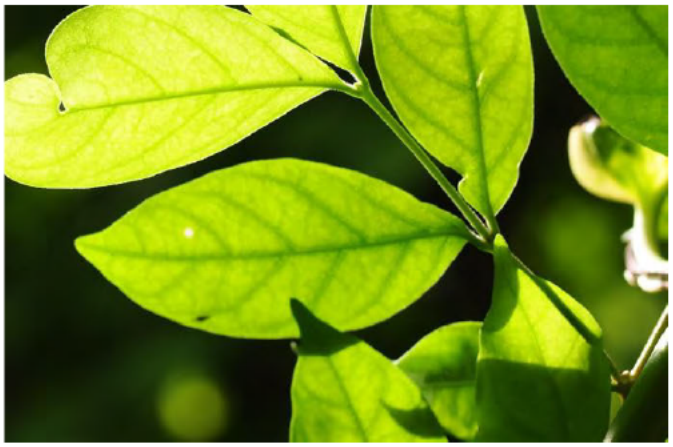
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Shropshire In-Vessel Composting Facility



Veolia

Bioaerosol Risk Assessment

ENGINEERING + CONSULTING

Document approval

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Document revision record

Revision no	Date	Details of revisions	Prepared by	Checked by
0	07/05/2025	First issue	SMN	RSF
1	23/05/2025	Final version	SMN	RSF
2	12/02/2026	Updated for NRW PAC response	SMN	RSF

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1 Introduction

1.1 Background

Fichtner Consulting Engineers Ltd (Fichtner) has been engaged by Veolia ES Shropshire Limited (the Client) to prepare a Bioaerosol Risk Assessment to support the Environmental Permit (EP) application for an in-vessel composting (IVC) facility (the Facility) to be installed at the former Befesa salt slag processing facility, Fenn's Bank, near Whitchurch. The site location is shown in Figure 1.

The Facility will treat up to 100,000 tonnes per annum (tpa) of compostable waste. The activities to be undertaken will be permitted by Natural Resources Wales (NRW) under the Environmental Permitting (England and Wales) Regulations (2016).

The operations include the management of organic wastes with the potential to generate bioaerosols. Therefore, this Bioaerosol Risk Assessment has been produced to assess the potential risk posed by bioaerosol emissions from the Facility.

A previous version of this report (UF00174-0030-0002SMN Shropshire IVC Facility Bioaerosol Risk Assessment_r1, dated 23 May 2025) was submitted with the EP application. A pre-application consultation (PAC) response has subsequently been received from NRW regarding the planning application for the Facility, which advised that additional measures are required to reduce the air quality impact of the Facility. This included increasing the biofilter stack height from 20 m to 27 m. This version of the assessment has been updated to reflect this change.

1.2 Objective

The objective of this assessment is to evaluate the likelihood of potential emissions of bioaerosols from the Facility, in conjunction with the consequences to nearby receptors, to determine the overall risk to human health within the vicinity of the Facility.

2 Approach

2.1 Guidelines

There is limited regulatory framework or guidance relating to bioaerosol emissions from facilities managing anaerobic digestion of organic waste. The Environment Agency (EA) guidance note, dated October 2012, *'Guidance for developments requiring planning permission and environmental permits'* states:

> "We will need to consider proposals for in-vessel composting activities located within 250m of sensitive receptors (workplaces or homes) in more detail. These activities will need to demonstrate via a site-specific bio-aerosol risk assessment (SSBRA) that levels of emissions are acceptable"

This guidance note does not prescribe a risk assessment methodology, but links to the EA position statement '*Composting and potential health effects from bioaerosols: our interim guidance for permit applicants'* dated 2010 which makes reference to the document '*Guidance on the evaluation of bioaerosol risk assessments for composting facilities'*[1] that was published jointly by the EA and Cranfield University in 2009 (the 2009 EA guidance). The principles of the 2009 EA guidance have been applied in the development of this Bioaerosol Risk Assessment, in lieu of any specific guidance published by NRW. The 2009 EA guidance proposes the following steps:

- Hazard identification – what sources of hazard(s) are present and what are their properties.
- Exposure assessment – evaluate the plausibility of the hazard being realised at the receptor, who (or what) is exposed, how long and often.
- Risk estimation – of what relative scale is the probability and extent of possible harm.
- Risk characterisation – how significant is the risk and what are the uncertainties.

