



# **Sandown Sludge Treatment Centre Environmental Permit Application**

Environmental Risk Assessment  
790101\_ERA\_SAN

December 2023



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# Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	15/12/20	Alex Symeonidis	Anita Manns	Ian Scott	First Draft
B	06/05/21	Alex Symeonidis	Anita Manns	Ian Scott	Second Draft
C	04/06/21	Alex Symeonidis	Shannon Stone	Anita Manns	Third Draft
D	25/06/21	Natalia Cunningham	Shannon Stone	Anita Manns	Final Draft
E	07/12/23	Isobel Moss	David Dray	Anita Manns	Resubmission

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**Document reference** 790101\_ERA\_SAN December 2023

**Information class:** Standard

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# 1 Introduction

## 1.1 Background and scope

This document has been prepared to support the application for a new bespoke Installation Environmental Permit (hereafter referred to as 'the Permit') for the Sandown Wastewater Treatment Works (WTW) and Sludge Treatment Centre (STC) ('the Site') on behalf of Southern Water Services Limited ('Southern Water' or 'the Operator'). The Site does not currently hold an Environmental Permit for its WTW and STC activities.

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'<sup>1</sup>.

## 1.2 Assumptions and limitations

The assessment of effects has been based on information sourced from relevant and applicable legislation and 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.

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<sup>1</sup> 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: East Yar Road, Sandown, Isle of Wight, PO36 9AX

National grid reference: SZ 6027 8523

A plan showing the boundary of the scheme is provided in 790101\_MSD\_SiteLayoutPlan\_SAN December 2023.

### 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. Within 250m of the Site, areas of peat, Head deposits and Beach deposits are present, adjacent to the Alluvium.

Made ground is also shown to be present on the eastern half of the Site (associated with landfilling), which indicates the thickness of made ground in this area exceeds 2.5m. There may, however, be lesser thicknesses of made ground across the Site associated with development.

The Site lies upon the Wessex Formation of the Wealden Group, constituting interbedded mudstone and subordinate unconsolidated sandstone and some ironstones. This sedimentary bedrock formed between 126 and 145 million years ago in the Cretaceous Period. Sandstone units generally fine-upwards grading up into mudstones from basal conglomerates. The Wessex Formation thickness is estimated to be around 580m on the Isle of Wight.

There is a fault located 670m west of the Site.

### 2.3 Hydrogeology

The Bedrock and superficial aquifers underlying the Site are both designated by the Environment Agency as Secondary A aquifers. The Wealden Group, however, presents rocks with essentially no groundwater present. Small yields of water have been obtained from subordinate sandstones and limestones.

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 susceptible to extreme flooding from rivers or sea without flood defences. There are no flood defences present.

### 2.4 Hydrology

The River Yar flows west to east along the north-eastern boundary of the Site, connecting into Bembridge Harbour approximately 5km downstream. A ditch network is present in the fields to the east of the Site, with one ditch following the western boundary of the water treatment works, although it is unclear if this connects with the River Yar. Based on the Ordnance Survey master-map network, there are a further ten unnamed surface water drainage features within 50m of the Site. The English Channel is present approximately 650m to the south of the Site.

Three discharge consents are reported to have been issued to Southern Water Services Ltd for the Site, all for sewage discharge, although only one is currently active. Two consents

discharged into the Channel, whilst the other discharged to a freshwater river (likely the River Yar). Southern Water Services Ltd have also operated an additional two sewage discharge consents within 250m that discharge into the River Yar (Eastern Yar).

## 2.5 Protected Areas

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

- Solent and Dorset Coast Special Protection Area (SPA), located 590m south;
- South Wight Maritime Special Area of Conservation (SAC), located 590m south;
- Solent & Southampton Water SPA, Ramsar site, located 1.5km north-east;
- Solent & Isle of Wight Lagoons SAC, located 3.6km north-east; and
- Bridlesford Copses SAC, located 6.3km north-west.

The national statutory designated sites located within 2km of the Site are as follows:

- Bembridge Marine Conservation Zone (MCZ), located 560m south of the Site;
- Bembridge Down Site of Special Scientific Interest (SSSI), located 650m south-east; and
- Brading Marshes to St. Helen's Ledges SSSI, located 1.5km north-east.

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

- Sandown Meadows Wildlife Trust Reserve, located 60m north and is separated from the Site by the A3055;
- Marshcombe Copse ancient woodland, located 680m north-east;
- Northland Copse ancient woodland, located 1.2km east;
- Kelly's Copse ancient woodland, located 1.4km north;
- Rowdown Copse ancient woodland, located 1.6km north-west;
- Alverstone Mead Wildlife Trust Reserve, located 1.7km west;
- Alverstone Lynch ancient woodland, located 1.7km north-west; and
- Centurion's Copse ancient woodland, located 1.8km north-east.

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

- Coastal and floodplain grazing marsh occupying extensive areas adjacent and to the east and north of the Site;
- Lowland fens located 100m south-east of the Site and comprising one small area. Larger narrow areas are present at 1.3km distance to the west;
- Reedbeds located 120m south. Several small areas are present within the study area;
- Maritime cliff and slope 700m south-east of the Site. A narrow area extended east is present along the coastline and is also present to the south-west;
- Deciduous woodland 680m north-east and comprising several small areas which are mostly connected to other areas of woodland;
- Lowland dry acid grassland 1.4km west comprising one medium to large sized area;
- Wood-pasture and Parkland 1.6km north comprising one large block;
- Lowland heathland located 1.7km south-west made up of one large area adjacent to the dry acid grassland; and
- Lowland calcareous grassland 1.9km east. Limited area present within the survey area.

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



## 2.6 Other notable features

### 2.6.1 Properties

As shown in Figure A.4 in Appendix A, three sensitive receptors lie within 100m of the Site. The closest sensitive receptor is an estate agent (place of work), which lies 50m west of the Site. Another workplace and a residential property lie within 65m and 70m southwest of the Site.

## 3 Environmental risks

### 3.1 Methodology

The ERA has been undertaken by identifying hazards and source-pathway receptors and assigning a probability of exposure and a severity of consequence. These are assigned as described in Table 3.1 and Table 3.2 and are based on the generic risk assessments used for standard rules “SR2012 No11 and No12”, “SR2009 No 4” and “SR2008 No 19”, applicable to anaerobic digestion operations including use of the resultant biogas.

The probability and severity scores are then combined within a matrix to give an overall magnitude of the risk. This matrix is shown in Table 3.3 and is intended to illustrate the general approach to scoring.

Risks are categorised as either low, medium or high; this ranges from being a nuisance in some instances to potential health risks in others.

