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Fairlee Transfer Water Pumping Station

Bioaerosol Risk Assessment

March 2024

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March 2024

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1 Introduction

1.1 Overview

Southern Water is applying for a new bespoke environmental permit at the Fairlee Transfer Water Pumping Station ("the Site"). The permit will allow the Site to accept cess and blue toilet waste directly into the pumping station, and enable the Site to continue to accept sludge cake, grit and screenings for storage from other sites on the Isle of Wight. The Site's activities are covered by the Environmental Permitting Regulations (EPR) 2016, which incorporates the application of the Industrial Emissions Directive (IED). The Site currently operates under S1, S2, D5, and U6 exemptions and has two environmental permits for discharges to water (Ref: NPSWQD000451 and A851/IOW/98).

Regulatory Position Statement 209[1], issued 23 January 2018 by the Environment Agency, states that all sites that have a permit for the treatment of biological waste within 250 metres of a sensitive receptor (a place where people live or work for more than 6 hours at a time) must carry out a site-specific bioaerosol risk assessment. As sensitive receptors are found close the boundary of the Site, the closest of which is approximately 145m from the nearest potential source of bioaerosols at the Site, a bioaerosol risk assessment has been undertaken.

This bioaerosol risk assessment has assessed the magnitude of risk from potential emissions of bioaerosols from the Site at nearby sensitive human health receptors. The assessment has been undertaken in accordance with the methods and principles outlined in the Environment Agency's "*Guidance on the evaluation of bioaerosol risk assessments for composting facilities*" [2].

1.2 Site location

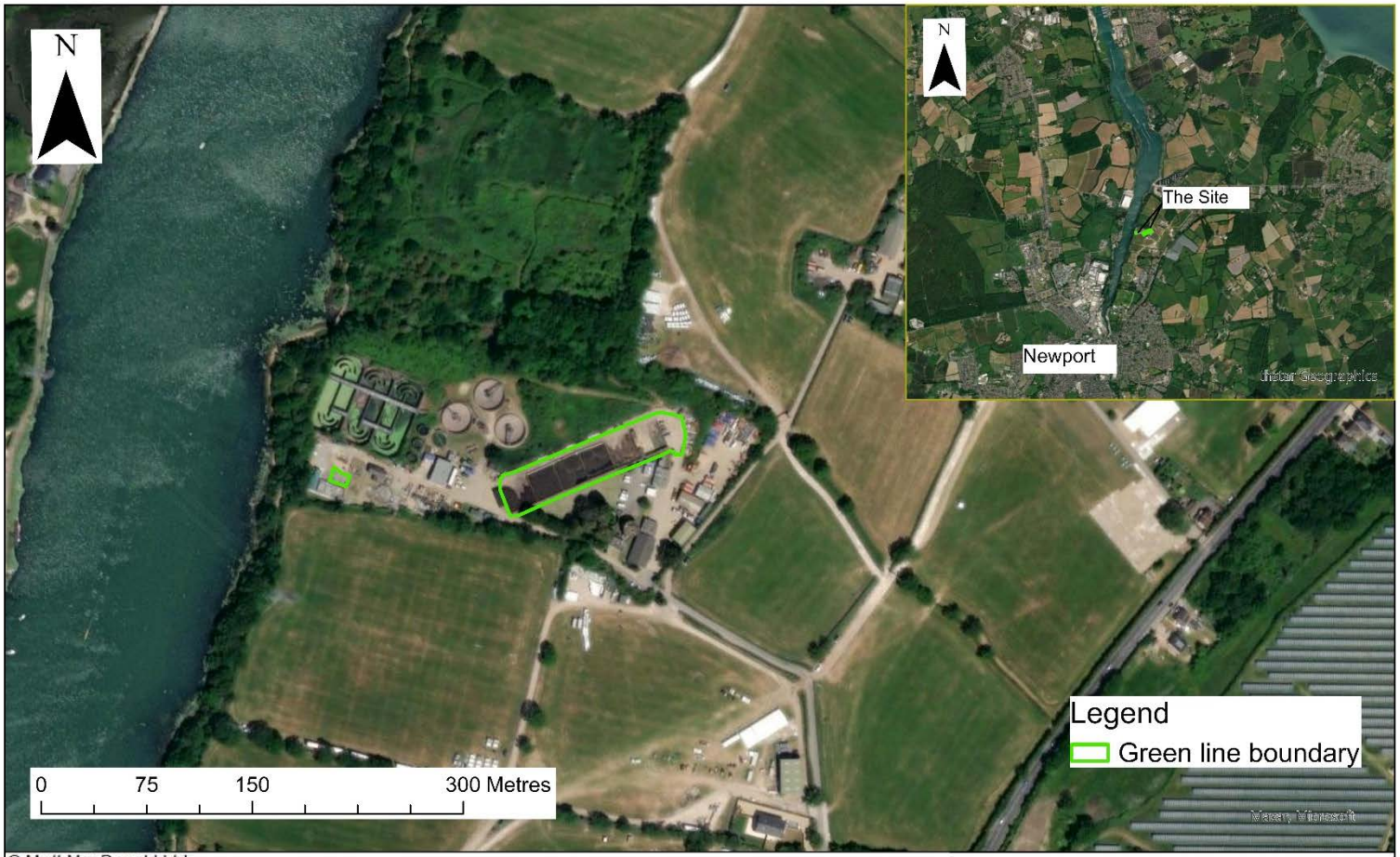
The Site is situated off the A3054 Fairlee Road in the north-east of Newport, Isle of Wight. The Site is surrounded by agricultural fields and rural land use to the north, east and south and the River Medina to the west. Beyond the agricultural fields to the north east are areas of mixed of residential and industrial properties.