2.2 Methodology

The approach detailed in the 2009 EA guidance has been applied to determine the magnitude of risk accounting for the probability of harm and consequence of the hazard.

2.2.1 Probability of harm

The probability of harm examines the likelihood of exposure for an individual. The terminology is taken directly from the 2009 EA guidance. For clarity, the 'probability of harm' in this context is best thought of the potential for exposure, as it does not specifically consider the harm that would occur due to that exposure. The term 'potential for exposure' has been used in this assessment. The following descriptors have been applied:

- 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; or
- Very low – exposure very unlikely, effective and multiple barriers.

The potential for exposure is also affected by the proximity of the receptor to the bioaerosol source.

[1] EA, (2009) Guidance on the evaluation of bioaerosol risk assessments for composition facilities.

2.2.2 Consequence of hazard

The consequence of the hazard considers the nature of the source, the hazard, and the receptor. As such, consideration must be given to the source parameters (e.g. high or low potential for bioaerosol release), the nature of the hazard (bioaerosol release which could lead to adverse health effects) and the sensitivity of the receptor. The 2009 EA guidance defines schools and hospitals as being 'particularly sensitive'. Schools and hospitals would therefore be considered to be of higher sensitivity than residential receptors, while workplaces, where exposure is typically for less time, would be of lower sensitivity.

The following descriptors for the consequence of the hazard have been applied:

- 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; or
- Very low – negligible consequences, no evidence for adverse changes.

2.2.3 Magnitude of risk

The magnitude of risk can be determined by examining the potential for exposure and the consequence of the hazard. The matrix presented in Table 1 has been applied to determine the magnitude of risk.

Table 1: Magnitude of risk matrix

Potential for exposure	Consequence			
	Very low	Low	Medium	High
High	Low	Medium	High	High
Medium	Low	Medium	Medium	High
Low	Low	Low	Medium	Medium
Very low	Very low	Low	Low	Medium

3 Process Description

3.1 Description of Facility

The Facility comprises IVC facility with a design capacity of approximately 100,000 tonnes per annum of organic material.

The Facility comprises:

1. A main IVC processing building comprising:
   a. a tipping hall with waste storage bays,
   b. pre-treatment, i.e. shredding and blending; and
   c. 7 no. IVC tunnels;
2. Outdoor stabilisation/maturation area, comprising 11 bays 34 m x 5.5 m and 5 bays 30 x 5.5 m;
3. Refining plant;
4. Oversized material storage;
5. Composted product storage;
6. 2 no. biofilters;
7. 1 no. scrubber and combined 27 m tall biofilter emission stack;
8. Control room and ancillary water storage tanks; and
9. Office, welfare and workshop areas.

The layout of the site is presented in Figure 2 of Appendix A.

3.1.1 Organic waste reception, pre-treatment and storage

Organic waste is delivered to the Facility and deposited into concrete bays within the reception hall, which is fitted with fast-acting roller shutter doors and held under negative pressure to prevent fugitive emissions from the building. The total volume of storage of incoming material is 2,175 m^3.

The waste is then blended and shredded in a pre-treatment plant within the process building, which forms a uniform mixture suitable for composting. The shredded material is then stored in a concrete bay of maximum capacity of 450 m^3.

3.1.2 In-vessel composting

The shredded material is transferred into the processing hall and deposited into one of the seven composting vessels. These are equipped with doors with rubber sealing. A series of pipes distribute air and process conditions are constantly monitored to ensure aerobic conditions are maintained. The process destroys any pathogens present in the material conforming to all requirements under the Animal By Product Regulations.

3.1.3 Maturation

Once in-vessel composting is complete and the material is sanitised, as verified by an automated computer controlled programme, the material is transferred to an outdoor stabilisation/ maturation pad comprising 16 bays. The pad has a forced aeration system supplying air required to support the biological activity required to complete the composting process. The use of a forced air system means there is no requirement for tuning of the piles. During the stabilisation period stage

temperature and air flow are monitored by a probe array. Moisture and material structure are monitored manually.