**Table 3.1: Severity Index**

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

**Table 3.2: Probability index**

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

**Table 3.3: Magnitude of risk**

Magnitude of risk	Probability index		
	Low	Medium	High
Severity index			
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

A high-level initial review of combustion activities on the Site has been carried out, using readily available information provided by Southern Water. The Environment Agency's 'Risk assessments for your environmental permit'<sup>2</sup> methodology was used, and has informed the risk assessment presented in Appendix B. The initial review has been considered taking into account some of the following information:

- Emission points and pollutants released from the Site;
- Effective stack heights;
- Quantification of pollutants and emission rates;
- Background pollutant levels;
- Pollutant concentrations and comparison against relevant Environmental Quality Standards (EQS)/Environmental Assessment Levels (EALs); and
- Emission Limit Values.

For potential human health effects, the pollutant of key concern is NO<sub>2</sub>, although emissions of SO<sub>2</sub> and CO have also been considered. Effects of atmospheric concentrations of NO<sub>x</sub> and SO<sub>x</sub> have also been assessed with respect to sensitive ecological sites. The method of the assessment has taken a conservative approach by assuming worst case conditions for a number of aspects including emissions characteristics, operating scenarios and metrological conditions.

An Air Quality Risk Assessment has been undertaken to assess the impacts from point sources emissions to air from the site. This is currently being approved for issue and will be submitted by 12<sup>th</sup> January 2024.

The flare is understood to operate during emergencies such as during CHP maintenance or downtime, or due to operational issues. Maintenance of the flare is undertaken annually. Overall impacts of all air pollutants are considered to be low.

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.

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<sup>2</sup> Environment Agency (2020) Risk assessments for your environmental permit .Available online at: <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

### 3.2.2.2 Bioaerosols

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

The sensitive receptors in relation to the Site are shown in Appendix A. The Site lies within 250m of three sensitive human receptors and, therefore, a bioaerosols risk assessment has been undertaken and is provided with the supporting documents of the permit application (Document reference 790101\_ERA\_BioaRA\_SAN 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 Site, to prevent the release of bioaerosols. These include methods and principles outlined in the Environment Agency's "Guidance on the evaluation of bioaerosol risk assessments for composting facilities"<sup>3</sup> 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 the Substantial Pollution Incident register in Landmark's Envirocheck report (Reference no: 263473644\_1\_1), no substantiated pollution incident to water, air or land has been recorded within 250m of the Site within the past five years. 13 No. Category 4 incidents (little or no impact) were recorded in the last five years according to the Operator's pollution incident report, all of which occurred in 2019 and related to near misses. No Category 3 incidents (minor incident) were recorded during the same period.

### 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. One Category 4 (little or no impact) incident to water was reported in Southern Water's Site incident report in the last five years, and occurred in 2018.

The Site lies within an area of groundwater flooding capability with potential flooding to property situated below ground level and at the surface. No groundwater abstractions are present on-site.

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<sup>3</sup> 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 drainage network sends water to the head of the works for treatment. There will be no point source emissions from the Site. There are no direct potentially contaminated discharges to controlled surface waters.

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 discharges to a sealed sump and is returned to the head of the WTW. The condensate is clean, uncontaminated and discharges are small in volume.

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 adjacent Sandown WTW and will undergo treatment through the works before being discharged under an existing water discharge permit. On-site WTW effluent will meet the requirements of the existing 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 WTW via a return pumping station at the north-west of the Site. A drainage plan of the Site is presented in 790101\_MSD\_DrainagePlan\_SAN.

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 and containment areas.

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.

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

Three different polymers used for sludge thickening and ferric chloride are stored in separate 1,000 litre (L) intermediate bulk containers (IBCs). Sodium hypochlorite is stored in a 30m<sup>3</sup> container, sodium hydroxide (caustic soda) liquor in a 2,700L container and sulphuric acid in a 1,278L container; all are fully enclosed and bunded. All raw materials are handled and stored within the confines of the buildings on-site, or in IBCs in bunded areas, with the exception of biogas which is contained within the gas handling system. Releases of raw materials to land are

considered to be negligible, 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

Historically, the Site received noise complaints which were due primarily to the operation of one of the centrifuges. This has since been rectified with improved maintenance and servicing, and only one noise complaint has been received in the last five years, which was found to be associated with a third-party site.

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

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

### 3.2.5 Odour

A review of the nearest human receptors has been undertaken to establish the level of odour risk to the receptors before and after mitigation. Sensitive receptors to odour are users of the adjacent land, which may vary in their sensitivity to odour. Two are located within 250m and are shown in Figure A.4 in Appendix A.

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

The Site is located at the north-eastern extent of Sandown town close to residential areas. A caravan park, small industrial estate, and a limited number of residential properties are located to the west of the Site. The area to the north and east of the Site remains as undeveloped fields.

21 odour complaints have been received between 2018 to 2023. No further information is available on the description of complaints, actions taken or the timescale for rectification. The complaints have not been confirmed as substantiated or relating 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 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 low, as shown in Appendix B and the OMP provides sufficient mitigation.

The Odour Management Plan can be found in document reference 790101\_ERA\_OdourMP\_SAN December 2023.

### 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 stored in open bays 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.

### 3.2.7 Pests

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

A new contract for pest control is in place and the new service provider will review the current planned schedule for pest control for the Site and provide an updated plan.

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 not deemed to be medium or higher, 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 is located at the north-eastern extent of Sandown town. It has been in the current location since around 1940. To the west of the Site is a caravan park and small industrial estate, as well as a limited number of residential properties. The area to the north and east of the Site remains as undeveloped fields.

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 residential properties is obscured by hedges along the western site boundary. In addition, the STC and WTW is located in the central and north-eastern part of the Site away from these properties. Visual impacts from the Site are therefore considered to be low.

### 3.2.8.2 Site security

Activities are managed and operated in accordance with the management system. Access to site and waste is restricted by a 2.5m high chain link security fence. A 2.5m high galvanised steel, automated gate secures the main access and is controlled by the control room. The Site is manned 24 hours a day, 7 days a week. For visitors and unauthorised personnel an intercom system at the Site entrance is used. The site also benefits from up to 18 CCTVs positioned in strategic locations around the Site.

Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements.

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

### 3.2.8.3 Flood risk

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

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

The Site is susceptible to extreme flooding from rivers or sea without flood defences as it is surrounded by a flood plain. There are no flood defences present. The Site is considered to be a medium risk for flooding from surface water, corresponding to a chance of flooding each year of between 1 in 100 (1%) and 1 in 30 (3.3%).

Drainage from Site roads and reception areas lead to the return liquor pumping station which then returns to 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, including (but not limited to) the removal and clean-up of spilled waste material, including sludge, cake etc. and other pollutants (this may also include removal of used spill kits and mobile bunds) before these could enter any flood waters if an event was to occur.

