or structural modification to built structures. It is considered unlikely, therefore, that Site activities would lead to the disturbance or removal of terrestrial habitats.	As required by the Southern Water EMS various housekeeping and waste management practices are in place to monitor waste emissions. These include segregation of wastes according to their classification and nature, labelling waste and using designated storage containers.	Low