3.1.4 Refining plant

Once maturation is complete the material is passed through a refining plant which removes oversized material, graded compost material, and non-organic material (plastics and metals). The refining plant is mostly enclosed. Oversized material is temporarily stored next to the refining plant before it is recirculated to the input stage for shredding. Metals are removed from site for recycling and plastics removed for energy recovery.

3.1.5 Product storage

Once refinement is complete, the product is stored in one of two storage bays awaiting transport off site for final use.

3.1.6 Biofilters

The air from within the process building is extracted for treatment in two biofilters. A scrubber is located upstream of the biofilters to reduce the ammonia concentration and humidify the air. The purpose of the biofilters is to remove odourous compounds, bioaerosols and residual ammonia. The treated air is discharged from a single 27 m tall stack.

3.2 Sources of bioaerosols from the Facility

There is the potential for bioaerosols to be released from the following sources:

- fugitive emissions from the handling and preparation of incoming waste;
- fugitive emissions from the handling of composted material;
- fugitive emissions from the maturation process; and
- emissions from the biofilter stack.

3.2.1 Handling and preparation of waste

All waste reception and storage operations are undertaken within buildings which are held under a negative pressure through the extraction of air by forced ventilation. This ensures all air is drawn through the biofilters to prevent fugitive emissions of odour or bioaerosols from the process building. All external doors are kept closed when not in use as necessary and are fast-acting to minimise opening and closing times.

Biofilters were originally designed to remove odour, however as detailed in the 2009 EA guidance, some studies have demonstrated their effectiveness at removing bioaerosols, particularly *Aspergillus fumigatus* spores, by approximately 90%. Despite this, the 2009 EA guidance states that there is some evidence to suggest that biofilters can become a source of bioaerosol themselves under certain conditions. Whilst this phenomenon is not well understood, it is considered within this assessment that the biofilters are a potential source of bioaerosols either due to pass-through of a small proportion of bioaerosols from the IVC process, or directly from the biofilters.

The organic feedstock to the IVC process is prepared by shredding to reduce its particle size to make it more suitable for the IVC process. The waste reception and pre-treatment areas are enclosed and held under negative pressure with all external doors kept closed, except for short periods during

waste delivery. As such, it is considered that the risk of fugitive emissions of bioaerosols during handling and preparation of the waste feedstock is minimal.

3.2.2 IVC process

The IVC process is aerated with fans on each vessel to ensure pass-through of air to maintain aerobic conditions. Therefore, the air leaving the vessels is likely to contain bioaerosols. As the IVC process is undertaken within the process building which is held under negative pressure, as described above, and the extracted air is treated in the biofilter prior to release to atmosphere, it is considered that the risk of fugitive emissions of bioaerosols from the IVC process is minimal.

Leachate from the IVC process is collected in storage tanks with the option to recirculate into the process. When leachate storage is nearing capacity the leachate will be removed from the site by a specialist contractor.

3.2.3 Maturation

The material is transported to the outdoor maturation pads. This involves disturbance of the material during transport and unloading, but disturbance is otherwise minimal as aerobic conditions during maturation are maintained using a forced aeration system which eliminates the need to turn the material.

Leachate from the maturation pad is channelled into a storage tank. When leachate storage is nearing capacity the leachate will be removed from the site by a specialist contractor.

3.2.4 Refinement

The composted material is passed through the refining plant, which is located outdoors but is mostly enclosed, to remove oversized and non-organic material. The refining plant includes a star screen, wind sifters, overband magnet, and an enclosed trommel. By the nature of the refinement process, the composted material is disturbed and there is the potential for bioaerosol emissions as a result. However, as active composting has been completed by this stage of the process and the refining plant is substantially enclosed, the risk of bioaerosol release is lower than for material actively undergoing composting.

3.2.5 Product storage

Storage of the composted product has negligible potential for bioaerosol generation. Moving the composted material to the storage bays and loading the material for export have low potential for bioaerosol release as the product is no longer undergoing composting.

4 Description of the local area

4.1 Surrounding land use

The Facility is located in a rural area. Open fields surround the Facility on all sides. To the east is a collection of agricultural buildings (Park Farm) and the residential dwellings of Fenn's Bank. To the south is a paving business (Ready Pave). No other workplaces or residential areas lie within the relevant screening distances in any direction.

