MOTT MACDONALD

Fullerton Sludge Treatment Centre Environmental Permit Application

Environmental Risk Assessment

January 2025

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

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

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1 Introduction

1.1 Background and Scope

This document has been prepared to support the application for the variation and consolidation of permits EPR/PP3303PQ and EPR/SP3492HL into a bespoke Waste Installation Environmental Permit (hereafter referred to as “the Permit”), for the Fullerton Sludge Treatment Centre (STC) (‘the Site’) on behalf of Southern Water Services Limited (‘Southern Water’ or ‘the Operator’). The Site currently holds S1, S2, U6 and D5 exemptions.

The permit activities comprises imports, physio-chemical and anaerobic digestion (AD) treatment, and the storage of waste, all for recovery purposes. The STC handles waste derived from the wastewater treatment process, either indigenously produced on-site or imported from other Southern Water owned assets.

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 assessment for your environmental permit. Available online at https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

2 Site setting

2.1 Location

Site address: Romsey Road, Goodworth Clatford, Andover, SP11 7HR

National grid reference: SU 36859 41401

A plan outlining the boundary of the scheme is provided in 790101_MSD_SiteLayoutPlan_FUL February 2024.

2.2 Geology

The majority of site is underlain by an absence of superficial deposits. The south of site lies on an area of polymict head deposits comprising clay, silt, sand, and gravel. These superficial deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by subaerial slopes. The extent of the site in the west lies upon an area of River Terrace Deposits (RTD) associated with the River Anton, comprising sand, silt and clay. These superficial deposits formed up to 3 million years ago in the quaternary period. Local environment previously dominated by rivers.

The site lies upon the Newhaven Chalk Formation – Chalk which comprise soft to medium hard, smooth white chalks with numerous marl seams and flint bands, including abundant Zoophycos flints (notably at levels near the base). The formation is known to contain distinct phosphatic chalks of limited lateral extent. Equivalent beds, the Margate Chalk of north Kent, are marl-free and contain little flint.

2.3 Hydrogeology

The Newhaven Chalk formation underlying the site is designated by the Environment Agency as a Principal aquifer.

The surrounding superficial alluvium and River Terrace deposits to the south and west have both been designated as Secondary A aquifer. The head deposits to the southeast have both been designated as a Secondary (undifferentiated) aquifer.

The site lies 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).

There are 17 active groundwater abstractions are located within 1km of the Site, where the closest is approximately 792m from the Site.

There are no discharge consents indicated on site, but four inactive discharges are known to occur within 250m of the site.

Additionally, the site falls with two nitrate vulnerable zones; Hampshire Chalk (groundwater) and Hamble Estuary eutrophic NVZ (Trac) (eutrophic water). The decommissioned Test Valley environmentally sensitive area lies 131m southwest of the site.

2.4 Hydrology

The River Anton is located approximately 40m west of the Site and flows south to converge with the River Test and eventually flow into the English Channel. A drain exists 10m west of the Site and converges with the River Anton. Immediately west of the site, the course of the River Anton

has been artificially altered through sluice gates and channels to facilitate irrigation. The River Anton is listed on the OS Water Network Map as an inland river.

Northeast of the Site (approximately 165m away), a drain associated with the disused oil well, formerly operated by Star Energy Oil UK Ltd, is present but is contained within the oil extraction site. There are no further drains located within 500m of the site area. Immediately west of the site, the course of the River Anton has been artificially altered through sluice gates and channels to facilitate irrigation. The River Anton is listed on the OS Water Network Map as an inland river.

There is an on-site drain that does not leave the site boundary.

2.5 Protected areas

There are no European designated habitat sites located within 10km of the Site.

The national statutory designated sites located within 2km of the Site include:

- Chilbolton Common Site of Special Scientific Interest (SSSI) located 1.8km from the Site
- River Test (SSSI) located 1.9km from the Site
- Ancient woodland Harewood Forest South located 731m from the Site

The priority habitats located within 2km of the Site include:

- Deciduous woodland located on Site
- Good quality semi-improved grassland located 37m from the Site
- Coastal and floodplain grazing marsh located 56m from the Site
- No main habitat but additional habitats present 243m from the Site
- Traditional orchard located 569m from the Site
- Lowland calcareous grassland located 819m from the Site
- Lowland fens located 1865m from the Site
- Lowland meadows located 1898m 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

As shown in Figure A.4 in Appendix A, the closest sensitive human receptors are two residential properties adjacent to the site entrance, and a solar PV plant (place of work) located approximately 50m north of the Site, a residential property located approximately 300m southwest of the plant, a residential property 500m west of the site and a petrol station approximately 700m north west 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 No4” and “SR2008 No19”, applicable o 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 OBJ	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 any potentially sensitive receptors within the vicinity of the Site and assesses the environmental risks with 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

As the combustion activities are not being changed on-site as a result of permitting the AD plant and associated processes, it is not anticipated that Air Dispersion Modelling (ADM) will be required to be updated for this permit application. This is because the point sources to air were screened in 2019 as part of the application for first issue of EPR/PP3303PQ, and in accordance with the Environment Agency's guidance on air quality modelling at the time of the permit was granted[2]. The Site screened out from requiring an ADM report because the nearest non-roadside and roadside human receptors are located 600m and 500m from the Site respectively. The 2 No. dual fuel boilers (biogas/diesel) were not considered in the assessment because the model was at worst-case with the CHP running 24/7. The boilers will be used for emergency use only, if the CHP is offline, to continue to provide heat to the ADs and, therefore, not considered necessary to further assess as the 2019 conclusion remains unchanged.

The combustion plant status in regard to Medium Combustion Plant Directive is provided in Table 3.4.

