

Odour Assessment

Land off Henfield Road, Cowfold

October 2025

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1. Introduction

Background

- 1.1 Phlorum Limited has been commissioned by Landacre Developments Limited ("the Client") to undertake an odour assessment to support a future planning application for residential development on land to the east of Henfield Road, in Cowfold. The National Grid Reference for the centre of the site is 521400, 122010. A Site Location Plan is presented in Figure 1.
- 1.2 The proposed development is located directly to the south-west of Cowfold Wastewater Treatment Works (WwTW), which is operated by Southern Water (SW).
- 1.3 An odour assessment is required to understand whether odorous emissions from this WwTW could significantly impact the amenity of future users of the proposed development.

Scope of Assessment

- 1.4 This odour assessment incorporates a thorough and detailed methodology, considered suitably robust for the associated level of risk. In line with Institute of Air Quality Management (IAQM) guidance, this assessment uses a number of tools and several sources of information to determine whether odours from the WwTW have the potential to cause significant nuisance to the proposed development.
- 1.5 Specifically, this assessment relies on a "weight of evidence", incorporating an analysis of the local odour complaints record, detailed odour dispersion modelling using emissions data collected through olfactometric sampling, and the results of three odour surveys ("sniff tests").
- 1.6 The results of this assessment shall be used to determine how the site might be constrained by the WwTW from an odour perspective, in terms of where proposed residential units could be built.

2. Policy Context and Guidance

- 2.1 The planning process can determine whether and where any developments with a significant potential for odour release can be located. It also has some control over the siting of developments that may potentially be sensitive to odour emissions from nearby sources.
- 2.2 Some potentially odorous developments and activities are regulated by the Environmental Permitting Regulations (2016)¹. Statutory nuisance provisions under the Environmental Protection Act (1990) additionally apply where activities are not permitted.

National Planning Policy Framework

- 2.3 The National Planning Policy Framework² (NPPF), which was updated in December 2024, sets out the Government's planning policy for England. At its heart is an intention to promote more sustainable development. A principle in the NPPF that relates to odour is set out in paragraph 200:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

Local Planning Policy

- 2.4 Horsham District Council (HDC), the Local Planning Authority, adopted their latest Local Plan³ in 2015, aimed at directing planning within the district over the following decade.
- 2.5 Of relevance to odour, the Local Plan states the following, within *Policy 24*:

"The high quality of the district's environment will be protected through the planning process and the provision of local guidance documents. Taking into account any relevant Planning Guidance Documents, developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they: [...]"

1 The Environmental Permitting (England and Wales) Regulations SI 2016/1154

2 Department for Communities and Local Government (DCLG). (2024). National Planning Policy Framework.

3 HDC (2015). Horsham District Planning Framework – November 2015.

Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality."

- 2.6 In 2024, HDC submitted their draft Local Plan⁴ to the Planning Inspectorate for review. Whilst the plan has not yet been adopted, it is pertinent to consider the draft policies contained within the document.

- 2.7 Strategic Policy 11 of the draft local plan retains the above existing *Policy 24*, and adds:

"Proposals for new development within the vicinity of an existing business or community facility will not be supported where it is considered that the current use could have a significant adverse environment impact on the new development, unless it can be demonstrated that suitable mitigation will be implemented prior to the occupation or use of the new proposal."

- 2.8 Further mention of odour is given in Strategic Policy 20, which states:

"In order to conserve and enhance the natural and built environment, and deliver beautiful and sustainable buildings and places, proposals for development will be supported provided that it meets all of the following: [...]"

Is designed to avoid unacceptable harm to the amenity of existing and future occupiers or users of nearby property and land, for example due to overlooking, over dominance or overshadowing, light pollution, traffic generation, and general activity, noise, odour and/or vibration, and having regard to the sensitivities/impact of surrounding development;"

- 2.9 Also of relevance to this assessment is West Sussex's Waste Local Plan⁵, which is pertinent to the Cowfold WwTW and other such waste operations in West Sussex. *Policy W19: Public Health and Amenity* states:

"Proposals for waste development will be permitted provided that:

- a) lighting, noise, dust, odours and other emissions, including those arising from traffic, are controlled to the extent that there will not be an unacceptable impact on public health and amenity; [...]"*

Guidance

- 2.10 A number of guidance documents were referred to in preparing this odour assessment. These are outlined under the following headings.