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), Hampshire and Isle of White 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 & Isle Of Wight Wildlife Trust (HIWWT), 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 Sandown STC**

Natural habitats and ecology	Sandown
<b>Statutory designated European sites within 10km of the Site boundary</b>	
Special Areas of Conservation (SAC)	3
Special Protection Areas (SPA)	2
Sites of Community Importance (SCI)	
Ramsar sites	
<b>Statutory designated national sites within 2km of the Site boundary</b>	
Sites of Special Scientific Interest (SSSIs)	2
Marine Conservation Zones (MCZs)	1
National Nature Reserves (NNRs)	
Local Nature Reserve (LNRs)	
Areas of Outstanding Natural Beauty (AONBs)	1
<b>Non-statutory designated sites within 2km of the Site boundary</b>	
Local Wildlife Sites (LWS)	
Ancient Woodlands	6
Country Parks	
Sites of Importance for Nature Conservation (SINC)	
Hampshire and Isle of White Wildlife Trust Reserves	2
<b>Priority habitats within 2km of the Site boundary</b>	
Priority habitats	9
<b>Protected species</b>	
Granted European Protected Species (EPS) licences: within 2km of the Site boundaries	1

Natural habitats and ecology	Sandown
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	

Three SACs and two SPAs are located within 10km of the Site. Solent and Southampton Water SPA and South Wight Maritime SAC are both located within 600m of the Site. However, it is considered unlikely that a Habitats Regulations Assessment (HRA) would be required for the Site because Environment Agency best practice methods will be followed, during operation of the facility, to prevent significant effects to the designated habitats. These are described in Appendix B.

Two SSSIs, one MCZ and one AONB are located within 2km of the Site. The MCZ are AONB are both located within 600m of 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.

Six ancient woodlands, two Wildlife Trust Reserves and nine priority habitats are located with 2km of the Site. Sandown Meadows Wildlife Trust Reserve is located 60m to the north and is separated from the Site by the A3055. It is considered unlikely that Site activities will impact these habitat sites, however. This is covered in Appendix B along with appropriate mitigation.

One granted EPS mitigation licence for destruction to a common pipistrelle maternity roost is present 1.4km south-west of the Site. The site boundary includes hardstanding and infrastructure at its west, and open green space with grassland and scrub at its east.

Areas of grassland and scrub are located to the south, east and north of the Site boundary, with some scattered trees. Commercial buildings, hardstanding and a static caravan home estate are located to the west of the Site. Two ponds and several wet ditches are located within the zone of influence (Zol) for great crested newt. The River Yar is located along the north boundary of the Site, and a water course is also located along the west edge, with the east edge bordered by a wet ditch.

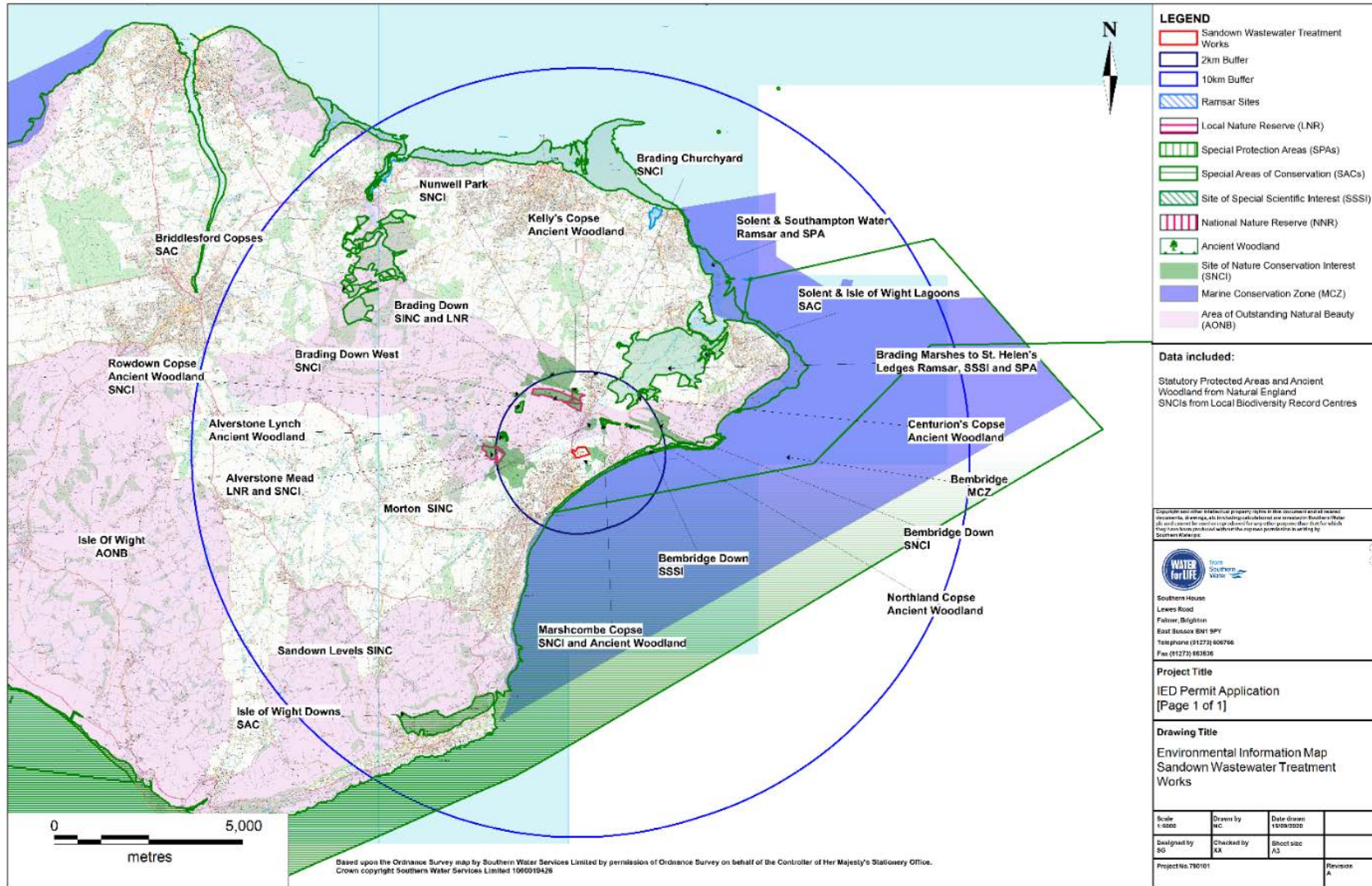
The habitats within the Zol are suitable to support breeding birds, reptiles, great crested newts, water vole and otter. No suitable roosting features for bats are visible from aerial imagery, however some of the infrastructure buildings may be suitable for roosting bats. Notable species such as white-clawed crayfish *Austroptamobius pallipes*, fish species, hedgehog and common toad could be present.

