

## Strongford STW Bioaerosol Risk Assessment

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# 1. Introduction

The purpose of this Bioaerosols risk assessment is to provide supplementary information to support the permit application for a bespoke installation variation for the Strongford STW.

## 1.1 Site description

Strongford sewage treatment works lies on the south side of the city of Stoke on Trent, just south of the settlement of Trentham and north of the settlement of Barlaston. The site is bordered to the immediate north by a golf course, with agricultural land to the and south, before villages. The River Trent is adjacent to the western site boundary and then farmland. To the east of the site, there is a mixture of open farmland and properties along Barlaston Old Road.

The site sits partially in a flood zone 2 and partially in a flood zone 3, however both of these lie on the eastern side of the site. Flood Zone 2 represents a medium probability of flooding, specifically defined as land having between a 1 in 100 and 1 in 1,000 annual probabilities of river flooding. These areas require a flood risk assessment (FRA) for planning applications. Flood Zone 3 represents land with a high probability of flooding, defined as having a (1 in 100) annual probability of river flooding, ignoring existing defences. It is considered the highest risk category for planning purposes, requiring detailed flood risk assessments for development.

The site is not located within a designated source protection zone (SPZ). There is ancient woodland 650m north west of the site (Kings and Hargreaves Woods) which is also an SSSI and ancient woodland (Newstead Wood) 990m east of the site. There are no special areas of conversation, RAMSAR sites, National nature reserves, local nature reserves, or local wildlife sites within the applicable screening distances. The site is located in the air quality management area for Stoke on Trent for Nitrogen Dioxide.

### Environmentally Sensitive Locations

Site Name	Designation	Distance	Direction
Newstead Woods	Ancient Woodland	1.1km	North East
Kings Wood (multiple blocks)	Ancient (and Ancient and Replanted) Woodland	1.0 km	West
Kings and Hargreaves Woods (multiple units)	SSSI	1.25km	West
<b>List of Local Wildlife Sites*</b>			
None identified			<2km

The above table shows data taken from MAGIC.gov.uk website, accessed January 2025, and from the EA, provided April 2024. For habitat sites, the relevant distance for consideration are: International designations (SAC, MPA, SPA and Ramsar - 10km); National designations (SSSI – 2km); Nature reserves, local wildlife sites and ancient woodland (2km)

The address of the installation is:

Severn Trent Water Limited  
 Strongford Sewage Treatment Works;  
 Barlaston Old Road,  
 Barlaston,  
 Stoke-on-Trent,  
 ST12 9EX.  
 SJ 87925 39070

## 1.2 Site Activities

Strongford STW is operated by Severn Trent Water Ltd and treats wastewater from sewers and tankered imports through the Urban Waste Water Treatment Directive (UWWTD) process a percentage of which is filtered to recover cellulose fibres from the bulk UWWTD flow, with separate sludge treatment and biogas production through thermal hydrolysis; anaerobic digestion and the production of gas which is either treated and exported from site via a gas to grid plant or used on site in the CHP engines and boilers on site. Dewatering liquors are either treated aerobically through a liquor treatment plant, or chemically scrubbed to recover ammonia. It also includes the importation of specified wastes to the works inlet for treatment through the Urban Wastewater Treatment Directive regulated works.

There are a number of directly associated activities at the site:

Treatment	Component
UWWTD Stream	Works inlet Tankered waste inlet; Screens; Rag removal; Primary settlement tank (PST); Activated sludge plant (ASP); Final settlement tanks (FST); Storm tanks; and Final effluent discharge point.
Cellulose Recovery Plant	Drum screens, cellulose screen, washer, drier, hygienator and cellulose storage.
Sludge Treatment	Digester tanks; Dewatering tanks; Centrifuge plant; Cake storage.
Liquor Treatment	LTP using aerobic treatment; ammonia recovery through chemical scrubbing
Biogas Production and Combustion	Combined heat and power (CHP) unit; Gas holder; and Flare stack.