Table 3.4: Combustion plant details

	CHP	Boiler (back-up)	Boiler
Make/Model number	LH A412, Veolia	Eurograde burner ED10S/SG/3H	Strebel boiler RU2 - 8
Date that MCP became operational/was commissioned	March 2017	Prior to 2016	Prior to 2016
Thermal input (MWth)	1.23	0.78	0.46
Stack height (m)	10	6	6
Fuel used (biogas, diesel etc)	Biogas	Biogas and diesel	Biogas and diesel
Estimated total hours of operation per year	8760	Emergency use only	Emergency use only
MCPD and SG Regs status	Tranche B generator Existing MCP	N/A (>1MWth)	N/A (>1MWth)

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

[2] Environment Agency (2018). Emissions from specified generators: Guidance on dispersion modelling for oxides of nitrogen assessment from specified generators. Version 1

flares is undertaken every six months, one as an annual service and the other an interim six-monthly service.

The site is considered to have a correctly sized CHP unit for the gas generated.

However, at the time of writing, a combination of equipment issues on site have impacted the gas quality and the measured flare hours shows the site has experienced around 20% flaring (of time, pro-rated to annual from Sept 2024-Jan 2025). Work to address the site issues is in progress.

The CHP is planned to be retained as it is considered correctly sized for a stable operation of the site assets.

The flare is planned to be replaced in AMP8 (based on emission testing results of similar flares), this is scheduled to be in operation by 29/05/2026 in line with the planned works schedule provided to KS (EA) on 17/01/25.

This includes related equipment replacements to 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 flare once the appropriate design has been completed.

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_BioRA_FUL 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 overall magnitude of the risk associated with bioaerosols emissions from the Site is considered to be ‘low’ to ‘medium’. Operation of the Site is therefore unlikely to lead to significant impacts at nearby sensitive receptors from bioaerosol emissions. This is primarily due to the ‘wet’ nature of several processes undertaken at the Site and the control measures in place which are considered to be effective at reducing and containing emissions of bioaerosols, inhibiting the pathway between source and receptor. Therefore, 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"[3] 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.

The Substantial Pollution Incident register in Landmark's Envirocheck report (281861584_1_1) has been used to provide details of pollution incidents within the past five years. According to the report, there have been no pollution incidents to controlled waters recorded within 1km of the site in the last five years.

3.2.3.1 Emissions to water (other than sewers)

The Substantial Pollution Incident register in Landmark's Envirocheck report has been used to provide details of pollution incidents within the past five years (2019-2023). There have been no pollution incidents to controlled waters within 1km of the site.

According to the Operator's pollution incident register, in the past five years (2019-2023), one category 3 incident (minor incident) and one category 2 incident to water have been recorded. However, both pollution incidents have been confirmed as not substantiated or related to the STC.

There are no groundwater source protection zones (SPZ), but one groundwater abstraction point within 250m of the Site, located 194m southwest of the site operated by Liddell Enterprises Ltd.

All drainage water including surface or foul water is captured by the drainage network which returns all water to the head of the works for treatment.

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

There are no direct potentially contaminated discharges to groundwaters. Condensate from the flare, CHP and the biogas is captured in 4 No. condensate pots and is discharged to drainage and directed to the inlet works.

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 as there is no drainage on site. Any liquid waste will either be reused or discharged to the adjacent Fullerton WTW and will undergo treatment through the works before being discharged under an existing water discharge permit. On-site

[3] 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

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 the Site is presented in document reference 790101_MSD_DrainagePlan_FUL.

The stormwater 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 creation of a new hardstanding area.

If incoming flow is greater than the permitted WtW full flow to treatment (FFT) it overflows the storm weir to 4 No. storm tanks (5,200m^3) for holding. Settled storm sewage is returned by the storm pumping station for treatment just after the storm weir and before flow measurement.

Returns from the STC enter the WtW process downstream of storm separation and enter the primary settlement tanks (PSTs) distribution chamber and continue through the WtW process.

Therefore, it is not possible for return liquors to directly discharge into the environment from the installation, without it receiving full treatment in the WtW.

Tankered trade and domestic waste, including cess and chemical toilet waste, is inhibited to not discharge to the works during storm.

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.

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. Condensate is collected in condensate pots which return to the inlet works for treatment in the WTW.

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 the suitable storage vessels, the provision of bunding and the present of a contained drainage system.

3.2.3.4 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 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 not considered to be required.

3.2.4 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. There are 3 sensitive receptors located within 500m, 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.

The site is located 500m southeast of the village of Goodworth Clatford, which is approximately 4km south of Andover. The area surrounding the site is predominantly agricultural with a few small developments including two residential properties (formerly staff accommodation) directly to the east of the Site (at the site entrance, 15m from the inlet works). Immediately to the north is Fullerton Solar Farm and 216m north is an active oil well operated by Igas Energy Limited with agricultural fields separating the site from the village of Goodworth Clatford 700m north of the site. To the east, south, and west agricultural fields surround the site with areas of residential buildings. To the north west lies agricultural fields as well as Goodworth Clatford village, located 500m from the site.

During the last five years, the site has received one odour complaint, in 2021. However, the complaint has been confirmed as not substantiated or related to the STC.

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 January 2025, which identifies potential odour emissions from the site operations and procedures to manage, control and minimise odour impacts. It sets out the procedures for engaging with neighbours and how the Operators 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 Environment Agency's H4 Odour Management guidance (2011) (document reference 79101_MSD_OMP_FUL January 2025). The level of odour risk from the Site is considered to be low, as shown in Appendix B, so the OMP provides sufficient mitigation.

3.2.5 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.

All key sludge and wastewater treatment processes of the Site are enclosed, only the aeration lanes and final settlement tanks are open.

The sludge cake is stored in 14 No. bays, 6 No. are reserved for the site's own digested, dewatered cake, and 8 No. for imported cake, grit and screenings (and other solid waste from sewer cleaning e.g. vactor). The dewatered cake from the centrifuges is transported by conveyor to a receiving bay, and then moved to a cake bay for maturation. Drop height of the conveyor is kept to a minimum and once in a bay is not moved until it is ready to be removed from site.

