Ashford Sludge Treatment Centre Environmental Permit Application

Environmental Risk Assessment

December 2024

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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/BP3296SB, for the Ashford 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 (2020) 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: Kinneys Lane, Off Canterbury Road, Bybrook, Ashford, TN24 9QB

National grid reference: TR 02107 43407

A plan showing the boundary of the scheme is provided in doc reference 790101_MSD_SiteLayoutPlan_ASH December 2024.

2.2 Geology

The Site lies upon an area of Alluvium formed up to 2 million years ago during the Holocene, consisting largely of soft to firm consolidated, compressible silty clay, but may also include layers of silt, sand, peat and gravel. The local environment would previously have been dominated by rivers. In the south-west of the site, Alluvium is absent and a pocket of River Terrace Deposits from the quaternary period is marked, comprising sand and gravel with layers of silt, clay or peat. No artificial ground is shown to be on-site or within 250m.

The site lies upon the Sandgate Formation from the Aptian Age. The base is taken from the Easebourne Member, Fittleworth Member or Rogate Member where present. The upper boundary is taken from the Marehill Clay Member. The bedrock presents fine sands, silts and silty clays, typically glauconitic. Some soft sandstones are present with some sands limonitic or calcareous.

Underlying the Sandgate Formation are the Hythe Formation (interbedded sandstone and limestone), Atherfield Clay Formation (mudstone) and the Weald Clay Formation (mudstone).

A fault is found 270m south-west between the Sandgate Formation and the Hythe Formation/Atherfield Clay Formation.

2.3 Hydrogeology

The bedrock and superficial aquifers underlying the Site are both designated by the Environment Agency as Secondary A aquifers and the bedrock is classed as highly vulnerable.

2.4 Hydrology

The Great Stour river flows south-west to north-east around the perimeter of the site. The river enters the North Sea just east of Herne Bay. Field drains are present to the north of the Site, although it is not clear if these run into the Great Stour river. Based on the Ordnance Survey master-map network, there are a further five unnamed surface water drainage features within 50m of the Site.

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

The majority of the Site is located within Flood Zone 1 (less than 1 in 1,000 annual probability). The north-east corner of the Site is within the Flood Zone 2 boundary due to the Site's proximity to the Great Stour river.

There are several discharge consents reported to have been issued to Southern Water for the Site, all for sewage discharge, dating back to 1991. The discharge of treated sewage effluent

and settled storm sewage from Ashford WTW to the Great Stour river is permitted under water discharge activity permit reference A805/K/98.

2.5 Protected Areas

The only European designated habitat site located within 10km of the Site is the Wye and Crundale Downs Special Area of Conservation (SAC), located 5.1km away.

The only national statutory designated site located within 2km of the Site is the Ashford Green Corridors Local Nature Reserve (LNR), located 49m away from the Site.

The non-statutory designated sites identified within 2km of the Site comprise:

- Great Stour Estuary - Ashford to Fordwich Site of Importance for Nature Conservation (SINC), located with the Site boundary;
- Ashford Warren SINC, located 1.3 km away from the Site;
- Willesborough Lees & Flowergarden Wood SINC, located 1.1km away from the Site;
- Bybrook Nature Reserve SINC, located 0.4km away from the Site; and
- Ancient woodlands located 1.3km away from the Site.

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

- Undefined priority habitats present located 50m from the Site;
- Deciduous woodland adjacent to the Site; and
- Traditional orchard located 0.6km away 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, the closest sensitive receptors are residential properties located within 100m of the Southern boundary on the opposite side of the M20 motorway. Additional residential and industrial properties are located within 500m of the Site on all sides.

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

Magnitude of risk	Probability index		
Severity 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 risk 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 to air

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.

The flare operates during emergencies, periods such as CHP maintenance or downtime. Maintenance of the flare is undertaken annually. Southern Water confirms that they plan to replace the CHP engine and keep the flare at Ashford.

The flare run time and gas flow is reported on the site's SCADA system and daily values are recorded on an excel spreadsheet. The current flare is monitored for runtime on SCADA The available data shows the flare is used for 9.5% of the time (from measured run hours).

The planned replacement of the CHP engine will be sized to ensure the flare is operated for maintenance and emergency situations only (once the work is completed).

The flare has been tested and the emissions are compliant. The flare is not planned for replacement.

Additional work is required to ensure all BAT requirements are covered (e.g. access platforms for testing, the required testing is fully adopted into BAU and related processes).

The collation and use of flare use data forms part of wider data collation and reporting (IT) system improvements planned to meet BAT 2c for inventory, BAT 11 energy and has an influence on BATs 15b, 16b and 21c for incident reporting (re. PVRVs and gas system management).

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).

Southern Water confirm that the flare does not operate over the 10% including the allowance for downtime and maintenance, therefore, the AQRA does not require updating.

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 sensitive human receptors and, therefore, a bioaerosols risk assessment has been

undertaken and is provided with the supporting documents of the permit application (Doc reference 790101_ERA_BioaRA_ASH December 2023).

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 risk, a Bioaerosol Management Plan is not required.

Best practice methods will be followed during operation of the facility, 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 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.

According to Landmark's Envirocheck report (Reference no: 273817799_1_1), no substantiated pollution incident to water, air or land has been recorded within 250m of the Site. Five Category 4 incidents (little or no impact) were recorded in the last five years, according to the Operator's pollution incident register, one of which occurred in 2020 and related to a near miss. No Category 3 incidents (minor incident) or worse were recorded in the register during the same period.

3.2.3.1 Emissions to water (other than sewers)

The Site is located within 250m of a groundwater SPZ. No abstractions are present on-site.

The drainage network sends water to the head of the works for treatment. There are no direct potentially contaminated discharges to controlled surface waters. During normal and storm events the liquor returns from the STC process enter the WtW either via the liquor treatment plant, which discharges to the inlet channel downstream of the storm overflow/storm control penstock, or via the works return which discharges to the PST distribution chamber, which is also downstream of the storm overflow. The returns from the STC cannot enter the WtW process upstream of the storm overflow and, therefore, cannot be discharged from the site via this route. The site will treat incoming crude up to pass forward flow plus the returns from the STC process and returns from the WTW processes.