The STW can treat up to 7,003,985 m<sup>3</sup> (wet tonnes) per day (input) 49,027,895 m<sup>3</sup> (wet tonnes) per week (input) There are six operational primary digesters, which accept sludges for treatment following pre-treatment in the thermal hydrolysis plant.

Some of the treatment throughput is sludge, which is subject to dewatering as treated sludge cake, deposited on the cake pad pending to application to land offsite. Within the area covering the permitted activities, there are three Odour Control Unit (OCU) linked to specific tanks and processes which produce potentially odorous air. The units treat the air through a variety of means, including use of dry chemical scrubbers and biofilters.

The anaerobic digestion process gives rise to biogas, a mixture of biomethane and carbon dioxide, in a mixture with trace components. This biogas is either cleaned up in a gas to grid plant for export to the gas network, combusted through the site's Combined Heat and Power engines, to generate electricity both for the site and for export. Additional biogas can be utilised in the site boilers, with excess biogas being subject to emergency flaring. The biogas handling system is equipped with a number of pressure relief valves (PRVs) which activate as a safety precaution when there is excess gas over what the boilers and emergency flare can handle.

## 1.3 Regulatory requirements

The sludge treatment activity has not previously required an environmental permit as the digested sewage sludge from the site is normally sent for recovery to land. However, a permit application has been submitted based on the Environment Agency's recent conclusion that sewage sludge is a waste and therefore the treatment of sewage sludge by anaerobic digestion for recovery is a permissible activity under Schedule 1 of the EPR 2016, specifically Chapter 5, Section 5.4, Part A 1(b)(i). There is also listed activities at the site for the treatment of dewatering liquors, but these processes do not give rise to bioaerosols.

For permits, if the site is within 250m of sensitive receptors then there is a requirement to monitor bioaerosols in accordance with the EA technical guidance note<sup>1</sup> 'M9: environmental monitoring of bioaerosols at regulated

<sup>1</sup> Environment Agency. July 2018. M9: Environmental monitoring of bioaerosols at regulated facilities v2, July 2018

*facilities'*. M9 describes bioaerosols and the risks that they pose, as well as identifying potential sources within biological treatment facilities.

The Strongford Sludge Treatment Centre installation is within 250m of sensitive receptors, as defined by M9. These are detailed in Section 2.5 of this report.

## 1.4 Bioaerosols

Bioaerosols are found naturally within the environment. They consist of airborne particles that contain living organisms, such as bacteria, fungi and viruses or parts of living organisms, such as plant pollen, spores and endotoxins from bacterial cells or mycotoxins from fungi. The components of a bioaerosol range in size from around 0.02 to 100 micrometres ( $\mu\text{m}$ ) in diameter. The size, density and shape of a bioaerosol will affect its behaviour, survivability and ultimately its dispersion in the atmosphere.

Bioaerosols are easily breathed into the human respiratory system, potentially causing allergic responses and inflammation. They also have the potential to cause eye irritation, gastrointestinal illness and dermatitis.

Bioaerosols are associated with composting, anaerobic digestion and mechanical biological treatment, which are the main processes used to treat organic wastes in the UK. As organic waste material breaks down it goes through different temperature dependent stages that are dominated by certain groups of bacteria and fungi. Bacteria are the most numerous group of microorganisms. *Aspergillus fumigatus* is a mesophilic fungus that is thermotolerant and is present throughout the different stages of the organic breakdown process. This fungus can cause severe respiratory infection if inhaled.

The dependence on microorganisms to degrade organic material and the way in which the material is processed make biological treatment facilities a potential source of bioaerosols. However, we note that the 2012 EA guidance note<sup>2</sup> for developments requiring planning permission and environmental permits states that the EA do not consider bioaerosols from anaerobic digestion to be a serious concern. This is due to the fact, that anaerobic digestion is generally a wet process undertaken in enclosed tanks and equipment, whereas composting is often undertaken using open systems such as windrows and static piles.

The Strongford STW does not undertake any aerobic composting activities and the anaerobic digestion process on site, undertaken in the primary digesters, is an enclosed process with all produced gases captured within the biogas system.