Although the site has been screened as being within (250m) of sensitive receptors (see Appendix A), a Dust Management Plan is not considered to be required since operations and waste types use on-site cause minimal dust emissions and appropriate mitigation is in place.

3.2.6 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 EMS227. The Site has no reported issues with pests. The site has 12 visits per year, by a contractor and if there is an increase in pest issues, a request is made for additional contractor visits. Bait boxes are also kept on site in case of infestation.

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.

3.2.7 Human health and environment safety

3.2.7.1 Visual impacts

The WTW site was built in 1969, with the STC developed later in 1995. The Site is located in a rural area on the outskirts of the village of Fullerton, near Andover in Hampshire and is surrounded by agricultural land. The nearest sensitive human receptors are two residential properties directly adjacent to the site entrance to the east of the Site, and a solar PV plant (place of work) which is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m southwest of the site, a residential property 500m north west of the site and a petrol station approximately 700m north west of the Site.

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 Site is surrounded by agricultural land and is located away from residential properties. The boundary is surrounded by trees and assets are low to ground or below ground. Therefore, visual impacts from the Site are considered to be low.

3.2.7.2 Site Security

Activities are managed and operated in accordance with the management system.

The site is fully enclosed by perimeter fencing. Three quarters of which is 10ft chain-link fencing with barbed wire, quarter is barbed wire fencing lined with trees. The gates are manually operated and locked out of hours. There is CCTV above the cess plant. 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.

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

3.2.7.3 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 related to the flood risk from surface water, rivers and the sea.

The site is located at low risk of flooding from rivers, the sea and surface water, meaning that the annual chance of flooding is less than 0.1%.

The drainage from the Site is rerouted to the returns well then the head of the works. 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 spiled 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, and no historical floods have been recorded.

Since no changed 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 changed do occur these are understood to be either of a relatively minor nature or are unlikely to significantly alter existing development footprints.

3.2.8 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), Hampshire 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 Hampshire Wildlife Trust. 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 3.5: Results of initial screening of natural habitats and ecology for Fullerton STC

Natural habitats and ecology	Fullerton STC
Statutory designated European sites within 10km of the Site boundaries	
Special Areas of Conservations (SAC)	
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)	2
Marine Conservation Zones (MCZs)	
National Nature Reserves (NNRs)	
Local Nature Reserves (LNRs)	
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)	
Hampshire Wildlife Trust Reserves	
Priority habitats within 2km of the Site boundaries	
Priority habitats	8
Protected species	
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	
Species of nesting birds: within 200m buffer of the Site boundaries	
Bats: within 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 500m buffer of the Site boundaries and terrestrial habitat within 10m	

There are no statutory designated European sites within 10km of the Site. Therefore, 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, groundwater and 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.

Two SSSIs are located within 2km of the site boundary. The River Test in particular is located approximately 1810m from the site boundary. Harewood Forest South Ancient Woodland is located approximately 731m from the Site, however it is considered unlikely that the Site activities will impact these habitat sites. This is covered in Appendix B along with appropriate mitigation.