4.2 Sensitive receptors

The EA's current policy position on potential health impacts from bioaerosols states a screening distance of 250 m between workplace or dwellings and a potential new source[2]. The policy considers fixed or static receptor locations and does not include transient exposure along public footpaths or highways. Therefore, only workplaces and dwellings have been considered as sensitive receptors. Furthermore, despite the Facility itself being considered a workplace, as stated with the EA guidance technical note *M9: Environmental monitoring of bioaerosols at regulated facilities*, the health of staff controlling a permitted facility are assessed under the Health and Safety at Work legislation[3]. Based on this screening criterion, five sensitive receptors within 250 m of the installation boundary have been identified, as listed in Table 2. A plan showing the location of sensitive receptors is presented in Figure 3 of Appendix A.

Table 2: Sensitive receptors

ID	Receptor Name	Receptor Category	Distance (m) at closest point
R1	Park Farm Cottages, Fenn's Bank Road	Residential dwelling (adjacent to agricultural workplace)	c.160 m E of installation boundary and >220 m from waste reception. c.250 m from biofilter stack and >250 m from all other process areas.
R2	Fenn's Bank Road 2	Residential dwelling	c.200 m E of the installation boundary and c. 250 m from waste reception. >250 m from all other process areas.
R3	Fenn's Bank Road 3	Residential dwelling	c.210 m E of the installation boundary and >250 m from all process areas.
R4	Residence near Mereside Industrial Park	Residential dwelling	c.110 m SE of the installation boundary and >220 m from waste reception >250 m from all other process areas.
R5	Ready Pave	Workplace	c.50 m S of the installation boundary, and >170 m from waste reception.

[2] Cranfield University and Environment Agency, Guidance on the evaluation of bioaerosol risk assessments for composting facilities, 2009

[3] Environment Agency, M9 Technical Guidance Note (Monitoring) - Environmental monitoring of bioaerosols at regulated facilities, 2018

ID	Receptor Name	Receptor Category	Distance (m) at closest point
			c. 230 m from biofilter stack, c 140 m from maturation pad and c. 210 m from refining plant.

4.3 Wind data

Five years of meteorological data from Shawbury have been used within the assessment to take into account inter-annual fluctuations in weather conditions. The period 2018 – 2022 is the same dataset as used in the dispersion modelling undertaken to support the EP application. Wind roses for each year are presented in Figure 4.

An assessment of the location of each sensitive receptor in relation to the Facility has been conducted, including the determination of a range of wind directions which would result in potential bioaerosol exposure from the Facility. The results are presented in Table 3.

Table 3: Wind direction

ID	Receptor name	Direction from source	Wind directions with potential to include bioaerosols from Facility (°)
R1	Park Farm Cottages, Fenn's Bank Road	E	220 - 280
R2	Fenn's Bank Road 2	E	260 – 285
R3	Fenn's Bank Road 3	E	270 - 300
R4	Residence near Mereside Industrial Park	SE	285 - 320
R5	Ready Pave	S	315 – 20 (via 0°)

The frequency with which the wind blows within the respective directional ranges for each receptor is presented within Table 4.

Table 4: Frequency of wind from Facility

ID	Wind frequency with potential to include bioaerosols from Facility (%)					
	2018	2019	2020	2021	2022	Average
R1	29.6%	32.4%	34.5%	29.6%	29.5%	31.1%
R2	9.0%	10.4%	11.0%	10.5%	10.2%	10.2%
R3	7.1%	9.1%	9.1%	9.3%	9.2%	8.7%
R4	7.3%	9.2%	7.8%	8.7%	8.9%	8.4%
R5	17.5%	14.6%	13.8%	19.3%	15.9%	16.2%

4.4 Health risks associated with bioaerosols

Bioaerosols, as airborne suspended fungi, bacteria and actinomycetes, pose a range of human health risks with symptoms typically manifesting in the form of:

- inflammation of the respiratory system;
- respiratory illnesses such as 'bronchitis' and 'inhalation fever;

- reduced lung function;
- coughs;
- fevers;
- gastrointestinal illnesses;
- eye irritation; and
- dermatitis/skin conditions.