### 1.4.1 High Risk Activities

The M17 guidance document, in section 3.3.3, outlines a number of potential sources and release mechanisms of particulate matter, including bioaerosols from waste management facilities. These potential sources are not graded for importance within M17 and include: the movement of waste to and from the facility; storage of waste (under certain conditions) on site; the handling and processing of waste materials e.g. shredding of green waste, turning of windrows, daily cover; and wind scouring of waste surfaces.

In terms of potential sources of bioaerosols release at Strongford STW, which meet the M17 guidance, only the temporary storage of sludge cake on the cake pad and two OCUs are relevant. There is no shredding of waste or turning of stockpiles as part of the management process and all sewage waste is contained and received via pipes.

### 1.4.2 Relevant Thresholds

Based on the accepted Levels at sensitive receptors as set out in the Environment Agency M17 guidance<sup>3</sup> '*M17 Monitoring of particulate matter in ambient air around waste facilities*', and in line with the Governments regulatory position statement (RPS) 209 outlining when a specific bioaerosol risk assessment

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<sup>2</sup> Environment Agency. October 2012. Guidance for developments requiring planning permission and environmental permits

<sup>3</sup> Environment Agency. 2013. Technical Guidance Note (Monitoring) M17: Monitoring Particulate Matter in Ambient Air around Waste Facilities, v2, July 2013 <https://www.gov.uk/government/publications/m17-monitoring-of-particulate-matter-in-ambient-air-around-waste-facilities>

and/or monitoring is required and use of the Environment Agency Technical Guidance Note M9<sup>4</sup>; key bioaerosols of interest and their respective threshold Levels (including background) at sensitive receptors are outlined below:

- Total bacteria: 1000 cfu/m<sup>3</sup>
- Aspergillus Fumigatus: 500 cfu/m<sup>3</sup>

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<sup>4</sup> Environment Agency. 2018. Technical Guidance Note (Monitoring) M9: Environmental monitoring of Bioaerosols at regulated facilities, v2, July 2018.

## 2. Bio aerosol risk assessment

### 2.1 Introduction

A source-pathway-receptor risk assessment has been undertaken to appraise the potential for risk to human health at sensitive receptors within the relevant distance from operations at the Strongford STW. This risk assessment follows a standardised approach, namely:

- Hazard identification: what sources of bioaerosols are present on site.
- Exposure assessment: what are the mechanisms or pathways allowing bioaerosols to migrate off site and reach a sensitive receptor; and
- Risk evaluation: who is potentially exposed to bioaerosols; what is the probability, magnitude, and duration of that exposure.

The assessment describes:

- The processing techniques and equipment used within the installation.
- Feedstock, tonnages processed and any seasonal variations.
- Potential sources of bioaerosols.
- The site layout, including any screens, bunds, or trees around the site.
- What is beyond the site boundaries and the location of sensitive receptors.
- Local wind direction data.

### 2.2 Processing equipment and techniques

#### 2.2.1 Waste Reception

Sludge from the UWWTD treatment processes on site is thickened and transferred to one of four sludge blending tanks. Imported sludge is offloaded into an import tank after passing through a logger to record the incoming volume of sludge, with the imported sludge being transferred into the blending tanks with thickened indigenous SAS and indigenous primary sludges prior to transfer to one of two sludge silos which feed the THP unit on site. Following the application of heat and pressure in the THP, treated sludge is transferred to one of the six primary anaerobic digesters on site which are of concrete construction and equipped with suitable pressure relief valves (PRVs) which operate in an emergency only. The digesters operate on a continuous basis in series, with digested sludge removed to a digested sludge storage tank, which is normally only a single tank but there are two contingency tanks for this purpose, and then transferred to the sludge dewatering process on site.

The sludge import tank is connected to OCU1. The four blending tanks are connected to OCU2 and the THP plant is connected to OCU3.

#### 2.2.2 Digested cake

Following this, fully digested sludge is transferred to site dewatering equipment, where, following the addition of polyelectrolyte based coagulant, it is dewatered and stored on the sites open cake pad. Centrate from the dewatering process is transferred to the liquor treatment plant or ammonia recovery plant, for further treatment, prior to return back to the works inlet for treatment in the UWWTD process.