It is considered very 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

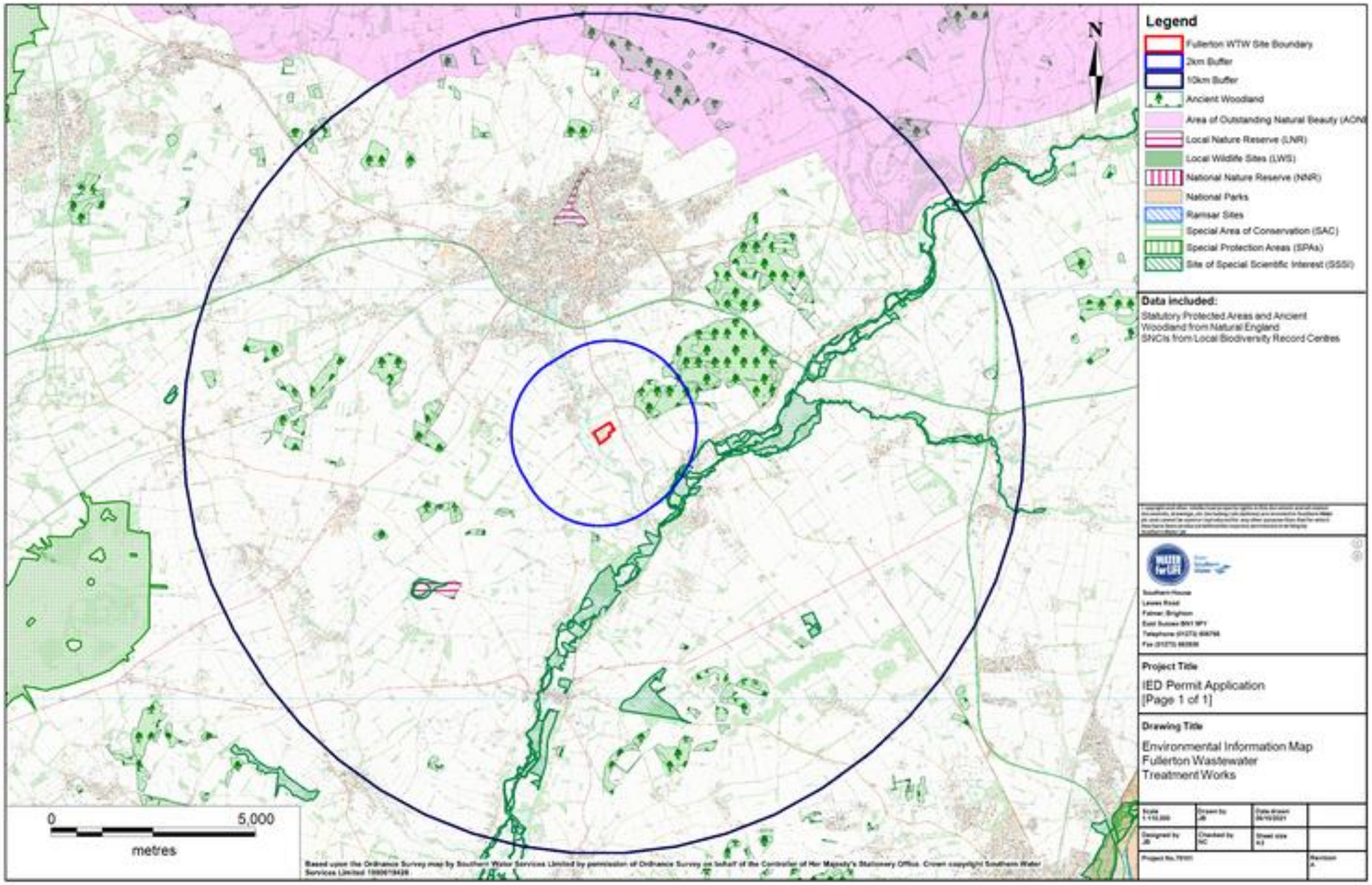


Figure A 2: Non-statutory designated habitat sites within 2km of the Site