The fungi species *Aspergillus fumigatus* is of particular concern at waste management facilities due to the severe infection *aspergillosis* which can be fatal in individuals that are immuno-compromised.

Due to bioaerosol particle size typically being <10 µm in diameter, they are not filtered out within the upper respiratory tract and therefore can penetrate the deep lung.

Based on the processes outlined in Section 3.1.6, the majority of emissions of bioaerosols from the Facility are expected to short term fugitive emissions from the air released from waste management areas or the handling of waste materials. Therefore, the health risk posed by these sources is expected to be acute (short duration) due to the limited likelihood of waste management areas being open to atmosphere for significant periods of time.

The air exhausted from the biofilters is expected to potentially emit bioaerosol from bacterial/fungal accumulation within the biofilter, and a low level of pass-through of bacteria and fungi from the air extracted from within the process building. Whilst the biofilters operates continuously to process air from waste management areas, it is anticipated that appropriate cleaning/replacement procedures to the biofilter during maintenance outages would aid in mitigating this health risk.

4.5 Other sources of bioaerosols

A desktop study has identified no other significant sources of bioaerosols in the local area. While local land uses include farming which may include composting, this would be on a much smaller scale than the composting undertaken at the Facility.

5 Risk Assessment

In line with the assessment methodology set out in Section 2.2, the magnitude of risk has been determined based on the potential for exposure and the consequence of the hazard. As explained within Section 3.1, the sources of bioaerosols are from:

- The handling and preparation of waste;
- The IVC process;
- Maturation;
- Refinement; and
- The handling and storage of the product prior to transfer off-site.

5.1 Likelihood of exposure

The design of the Facility incorporates multiple barriers to prevent fugitive emission of bioaerosols to atmosphere. Additionally, all waste handling process is conducted within enclosed buildings from which air is sent to biofilters which filter bioaerosols before release to atmosphere. However, the biofilter may be a source of bioaerosols from the Facility, albeit these would be released from a stack with a height of 27 m to aid dispersion. Additionally, the biofilter is expected to be cleaned or replaced as required as routine maintenance.

The likelihood of bioaerosol exposure at each receptor is presented in Table 5, based on the criteria detailed in section 2.2.1.

Table 5: Potential for exposure

ID	Distance to bioaerosol sources	Frequency of wind from Facility	Potential for exposure	Justification
R1	220 m to waste reception. 250 m to biofilter. All other sources >250 m.	31.1%	Low	Fairly high frequency of wind from Facility, but distance to sources is close to 250 m screening distance. Most sources >250 m away.
R2	250 m to waste reception. All other sources >250 m.	10.2%	Very low	Low frequency of wind from Facility, closest sources almost at 250 m screening distance. Most sources >250 m away.
R3	All sources >250 m.	8.7%	Very low	Low frequency of wind from Facility, all sources >250 m away.
R4	220 m to waste reception. All other sources >250 m.	8.4%	Very low	Low frequency of wind from Facility, closest sources almost at 250 m screening distance. Most sources >250 m away.
R5	140 m to maturation pad, 170 m to waste reception, 210 m to refining plant, 230 m to biofilter.	16.2%	Low	Moderate frequency of wind from Facility. Outdoor sources (maturation and refinement) < 250 m away, with maturation pad being 140 m away at the closest point. Forced aeration on maturation pad reduces emissions.

5.2 Consequence of hazard

As discussed in Section 4.4, the potential health effects of bioaerosols can be severe, particularly in individuals that are immuno-compromised or with existing respiratory or gastrointestinal issues. As such, the consequence of the hazard is highly dependent on the sensitivity of receptors and the nature of the source.

All of the receptors identified within this assessment are either residential dwellings (R1 – R4) or workplaces (R1 and R5). No particularly sensitive receptors (schools, hospitals, care homes) have been identified within the 250 m screening distance, in line with the 2009 EA guidance.

The sources of bioaerosol emissions from the Facility are the biofilter and potential fugitive emissions from storage and handling areas. As there are control measures to prevent fugitive emissions from the process building, and the biofilter is a controlled point source, the potential quantity of bioaerosol emissions from these sources is expected to be low. The greatest potential for bioaerosol release considered to be from the outdoor processing areas, i.e. the maturation pad and refinement plant, although this is mitigated by the forced aeration system in the maturation process, and the refinement process being undertaken after active composting is complete.