The sludge cake is transferred to the cake pad for storage following dewatering. The sludge is analysed to check compliance with Sludge (Use in Agriculture) Regulations 1989 (SUiARs), in accordance with the Biosolids Assurance Scheme (BAS) and once the sludge is confirmed to be compliant it is removed from storage for land spreading.

#### 2.2.3 Odour Control Units

Sewage treatment works have a number of potentially odorous sources within their boundary. Some of these sources may be linked to OCUs to treat potentially odorous compounds given off by the process. These units take air extracted from above tanks or process areas and treat the odour compounds by means of different methodologies dependent upon the nature of the odour compounds. Treatment methodologies include

activated carbon systems; biofilters or other biological treatment; and chemical scrubbing. Individual OCUs may use one or more of these methodologies in series.

Under the M9 guidance documents, the Environment Agency has identified that biofilters may give rise to bioaerosols during operation.

## 2.2.4 Seasonality

Sewage treatment is undertaken at the STW on a continuous basis, 24 hours a day 365 days of the year. Digested sludge cake is, therefore, produced daily and at similar levels across the whole year.

## 2.3 Potential Sources

There are eleven point-source emissions to air from the processes within the installation boundary, as presented in Table 1 and illustrated in Appendix B. The references and source descriptions match those in the permit:

Table 1: Point source emissions to air

Air emission reference	Source	In scope?
A1	CHP engine 1	X
A2	CHP engine 2	X
A6	Emergency Flare	X
A7	Biogas upgrade plant stack	X
A8	Biogas Plant Flare	X
A9a	CHP3	X
A9b & c	Boilers	X
A10	Digester PRV	X
A13	Digester PRV	X
A14	Gas storage PRV	X
A15	Gas storage PRV	X
A16	Digester PRV	X
A17	Digester PRV	X
A18	Digester PRV	X
A19	OCU	✓
A20	OCU	✓
A21	SAS Vent System	X
A22	OCU	✓
A23	Gas Storage PRV	X
A24	Vent System	X

Air emission reference	Source	In scope?
A25	ELOVAC Vents	X
A26	ELOVAC Vents	X
A27	Cellulose plant vent	X

### 2.3.1 Source Assessment

The CHP engine, boilers and emergency flare (points A1; A2, A9a, A9b&c; A6) combust the produced biogas at high temperatures (in excess of 450°C). Due to the combustion of the biogas, these points can be discounted as sources of bioaerosols emissions.

There are three Odour Control Units (OCU) (points A19, A20, A22) serving the STW.

Unit	OCU Type	System details	Media type
OCU 1 Imported Sludge Well	2 x P1000 peacemakers in parallel	Fully enclosed system, vents to atmosphere via a single exhaust point	Chemical impregnated pellets with carbon polishing stage
OCU 2 from indigenous sludge	Biofilter	Fully enclosed system, vents to atmosphere via a single exhaust point	Calcified seaweed
OCU 3 (THP)	Biofilter	Fully enclosed system, vents to atmosphere via a single exhaust point	Calcified seaweed

Two of the three OCU's within the permit scope is a biofilter and therefore potentially poses a risk of bioaerosols.

The Pressure Relief Values (PRVs) (points A10 – A18; A23) are normally closed and do not emit to atmosphere. However, in the event of an abnormal situation such as the failure of the flare stack and/or boilers, the PRVs would open to relief excess biogas pressure, potentially resulting in the release of bioaerosols, while the problem is rectified. While the problem is rectified, biogas generation is reduced by reducing or inhibiting the digester feed. These abnormal events are unlikely, temporary, and infrequent due to the extensive monitoring and maintenance programmes undertaken at the site as well as the procedures and warning systems in place. Points A21; A24-27 are vents and not in routine operation.

Dewatered digested sludge cake is stored on the cake pad at the site pending offsite application to land.

### 2.3.2 Risk

The overall treatment process is considered to be a very low source of bioaerosols.