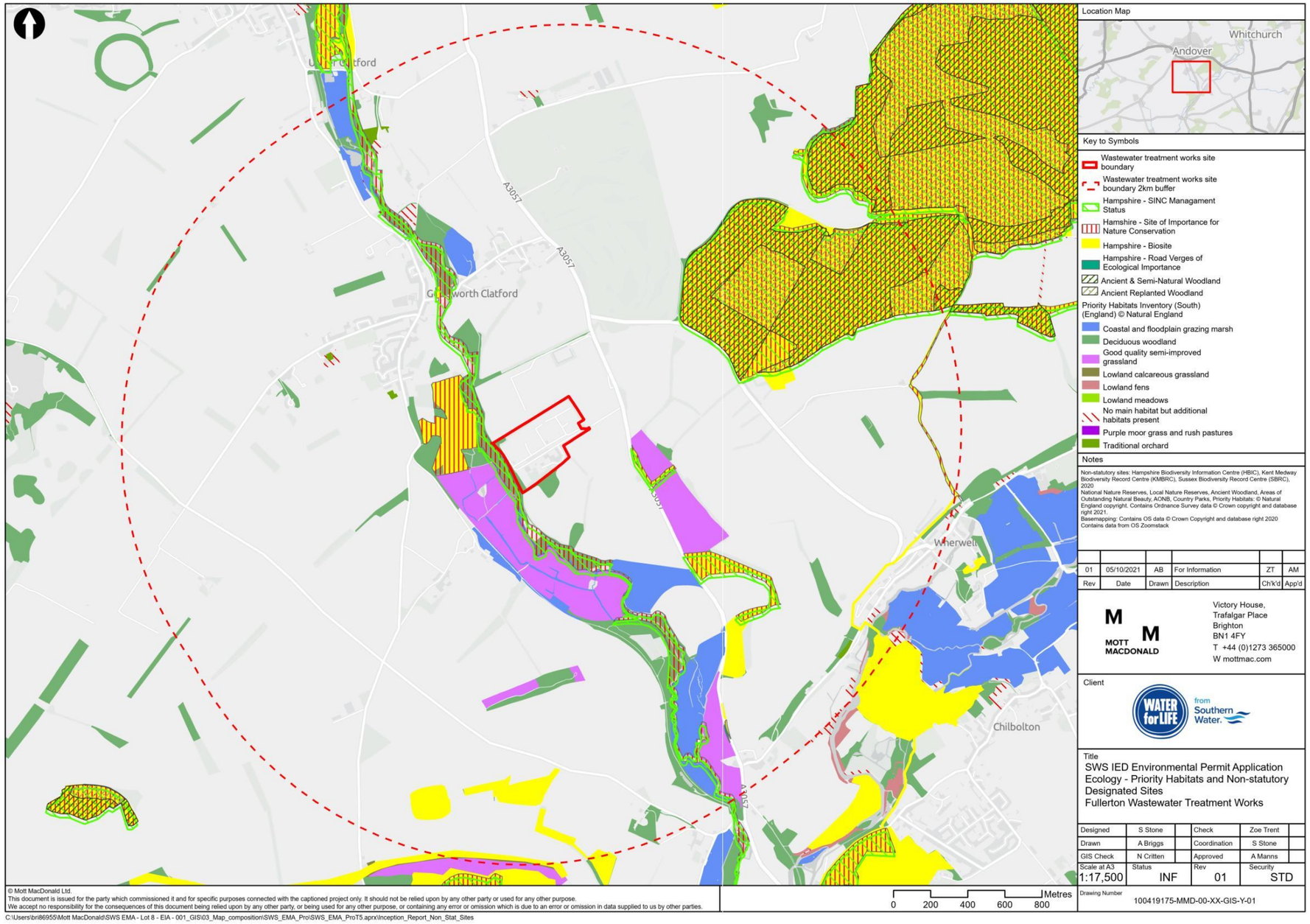


Figure A 3: Designated heritage sites within 1km of the Site

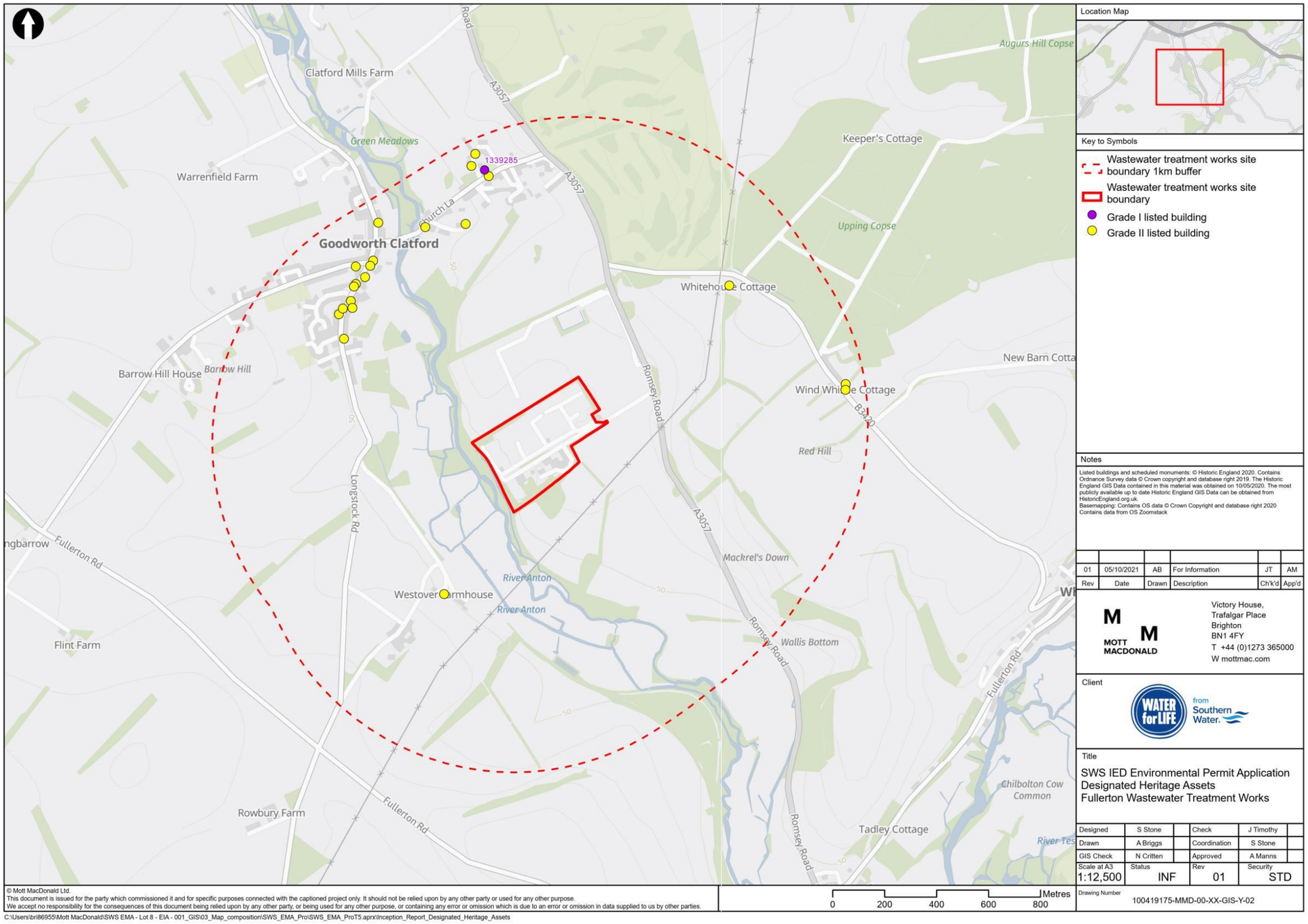
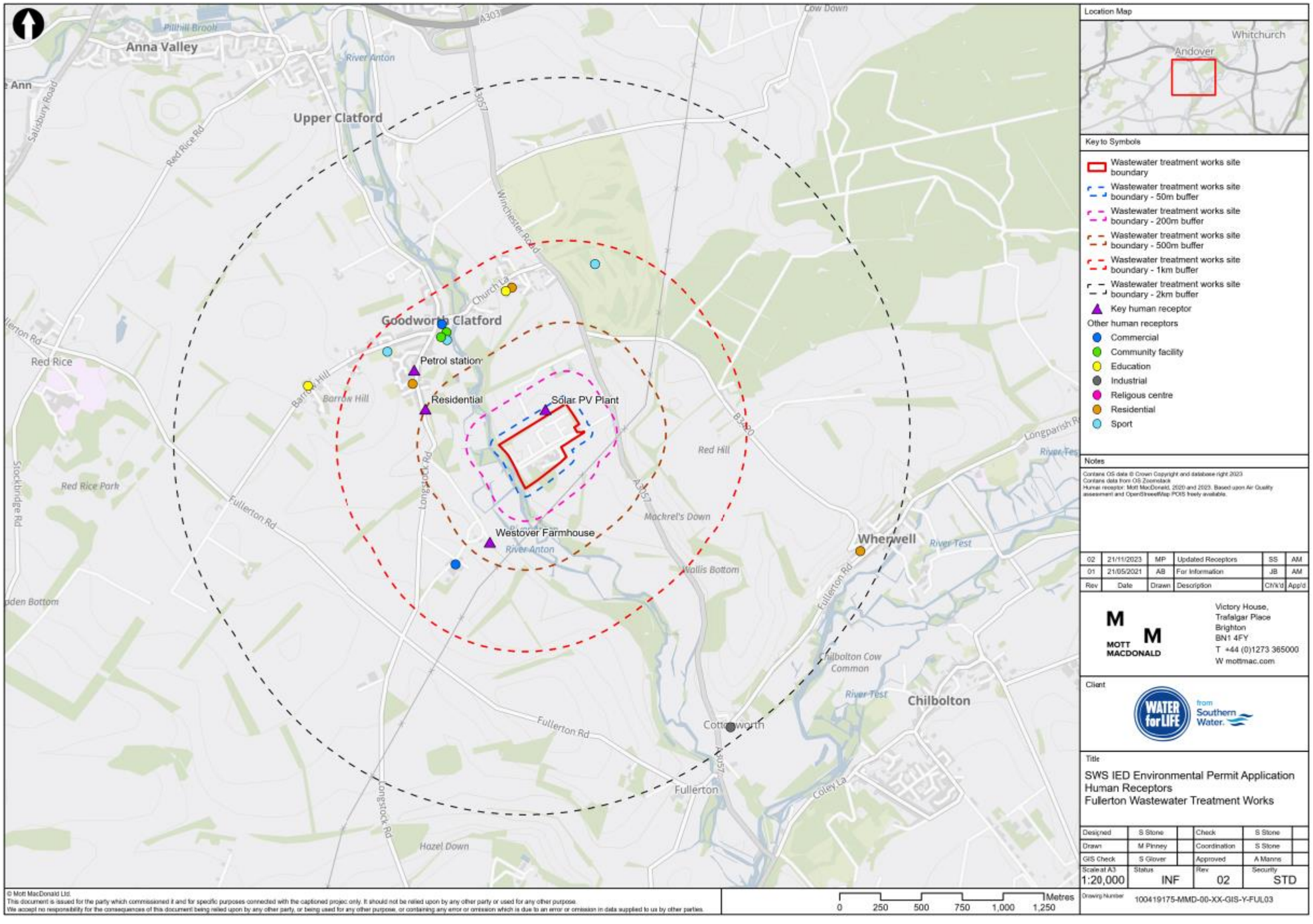