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 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.

## A. Environmental Constraints Maps

Figure 0.1: Statutory designated habitat sites within 10km of the Site





**Figure 0.2: Non-statutory designated habitat sites within 2km of the Site**

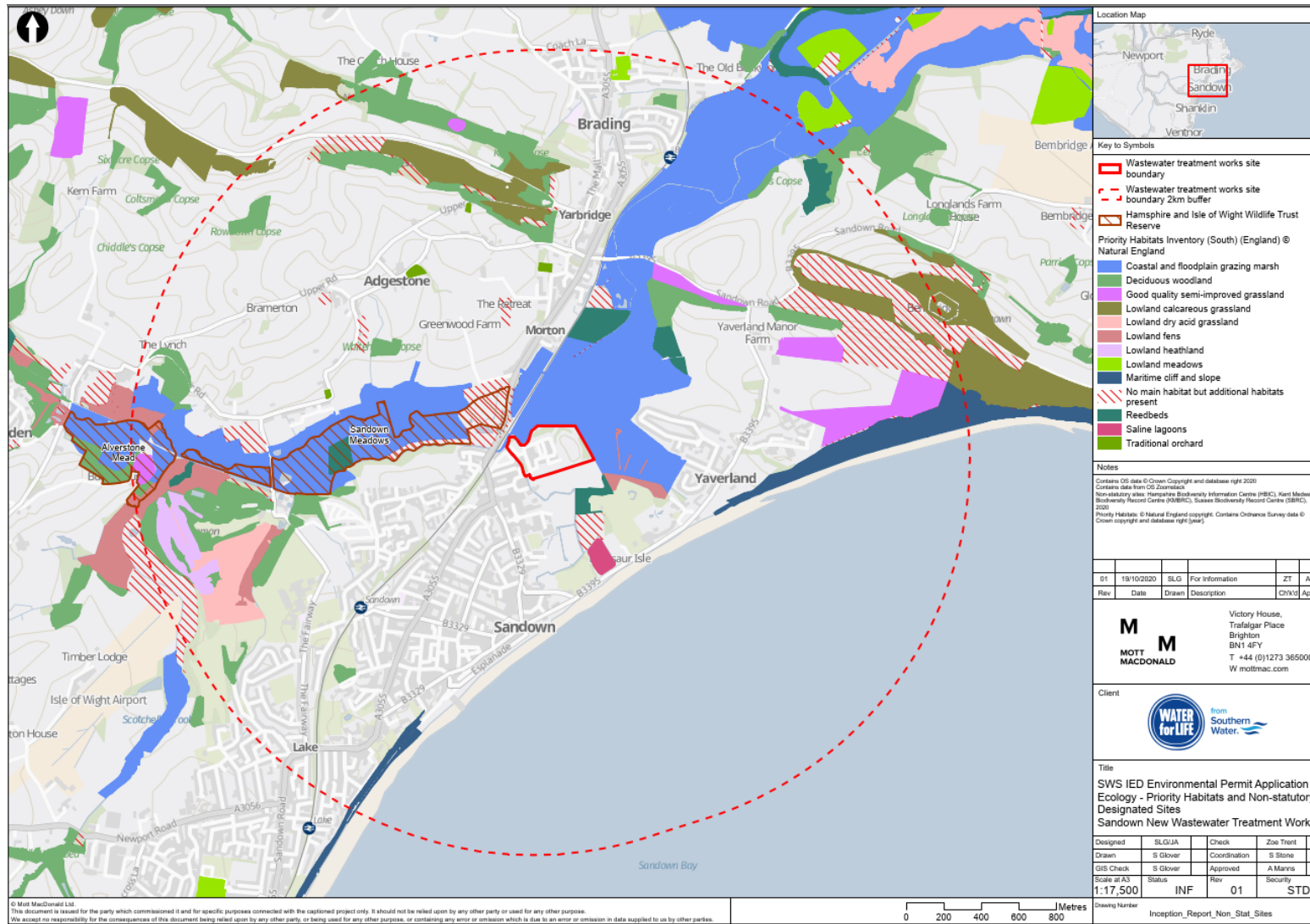


Figure 0.3: Designated heritage sites within 1km of the Site

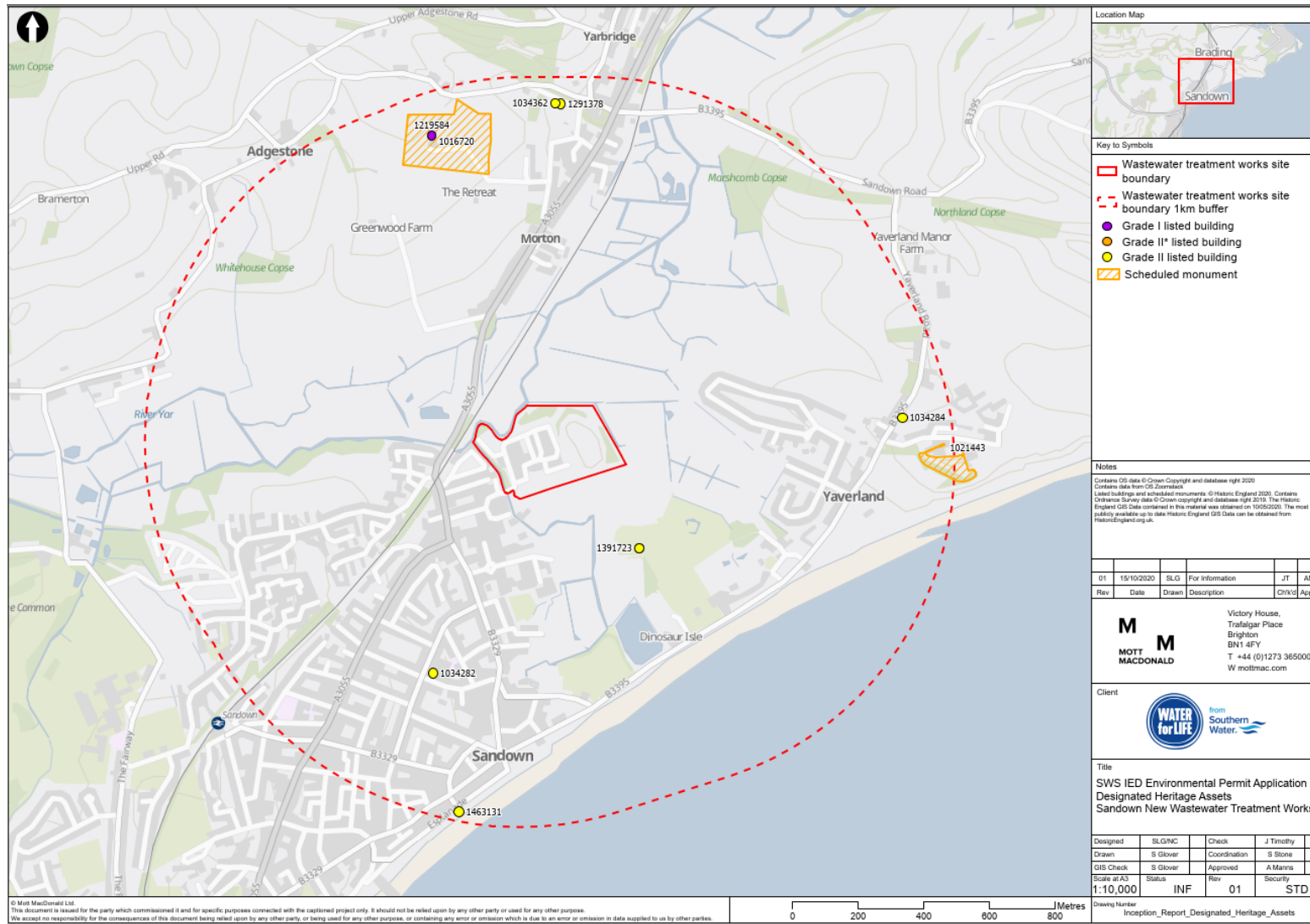
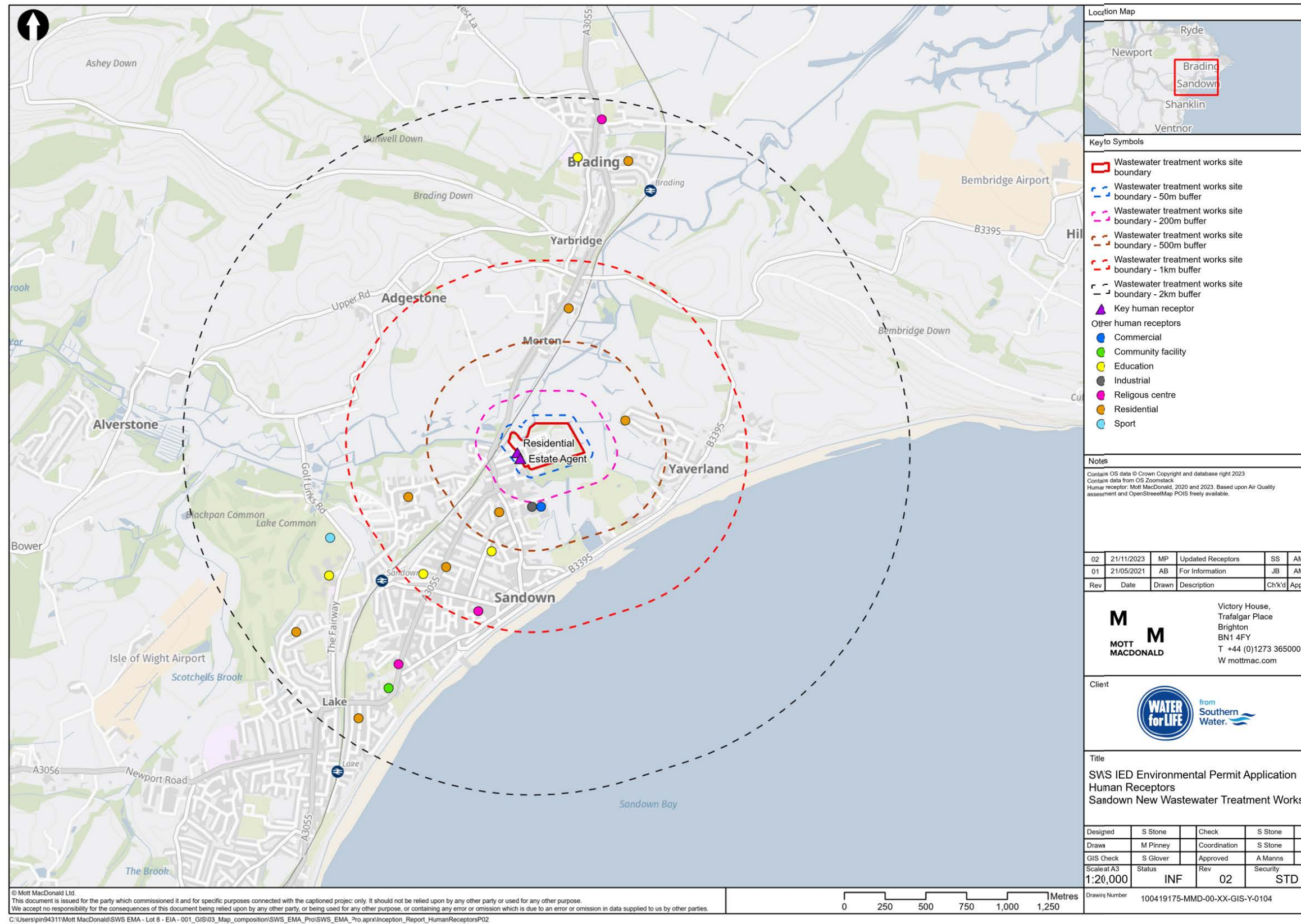




Figure 0.: Sensitive receptors within 2km of the Site





## 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 <sub>2</sub> , SO <sub>2</sub> , CO, NH <sub>3</sub> 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. Based on the results of the high-level initial air quality review, overall impacts of all air pollutants are considered to be low from the activities undertaken on the Site.	Activities will be managed and operated in accordance with the EMS. This will include regular inspection and maintenance of associated equipment (flare, mobile equipment and vehicles). 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. There is one flare present on-site, which is understood to operate during emergencies only, such as during CHP maintenance or downtime.	Activities shall be managed and operated in accordance with the EMS and will include measures covering operation, 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 TGNs including M2.	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 of cake 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. Occasional dust has been detected from cake bays during dry periods, but waste types used on-site are unlikely to cause significant 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. In addition, the Site accepts cake from other sites for blending and the cake reception area has interlocking doors which are closed prior to a vehicle tipping cake. Vehicles, equipment and impermeable surfaces are swept and washed down when necessary. Internal roads are swept, as required, to reduce the likelihood of 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. There are six cake storage bays on-site, all of which are in good condition and whose walls are approximately 1.2m to 1.5m high. Hardstanding and walls are in good condition and the capacity of the cake storage bays is sufficient to contain the quantity of cake stored on-site and limit dust emissions therefrom. Cake is stored on site and not handled until it is removed. Each bay takes approximately 4-6weeks to fill. No lime treatment is undertaken on site.	Low