Sewage cake is stored on the site on the open cake pad. It is not subject to turning or maturation on the pad.

The OCU's in use for the permitted activities at the site, include one biofilter based unit, OCU2 (A20) and OCU3 (A21) which may pose a risk of bioaerosols.

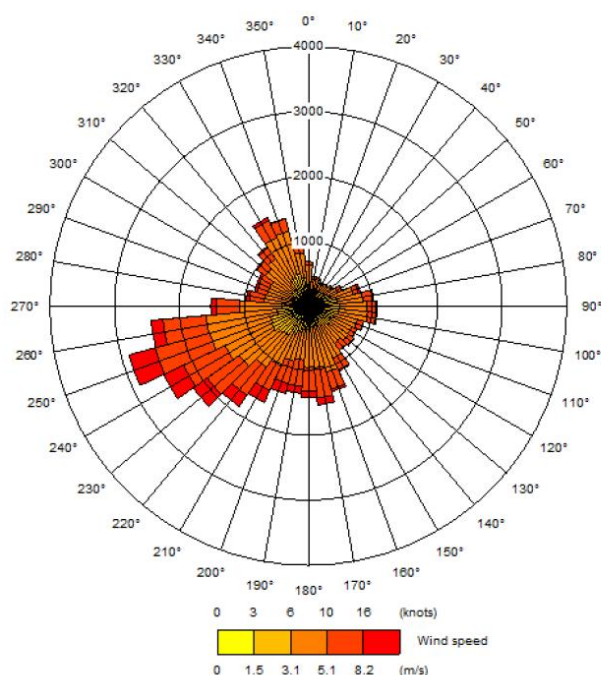
As discussed above, there are a number of control measures in place at the site to reduce and contain emissions of bioaerosols. These control measures are regularly maintained to sustain their efficacy and reduce the risk of equipment failure.

In addition, waste treatment tanks and associated pipework are enclosed. The wet wells and tanks used to receive incoming sludge are either below ground and covered or above ground, covered and abated. Sludge screening and dewatering takes place in enclosed tanks and units that are located within a building. In addition, the PRVs are only open in abnormal situations which are temporary and unlikely.

## 2.4 Pathways

Bioaerosols are very small and light in weight so can easily be transported by the wind from their source to a receptor. Historical prevailing wind data below from the Met Office shows the predominant direction is West / South West. The site is located in a semi rural area, which may impact on dispersion patterns. Strongford STW is north of most sensitive receptors so the aim is to keep impacts to a minimum whatever the wind direction.

**Figure 1 – Wind rose RAF Shawbury**



Because of the dilution effect in open air, bioaerosol concentrations fall away rapidly with distance from the source. It has been shown by research by the HSE<sup>5</sup> that by 100 to 200m away, the bioaerosol concentration has mostly returned to background levels. Between 50m and 100m distances downwind of the process, bioaerosol concentrations were substantially reduced by comparison to those level measurements at source. RR786 confirmed previous published studies which showed that at a distance of 250m from composting activity, in most cases, the bioaerosol concentrations will be reduced to background levels. Note that this research was undertaken on aerobic composting sites, which generate higher levels of bioaerosols than anaerobic digestion sites, although the 250m separation distance has been retained.

At present, Severn Trent Water has empirical evidence for the levels of bioaerosols that might be associated with the potential sources at the Strongford works, based on monitoring of emissions. This data shows that there are no emissions at levels exceeding the relevant thresholds in M9 and M17.

The sampling was in accordance with the requirements of M9 and M17, and consisted of a series of agar gel plates being placed downwind and upwind of the cake pad, including sampling points both directly upwind of the downwind sampling point and additional samples in the direction of the nearest sensitive receptors.