Figure A 4: Sensitive receptors within 2km of the Site



B. Environmental Risk Assessment Tables

Emissions to air									
Data and information				**Judgment**				**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 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	Medium	High	High	There is potential for exposure to anyone living close to the Site or at locations where members of the public might be regularly exposed. The operation of the flare is used during emergencies, such as during CHP maintenance and downtime, where it is used less than 10% of the time. In any other scenario the imports of the biogas to the CHP unit will be controlled to reduce the time of operation of the flare where possible.	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 per gas holder (2 total) Operational record including date, time duration of pressure relief events and calculated annual mass release. Linked to SCADA. The site is considered to have a correctly sized CHP unit for the gas generated. However, at the time of writing, a combination of equipment issues on site have impacted the gas quality and the measured flare hours shows the site has experienced around 20% flaring (of time, pro-rated to annual from Sept 2024-Jan 2025). Work to address the site issues is in progress. The CHP is planned to be retained as it is considered correctly sized for a stable operation of the site assets. The flare is planned to be replaced in AMP8 (based on emission testing results of similar flares), this is scheduled to be in operation by 29/05/2026 in line with the planned works schedule provided to KS (EA) on 17/01/25. This includes related equipment replacements to 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 flare once the appropriate design has been completed.	Medium
Domestic properties, local human population, local	Releases of particulate matter (dust) from cake and storage bays and transport off-site	Nuisance, loss of amenity.	Air transport then deposition	Medium	Low	Low	Local residents and the surrounding environment are often sensitive to dust.	No wastes consisting solely of dusts are accepted. General operations at the Site do not create dust materials.	Low

amenity, site staff, visitors and offices. Haul roads, public highways.							Dust may be produced from dirt deposits from vehicles or other users of the haul road and treatment and storage of cake. There are 14 cake bays on site, 8 used for imported sludge cake, 6 used for indigenous cake (one currently in use for post centrifuge reception) Waste types on site are unlikely to cause significant dust emissions, therefore, the magnitude of risk is considered to be low.	Cake is stored in open bays, but this material is not dusty by nature even when it is dry. Cake is stored in 14 open cake bays in the main building on site. Cake is moved around the site via a telehandler and is centrifuged before being transported via a 10ft elevated conveyor to a receiving bay and the cake bay. 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. 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, except for the PDSTs and cake bays, which are open/uncovered. Appropriate wash up facilities are also provided for drivers to clean the vehicles after loading or unloading in sludge storage bays and loading points, hose wash facilities are used at waste receptions.	
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 nearest sensitive human receptors are two residential properties, located directly adjacent to the east of the Site entrance. There is also a solar PV plant (place of work) is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m southwest of the site, a residential property 500m northwest of the site and a petrol station approximately 700m northwest of the Site. The aeration lanes, cake bays, PE tanks and final settlement tanks are uncovered Emergency situations such as failure of the flare of 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. All key sludge and wastewater treatment processes of the Site are enclosed, only the aeration lanes, cake bays, Final effluent (FE) tanks and primary settlement tanks are open. SWS plan to cover the PDST as part of the IED improvement scope. Ongoing residual biogas testing and LDAR activities (OGI camera) will help determine the most appropriate abatement solution for this tank, which will inform the connections required for the new roof. The PSTs, aeration lanes and FST's are uncovered, however these involve 'wet' processes so the risk of resuspension of bioaerosols is minimised. The anaerobic digestion vessels are sealed and biogas is extracted from the vessels. This minimises the risk of bioaerosols affecting operational staff. Telehandlers remove sludge cake from site daily by ACS once ready for recycling in agriculture. A maximum of eight loads per day (four to six on average) are received of imported sludge cake via RoRos. The sludge reception is enclosed in a building, 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 very 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. 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 bio-aerosol risks are low to medium.	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. Damage to drainage system. Spillage of raw materials of sludge/liquor during delivery/storage. Contaminated run off from cake storage e.g. containing suspended solids.	Aquatic or chronic effects to aquatic life, contamination, and water deterioration of water quality.	Direct run-off from the Site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer. Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Medium	High	High	Potential for leaks from digestions tanks, storage vessels/bays and drainage system which may cause contamination or deterioration of surface water quality. The hardstanding and pavement across the site is in reasonable condition, with a few cracks and potholes noted along the site road. The whole site is not bunded, but most tanks are. Where hardstanding is in place, all water flows to the drainage network which diverts all water to the head of works. Quantities of liquids stored are generally low. The nearest river to the Site is the River Test and is located approximately 40m west. No substantiated pollution incident to water, air, or land has been recorded within 250m of the Site.	The Site drainage plan is documented and all staff are trained in the event of emergency or accident. Impermeable surface and secondary containment, in the form of constructed bunds or portable bunds, is in place around storage areas of all wastes and raw materials surrounding the STC and WTW. Bunding will also be implemented for all raw material storage. All skips are and bins are stored on a hardstanding area. As part of the BAT requirements and in accordance with the recommendations of the Construction Industry Research and Information Association (CIRIA) standard 736 risk assessment, damaged bunding and hardstanding are to be repaired throughout the Site. 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.	Medium
Abstraction from watercourse downstream of facility (for agricultural or potable use).	Spillage of liquids, contaminated rainwater run-off from waste e.g. containing suspended solids.	Acute effects, closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains etc. then abstraction.	Low	Medium	Low	Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off. No groundwater abstractions are present on-site. No substantiated pollution incident to water, air or land has been recorded within 250m of the Site.	The sludge cake is stored in 14 No. bays, 6 No. are reserved for the site's own digested, dewatered cake, and 8 No. for imported cake, grit and screenings. Digested cake is imported for temporary to allow for extended maturation where capacity is not available elsewhere. Cake is imported from Millbrook, Budds Farm and Ford predominantly and are stored in separate bays. The bays are cleaned out after use prior to refilling. Grit and screenings are imported to 1 No. designated cake bay for drying out and bulking up, prior to treatment or disposal elsewhere. This bay is divided in two halves. One half is used for grit and screenings and the other half is used for vactor waste. The liquid fraction goes to the cess/trade waste reception point. The dewatered cake from the centrifuges is transported by conveyor to a receiving bay, and then moved to a cake bay for maturation. Drop height of the conveyor is kept to a minimum and once in a bay is not moved until it is ready to be removed from site. 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 into the head of the works with no discharge outside of the Site boundary. Regular inspections of the Site drainage systems and other equipment are undertaken, with any repairs and maintenance carried out if necessary. All complaints and other incidents are recorded in the site diary including actions taken.	Low
Groundwater, land and surface water	Spillages of liquids, contaminated rainwater run-off from wate e.g. containing suspended solids. Sludge/liquid spillages as a result of loss of tank/pipe integrity carelessness during transfer or overfilling	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction at borehole or intake.	Low	Medium	Low	Potential for leaks from digestion tanks and storage vessels. Site infrastructure and hardstanding is generally in good condition. The hardstanding and pavement across the key areas of the site is in decent condition, but the site road has a number of cracks and potholes Quantities of liquids stored are generally low.		Low