The consequence of hazard at each receptor is presented in Table 6, based on the criteria detailed in section 2.2.2.

Table 6: Likelihood of exposure

ID	Sources within screening distance	Consequence of hazard	Justification
R1	Waste reception, biofilter stack	Low	High sensitivity receptor, but low quantity of bioaerosol emissions from these sources.
R2	Waste reception	Low	High sensitivity receptor, but low quantity of bioaerosol emissions from this source.
R3	None	Very low	No sources within 250 m.
R4	Waste reception	Low	High sensitivity receptor, but low quantity of bioaerosol emissions from this source.
R5	Maturation pad, waste reception, refining plant, biofilter stack, outdoor product storage	Low	Higher risk of bioaerosol emissions from these sources, but receptor is a workplace where exposure is not constant.

5.3 Magnitude of risk

Table 7 provides a summary of the risk assessment and justification for the overall magnitude of risk.

Table 7: Bioaerosol risk assessment

Receptor	Sources	Harm	Pathway	Potential for exposure	Consequence	Magnitude of risk	Justification	Risk management	Overall risk
R1	Waste reception, biofilter stack.	Human health: Respiratory illnesses, reduced lung function, gastro-intestinal disorders and allergic reactions.	Direct air transport followed by inhalation or ingestion	Low	Low	Low	Receptor c.220m from closest identified potential bioaerosol emission source. Receptor down-wind for ~30% of the year.	All reception, handling, and preparation of waste to occur within an enclosed area; Process building held under negative pressure with all air exhausted through biofilters. Monitoring and aeration of IVC process to maintain aerobic conditions.	Low (not significant)
R2	Waste reception.	Human health: Respiratory illnesses, reduced lung function, gastro-intestinal disorders and allergic reactions.	Direct air transport followed by inhalation or ingestion	Very low	Low	Low	Receptor c.250m from closest identified potential bioaerosol emission source. Receptor down-wind for ~10% of the year.	All reception, handling, and preparation of waste to occur within an enclosed area; Process building held under negative pressure with all air exhausted through biofilters. Monitoring and aeration of IVC process to maintain aerobic conditions.	Low (not significant
R3	None within 250 m.	Human health: Respiratory illnesses, reduced lung function, gastro-intestinal disorders and allergic reactions.	Direct air transport followed by inhalation or ingestion	Very low	Very low	Very low	No sources within 250 m.	N/A	Very low (not significant
R4	Waste reception.	Human health: Respiratory illnesses, reduced lung function, gastro-intestinal disorders and allergic reactions.	Direct air transport followed by inhalation or ingestion	Very low	Low	Low	Receptor c.220m from closest identified potential bioaerosol emission source. Receptor down-wind for ~8% of the year.	All reception, handling, and preparation of waste to occur within an enclosed area; Waste reception areas held under negative pressure with all air exhausted through filters within biofilters. Monitoring and aeration of IVC process to maintain aerobic conditions.	Low (not significant
R5	Maturation pad, waste reception, refining plant, biofilter stack, outdoor product storage.	Human health: Respiratory illnesses, reduced lung function, gastro-intestinal disorders and allergic reactions.	Direct air transport followed by inhalation or ingestion	Low	Low	Low	Receptor c.140m from outdoor source (maturation pad) at closest point; forced aeration reduces emissions from this source. Outdoor (but substantially enclosed) refining plant also within 250 m, as are the waste reception area, biofilter stack and outdoor product storage.	All reception, handling, and preparation of waste to occur within an enclosed area; Waste reception areas held under negative pressure with all air exhausted through filters within biofilters. Monitoring and aeration of IVC and maturation processes to maintain aerobic conditions. Automated and manual checks to confirm composting completed prior to refining.	Low (not significant

5.4 Uncertainties

All uncertainties identified within the assessment are summarised below:

1. Bioaerosol behaviour in atmosphere (dispersion and particle dynamics) and resulting dose-response relationships.
2. Quantification of bioaerosol concentration and emission durations for activities at the Facility from:
    a. Fugitive emissions resulting from handling and preparation of organic waste prior to the IVC process;
    b. Emissions from the IVC process;
    c. Emissions from the biofilters;
    d. Emissions from maturation and refining of material;
    e. Fugitive emission from the handling and storage of digestate prior to transfer off-site.