There will be no direct discharge of wastewater to controlled waters from the STC.

There are no direct potentially contaminated discharges to groundwaters. Most condensate discharges directly to the Site drainage system which diverts water to the head of the works of

[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.

the adjacent Ashford WTW. Condensate from the CHP exhaust discharges to a container which is emptied at least fortnightly to the drainage system of the adjacent Ashford WTW. The condensate is clean, uncontaminated and discharges are small in volumes.

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.

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. Any liquid waste will either be reused or discharged to the drainage system of the Ashford WTW and will undergo treatment through the works before being discharged under an existing environmental permit for discharges to water. On-site WTW effluent will meet the requirements of the existing environmental permit for discharges to water. 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 head of the WTW via a return pumping station. A drainage plan of the Site is presented in document reference 790101_MSD_DrainagePlan_ASH.

The surface water drainage of potentially contaminated areas from within the Site boundary will be routed into the sewage treatment process with no discharge outside of the Site. There will therefore be no risk of polluted runoff affecting off-site features.

Due to the anticipated low levels of contamination of the water and the volumes involved, no monitoring of its composition is proposed prior to discharge to the WTW.

Any areas of the Site, where there is a risk of contamination of surface water, groundwater or discharge of process waters are located on impermeable concrete surface. All surface water from these areas drain to the WTW internal drainage system and are returned to the head of the works for treatment prior to discharge as final effluent.

The ACWA Amtreat® sludge liquor treatment plant, was installed in 2008. The LTP replaced an existing sequential batch reactor (SBR) plant. The plant is an above ground installation using glass coated steel process tanks. The tanks are accessed via stairs and associated walkways. It is designed to treat liquors from the following source arising from the sludge treatment process:

- Dewatering centrate
- Thickener liquors
- Centrifuge and thickener wash down
- Cake storage area

The LTP is designed to treat the flows and loads arising from the number of different processes within the STC. The LTP consists of the following process units:

- 1 No. Balance tank with mixing system (2,800m^3) - covered
- 1 No. Liquor blending tube for ‘hot’ and ‘cold’ liquors
- Amtreat liquor plant includes:
  - 2 No. Anoxic tanks for denitrification (150m^3 each) – covered
  - 2 No. Amtreat reactors for nitrification (1,275m^3 each) – covered

- 2 No. Stilling tubes
- 2 No. Final settlement tanks for solids removal (230m^3 each) - open
- Associated pumps, air blowers, and instrumentation
- 1 No. Sodium hydroxide storage and dosing system (40m^3) - covered in a concrete bund.

The LTP is configured for nitrification, partial denitrification and alkalinity recovery.

The plant includes an internal nitrate recycle and RAS recycle to optimise denitrification and alkalinity recovery, which in turn minimises the sodium hydroxide dosing.

The LTP is located adjacent to the STC. Treated effluent is discharged to the adjacent Ashford WtW, with solids drawn from the tanks regularly. RAS is returned back to the anoxic tanks and SAS is directed to the head of the works for further treatment.

3.2.3.3 Emissions to land

There will be no point source emissions to land as part of the activities carried out on-site.

Discharges will be minimal, typically arising from periodic maintenance/cleaning operations, and are captured in spill trays. The CHP exhaust condensate discharges to a container, which is emptied at least fortnightly by Finnings.

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, therefore, considered to be negligible 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 received four noise complaints in the last five years from three addresses. The complaints refer to lorries reversing in the early hours of the morning (one occurrence) and machinery noise heard during night hours. A flare is used in the event of the CHP not being operational.

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 in respect of this application. 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. Several residential properties are located within 250m of the Southern boundary, on the opposite side of the M20 motorway. These sensitive receptors 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.

Historically, the Site has received a large number of odour complaints; 58 were recorded in 2018 and 66 in 2019. In 2020 the Site recorded an unusually high number of odour complaints

with an annual total of 123, averaging about 10 odour complaints a month throughout the year. This spike in complaints was likely to have been caused by a hot spring and summer in which the majority of the local residential population were at home for extended periods, including midweek days, due to the Coronavirus pandemic.

In 2020, a scheme was approved to install covers on tanks and extract the gas to the OCU. According to the FPM, with the improvement works on site, the number of odour complaints recorded reduced to 25 in 2021, 7 in 2022 and 0 in 2023.

The Site has not operated any differently in 2023, to result in more odorous conditions or emissions. The same odour mitigation techniques from 2019 remained in place.

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), reviewed and updated in December 2023, 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_ASH December 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 the open in minor quantities on the Site, but 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.

There are not considered to be any significant dust or particulate sources from the Site as identified in the Appendix B.

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.

Pest control measures are implemented under the EMS, with an external contractor attending the Site once a month. In the event of a pest complaint, additional visits will be requested from the pest control contractor to investigate and implement measures to prevent reoccurrence.

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, with similar infrastructure since around 1965. The Site runs parallel to the M20 motorway on the Southern boundary and there is an industrial estate on the opposite side of the M20. The Great Stour river runs approximately 250m north-east of the Site along the Site perimeter to the south-west. To the north of the river, there are rugby playing fields and a few residential properties.

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.

The view of the Site from the nearest property is obscured by the M20 and two verges of vegetation. 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 the Site and waste is restricted by 2.8m high fencing, which is a combination of chain link and palisade. The main Site entrance is secured by a 2.8m high manually operated gate. Site floodlighting is provided at all reception facilities to give good visibility at all times of the day and night. The Site is staffed 24 hours a day, 7 days a week. The Site also benefits from a CCTV system, comprising 24 cameras that cover the entrance, perimeter and waste storage areas. 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 the ERA 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 with limited potential for groundwater flooding to occur.

The majority of the Site is located within Flood Zone 1 (less than 1 in 1,000 annual probability). The north-east corner of the Site is within a Flood Zone 2 boundary due to the Site's proximity to the Great Stour river.

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

There are no known issues with flooding at the Site, however the Site car park collects standing water during periods of heavy rainfall due to slow drainage. The car park is separately located from Site activities and waste operators and, as a result, poor drainage in this area does not pose an environmental or operational risk.