The layout of the Site is shown in Figure 1.1.

[1] Environment Agency (2018) Bioaerosol monitoring at regulated facilities - use of M9: RPS 209. Available online at: https://www.gov.uk/government/publications/bioaerosol-monitoring-at-regulated-facilities-use-of-m9-rps-209/bioaerosol-monitoring-at-regulated-facilities-use-of-m9-rps-209

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

Figure 1.1: Site location



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2 Methodology

2.1 Overview

Bioaerosols are naturally present in the air, but they are also associated with composting, anaerobic digestion (AD) and mechanical biological treatment, which are the main processes used to treat organic waste in the UK.

Bioaerosols are micro-organisms which are suspended in the air; these can include bacteria, fungi and viruses, or parts of living organisms, such as spores and plant pollen. Bioaerosols range in size from 0.02-100µm but are generally smaller than 10µm in diameter so can easily be breathed into the human respiratory system where they can cause adverse health impacts such as respiratory and gastrointestinal illnesses. Especially relevant to waste treatment facilities are infections of the respiratory system caused by Aspergillus fumigatus, which can be fatal, especially for at-risk and immuno-compromised patients. Bioaerosols can also cause eye irritation and dermatitis if they come into contact with the eyes and skin.

2.2 Guidance

There is minimal regulatory guidance available for assessing bioaerosol emissions from AD facilities. Regulatory Position Statement (RPS) 031[3] states that bioaerosol concerns would normally be associated with composting activities, which are defined as: *'biological decomposition of biodegradable waste under conditions that are predominantly aerobic and that allow the development of thermophilic temperatures as a result of biologically produced heat'*.

This RPS also defines operations which are *'likely to result in the uncontrolled release of high levels of bioaerosols'* as including '*the shredding of waste and the turning of waste in the sanitisation, stabilisation and maturation stages of composting where these operations are not contained or are not subject to exhaust ventilation and scrubbing/filtering'*.

These activities do not occur at the Site as the biological decomposition of waste occurs under controlled, anaerobic conditions. Therefore, the Site is unlikely to be a high-risk site for bioaerosol emissions. This is supported by a 2012 Environment Agency guidance note[4] which states that the Environment Agency do not consider bioaerosols from anaerobic digestion to be of serious concern (provided composting activities are not undertaken at the facility).

Nonetheless, current Environment Agency guidance[5] requires any facility which could release bioaerosols to provide a site-specific bioaerosol risk assessment if there are sensitive receptors within 250m of activities. For new permits there is also a requirement to monitor bioaerosols if the site is within 250m of a sensitive receptor[6].

[3] Environment Agency. 2011. Composting and potential health effects from bioaerosols: our interim guidance for permit applicants. Regulatory Position Statement 031.

[4] Environment Agency. 2012. Guidance for developments requiring planning permission and environmental permits' (England)

[5] Environment Agency (2018) Bioaerosol monitoring at regulated facilities - use of M9: RPS 209. Available online at: https://www.gov.uk/government/publications/bioaerosol-monitoring-at-regulated-facilities-use-of-m9-rps-209/bioaerosol-monitoring-at-regulated-facilities-use-of-m9-rps-209

[6] *"Sensitive receptor – any building, other structure or installation, in which at least one person normally lives or works, other than a building, structure or installation within the same ownership or control as the operator/owner of the composting facility."* Taken from 'Guidance on the evaluation of bioaerosol risk assessments for composting facilities.'

As sensitive human health receptors are found within 250m of the activities at the Site which have the potential to release bioaerosols, a bioaerosol risk assessment has been undertaken.

2.3 Methodology

The method used for this bioaerosol risk assessment is adapted from the Environment Agency's '*Guidance on the evaluation of bioaerosol risk assessments for composting facilities*'[7], which recommends using a Source-Pathway-Receptor model to help determine the magnitude of the risk associated with bioaerosol emissions from a facility.

The magnitude of risk is a function of both the probability of exposure and the consequences of the hazard. The probability of exposure to bioaerosols can be described as:

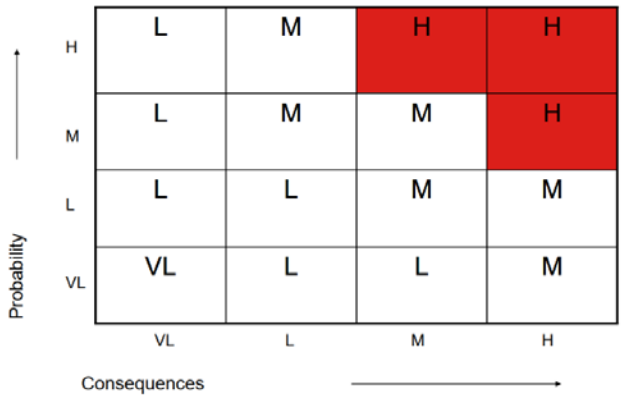
- High – exposure is probable, direct exposure likely with no/few barriers between source and receptor
- Medium – exposure is fairly probable, barriers less controllable
- Low – exposure unlikely, barriers exist to mitigate
- Very low – exposure very unlikely, effective and multiple barriers

The consequence of the hazard considers the nature of the source, the hazard and receptor. These consequences can be described as:

- High – severe consequences, evidence that exposure may result in serious damage
- Medium – significant consequences, evidence that exposure may result in damage that is not severe and is reversible
- Low – minor consequences, damage not apparent, reversible adverse changes possible
- Very low – negligible consequences, no evidence for adverse changes

The probability of exposure and consequence of the hazards are then combined to determine the overall magnitude of the risk, as demonstrated in Figure 2.1.