Local human population.	Release of microorganisms (bioaerosols).	Harm to human health - respiratory irritation and illness.	Air transport then inhalation.	Low	Medium	Low	<p>The permitted waste is non-hazardous sludge in liquid and cake form.</p> <p>The nature of waste and the 'wet' processes undertaken on-site are not likely to cause a release of bio-aerosols.</p> <p>Emergency situations such as a failure of the flare or CHP/boilers could result in uncontrolled emissions of bioaerosols.</p>	<p>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.</p> <p>Key operations take place within a closed system, including covered tanks, centrifuges, pipework and machinery. The anaerobic digestion vessels are sealed and biogas is extracted from the vessels. This minimises the risk of bioaerosols affecting operational staff. Biofilters are regularly checked for efficiency.</p> <p>While uncovered, cake within bays at the end of treatment process so bioaerosol concentrations would be at very low/de minimis (any exposure would not result in "significant" consequences). No disturbance of cake while in bays except for removal.</p> <p>Any emergency event would be temporary and infrequent due to the extensive monitoring and maintenance programmes undertaken at the Site as well as the emergency procedures and warning systems in place.</p> <p>Odour control unit is airtight and treats air released to remove bioaerosols. The process is monitored and regularly maintained.</p> <p>Gas holder is air-tight to prevent uncontrolled release of bioaerosols. SCADA system in place to detect leaks.</p> <p>Combustion of biogas occurs at high temperatures in the CHP, boilers and flare, which would destroy bioaerosols.</p> <p>Stringent loading and unloading procedures are in place for receipt of sludge and liquor.</p> <p>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.</p> <p>A Bio-aerosol Risk Assessment has been undertaken to assess the risks of bio-aerosols from the Site. This identifies that bio-aerosol risks are low.</p>	Low
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Emissions to water and land									
Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
All surface waters close to and downstream of the Site.	Tank failure, spillages of digestate and/or liquids including oil 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.	Acute or chronic effects to aquatic life, contamination and 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.	Low	High	Medium	Potential for leaks from digestion tanks, storage vessels/bays and drainage system which may cause contamination or deterioration of surface water quality. The Site is generally in good condition, including hardstanding and cake storage bays. Bunding is provided throughout the whole Site, including for raw materials stored on-site. Cake storage bays have sufficient capacity for the quantities stored therein. However, permeable ground surfacing currently surrounds the digesters, with concrete pathways. Quantities of liquids stored are generally low. The River Yar flows west to east along the north-eastern boundary of the Site, connecting into Bembridge Harbour approximately 5km downstream. A ditch network is present in the fields to the east of the Site, with one ditch following the western boundary of the water treatment works, although it is unclear if this connects with the River Yar. There are a further 10 OS Water Network lines within 50m of the Site. The English Channel is present approximately 650m to the south of the Site. However, no substantiated pollution incident to water has been recorded within 250m of the Site within the last five years. No Category 3 incidents (minor incident) were recorded in the Operator's pollution incident register during the same period.	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 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 the Construction Industry Research and Information Association (CIRIA) standard 736. Hardstanding is planned to be constructed (based on the recommendations of the CIRIA risk assessment) around the 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. 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.	Low
Abstraction from watercourse downstream of facility (for agricultural or potable use).	Spillage of liquids, contaminated rainwater run-off from waste e.g. containing suspended solids.	Acute effects, closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains, ditches etc. then abstraction.	Low	Medium	Low	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 within the last five years.	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. All condensate from the CHP, flare stack and the biogas system discharge back to the Sandown WTW. The condensate is clean, uncontaminated water and is small in quantity.	Low
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 digestion tanks and storage vessels. There is permeable gravel surfacing surrounding the digesters with concrete pathways. Site infrastructure and hardstanding is generally in a good condition. Quantities of liquids stored are generally low.		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.  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. 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 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.  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).  All transfer of digestate and material takes place under supervision and with flow rate control.  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.	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	Presence of surplus activated sludge (SAS) pipework 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 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 not known to flood, although is situated in a flood plain, additional measures to prevent flooding on the Site are in place such as the a requirement in the planning permission to draw water from the surrounding area into the storm tanks to reduce the levels in the flood plain.  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	Medium	Low	Local residents and site staff often sensitive to noise and vibration. Historically, the Site received noise complaints which were due primarily to the operation of one of the centrifuges. This has since been rectified with improved maintenance and servicing, and only one noise complaint has been received in the last five years which was found to be associated with a third party site. No noise complaints have been received in relation to vehicle movements.	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	Medium	Low	Local residents and site staff often sensitive to noise and vibration. Majority of site operations are fully enclosed. Historically, the Site received noise complaints which were due primarily to the operation of one of the centrifuges. This has since been rectified with improved maintenance and servicing, and only one noise complaint has been received in the last five years which was found to be associated with a third party site. At the time the Local Authority EHO carried out a noise assessment and considered the levels to be within acceptable limits.	Fans and condensate traps will be checked for water and fans and extraction systems checked. Flare usage kept to a minimum to reduce noise impact. The design has been developed to minimise noise off-site. The operator will maintain all equipment either in house or by a sub-contract such that noise and vibration are maintained within the limits of the inputs to the sound model. All STC site operations are either covered or enclosed, and equipment is turned off when not in use, where appropriate. Where equipment is to be replaced choose quiet plant and the provision of silencing equipment. There is no equipment on-site that can cause vibration nuisance at the local receptors. Nonetheless, equipment is turned off when not in use, where appropriate. Any complaints received are investigated and actioned in line with the complaint's procedure. All complaints are recorded in the site diary including actions taken.	Low