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 flood risk assessment (FRA) (defined here as a detailed assessment involving bespoke hydraulic modelling work) is unlikely to be required. When proposed changes 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), Kent 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) within 2km of the Site boundary. Licences available on Multi-Agency Geographic Information for the Countryside (MAGIC), data from Kent Wildlife Trust (KWT), Kent & Medway Biological Records Centre (KMBR) or Sussex Biodiversity Record Centre (SBRC) depending on location of site. 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 Ashford STC

Natural habitats and ecology	Ashford STC
Statutory designated European sites within 10km of the Site boundaries	
Special Areas of Conservation (SAC)	1
Special Protection Areas (SPA)	
Sites of Community Importance (SCI)	
Ramsar sites	
Statutory designated national sites within 2km of the Site boundaries	
Sites of Special Scientific Interest (SSSIs)	
Marine Conservation Zones (MCZs)	
National Nature Reserves (NNRs)	
Local Nature Reserve (LNRs)	1
Areas of Outstanding Natural Beauty (AONBs)	
Non-statutory designated sites within 2km of the Site boundaries	
Local Wildlife Sites (LWS)	
Ancient Woodlands	1
Country Parks	
Sites of Importance for Nature Conservation (SINC)	4
Kent Wildlife Trust Reserves	
Priority habitats within 2km of the Site boundaries	
Priority habitats	3
Protected species	
Granted European Protected Species (EPS) licences: within 2km of the Site boundaries	5
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	

The Site is located within 10km of one SAC. Owing to the distance, type of qualifying feature and lack of hydrological connectivity, no effects are likely to this European site from the Site. Therefore, it is considered highly unlikely that a Habitats Regulations Assessment (HRA) would be required for the Site.

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 LNR, four SINCs, one ancient woodland and three priority habitats are located within 2km of the Site. Great Stour Estuary – Ashford to Fordwich SINC, in particular, is located partly within the Site boundary. It is considered, however, unlikely that Site activities will impact these habitat sites. This is covered in Appendix B along with appropriate mitigation.

There are five granted EPS licences within 2km of the Site. An Amphibian EPS licence is located 1km to the northeast and 1.9km west. Two EPS licences for bats lie to the south-west, 1.4km and 1.8km from the Site boundary. 1.8km to the West lies an EPS license for Other Mammals.

The Site is mostly hardstanding and water treatment infrastructure and bordered by trees. The M20 borders the Site to the south with Henwood Industrial Estate located immediately south beyond that. The Great Stour river runs approximately 250m north-east of the Site along the Site perimeter to the south-west. To the north of the river, there are rugby playing fields and a few residential properties.

There is the potential for bats (i.e. brown long-eared bat, long-eared bat species, noctule bat, Daubenton's bat, common pipistrelle), great crested newts, ear moths, common toads and otters to be present within the Zones of Influence (ZoI).

It is considered to be 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 the 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