Figure 2.1: Magnitude of risk matrices



Source: Environment Agency, 2009

For this bioaerosol risk assessment, a Source-Pathway-Receptor model has been used to help assess the probability of exposure associated with different processes at the Site (Section 3). Existing control measures have also been identified to help inform the probability of exposure (Section 4). This has then been combined with the consequence of the hazard in Section 5 to

[7] 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.

determine the overall magnitude of risk associated with the different sources of bioaerosols at the Site, using the risk matrix above.

3 Source – Pathway – Receptor model

3.1 Overview

This section provides a summary of the sources of bioaerosols at the Site and the potential pathways that the bioaerosols could travel to sensitive human health receptors.

3.2 Sources

3.2.1 Overview

The Site includes the following assets which could release bioaerosols:

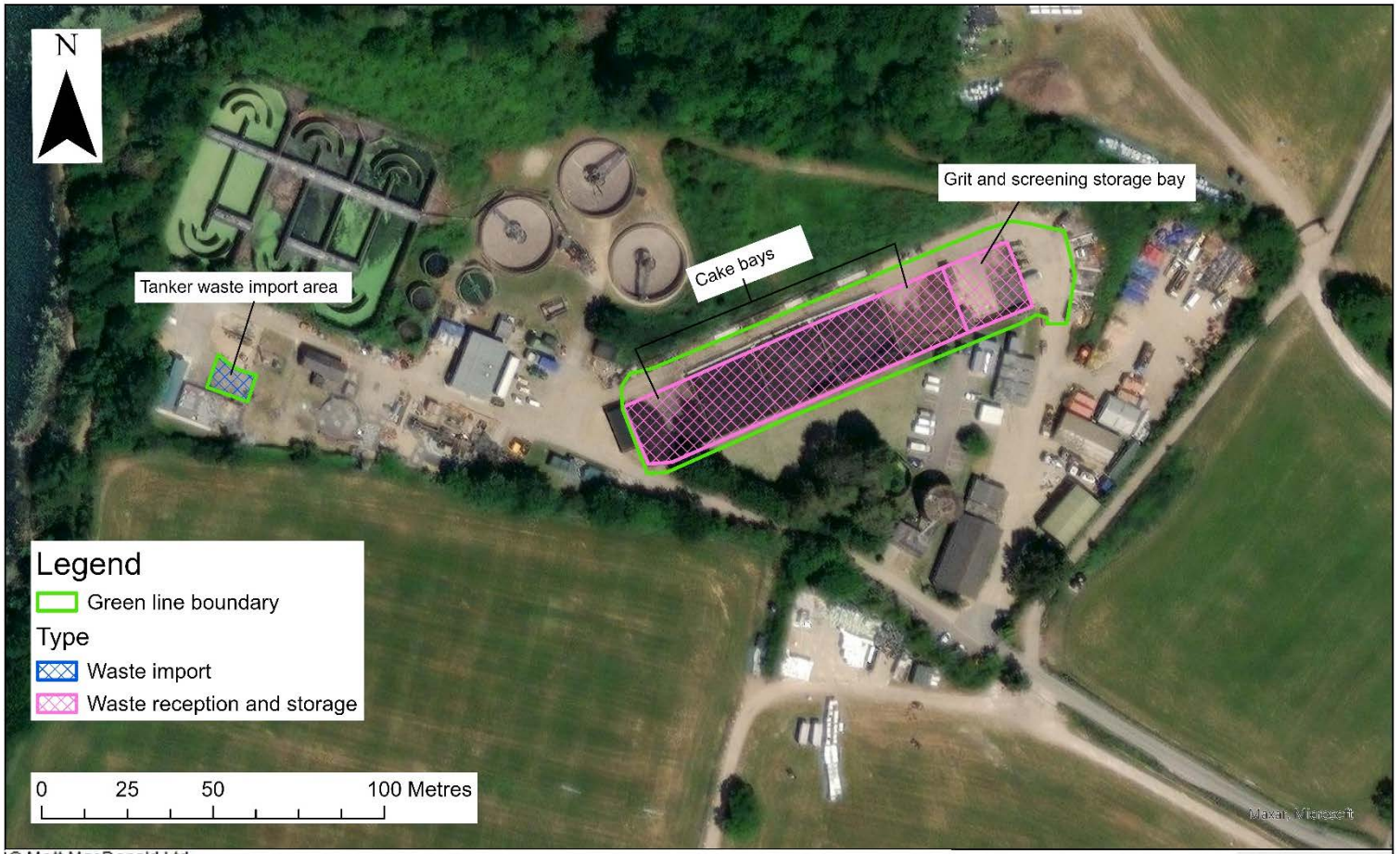
- Tankered waste import area
- One grit and screening storage bay
- Five cake bays

The following processes undertaken at the Site involving these assets have the potential to release bioaerosols:

- Waste import (tankered waste import area)
- Waste reception and storage (cake bays, and grit and screening storage bay)

Figure 3.1 shows the locations of these different processes and assets across the Site. A summary of the activities which occur at the Site involving these assets is presented below.