Odour									
Data and information				Judgement			Action (by permitting)		
Receptor	Source	Hazard	Pathway	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Local human population.	Odour from site activities	Nuisance, loss of amenity (e.g. disruption during outdoor activities)	Air transport then inhalation.	Low	Medium	Low	Local residents and site staff often sensitive to odour. The nature of waste may cause odour issues at reception from wastes, release of biogas and from digestate hence control measures adopted. Majority of operations are fully enclosed. 21 odour complaints have been received between 2018 to 2023. No further information is available on the description of complaints, actions taken or the timescale for rectification. The complaints have not been confirmed as substantiated or relating to the STC.	Odours are likely to be generated and released due to nature of the wastes. Odours are controlled by odour control units. These are equipped with wet chemical scrubbers for air treatment and abatement to reduce odours and the generation of other gaseous compounds. Process and air quality monitoring data are centralised on the SCADA and telemetry system to ensure emissions are free of odorous compounds. Odorous air is extracted by one set of 2 No. duty, standby fans and treated by 1 No. wet bio-scrubbers (using sodium hypochlorite and sodium hydroxide), for the STC. The unit also benefits from carbon filters. used for air treatment and abatement to reduce odours and the generation of other gaseous compounds. Odour is monitored for H <sub>2</sub> S and chemicals are added to the system to combat odours. 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. Other odour mitigation measures implemented on-site include enclosing the STC, placing covers on containers, limiting the height of rising sludge and use of ferric dosing. Perimeter sprayers are present and operational in certain areas of the Site. 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 storage tanks are covered and enclosed. All waste is imported 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. No odour complaints have been received, although odour has been detected when moving large amounts of cake.	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 <sub>2</sub> S	Nuisance, loss of amenity	Air transport then inhalation.	Low	High	Low	Local residents and staff often sensitive to odour. Fugitive release, not expected to occur under normal operating conditions. No odour complaints have been received.	Activities are managed and operated in accordance with the EMS (and include inspection and maintenance of equipment, including engine management systems). H <sub>2</sub> S point source emissions to air are controlled in accordance with emission limits. Dosing with ferric chloride is undertaken to reduce H <sub>2</sub> S potential. A specialist unit equipped with wet chemical scrubbers 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 being blown 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 garages 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 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. There are wheel washing facilities on the Site and 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. The site has an annual contract and a new site plan in place, the service provider attends the Site monthly. 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.	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	Medium	Medium	Low	<p>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.</p> <p>The Site lies within an area of groundwater flooding capability with potential flooding to property situated below ground level and at the surface.</p> <p>The Site is susceptible to extreme flooding from rivers or sea without flood defences. There are no flood defences present on-site. The Site is considered to be a medium risk for flooding from surface water.</p> <p>Although the Site is situated on a flood plain, there have not been any reported flooding issues from the Site.</p>	<p>The drainage network sends water to the head of the works for treatment. There are no direct potentially contaminated discharges to controlled surface waters.</p> <p>Additional measures to prevent flooding on the Site are in place such as the requirement in the planning permission to draw water from the surrounding area into the storm tanks to reduce the levels in the flood plain.</p> <p>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.</p>	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	<p>Potential injury to on-site personnel as a result of vehicle movements or equipment malfunction or misuse.</p> <p>Direct physical contact is minimised by activity being carried out within enclosed digesters so a low magnitude risk is estimated.</p> <p>Contact with waste is minimal with exception of leaks or spills from unloading of tanker and transfer of filter cake.</p>	<p>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.</p> <p>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.</p> <p>Training includes awareness raising of the potential on-site hazards and health and safety measures to adhere to.</p> <p>Preventative measures will be under continuous review as part of the EMS procedures.</p> <p>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.</p> <p>Access to site and waste is restricted by a 2.5m high chain link security fence. A 2.5m high galvanised steel, automated gate secures the main access and is controlled by the control room. The Site also benefits from up to 18 CCTVs which are located throughout the Site.</p> <p>The Site is manned 24 hours a day, 7 days a week.</p> <p>For visitors and unauthorised personnel an intercom system at the site entrance, is used.</p> <p>Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to site. Repairs are undertaken in accordance with the EMS requirements.</p> <p>Key sludge treatment and wastewater treatment activities undertaken within enclosed systems.</p> <p>Operator has produced a hazard review document relating to this and other types of potential incidents.</p>	Low

							<p>On average there are 4 tankers per day (over a 5-day week) deliver sludge to the Site.</p> <p>On average there are 10 tankers per day of domestic waste is delivered to the Site.</p> <p>The Site does not currently accept commercial tankered waste, but there are plans to include this in the permit.</p> <p>Vehicle movements around the Site vary depending on what activities are being undertaken. Cake is moved to cake bays once a trailer is full. Cake is removed from site frequently during specific land spreading windows – typically throughout the summer months. Waste is removed as required. Therefore, frequent vehicle movements are typically undertaken only by Site staff and maintenance contractors.</p>		
Local human population and local environment.	Explosion of biogas causing the release of polluting materials to air (smoke or fumes), water or land	Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or arsonists/vandals. Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land. Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.	Air transport 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	Low	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff.</p> <p>An explosion may cause injury to local residents and site staff from flying debris.</p> <p>Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings.</p> <p>Effective management systems are in place so magnitude risk of explosion is considered to be low.</p> <p>Permitted waste types limited to sludges and liquids.</p>	<p>The key sludge treatment and WTW processes are undertaken within enclosed systems such as the anaerobic digestion (AD) and biogas systems. Sludge storage tanks are covered and enclosed.</p> <p>Activities are managed and operated in accordance with the EMS, H&amp;S and O&amp;M manuals – this includes site security measures to prevent unauthorised access. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification.</p> <p>Fire detection equipment is installed in the CHP containers and the boiler building which 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.</p> <p>Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS and Safety Instruction Book (SIB) includes procedures relating to maintenance and inspection of bunding of tanks, spills and environmental incidents.</p>	Low
Local human population and local environment	Explosion of pressurised tanks due to equipment and/or process failure.	Respiratory irritation, illness and nuisance to local population. Fatality/injury to staff, fire fighters. 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.		Low	High	Low	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke, fumes and material released from tanks may cause irritation, illness or nuisance to local residents and site staff.</p> <p>Impact from the tank explosion may cause external damages to other equipment, buildings located close to the epicentre of the explosion.</p> <p>Effective management systems are in place so magnitude is reduced.</p>	<p>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.</p> <p>Emergency operating procedures are in place and detailed in the Site's Operational Continuity Plan.</p> <p>Adequate firefighting measures are implemented on-site.</p> <p>Access to site and waste is restricted by a 2.5m high chain link security fence. A 2.5m high galvanised steel, automated gate secures the main access and is controlled by the control room. The Site also benefits from up to 18 CCTVs which are located throughout the Site.</p> <p>Site floodlighting is provided at all key operational areas to give good visibility at all times of the day and night.</p> <p>The Site is manned 24 hours a day, 7 days a week.</p> <p>For visitors and unauthorised personnel an intercom system at the site entrance is used.</p> <p>Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to the Site. Repairs are undertaken in accordance with the EMS requirements.</p> <p>A Fire Prevention Plan is not required to be submitted for the permit application as the biowaste process on site is wet anaerobic digestion. However, fire prevention and environmental fire risk assessment procedures are</p>	Low