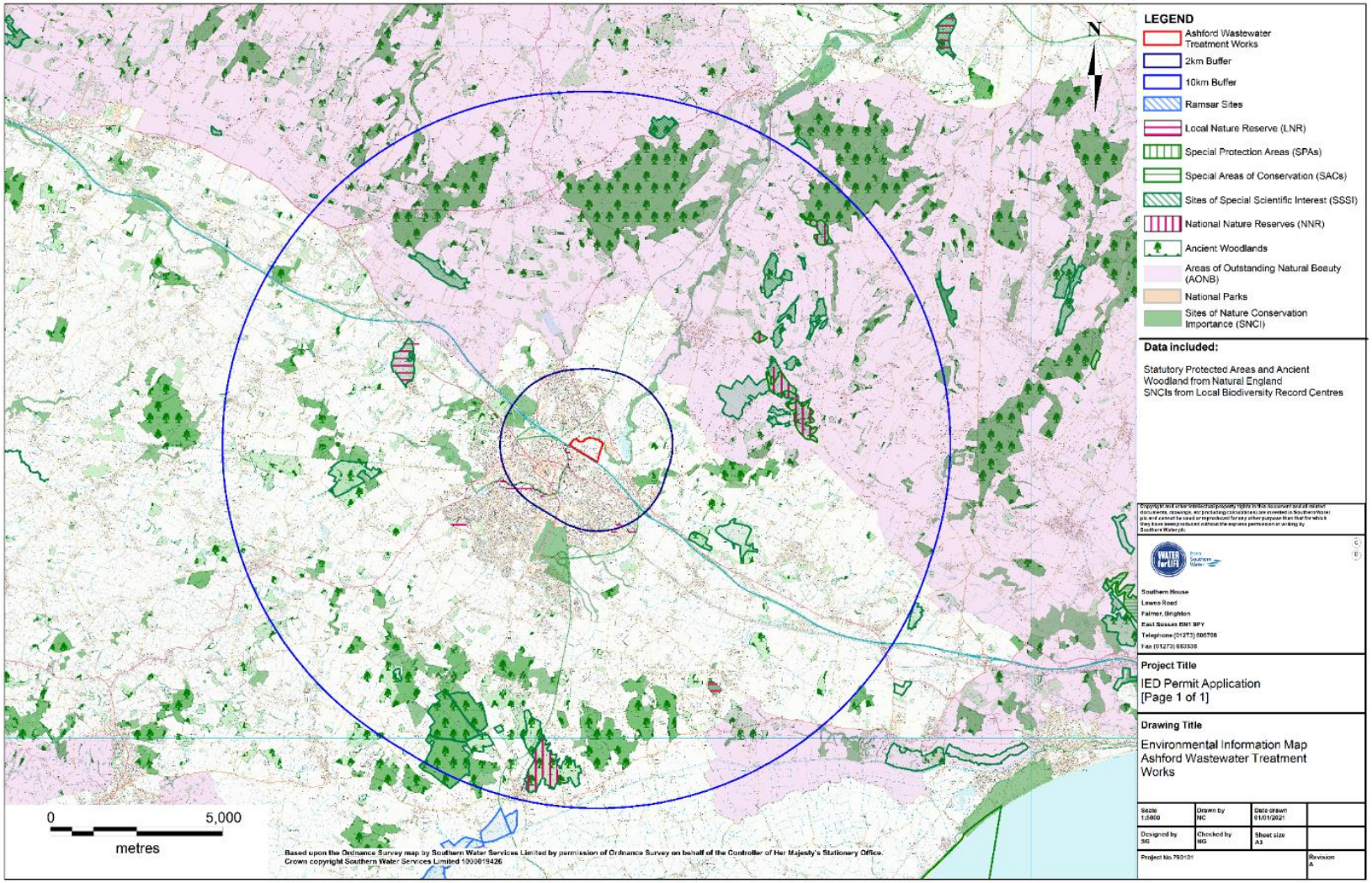


Figure A.2: Non-statutory designated habitat sites within 2km of the Site

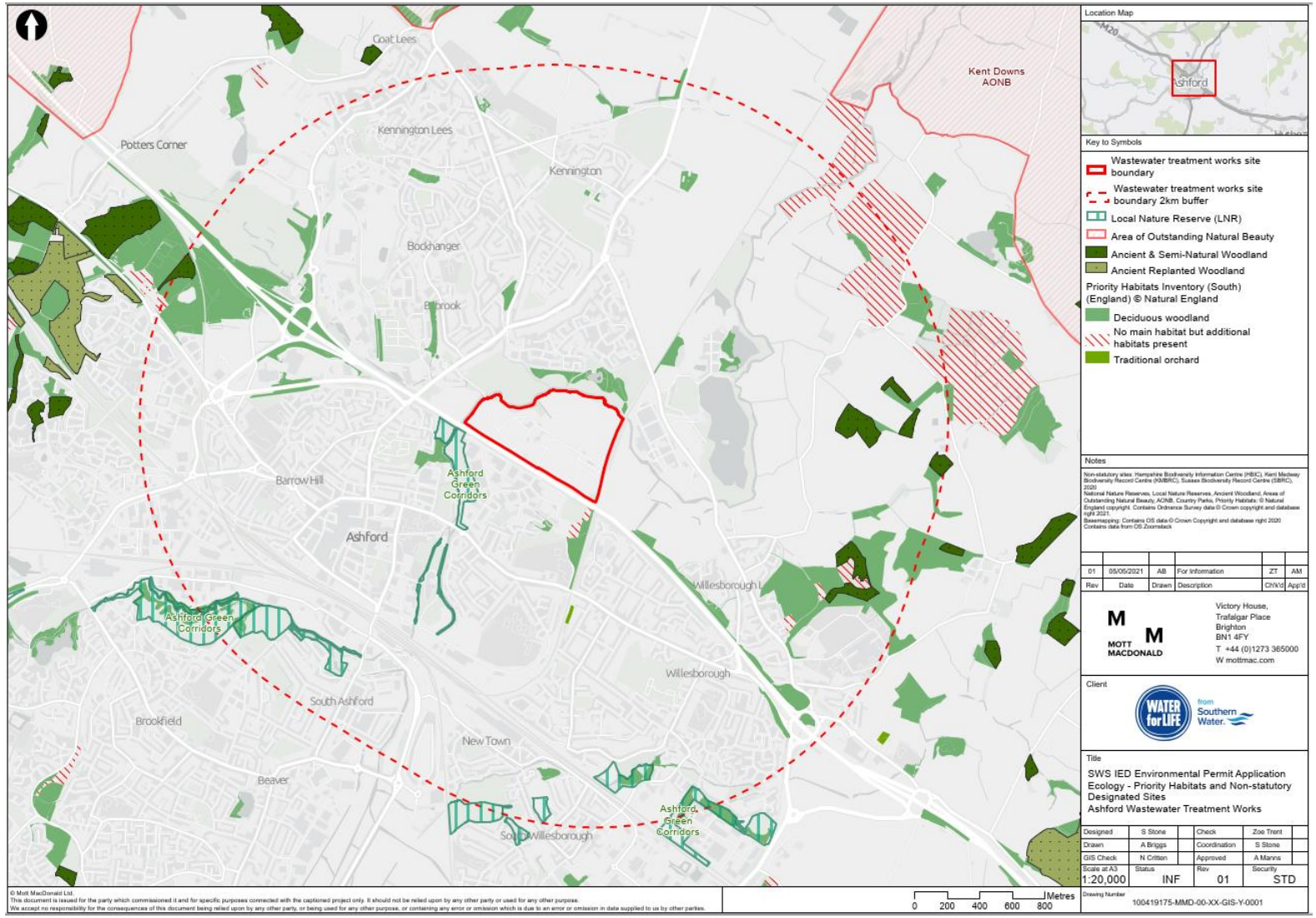