Figure 3.1: Potential sources of bioaerosols at the Site



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3.2.2 Tankered waste import area

The Site accepts wastewater from portable shower units and blue toilet waste from chemical toilets during the Isle of Wight festival, which is for one week of the year. The waste is delivered to the Site by covered tankers and then discharged into the tankered waste import area. The waste is then passed to Sandown Wastewater Treatment Works (WTW) via underground covered pipes for further treatment. There is no storage area and treatment of wastewater within the Site. The Site also occasionally accepts discharges from storm overflows from Sandown WTW.

3.2.3 Sludge cake reception and storage

The Site accepts wet grit and screenings from other Southern Water's WTWs across the Isle of Wight for temporary storage. The wet grit and screenings are transferred via tanker into the grit and screening bay to dry out before disposal off-site.

The Site also accepts of dewatered sludge cake from the Sandown Sludge Treatment Centre (STC). The imported cake is discharged via Roll on, Roll off (Ro-Ro) into the cake bays for temporary storage. The dry cake is stored in the cake bay for up to 6 months (depending on spreading times) before it is transported offsite for recycling.

3.3 Pathways

Bioaerosols are very small and light in weight so can easily be transport by the wind from their source to a receptor. The 2019-2023 wind rose for the nearest meteorological site, St. Catherine's Point (located approximately 15km south of the Site), is shown in Figure 3.2. This monitoring site experiences strong prevailing winds from the west, with occasional strong winds from the east. However, this meteorological site is located on a headland while the Site is located within a bay and therefore, addition, an atmospheric hindcast model (Vortex) has also been used to assess the wind conditions at the Site.

The Vortex model uses historic ERA5 data from the European Centre for Medium-Range Weather Forecasts (ECMWF) and works by combining past meteorological data with current weather models. This allows meteorological parameters, such as wind speed and direction, to be predicted at any location for any time period from the past 40 years, accounting for some localised effects. The data from this model is a popular dataset for climate modellers and is used by the World Meteorological Organization for their annual State of the Climate report.

Figure 3.3 presents the wind rose generated for the Site from the Vortex model for the period from 2019-2023. The wind rose demonstrates that historically this location experiences strong prevailing winds from the west and south west, with occasional gusts from the north east. This suggests that sensitive receptors located to the north east and east of the Site would be at the greatest risk from bioaerosol emissions from the Site as they would be downwind of the prevailing wind direction.

Overall, the two datasets show general agreement with the modelled data indicating the predominant wind originating from a south westerly direction rather than a westerly direction.

Figure 3.2: Average wind rose for St. Catherine's Point meteorological site, Isle of Wight 2019-2023