5.5 Summary

In line with the assessment methodology detailed in the 2009 EA guidance, this Bioaerosol Risk Assessment evaluates the likelihood of potential emissions of bioaerosols from the Facility, in conjunction with the consequences to nearby receptors, to determine the overall risk to human health within the vicinity of the Facility. This is achieved through identification of potential bioaerosol hazards, the plausibility of hazards being realised at receptors, the probability of the risks to human health and the significance of those risks.

The magnitude of risk identified across the five receptors identified within the screening distance is deemed to be ‘low’ or very low. At this level of risk, no significant impacts are predicted and only periodic review of bioaerosol risks and control measures are required.

Appendices

A Figures



Legend

Site location

Client:	Veolia
Site:	Fenn's Bank IVC EP Application
Project:	Bioaerosol Risk Assessment
Title:	Figure 1. Site Location
Drawn by: SMN	Date: 06/05/2025

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0 0.25 0.5 1 km

Scale: 1:25,000

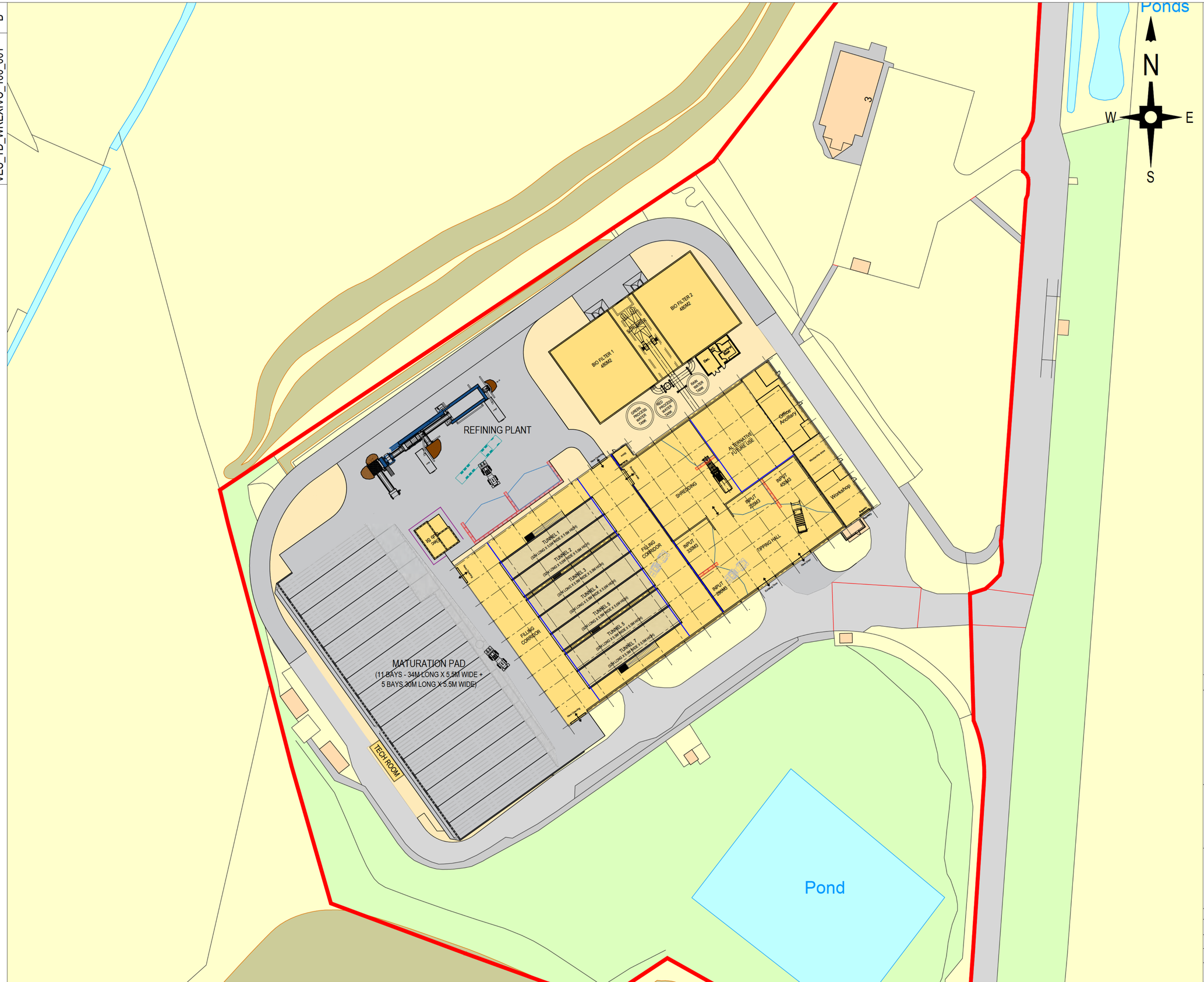
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Revision B