## 2.5 Receptors

Environment Agency guidance note M9 recommends a screening distance of 250m from bioaerosol emission sources to static receptor locations. Sensitive receptors are defined as: 'permitted activities where people are likely to be for prolonged periods'. This term would therefore apply to dwellings (including any associated gardens) and to many types of workplaces. We would not normally regard a place where people are likely to be present for less than 6 hours at one time as being a sensitive receptor. The term does not apply to those

<sup>5</sup> RR786 - Bioaerosol emissions from waste composting and the potential for workers' exposure  
<https://www.hse.gov.uk/research/rrhtm/rr786.htm>

controlling the permitted facility, their staff when they are at work or to visitors to the facility, as their health is covered by Health and Safety at Work legislation but would apply to dwellings, commercial or industrial premises nearby where people might be exposed for the requisite period.

There are a number of potentially sensitive receptors found within 250m of potential bioaerosol emission sources at the site.

**Table 2: Static Receptors within 250m of Potential Bioaerosol Sources**

Receptor	Description	Source	Distance from closest source (m)	Direction from the Source
R1	Educational: Middleton Livery Yard and Riding Tuition	OCU (A19)	170 m	South East
R2	Recreational: Old Road residential properties (nearest)	OCU (A19)	391m	South East

The nearest residential and commercial receptors are located approx. 170m south east of the site off, comprising of Middleton Livery Yard and Riding tuition. There are trees and scrub between the site and the receptors adjacent to operational areas and other receptors in this direction are over 250m away (the houses). There are no other residential or commercial properties within 250m of the site.

## 2.6 Risk Assessment

The method used for this bioaerosol risk assessment is adapted from the EA's standard guidance on risk assessments for environmental permitting, which recommends using a Source-Pathway-Receptor model to help determine the magnitude of the risk associated with bioaerosol emissions from a facility.

There is one potential sources of bioaerosols release within 250m of static receptors:

- Odour Control Unit 3

The receptors are situated to the South-East of the release points and the prevailing wind direction is from the South-west. There is potential for wind-borne transportation of bioaerosols, more so in the direction of Receptors R1 & R2.

Most storage tanks, treatment tanks and associated pipework are enclosed. Where tanks are not gas tight and vent to atmosphere, these are either connected to an OCU, or the moisture content is not low enough that there is not considered to be a risk of release of bioaerosols.

The maximum daily throughput of sludge is 7,003,985 m<sup>3</sup> (wet tonnes) per day.

The closest receptor is R1, the Livery yard, however as this is a commercial premises with a small teaching yard it is unlikely that students would be outside for over 6 hours at a time, and are generally excluded under M9 guidance.

The nearest applicable sensitive receptor is R2, the houses off Old Road, however these are further than 250m away from the odour control units. Whilst the possibility of an OCU releasing bioaerosols cannot be ruled out, the likelihood and magnitude of any bioaerosol release is likely to be low. Given that the identified potential source is considered to represent a low risk and the intervening distance, the screening provided by the vegetation, and that the prevailing wind does not blow in this direction, it is considered that the probability of exposure at these locations from bioaerosols emitted from the site is also likely to be low (if releases occur at all).

The other potential source is the site cake pad, which is located in the west of the site much further from the offsite receptors to the south and south east. The nearest receptor to the cake pad are houses 450m west of the site and therefore, outside of the assessment distance in M9.

The likelihood of bioaerosols being emitted from the permitted processes on site is considered to be low, and taking into account the location of receptors, their distance from source, and the control measures in place the overall risk is considered to be low or minimal.

Planned monitoring of bioaerosol emissions by Severn Trent Water is expected to validate the assumption that process contributions from sewage sludge treatment works would comply with the 'acceptable level' thresholds.