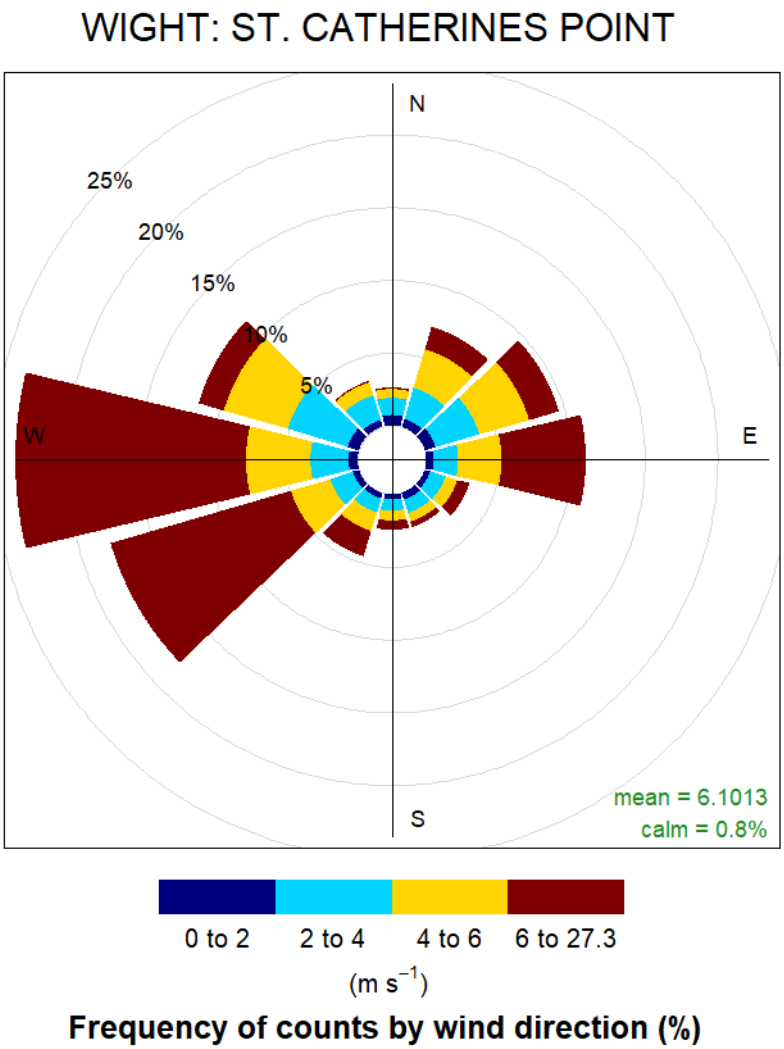
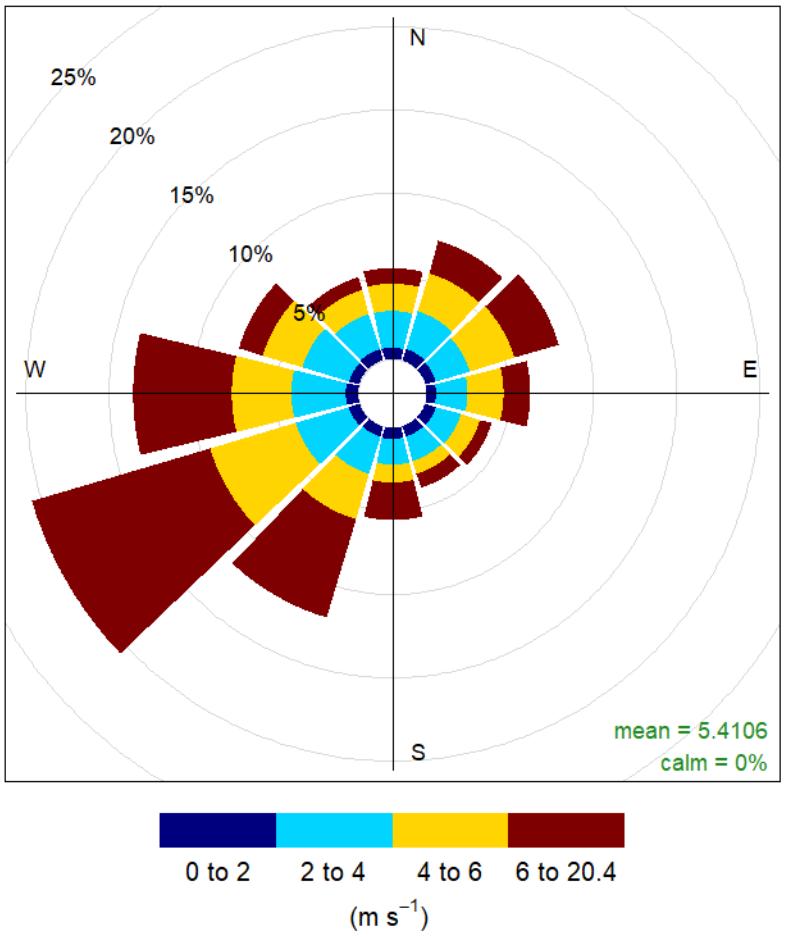


Figure 3.3: Average wind rose for the Site from the Vortex model, 2019-2023



Concentrations of bioaerosols decline rapidly within the first 100m from a source and generally decrease to background concentrations within 250m[8,9]. The local terrain in the 250m area surrounding the Site is relatively flat, with some low-lying trees bordering the Site to the north (so there would be few obstacles to inhibit the pathway between source and receptor). However, the effectiveness is dependent on the release height of bioaerosols on Site.

3.4 Receptors

Environment Agency guidance[10] 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*

[8] Environment Agency. 2011. Composting and potential health effects from bioaerosols: our interim guidance for permit applicants. Regulatory Position Statement 031.

[9] Health and Safety Executive, 2010. Bioaerosol emissions from waste composting and the potential for workers' exposure.

[10] Environment Agency (2018) Technical Guidance Note (Monitoring) M9 – Environmental monitoring of bioaerosols at regulated facilities. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/730226/M9_Environmental_monitoring_of_bioaerosols_at_regulated_facilities.pdf

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 occupied by the family of those controlling the facility."

There are three areas of sensitive receptors found within 250m of potential bioaerosol emission sources at the Site. As demonstrated in Figure 3.4, two areas of residential receptors are found to the northeast and west of the Site. There is also one area of industrial land use to the northeast of the Site. The nearest of these areas to a potential bioaerosol source is the area of industrial land use located in the northeast of the Site, approximately 145m northeast of the grit and screening storage bay.