4 HDC (2024). Horsham District Local Plan 2023 – 2040: Regulation 19.

5 West Sussex County Council (2014). WSCC and South Downs National Park Authority: West Sussex Waste Local Plan.

Code of Practice on Odour Nuisance from Sewage Treatment Works

- 2.11 The Defra Code of Practice⁶ (2006) is designed to provide a framework under the statutory nuisance regime enabling the relevant parties to operate, regulate and investigate odour nuisance from sewage treatment works. It provides information on the issues associated with WWTW odour, the characteristics of this odour, odour complaints and odour control measures.
- 2.12 Defra has also produced detailed odour guidance⁷ (2010), which describes investigative techniques, odour control measures, plus communication and intervention strategies.

Odour Guidance: Internal Guidance for the Regulation of Odour at Waste Management Sites

- 2.13 The Environment Agency's Odour Guidance⁸ (2002) provides a useful guide to the monitoring of odour on site, the description of odours and the effect of meteorological conditions.

Environment Agency Horizontal Guidance H4: Odour Management

- 2.14 Also relevant is the Environment Agency's (EA's) Horizontal Guidance H4⁹ (2011), which advises operators on how to comply with permit conditions, with respect to odour. This guidance provides useful information on assessing odour concentrations and on controlling and monitoring odour emissions from permitted processes.
- 2.15 It is understood that odour emissions from Cowfold WWTW are not covered by an environmental permit. Odorous emissions from processes that require a permit are usually more strictly controlled than those processes that do not require a permit. Therefore, the standards and methods contained within the guidance are stringent, and if applied to non-permitted processes could be considered unreasonably onerous.

IAQM Odour Guidance

- 2.16 The Institute of Air Quality Management's (IAQM) Odour Guidance¹⁰ is focused on the assessment of odour impacts for planning purposes. It provides an overview of all the key tools available for assessing odour impacts and weighs up their advantages and disadvantages, whilst advocating a multi-tool approach.
- 2.17 With regard to sewage treatment works and the offensiveness of odours from their normal operations, the guidance states the following:

6 Defra. (2006). Code of Practice on Odour Nuisance from Sewage Treatment Works.

7 Defra. (2010). Odour Guidance for Local Authorities.

8 Environment Agency. (2002). Odour Guidance: Internal Guidance for the Regulation of Odour at Waste Management Sites.

9 Environment Agency. (2011). Horizontal Guidance H4: Odour Management – How to comply with your environmental permit.

10 Institute of Air Quality Management. (2018). Guidance on the assessment of odour for planning.

“For odours that are less unpleasant, the level of odour exposure required to elicit the same effect may be somewhat higher, requiring professional judgement to be applied. For example, odours from sewage treatment works plant operating normally, i.e. non-septic conditions, would not be expected to be at the ‘most offensive’ end of the spectrum (Table 5) and can be considered on par with ‘moderately offensive’ odours such as intensive livestock rearing”.

- 2.18 With regard to odour dispersion modelling, the IAQM guidance states the following:

“Even when the model is a good representation of the real situation and the assumptions and input data are reasonable, the uncertainty for predictions from dispersion modelling can be considerable. It is therefore useful to use empirical, observational tools where they are available and applicable, and combine these with modelling where appropriate.”

- 2.19 When drawing conclusions from assessment results, the IAQM guidance states:

“When coming to a conclusion on odour impact, the practitioner also needs to give the right amount of weight to the results provided by each tool according to how well-suited it is to the study scenario in question.

For instance, where the assessment is of an existing activity or process, empirical observations will usually be possible of what is happening on the ground: considerable weight should normally be given to the observational findings of community-based tools (complaints analysis, community surveys and odour diaries) and sensory assessments (such as sniff tests). These may be supported by the results of any dispersion modelling (or perhaps ambient air monitoring for specific compounds) if these add tangible value to the study, e.g. they provide wider spatial or temporal coverage than observations alone.

However, it should be emphasised that the results from a model should not be used to try to “prove” the absence of an existing adverse odour effect (e.g. nuisance) when strong empirical evidence from complaints analysis, community response data, and sensory tests (by appropriately trained persons) show otherwise. To do so would be to mistake the model for the reality of the situation, rather than a simplified version of it.”

- 2.20 Considering the above, when assessing odour impacts from an existing source, an appropriate weight should be placed on observational and sensory findings. Odour modelling can be a useful tool; however, it should not be used to “prove” the presence or absence of an effect if empirical evidence suggests otherwise.