**Table 3: Risk Assessment of Potential Bioaerosols Sources**

What has the potential to cause harm?	How can the source reach the receptor?	Who can be affected?	Assessing the risk Probability of Exposure	Consequence (what is the harm that can be caused)	Managing the risk (Control Measures)	Overall/residual risk
Source	Pathway	Receptors				
Odour Control Unit - Pre-digestion Sludge Tanks	Inhalation via wind-borne transportation	R1 & R2	<p>Both receptors are &gt;150m away, and also screened by vegetation.</p> <p>The closest receptor is approximately 170m South East, however this is not in the direction of the prevailing which may provide some protection and are commercial properties excluded under M9.</p> <p>Probability of exposure from the OCU is considered to be <b>low</b>.</p>	Impact on human health (considered to be a sensitive receptor).	<p>Most storage tanks, treatment tanks and associated pipework are enclosed. Given the type of OCU, the likelihood of bioaerosol release is anticipated to be minimal.</p> <p>The OCU is maintained monthly by a Framework agreed contractor to reduce the risk of equipment failure.</p>	Low
Cake Pad	Inhalation via wind-borne transportation	R1&R2	<p>Receptors downwind are &gt;330m away from the cake pad and generally screened by vegetation on the site boundary. The prevailing wind is not in the direction of the closest receptor which is also over 250m from the source</p> <p>Probability of exposure from the cake pad is considered to be <b>low</b>.</p>	Impact on human health (considered to be a sensitive receptor).	<p>The cake pad is enclosed on all sides by a low level wall to protect from the wind. Digested sludge cake retains a high moisture content and is not prone to being dusty. Digested cake is removed from the pad every few days.</p>	Low

## 2.7 Abnormal Situations

In the event of plant failures or abnormal situations, an alarm would be raised on the Site Supervisory Control and Data Acquisition (SCADA) or telemetry systems, which will be reacted to by on-site or regional control room operators and Duty Managers. Depending upon the nature of the fault or emergency, where required, an operator would contact a mechanical or electrical technician, both of whom are on-call 24-hours, to attend site as soon as practicable.

If the on-call technicians are already engaged upon other response work, there is the facility to access staff from other STW geographic divisions, coordinated by the Duty Manager. All faults, breakdowns and emergencies are logged electronically together with records of the action taken and the solutions reached. One such abnormal event would be failure of the flare stack and/or CHP. Such an event would result in releases of biogas from the PRV's located on the roofs of the digesters and in the gas holder compound, which could release bioaerosols. This occurs to prevent over pressurisation and minimise the likelihood of a catastrophic failure of the digesters and gas systems. While the problem is rectified, biogas generation is reduced by reducing or inhibiting the digester feed.

### 3. Conclusions

A source-pathway-receptor risk assessment has been undertaken to appraise the potential for risk to human health in dwellings and other nearby buildings from bioaerosols arising from operations at the Strongford Sewage Treatment Works. The risk assessment followed a standardised approach, namely:

- Hazard identification: what sources of bioaerosols are present;
- Exposure assessment: what are the mechanisms or pathways allowing bioaerosols to migrate off site and reach a receptor; and
- Risk evaluation: what is the probability of exposure. This considered control measures in place to reduce the probability or magnitude of release.

Potential sources of bioaerosols within the site processes have been identified at the site, due to open cake storage and type of OCU installed at one points.

Although only qualitative data is available, the overall bioaerosol risk to the identified, potential, receptors within 250m of potential bioaerosol sources associated with the sludge treatment process is considered to be a 'Very Low' risk based on the probability of exposure and onsite management and maintenance, which would minimise the magnitude of any releases.

#### 3.1 Sampling

Severn Trent Water confirms it will use MCERTS accredited providers for the sampling from location OCU3 biofilter (NGR: SJ 87992 39213) and will sample OCUs on a bi-annual basis.

In line with M9, ambient sampling will be conducted to identify background emissions. A sampling round, consisting of four individual sampling points, each with its own agar plate will be carried out. One point will be located upwind of the biofilter give a background concentration, and three will be located in a fan like arrangement downwind:

Upwind sample location (approx.) which is approx. 50m NW of the biofilter: SJ 8803 3929\*

Downwind sample location 1 which is 60m S of the biofilter: SJ 8800 3915\*

Downwind sample location 2 which is approx. 85m WSW of the biofilter: SJ 8792 3917\*

Downwind sample location 3 which is approx. 80m SW of the biofilter: SJ 87970 3918\*

\* NGR's for sampling locations are only 8 digits at present, to allow the contractor flexibility as to precise location, taking into account the ability to safely locate and access (and security) of the sampling plates.

## **Appendix A. Site boundary and emission points**

See Main ASD site layout drawing

Appendix B. Site plan showing static receptors around the site