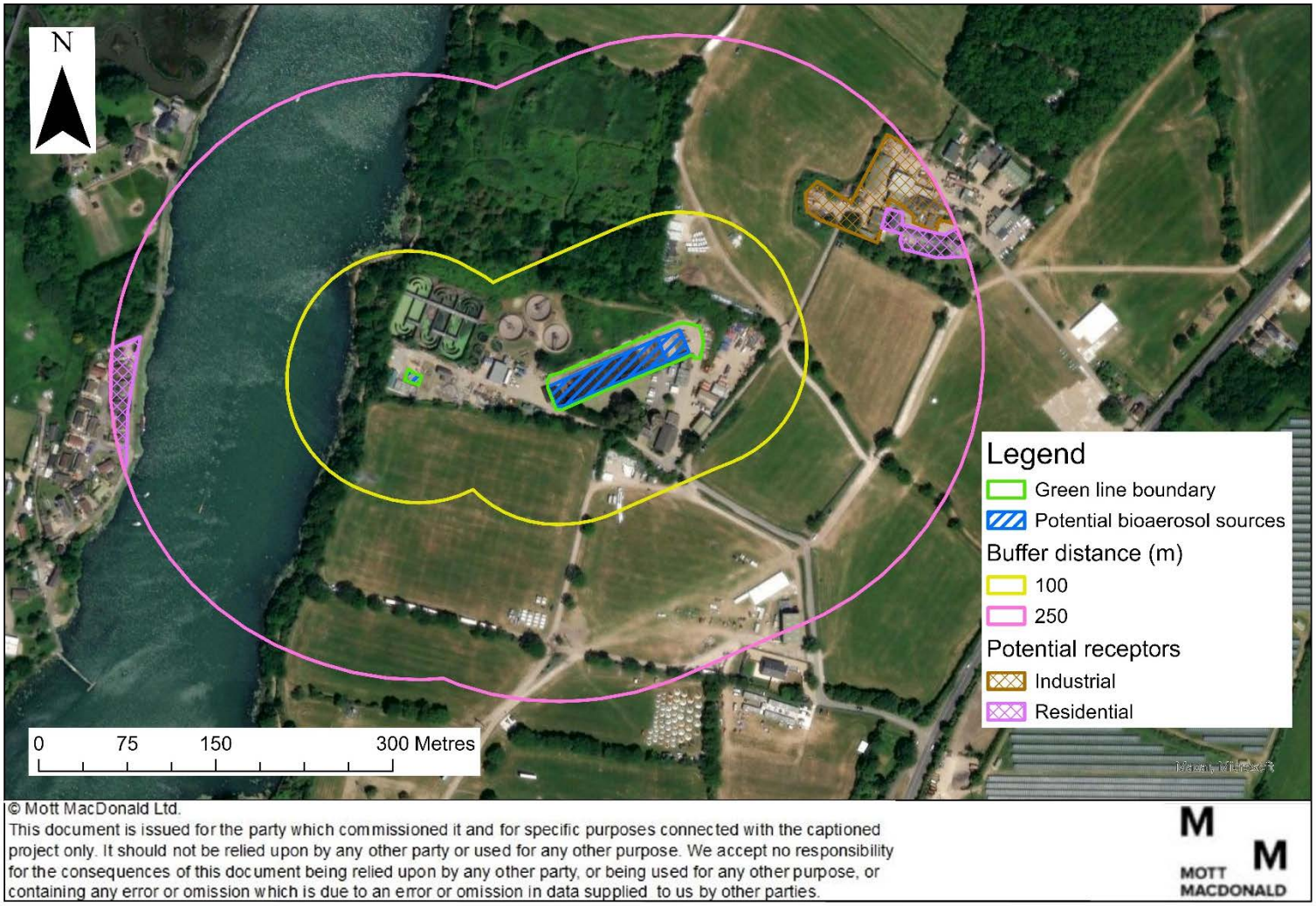
For these three areas of receptors, the distance and direction from each potential bioaerosol emission source on Site to the receptors has been identified below in Table 3.1. Where multiple assets exist for the same process, such as cake bays, only the closest asset to the receptors has been presented.

Table 3.1: Receptors within 250m of potential emission sources at the Site

Nearest potential emissions source to receptor	Process	Distance (m) and direction of different receptors from nearest potential emission source [b] [c]		
		Industrial land use northeast of the Site (Off North Fairlee Road)	Residential properties northeast of the Site (Off North Fairlee Road)	Residential properties west of the Site (Dodnor Lane)
Tankered waste import area	Waste import	355, northeast	410, northeast	**230**, west
Grit and screening storage bay	Waste reception and storage	**145**, northeast	190, northeast	440, west
Cake bays	Waste reception and storage	**165**, northeast	210, northeast	350, west

Source:
(a) Refers to the receptors presented within Figure 3.4.
(b) Distance from source to receptor is rounded to the nearest 5m.
(c) Value in bold represents the nearest potential emission source for each process which is closest to a sensitive receptor.

Figure 3.4: Sensitive receptors within 250m



3.5 Summary

Table 3.2 below summarises the potential sources of bioaerosol emissions at the Site, the sensitive receptors most at risk and the pathways through which the bioaerosols could travel from source to receptor.

Table 3.2: Source-Pathway-Receptor model

Source process	Potential emission source	Pathway	Nearest receptor
Waste import	Tankered waste import area	Air transport then: • Inhalation (through nose or mouth) • Ingestion (eating or swallowing) • Absorption/contact (through skin or eyes) • Injection (by high pressure equipment/ contaminated sharp objects)	230m west - Residential properties on Dodnor Lane
Waste reception and storage	Grit and screening storage bay		145m northeast - Industrial land use off North Fairlee Road
	Cake bays		165m northeast - Industrial land use off North Fairlee Road

4 Control measures

4.1 Overview

The three primary ways to mitigate emissions of bioaerosols[11] is to:

- Reduce emissions
- Contain emissions
- Enhance dispersion

The sections below outline the different bioaerosol control measures in place at the Site. These control measures aim to reduce and contain emissions of bioaerosols to prevent the source-pathway-receptor link associated with each of the potential emission sources identified in Section 3.5.