								The condensate is clean, uncontaminated water and is small in quantity.	
Groundwater, land and surface water	Spillages of sludge/liquids during transfer of imported and indigenous/unknown sludge and liquids from tankers.	Acute or chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole or closure of abstraction intakes. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality. Pollution of water or land.	Transport through soil/groundwater then extraction/ abstraction at borehole or intake.	Low	Medium	Low	Potential for spillage during transfer of liquid/sludge from tankers. Sludge currently imported into site from over 30 sites on average. Sludge cake is delivered in sealed RoRo containers and is unloaded inside main building. Cake is transported around the site via telehandlers (20 tonnes per day on average) and conveyors.	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 the acceptance of tankered trade waste (EMS387), waste duty of care (EMS380), operational waste procedures (EMS381) and waste rejection (EMS488). Compliance with the waste duty of care requirements to ensure waste accepted meets the permit conditions and relevant legislation. All liquid run off will be captured in the drainage network and returned to head of works.	Low
Groundwater, land and surface water	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	Condition of underground pipework is unknown. A Leak Detection and Repair Plan will be developed for 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 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, and there have been no previous floods recorded on the 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. 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 are often sensitive to noise and vibration. No noise complaints have been received in the last five years. The nearest sensitive human receptors are two residential properties, located directly adjacent to the east of the Site entrance. There is also a solar PV plant (place of work) is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m southwest of the site, a residential property 500m northwest of the site and a petrol station approximately 700m northwest of the Site.	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. 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. No noise complaints have been received in the last five years. The nearest sensitive human receptors are two residential properties, located directly adjacent to the east of the Site entrance. There is also a solar PV plant (place of work) is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m	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. 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.	Low

							southwest of the site, a residential property 500m northwest of the site and a petrol station approximately 700m northwest of the Site.	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.	
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	Low	Medium	Low	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. There has been one odour complaint in the last five years, however it was not substantiated to the STC. The nearest sensitive human receptors are two residential properties, located directly adjacent to the east of the Site entrance. There is also a solar PV plant (place of work) is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m southwest of the site, a residential property 500m northwest of the site and a petrol station approximately 700m northwest of the Site.	Odours are likely to be generated and released due to the nature of the wastes. There are two odour control units (OCU) serving the STC, which utilises Monashell and Monafil biofilters. Both units are currently out of service. Surveys and investigations to return to service and improvements to meet BAT are ongoing and will form part of the improvement plans. Southern Water is progressing detailed survey and assessment of the existing OCUs to understand any additional measures, including testing parameters, that may be required to meet BAT 34 and 53. Cake bays, primary settlement tanks and FE tanks are open, however these should not emit malodours. Leak detection (methane gas analyser) is also installed on biogas holder/s to ensure any leaks from the inner bag are detected. Any leaks detected on the biogas system would always be fixed immediately by Southern Water due to the process safety risk of posed by biogas. Other odour mitigation measures implemented on-site include placing covers on containers and limiting the height of rising sludge. The removal of biosolids off-site will be undertaken as soon as practically possible whilst considering prevailing weather conditions. 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. Cake is stored in 14 cake bays on site, imported cake is processed immediately, and is transported around the site via telehandlers conveyors. All waste is imported and exported in covered lorries or contained in tankers. Any complaints received are investigated and actioned in line with the complaints procedure.	Low