Figure A.3: Designated heritage sites within 1km of the Site

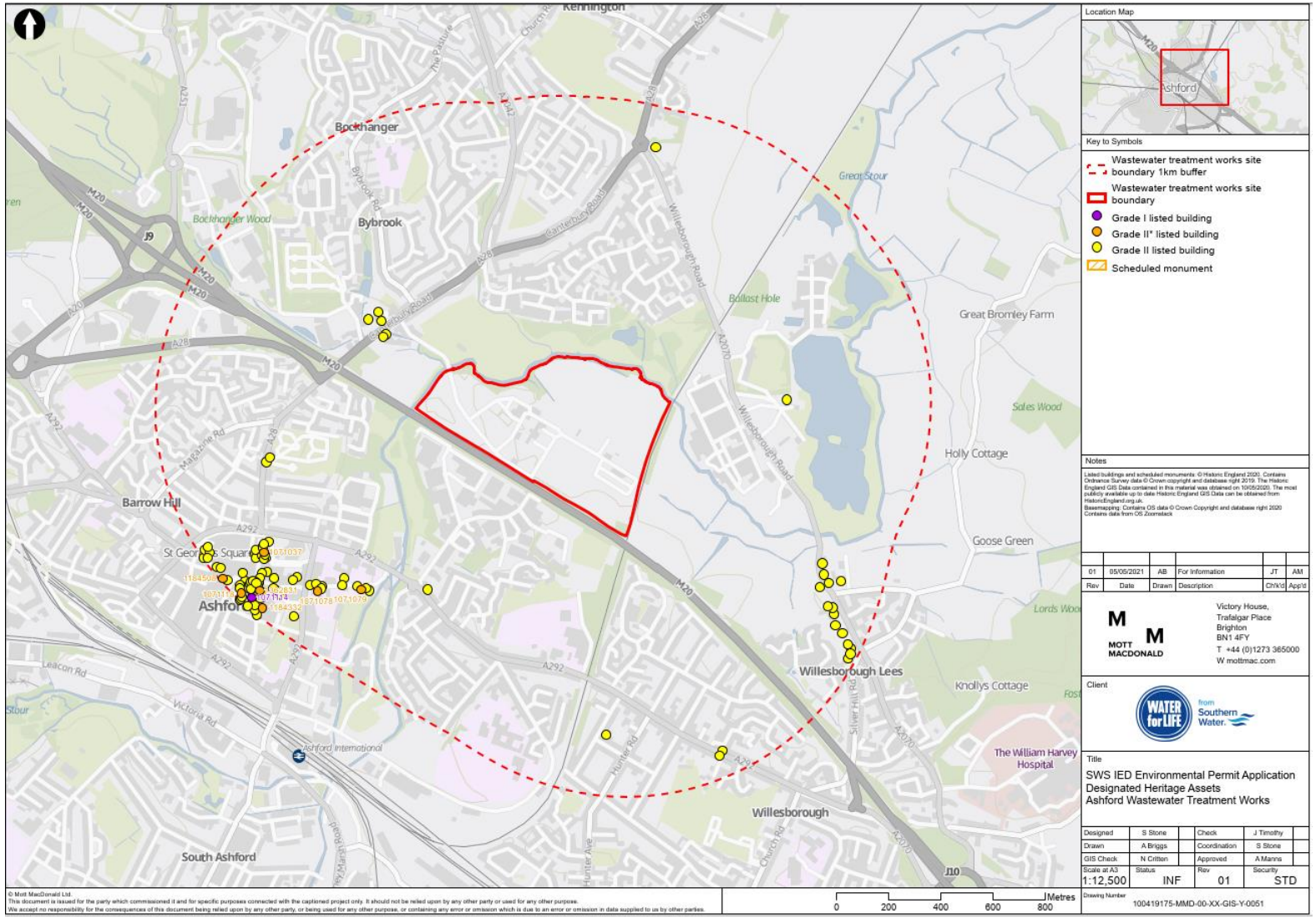
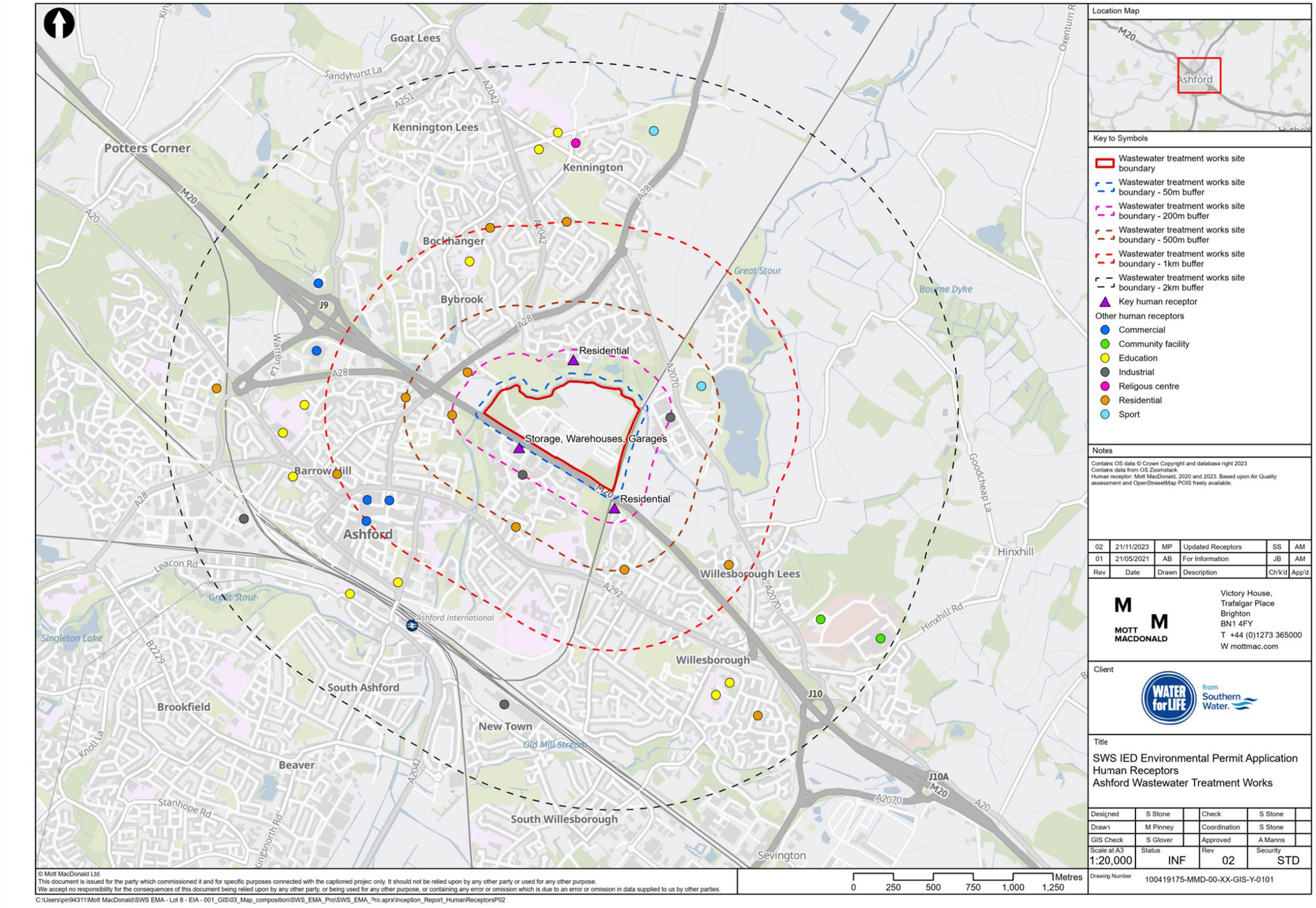