							<p>provided in the EMS and H&amp;S manual (EMS362, H&amp;S204 and H&amp;S440).</p> <p>Firewater is diverted through the drainage system to the head of the works or to storm overflow allowing for contaminated fire water to be contained on-site and treated through the wastewater treatment system.</p> <p>There is also Safety zoning of areas under the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)/ Potentially Explosive Atmospheres (PEXA) on-site and smoking is only permitted in designated areas.</p>		
Local human population and local environment	<p>Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land</p> <p>Equipment failure</p>	<p>Respiratory irritation, illness and nuisance to local population. Injury to staff or fire fighters.</p> <p>Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land.</p> <p>Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.</p>	<p>Air transport</p> <p>Direct run-off from site across ground surface, via surface water drains, ditches etc.</p> <p>Indirect run-off via the soil layer</p> <p>Transport through soil/ groundwater then abstraction.</p>	Low	High	Low	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff.</p> <p>Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings.</p> <p>Risk of accidental combustion of waste is minimal.</p> <p>Permitted waste types limited to sludges and liquids.</p>	<p>The key sludge treatment and WTW processes are undertaken within enclosed systems such as the AD and biogas systems. Storage tanks are enclosed and covered.</p> <p>Activities are managed and operated in accordance with the EMS, H&amp;S and O&amp;M manuals including, fire and spill management.</p> <p>Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers.</p> <p>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&amp;S manual and Safety Instruction Book (SIB) (EMS362, H&amp;S204, H&amp;S440, and SIB603).</p> <p>There is also Safety zoning of areas under DSEAR/PEXA on site and Smoking is only permitted in designated areas.</p> <p>Firewater is diverted through the drainage system to the head of the works or to storm overflow allowing for contaminated fire water to be contained on site and treated through the wastewater treatment system.</p> <p>Training and regular toolbox talks are given to operatives on-site and all operators and staff understand their role in an emergency. The EMS and Safety Instruction Book (SIB) includes procedures relating to maintenance and inspection of bunding of tanks, spills and environmental incidents.</p> <p>Site Manager shall ensure the programme of 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.</p> <p>Emergency operating procedures are in place.</p> <p>Adequate firefighting measures are implemented on-site.</p>	Low
Local human population and local environment.	<p>Arson and/or vandalism causing the release of pollution materials to air (smoke and fumes), water or land</p>	<p>Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or vandals/arsonists.</p> <p>Potential for uncontrolled release of fugitive emissions of gaseous, liquid or solid materials to air, water or land.</p> <p>Acute or chronic effects to aquatic life, contamination and deterioration of land and water quality.</p>	<p>Air transport</p> <p>Spillages and contaminated firewater by direct run-off from site across ground surface, via surface water drains, ditches etc.</p> <p>Indirect run-off via the soil layer</p> <p>Transport through soil/ groundwater then abstraction.</p>	Low	High	Low	<p>Emissions to air, land or water may cause harm to and deterioration of air, land or water.</p> <p>Smoke and fumes may cause irritation, illness or nuisance to local residents and site staff.</p> <p>Although biogas is flammable, risk of direct physical contact is minimised by activity being carried out within the sludge treatment works and in containerised units or locked buildings.</p> <p>Risk of accidental combustion of waste is minimal.</p> <p>Permitted waste types limited to sludges and liquids.</p>	<p>The key sludge treatment and WTW processes are undertaken within enclosed systems such as the AD and biogas systems. Storage tanks are covered and enclosed.</p> <p>Activities are managed and operated in accordance with the EMS, H&amp;S and O&amp;M manuals – this includes site security measures to prevent unauthorised access, fire explosions and spill management. No maintenance work or contractor is permitted on-site without a suitable permission to work and qualification.</p> <p>Fire detection equipment is installed in the CHP containers and the boiler building which activate an alarm on detection of a fire. Slam shut valves on biogas lines will automatically close on detection of a fire to prevent any fuel being supplied to the CHP engines or boilers.</p> <p>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</p>	Low

							<p>environmental fire risk assessment procedures are provided in the EMS and H&amp;S manual (EMS362, H&amp;S204 and H&amp;S440). There is also Safety zoning of areas under DSEAR/PEXA on site and Smoking is only permitted in designated areas.</p> <p>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, spills and environmental incidents.</p> <p>Site Manager shall ensure the programme of PPM is implemented effectively to minimise the probability of fire through faulty plant and equipment. All equipment is checked and calibrated as per the manufacturer's instructions.</p> <p>Emergency operating procedures are in place.</p> <p>Adequate firefighting measures are implemented on-site.</p> <p>Access to site and waste is restricted by a 2.5m high chain link security fence. A 2.5m high galvanised steel, automated gate secures the main access and is controlled by the control room. The Site also benefits from up to 18 CCTVs which are located throughout the Site.</p> <p>Site floodlighting is provided at all key operational areasto give good visibility at all times of the day and night.</p> <p>The Site is manned 24 hours a day, 7 days a week.</p> <p>For visitors and unauthorised personnel an intercom system at the site entrance is used.</p> <p>Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to the Site. Repairs are undertaken in accordance with the EMS requirements.</p> <p>Firewater is diverted through the drainage system to the head of the works or to storm overflow allowing for contaminated fire water to be contained on site and treated through the wastewater treatment system.</p>	
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	<p>Possible contamination to air, land, groundwater and surface water.</p> <p>Activities to be managed and operated in accordance with the EMS and management plans and procedures implemented.</p> <p>All equipment is checked under preventative maintenance plans and is checked and calibrated as per the manufacturer's instructions.</p> <p>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.</p> <p>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.</p> <p>Training includes awareness raising of the potential implications of failure to control operations and the potential impact on the environment.</p> <p>Preventative measures will be under continuous review as part of the EMS procedures.</p> <p>Emergency operating procedures are in place.</p> <p>Senior site-based management have direct responsibility for implementing risk management measures.</p>	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	Low	Low	Physical disturbance and emissions to air, water or land may cause harm to and deterioration of nature conservation sites. Three SACs and two SPAs are located within 10km of the Site. Solent and Southampton Water SPA and South Wight Maritime SAC are both located within 600m of the Site. Two SSSIs, one MCZ and one AONB are located within 2km of the site. The MCZ are AONB are both located within 600m of the site. 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. Where necessary an ammonia reduction plan will be implemented. Emission limits for stack gases are specified. BAT and appropriate additional mitigation measures set out in the EMS (EMS323, EMS223, EMS228 and EMS220), have been taken to prevent or where that is not practicable, to minimise, those emissions.	Low
Protected species, including nesting birds, wintering birds, common reptiles, terrestrial and aquatic invertebrates, common amphibians, bats, badgers, hazel dormice and great crested newts	Any, but principally NOx.	Harm to protected species through the disturbance or removal of habitats		Low	Low	Low	Physical disturbance and emissions to air, 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