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Rev	Description of revision	Drawn	Chkd	App	Date

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Project
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Title
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PROPOSED SITE LAYOUT

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Approved				

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Job No. WREXIVC

Drawing No. VES_TD_WREXIVC_100_001

Revision B

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1:500
0 10 20 50 100

CONCEPT

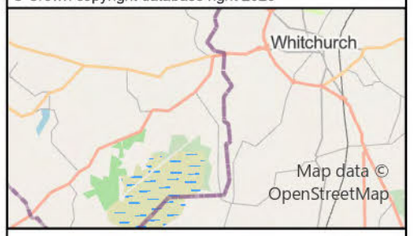


Legend

- Installation boundary
- Stack
- 250 m bioaerosol screening distance
- Bioaerosol receptors

Client:	Veolia
Site:	Fenn's Bank IVC EP Application
Project:	Bioaerosol Risk Assessment
Title:	Figure 3. Bioaerosol Receptors
Drawn by: SMN	Date: 06/05/2025

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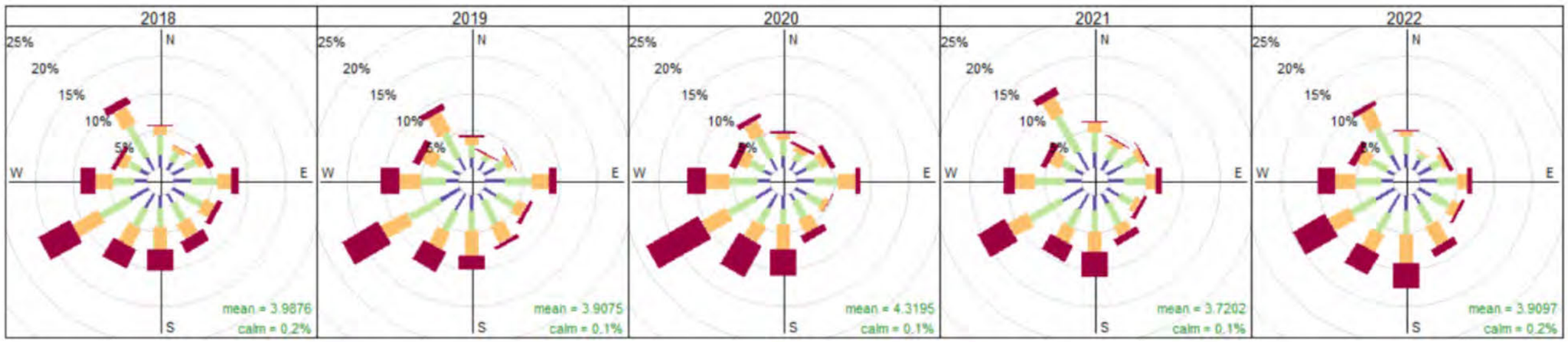
0 0.04 0.08 0.16 km

Scale: 1:4,000

N

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Frequency of counts by wind direction (%)

Legend

Client:	Veolia
Site:	Fenn's Bank IVC EP Application
Project:	Bioaerosol Risk Assessment
Title:	Figure 4. Wind Roses Shawbury 2018 - 2022
Drawn by: SMN	Date: 06/05/2025

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