Figure A.4: Sensitive receptors within 2km of the Site



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. NOx and GHG emissions are controlled by emission limits. Storage of high ammonia bearing material will be covered at all times. Any emissions of substances 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. One large flares is present on-site, which is only operated in emergencies, such as during CHP maintenance or downtime.	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 (8 total) 2 x gas holder (2 total) 2 x per PDST (4 total) Operational record including date, time duration of pressure relief events and calculated annual mass release. Linked to SCADA. The flare is appropriate for emergency use (such as breakdown and maintenance). There is no plan to replace the existing flare, however, the CHP engine is planned to be replaced and will be sized to ensure the flare is only operated during maintenance and emergency situations (once the work is completed). Additional work is required to ensure all BAT requirements are covered (e.g. access platforms for testing, the required testing is fully adopted into BAU and related processes). The flare is currently monitored for runtime on SCADA and data shows that the flare does not operate over the 10% allowance for downtime and maintenance.	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. 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 open bays, but this material is not dusty by nature even when it is dry. 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.	Low

								Bay 10 is the main cake storage bay on-site, which is emptied within a 24-hour period. Between 8 and 20 loads of cake are removed per day depending on the rate of throughput. The hardstanding and infrastructure of the storage bay are in good condition, with walls approximately 1.2m to 1.5m high. The capacity of the cake storage bay is sufficient to contain the quantity of cake stored on-site and limit dust emissions therefrom. Cake is stored in bays on-site and not handled until it is removed. Cake bays 4 and 6 take approximately 10 days to fill and cake bays 1, 2, 3, 5a and 5b take about 6 days to fill. Liquid lime treatment, which is not frequently required, is not undertaken on windy days. It is not dusty by nature,	
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 undertaken on-site are not likely to cause a release of bio-aerosols. The inlet works, primary settlement tanks (PSTs), humus tanks, emergency liquor tank, storm tanks, biological filters, nitrifying filters, sand filters and cake bays are not enclosed. Emergency situations such as a failure of the flare or CHP/boilers could result in uncontrolled emissions of bioaerosols.	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. Key operations take place within a closed system, including covered centrifuges, thickeners, pumps, boilers, 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. Biofilters are regularly checked for efficiency. The PSTs, humus tanks, emergency liquor tank and storm tanks are uncovered, however these involve 'wet' processes so the risk of resuspension of bioaerosols is minimised. 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. Odour control unit is airtight and treats air released to remove bioaerosols. The process is monitored and regularly maintained. Gas holder is air-tight to prevent uncontrolled release of bioaerosols. SCADA system in place to detect leaks. Combustion of biogas occurs at high temperatures in the CHP, boilers and flare, which would destroy bioaerosols. Stringent loading and unloading procedures are in place for receipt of sludge and liquor. Appropriate wash-up facilities are provided for drivers to clean the vehicles after loading or unloading in sludge storage bays and loading points. Lorry and tanker drivers are required to hose down any spillage after each loading or unloading and clean contaminated wheels before leaving site. A Bio-aerosol Risk Assessment has been undertaken to assess the risks of bio-aerosols from the Site. This identifies that magnitude of bio-aerosol risks range from very low to medium. Operation of the Site is unlikely to lead to significant impacts at nearby sensitive receptors from bioaerosol emissions.	Low

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.	Tank failure, spillages of digestate and/or liquids including oil	Acute or chronic effects to aquatic life, contamination and	Direct run-off from the Site across ground surface, via	Low	High	Medium	Potential for leaks from digestion tanks, storage vessels/bays and drainage system	The Site drainage plan is documented, and all staff are trained in the event of emergency or accident.	Low

	Damage to drainage system. Spillage of raw materials or sludge/liquor during delivery/storage Contaminated run off from cake storage e.g. containing suspended solids.	deterioration of water quality.	surface water drains, ditches etc. Indirect run-off via the soil layer Transport through soil/groundwater then extraction/ abstraction at borehole or intake.				which may cause contamination or deterioration of surface water quality. The Site is aging but hardstanding and cake storage bays are generally in a good condition across the Site. Appropriate bunding is provided for raw materials stored on-site and cake storage bays have sufficient capacity for the quantities stored therein. Permeable ground surfacing currently surrounds the tanks and digesters. Quantities of liquids stored are generally low. The Great Stour river runs approximately 250m north-east of the Site along the Site perimeter to the south-west. However, no substantiated pollution incident to water, air or land has been recorded within 250m of the Site.	Impermeable surface and secondary containment, in the form of constructed bunds or portable bunds, is in place around storage areas of all wastes and raw materials and surrounding the STC and WTW. 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 Construction Industry Research and Information Association (CIRIA) standard 736. Hardstanding likely to be planned to be constructed (based on the recommendations of the CIRIA risk assessment) around the tanks and digesters. All transfer of digestate and material takes place under supervision and with flow rate control. All tanks undergo a delegated inspection regime and the process parameters are monitored and understood by Site operatives. Digestion tanks are built to appropriate standard and require appropriate bunding.	
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	Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off. No substantiated pollution incident to water, air or land has been recorded within 250m of the Site.	There is one main cake storage bay on-site (Bay 10) and six emergency bays. The hardstanding and infrastructure of the storage bays are in good condition, with walls approximately 1.2m to 1.5m high. The capacity of the main cake storage bay is sufficient to contain the quantity of cake stored on-site and limit dust emissions therefrom. Activities are managed and operated in accordance with the EMS. Spill procedures are in place under EMS363 and 364 as well as a pollution prevention procedure EMS360 All spillages are recorded in the site diary including actions taken. Site Manager ensures the programme of Planned Preventative Maintenance (PPM) is implemented effectively to minimise the probability of equipment malfunction. Control of substances hazardous to health (COSHH) assessment undertaken for all raw materials. Both clean and contaminated surface water is directed to a pumping station which recirculates it back into the system. The surface drainage of potentially contaminated areas from within the Site boundary is routed to primary settlement tanks after storm separation with no discharge outside of the Site boundary. Regular inspections of the Site drainage systems and other equipment are undertaken, with any repairs and maintenance carried out if necessary. All complaints and other incidents are recorded in the site diary including actions taken. The condensate is clean, uncontaminated water and is small in quantity. Condensate traps are checked regularly and condensate is discharged to the head of the works.	
Groundwater, land and surface water	Spillage of liquids, contaminated rainwater run-off from waste e.g. containing suspended solids. Sludge/liquid spillages as a result of loss of tank/pipe integrity/ carelessness during transfer or overfilling	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction at borehole or intake.	Low	Medium	Low	Potential for leaks from digestions tanks and storage vessels. Site infrastructure and hardstanding is generally in a good condition. Quantities of liquids stored are generally low.		
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.	Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Low	Medium	Low	Potential for spillage during transfer of liquid/sludge from tankers. Reception area for sludge is generally in a good condition.	Impermeable surface required for storage of all waste. All storage and reception areas are generally in good condition and of sufficient capacity. Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented to reduce spills when transferring liquids/sludges from tankers. Established procedures are in place for waste duty of care (EMS380), operational waste procedures (EMS381) and waste rejection (EMS488).	Low