4.2 Control measures

4.2.1 Waste import

The transfer of imported wastewater (from portable shower units) and chemical toilet waste has a short duration and, under normal operations, takes place one week per year. These imports arrive to the Site via sealed tankers and are discharged directly into the tankered waste import area. The tanker parking area is sealed and bunded.

If a spillage of cake occurs, operators will carry out clean up as soon as possible (using disinfectant where necessary). If the spillage is caused by a truck, the driver is responsible for cleaning up the spill before leaving the Site. If a truck left a spillage behind, operators will log and report any incident observed and the driver or company involved will be asked to return to the Site immediately to clean up. Significant spillage incidents will be recorded in the Site diary.

Appropriate wash up facilities are also provided for drivers to clean the vehicles after loading or unloading. Truck drivers are required to hose down any spillage after each loading or unloading and clean contaminated wheels before leaving the Site.

4.2.2 Dewatered cake reception and storage

The cake bays are uncovered and contain digested cake which is near the end of sludge treatment process so the bioaerosol content and associated risk of exposure is reduced. In addition, the digested cake is moved to the cake bay for storage before transporting offsite for recycling.

Retaining walls have been erected around three sides of the cake bay to prevent any spillage from the cake bays. This also reduces the risk of bioaerosol emissions from the cake bay by wind erosion. Cake is rarely moved/overturned once loaded into the cake bay. The sampling of the cake bay occurs once per bay per rotation (approximately 10-20 times per year).

The grit and screening bay is uncovered. This area contains grit and screening from Southern Water's WTW across the Isle of Wight, typically from sewer or wet well cleans. The grit and screenings are considered to have a low bioaerosol content and associated risk of exposure.

[11] Wheeler P.A., Stewart, I., Dumitrean, P. and Donovan, B., 2001. Health Effects of Composting: A Study of Three Compost Sites and Review of Past Data. R&D Technical Report P1-315/TR, Environmental Agency, Bristol.

The digested cake, and grit and screenings are temporarily stored on the Site, then transported offsite for recycling for farmland and disposal respectively.

4.3 Emergency procedures

In the event of plant failures or emergency 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, a mechanical or electrical technician, both of whom are on-call 24-hours, would be contacted and would attend the Site as soon as practicable if required. Where the on-call technicians are already engaged upon other response work, there is the facility to access staff from other Southern Water geographic divisions, coordinated by the Duty Manager. All faults, break-downs and emergencies are logged electronically together with records of the action taken and the solutions reached.

4.4 Summary

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.

Across the Site, the potential for bioaerosol emissions which could result in significant consequences is limited. The greatest risk of significant bioaerosol emissions from the Site where there would be the greatest consequence of the hazard, is associated with emergency situations such as a failure of the tankered waste import area, which could result in uncontrolled emissions of bioaerosols. However, such an emergency event would be unlikely, 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.

5 Risk assessment

5.1 Overview

This section assesses the probability of exposure and consequence of the hazard associated with potential emissions of bioaerosols at the Site to determine the overall magnitude of risk. The descriptors used ('very low' to 'high') are based on the descriptors outlined in the Environment Agency guidance[12], as summarised in Section 2.3.

5.2 Probability of exposure

As described in Section 3, the main potential sources of bioaerosols at the Site are associated with:

- Waste import (tankered waste import area)
- Waste reception and storage (cake bays, and grit and screening storage bay)

These processes have the potential to emit bioaerosols, which are transported through the air by the wind and could cause harm to nearby human health receptors. However, as discussed in Section 4, there are multiple control measures in place at the Site which restrict the Source-Pathway-Receptor link by reducing and containing emissions of bioaerosols from these processes. Therefore, across all potential bioaerosol sources at the Site, the overall probability of exposure is '**very low**' to '**low**'.

The final probability of exposures to bioaerosols assessed for each emission source is presented below in Table 5.1.

Table 5.1: Probability of exposure to bioaerosols from different sources at the Site

Process	Potential source of bioaerosols	Probability of exposure	Justification
Waste import	Tankered waste import area	Very low	Stringent loading and unloading procedures. Unloading sludge activities are performed in a sealed and bunded area to covered pipes.
Waste reception and storage	Grit and screening storage bay	Low	Walls are erected around the uncovered bay. Temporary storage on the Site before disposal off-site.
Waste reception and storage	Cake bays	Low	Walls are erected around the uncovered bays. Temporary storage on the Site before recycling off-site.

5.3 Consequence of hazard

While the probability of exposure of receptors to bioaerosols is 'very low' to 'Low' as a result of the control measures in place and the nature of processes on Site, there is still a risk that nearby receptors could be exposed to bioaerosols, for example if there was a failure of the control equipment. Should this occur, any exposure to bioaerosols would likely be temporary/infrequent. Furthermore, if the exposure was due to a failure of control equipment, the fault would be detected by the SCADA system and the emergency protocols would be undertaken to rectify the fault as soon as possible.

[12] 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.