Local human population, domestic properties, site offices.	Spillages 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. The nearest sensitive human receptors are two residential properties, located directly adjacent to the east of the Site entrance. There is also a solar PV plant (place of work) is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m southwest of the site, a residential property 500m northwest of the site and a petrol station approximately 700m northwest of the Site.	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. All spills are recorded in the site diary including actions taken.	Low
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. The nearest sensitive human receptors are two residential properties, located directly adjacent to the east of the Site entrance. There is also a solar PV plant (place of work) is located approximately 50m from the boundary of the Site. Other sensitive receptors include a farmhouse approximately 400m southwest of the site, a residential property 500m north west of the site and a petrol station approximately 700m northwest of the Site. Fugitive releases 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). H_2S point source emissions to air are controlled in accordance with emission limits.	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 environmental 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. Cake that is delivered to the Site is transported in tankers.	All vehicles leaving the site which are transporting waste are to be covered to prevent waste/materials escaping from them. 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. Regular inspections for litter and debris are undertaken. Nuisance management measures are included in the EMS and the site specific management plant. Details of the procedures SWS follows with regards to the controls 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 and 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 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. Any mud or sludge arising from activities on-site is cleared up promptly. All hardstanding is cleaned and swept on a regular basis. There is a wheel wash located on site, hose wash and rag facilities are available at waste receptions.	Low

								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 where necessary. All vehicles leaving the Site, transporting waste/ cake are to be covered to prevent waste/materials being blown from them.	
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 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. The Site has no reported pest issues	Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented. Pest control measures are implemented under EMS227. The waste site adjacent to the Site uses birds of prey to deter birds, the presence of pigeons and gulls is reduced. The site has 12 visits per year, by a contractor, if there is an increase in pest issues, then a request is made for extra contractor visits. 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
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	Low	Medium	Low	Permitted waste types are sludges/bio-solids, which may contain pathogens, so any waste washed off-site will add to the volume of the local post-flood clean up and may be hazardous to human health. The site is located within a Flood Zone 1 (less than 1 in 1,000 annual probability, and there have not been any reported flooding issues from the Site previously.	The drainage network sends water to the head of the works for treatment. There are no direct potentially contaminated discharges to controlled surface waters. Activities to be managed and operated in accordance with a management system and management plans and procedures implemented, including the removal of spilled waste and other pollutants (such as use of spill kits and mobile bunds) before these could enter any flood waters if an event was to occur.	Low
Local human population and / or livestock after gaining unauthorised access to the installation.	All on-site hazards: machinery, wastes and vehicles.	Bodily injury, death.	Direct physical contact.	Low	Medium	Low	Potential injury to on-site personnel as a result of vehicle movements or equipment malfunction or misuse. Direct physical contact is minimised by activity being carried out within enclosed digesters so a low magnitude risk is estimated. Contact with waste is minimal with 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.	Low

								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 permitted on-site without a suitable permission to work and qualification. The main site entrance is secured by a manually operated gate which is locked out of operating hours. Three quarters of the perimeter fencing is a 10ft tall chainlink fence with barbed wire. The remaining quarter is a 3 wired barbed wire fence with trees. The Site only has a CCTV system observing the cess plant. The Site is staffed during shift times (Monday-Friday: 7am-5pm, Saturday: 7am- 1pm and Sunday 7am-11am). Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements. Key sludge treatment and wastewater treatment activities undertaken within enclosed systems. Under current conditions, five or six 29m3 tankers per day deliver sludge to the Site and sludge can enter the site 24/7. Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is moved to cake bays once a trailer is full. Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by site staff and maintenance contractors. 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 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 uncontolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.	Air transport. Direct run-off from site across ground surface, via surface water drains, ditches etc. Indirect run-off via the soil layer Transport through soil/ groundwater then abstraction.	Low	High	Medium	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. An explosion could cause injury to local residents and site staff from flying debris. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Permitted waste types limited to sludges and liquids.	The key sludge treatment and WTW processes are undertaken within enclosed systems such as the AD and biogas systems. Sludge storage tanks are covered and enclosed except the PDSTs and the cake bays. Those that are covered are either extracted to the OCUs or connected to the biogas system. Activities are managed and operated in accordance with the EMS, H&S and O&M manuals – this includes site security measures to prevent unauthorised access, fire and spill management. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification. Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers. 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.	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.		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	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Risk of accidental combustion of waste is minimal. Permitted waste types limited to sludges and liquids.	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. Emergency operating procedures are in place. Adequate firefighting measures are implemented on-site. 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. The main site entrance is secured by a manually operated gate which is locked out of operating hours. A visitor signing-in book is used. Three quarters of the perimeter fencing is a 10ft tall chainlink fence with barbed wire. The remaining quarter is a 3 wired barbed wire fence with trees. The Site only has a CCTV system observing the cess plant. The site is manned during operating hours, with several operatives available on call. Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is removed once the cake bays are full. Cake is imported to site from other SWS sites for further maturation, as required. The cake is delivered by covered tippers. Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by site staff and maintenance contractors. 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. 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	Low
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	Emissions to air, land or water may cause harm to and deterioration of air, land or water. Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff. Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings. Risk of accidental combustion of waste is minimal. Permitted waste types limited to sludges and liquids		Low

								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 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
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 water drains, ditches etc. Indirect run-off via the soil layer.	Low	Medium	Low	Physical disturbance and emission to air, water or land may cause harm to and deterioration of nature conservation sites. Two SSSI's, are located within 2km of the Site, One ancient woodland is located within 2km of the Site,	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. 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
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 disturbance or removal of habitats.	Transport through soil/ groundwater then abstraction.	Low	Medium	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 very unlikely, therefore, that Site activities would lead to the disturbance or removal of terrestrial habitats. Two SSSI's, are located within 2km of the Site, One ancient woodland is located within 2km of the Site.		Low

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