		Pollution of water or land.						Compliance with the waste duty of care requirements to ensure waste accepted meets the permit conditions and relevant legislation. All liquid run-off on-site is directed to a return pumping station before returning to the head of the works.	
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 pipework is fitted below ground. There is no leak detection of underground pipework on the Site.	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 buildings / gardens / natural habitats downstream.	Flood waters	Low	Medium	Low	Permitted waste types are sludges/bio-solids, which may contain pathogens, so any waste washed off-site will add to the volume of the local post-flood clean up and may be hazardous to human health. Area is not known to flood apart from the car park which retains some standing water due to slow drainage during periods of heavy rainfall.	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 are managed and operated in accordance with a management system and management plans and procedures implemented, include (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.	Low
Noise and Vibration									
Data and informatio				**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 are often sensitive to noise and vibration. The Site has received four noise complaints in the last five years. Three of the complaints related to the pumping station, and one was related to road traffic. It is considered that there is low potential for exposure to sensitive receptors.	Site will only accept imports within existing operating hours (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. 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.	Low
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 is low potential for exposure as three noise complaints relating to plant and equipment have been received in the last five years.	Fans and condensate traps will be checked for water and fans and extraction systems checked. The CHP and blowers have a sound enclosure for reducing noise from the process. Flare usage is kept to a minimum (only in emergency situations when CHP isn't running) 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, to the appropriate standards and to manufacturers recommendations. Where equipment is to be replaced choose quiet plant and the provision of silencing equipment. Proper maintenance of plant and equipment. Limitation of operating hours under the planning permission. 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.	Low

								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.	
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 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. Historically, the Site has received a large number of odour complaints; 58 were recorded in 2018 and 66 in 2019. In 2020 the Site recorded an unusually high number of odour complaints with an annual total of 123, averaging about 10 odour complaints a month throughout the year. This spike in complaints is likely to have been caused by a hot spring and summer in which the majority of the local residential population were at home for extended periods, including midweek days, due to the Coronavirus pandemic. In 2020, a scheme was approved to install covers on tanks and extract the gas to the OCU. According to the FPM, with the improvement works on site, the number of odour complaints recorded reduced to 25 in 2021, 7 in 2022 and 0 in 2023. The Site has not operated any differently in 2023 which would result in more odorous conditions or emissions. The same odour mitigation techniques from 2019 remained in place. The liquid sludge reception area is not enclosed.	Odours are likely to be generated and released due to nature of the wastes. Odours are controlled by odour control units. An odour control unit controls odour from the STC tanks and process areas. Two wet suppression systems (cobra) are installed at the Site, one at the storm tanks and cess reception area and another at the Northern boundary near cake bay 10. There is an additional dry vapour system (cobra) at cake bay 10. All abatement systems are designed, monitored and maintained to treat specified emissions and off gases. Other odour mitigation measures implemented on-site include placing covers on containers and regular removal of cake. The Site's Odour Management Plan, which was reviewed and updated in December 2023, 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. All sludge storage tanks are covered with the exception of the emergency liquor tank. Cake is stored in an open cake bay but is not handled until it is being removed from site. The main storage (Bay 10) is emptied within 24 hours. Quick removal of cake from the Site helps mitigate the risk of odour. Between 8 and 20 loads are removed from the Site each day depending on input volumes. Odour control procedures employed when lime treatment is taking place include the operation of odour suppressant sprays, with a dry spray used around bay 10 and a wet spray in operation along the bank. All waste is imported and exported in covered lorries or contained in tankers. Any complaints received are investigated and actioned in line with the complaint's procedure.	Low
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.	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). The Site Manager shall ensure all relevant staff are appropriately trained to use the spill kits and that all spillages are cleaned up immediately. 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.	Low

								All spills are recorded in the site diary including actions taken.	
Local human population, domestic properties, Site offices	Fugitive release of H_2S	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.	Activities are managed and operated in accordance with the EMS (and include inspection and maintenance of equipment, including engine management systems). H2S point source emissions to air are controlled in accordance with emission limits. Dosing with Ferric Chloride is undertaken to reduce H_2S potential. A specialist unit equipped with carbon filters is used for air treatment and abatement to reduce odours and the generation of other gaseous compounds.	Low
Litter, mud and debris									
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, 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.	All vehicles leaving the Site, transporting waste are to be covered to prevent waste/materials escaping from them. All waste produced from general Site activities are kept in enclosed containers, or inside a building, prior to removing from site. Bins for general waste and recyclable waste are located outside the office, in addition to a metal skip. WEEE is stored in buildings and grit and screenings are stored in appropriate skips. All waste is removed by an external contractor when required. Regular inspections for litter and debris are undertaken. Nuisance management measures are included in the EMS and the site-specific management plan. Details of the procedures Southern Water 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.	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.	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 Southern Water 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. Any mud or sludge arising from activities on-site is cleared up promptly. There are no wheel washing facilities on the Site but vehicles, equipment and impermeable surfaces are swept and washed down, when necessary. Any emissions of substances not controlled by emission limits (excluding odour and noise) shall not cause pollution. Vehicle routes are to be inspected regularly and swept when necessary. All vehicles leaving the Site, transporting waste/ cake are to be covered to prevent waste/materials being blown from them.	Low
Pests									
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.	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 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. Pest control measures are implemented under the EMS. The Site has 12 visits per year (one per month), by a	Low