However, if exposure to bioaerosols did occur, this could result in adverse health impacts at sensitive receptors. These impacts could include (but are not limited to):

- Respiratory infections and inflammation of the respiratory system
- Reduced lung function
- Allergic reactions
- Gastro-intestinal disorders
- Dermatitis
- Eye irritation

The consequence of the hazard at sensitive receptors (i.e. the severity of impacts on human health) is largely determined by the proximity of the receptor to the emission source; concentrations of bioaerosols decline rapidly within the first 50-100m from a source (and generally decrease to background concentrations within 250m) [13,14]. Therefore, receptors within 100m of bioaerosol emission sources will experience a greater hazard consequence than those more than 100m from the emission source.

For the purpose of this assessment, receptors within 50m of bioaerosol sources and downwind of the prevailing wind direction are considered to be '**high**' consequence of hazard. This is because within 50m of a source, consequences could be "severe", and "exposure may result in significant damage", as being downwind of the prevailing wind direction also increases the likelihood of exposure. Receptors within 50m of bioaerosols that are upwind of the prevailing wind direction are considered to have a '**medium**' consequence of hazard, as though they are in close proximity to a bioaerosol source, they are less likely to be exposed due to the prevailing wind direction.

Sources of bioaerosols within 50-100m of receptors are also considered to have a '**medium**' consequence of hazard, irrespective of whether they are upwind or downwind of the emission source. This is because within 50-100m of the source, concentrations of bioaerosols would reduce, so temporary exposure could result in "significant consequences" and potentially result in "damage that is not severe and is reversible". Beyond 100m, up to 250m, the consequence of the hazard is considered to be '**low**' as concentrations of bioaerosols would be lower so the consequence of the hazard would also be lower, resulting in "minor consequences" where damage is "not apparent, reversible adverse changes possible". Beyond 250m, the consequence is considered '**very low**' as concentrations of bioaerosols generally decrease to background concentrations at this distance so there would be "no evidence for adverse changes" at sensitive receptors at this distance. Beyond 500m, the consequence is not applicable (n/a).

The final consequence of hazard assessed for each emission source is presented below in Table 5.2. Across all potential bioaerosol emission sources at the Site, the consequence of hazard is '**low'**.

[13] Environment Agency. 2011. Composting and potential health effects from bioaerosols: our interim guidance for permit applicants. Regulatory Position Statement 031.

[14] Health and Safety Executive, 2010. Bioaerosol emissions from waste composting and the potential for workers' exposure.

Table 5.2: Consequence of hazard from bioaerosols s at the Site

Process	Potential source of bioaerosols	Nearest receptor	Consequence of hazard	Justification
Waste import	Tankered waste import area	230, west	Low	Nearest receptor <250m from potential source
Waste reception and storage	Grit and screening storage bay	145, northeast	Low	Nearest receptor <250m from potential source
Waste reception and storage	Cake bays	165, northeast	Low	Nearest receptor <250m from potential source

5.4 Magnitude of risk

Table 5.1 below summarises the probability of exposure, consequence of hazard and resulting magnitude of risk for each potential bioaerosol emission source at the Site. Across all sources, there is a ‘very low’ to ‘Low’ probability of exposure due to the nature of the processes and control measures in place which would prevent uncontrolled releases of bioaerosols. The consequence of hazard is described as ‘low’ depending on the proximity of the potential emission source to a sensitive receptor.

In accordance with Environment Agency guidance[15], across all potential bioaerosol emission sources, the magnitude of risk is described as ‘**low**’. Therefore, operation of the Site is unlikely to lead to significant impacts at nearby sensitive receptors from bioaerosol emissions.

[15] 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.

Table 5.1: Magnitude of risk from bioaerosols at the Site

Process	Potential source of bioaerosols	Probability of exposure	Consequence of hazard	Magnitude of risk	Justification
Waste import	Tankered waste import area	Very Low	Low	Low	Stringent loading and unloading procedures. Unloading sludge activities are within a sealed and bunded area to covered pipes. Nearest receptor <250m from potential source
Waste reception and storage	Grit and screening storage bay	Low	Low	Low	Walls are erected around the uncovered bay. Temporary storage on the Site before disposal off-site. Nearest receptor <250m from potential source
Waste reception and storage	Cake bays	Low	Low	Low	Walls are erected around the uncovered bays. Temporary storage on the Site before recycling off-site. Nearest receptor <250m from potential source

6 Summary

At the Site, there is the potential for bioaerosol emissions from:

- Waste import (tankered waste import area)
- Waste reception and storage (cake bays, and grit and screening storage bay)

Bioaerosol emissions associated with these processes could be transported by the wind to nearby sensitive human health receptors bordering the Site, resulting in adverse health effects. As these sensitive human health receptors are within 250m of potential emission sources at the Site, a bioaerosol risk assessment has been undertaken in accordance with Environment Agency guidance.

To inform the assessment, a Source-Pathway-Receptor model was developed and the control measures at the facility to reduce and contain bioaerosol emissions were reviewed. This was undertaken to determine the probability of exposure, consequence of hazard and overall magnitude of risk associated with different processes at the Site.

Based on the ‘very low’ to ‘low’ probability of exposure and ‘low’ consequence of hazards associated with different processes at the Site, the overall magnitude of the risk associated with bioaerosols emissions from the Site is considered to be ‘low’. Operation of the Site is therefore unlikely to lead to significant impacts at nearby sensitive receptors from bioaerosol emissions. This is primarily due to the control measures in place which are considered to be effective at reducing and containing emissions of bioaerosols, inhibiting the pathway between source and receptor.