								contractor, for rat control. Rat boxes are used around the Site, where appropriate. 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 in place, including regular inspection and monitoring of the Site for pests by contractors.	
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**	
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 with limited potential for groundwater flooding to occur. The majority of the Site is located within Flood Zone 1 (less than 1 in 1,000 annual probability). The north-east corner of the Site is within the Flood Zone 2 boundary due to the Site's proximity to the Great Stour river. There are no known issues with flooding at the Site, however the Site car park collects standing water during periods of heavy rainfall due to slow drainage. The car park is separately located from Site activities and waste operators, as a result poor drainage in this area does not pose an environmental or operational risk. There is only one Site access road. This road has not experienced flooding.	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 are managed and operated in accordance with a management system and management plans and procedures implemented include (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.	Low
Local human population and / or livestock after gaining unauthorised access to the installation.	All on-site hazards: machinery, wastes and vehicles.	Bodily injury	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 Southern Water's safety and environmental management procedures and are kept up to date on changes. Training includes awareness raising of the potential on-site hazards and health and safety measures to adhere to. 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	Low

								is permitted on-site without a suitable permission to work and qualification. Access to the Site is restricted by 2.8m high fencing, made up of a combination of chain link and palisade. The main Site entrance is secured by a 2.8m high manually operated gate. Site floodlighting is provided at all reception facilities to give good visibility at all times of the day and night. The Site is manned 24 hours a day, 7 days a week. The Site also benefits from a CCTV system, comprising 24 cameras which cover the Site entrance, perimeter and storage areas. 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. Tankers are only able to arrive and leave between 7am - 6pm on Monday to Friday and 7am – 1pm On Saturday and bank holidays. The Site is closed on Sundays and Christmas day. The Site does not currently accept commercial tankered waste. Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is removed from the bays frequently (8-20 loads removed from Site per day). Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by Site staff and maintenance contractors. Key sludge treatment and wastewater treatment activities undertaken within enclosed systems. 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.	
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 Direct run-off from Site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer Transport through soil/ groundwater then abstraction.	Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and Site staff. An explosion could cause injury to local residents and Site staff from flying debris. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Permitted waste types limited to sludges and liquids.	The key sludge treatment and WTW processes are undertaken within enclosed systems such as the AD and biogas systems. The emergency sludge storage tank and the LTP's FST are not covered but are not considered a fire risk. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals – this includes Site security measures to prevent unauthorised access. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Fire detection equipment is installed in the CHP containers and the boiler building which activates an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS includes procedures relating to maintenance and inspection of bunding of tanks. Site Manager shall ensure the programme of Planned Preventative Maintenance (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. Emergency operating procedures are in place and detailed in the Site's Operational Continuity Plan.	Low
Local human population and local environment	Explosion of pressurised tanks due to equipment and/or process failure.			Low	Medium	Low	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke, fumes and material released from tanks may cause irritation, illness or nuisance to local residents and Site staff. Impact from the tank explosion may cause external damages to other equipment, buildings located close to the epicentre of the explosion.		
Local human population and local environment	Accidental fire causing the release of polluting			Low	Medium	Low			

	materials to air (smoke or fumes), water or land. Equipment failure					Emissions to air, land or water may cause harm to and deterioration of air, land or water.	Adequate firefighting measures are implemented on-site.	
Local human population and local environment.	Arson and/or vandalism causing the release of pollution materials to air (smoke and fumes), water or land		Low	Medium	Low	Smoke and fumes may cause irritation, illness or nuisance to local residents and Site staff. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Risk of accidental combustion of waste is minimal. Permitted waste types limited to sludges and liquids	Access to the Site is restricted by 2.8m high fencing, composed of a combination of chain link and palisade. The main Site entrance is secured by a 2.8m high manually operated gate. Site floodlighting is provided at all reception facilities to give good visibility at all times of the day and night. The Site is manned 24 hours a day, 7 days a week. The Site also benefits from a CCTV system, comprising 24 cameras covering the Site entrance, perimeter and storage areas. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to the Site. Repairs are undertaken in accordance with the EMS requirements. 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 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. 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. Firewater use on other process/equipment areas (which either have existing, or will be provided with new, impermeable surfaces) will drain to site drainage systems. A robust means of isolating the site drainage from returning to the head of works is required. Where sites have pumped return to head of works stopping the pump and ensuring no hydraulic link (syphoning) is required. Where return to head of works is (or could be) gravity returned, a new isolation valve is required which is to be shut in the event of an incident. Implementation of these measures will ensure no firewater returns to the WtW without appropriate controls including sampling/testing. Further design development is underway to determine the most appropriate solution to address this requirement and ensure compliance.	

Local human population and local environment.	Operator Error	Pollution to air, land, surface water and groundwater and human health	Air transport Direct run-off from Site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer Transport through soil/ groundwater then abstraction.	Low	Medium	Low	Possible contamination to air, land, groundwater and surface water. Given the level of operator controls which are in place and management plans, it is considered the probability and magnitude will be low.	Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented. All equipment is checked under preventative maintenance plans and is checked and calibrated as per the 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 Southern Water's safety and environmental management procedures and are kept up to date on changes. Training includes awareness raising of the potential implications of failure to control operations and the potential impact on the environment. Preventative measures will be under continuous review as part of the EMS procedures. Emergency operating procedures are in place and detailed in the Site's Operational Contingency Plan. Senior site-based management have direct responsibility for implementing risk management measures.	Low
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	Medium	Low	Physical disturbance and emissions to air, water or land may cause harm to and deterioration of nature conservation sites. The Site is located within 10km of one SAC and within 2km of an LNR. 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	Medium	Low	Physical disturbance and emissions to air, water or land 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.		Low

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