Scottish Environmental Protection Agency (SEPA) Odour Guidance 2025

- 2.21 The SEPA odour guidance¹¹ was updated in January 2025 and has been referred to within this assessment.

11 Scottish Environmental Protection Agency. (2025). *Odour Guidance 2025*.

- 2.22 The guidance provides a list of standard descriptors which can be used to categorise odours (e.g. floral, fishy, earthy) and assigns an intensity to each using a scale of hedonic tones. Odours assigned a hedonic tone score between 0 and +4 can be considered to be pleasant with odours assigned scores between 0 and -4 considered to be unpleasant.

Odour Assessment Criteria and Case Law

- 2.23 The EA's technical odour guidance¹² (2009) provides useful information on managing and assessing odour emissions.
- 2.24 Odour concentrations are measured in odour units (Ou). There is a European CEN standard for an odour unit which is based on odour detection of a reference compound. The CEN standard is referred to as $1 \text{ Ou}_E.\text{m}^{-3}$ (1 European Odour Unit per Cubic Metre) and is roughly comparable to $1 \text{ Ou}.\text{m}^{-3}$, which can be a more subjective parameter as it is not standardised.
- 2.25 $1 \text{ Ou}_E.\text{m}^{-3}$ is the point of detection. As a general indicator of odour concentration, $1 \text{ Ou}_E.\text{m}^{-3}$ represents the concentration of an odorous substance, or mixture of substances, that is 'just detectable' by 50% of the population, or someone with an average sense of smell.
- 2.26 The EA suggests that for an unpleasant odour, concentrations above the following criteria can be used as a guide to determine whether it might represent a potential nuisance:
- 🌿 $1.5 \text{ Ou}_E.\text{m}^{-3}$ for a highly offensive odour;
 - 🌿 $3.0 \text{ Ou}_E.\text{m}^{-3}$ for a moderately offensive odour; and
 - 🌿 $6.0 \text{ Ou}_E.\text{m}^{-3}$ for a less offensive odour.
- 2.27 As such, highly offensive odours are likely to cause a problem at lower concentrations than more pleasant odours.
- 2.28 Determining the character and offensiveness of an odour is a subjective exercise and is difficult to accurately quantify. However, the EA attempts this by providing some examples as follows:
- 🌿 highly offensive odours = processes involving animal or fish remains, septic effluent or sludge;
 - 🌿 moderately offensive odours = intensive livestock rearing, wastewater treatment and fat frying; and
 - 🌿 less offensive odours = chocolate manufacturing, and brewing.
- 2.29 With regard to sewage treatment works, the H4 guidance recognises that the character of odours from different parts of the process may differ. For example, it states that *"it may only be the sludge handling part of a sewage works that attracts the highest score"* (i.e. a highly offensive odour).

12 Environment Agency. 2009. Environment Agency Technical Guidance Note H4 – Odour Management. EA: London.

- 2.30 Cowfold WwTW does not include any sludge treatment processes, and its sludge handling processes are not expected to generate highly offensive odours (explanation provided in Table 4.1). As such, it is reasonable to suggest that this WwTW can be considered 'moderately' offensive.
- 2.31 A further difficulty with odour quantification is that many odours are intermittent, often being emitted over relatively short, non-continuous timescales, which makes accurate measurement of short-term peaks in concentration over extended periods very difficult.
- 2.32 Going some way to deal with this issue, the EA guidance recommends that in dispersion modelling assessments, odour concentrations should be calculated as 98th percentile values of hourly mean concentrations ($C_{98,1\text{hour}}$). This allows for the top 2% of high odour concentrations to be discounted from an assessment and allows results to be directly compared with the EA odour criteria listed above.

CIWEM

- 2.33 The Chartered Institution of Water and Environmental Management (CIWEM) has issued the following statement on odour nuisance potential threshold ranges (where " C_{98} " is the 98th percentile average odour concentration):

"CIWEM considers that the following framework is the most reliable that can be defined on the basis of the limited research undertaken in the UK at the time of writing:

-  *$C_{98, 1\text{-hour}} > 10 \text{ ou}_E/\text{m}^3$ - complaints are highly likely and odour exposure at these levels represents an actionable nuisance;*
-  *$C_{98, 1\text{-hour}} > 5 \text{ ou}_E/\text{m}^3$ - complaints may occur and depending on the sensitivity of the locality and nature of the odour this level may constitute a nuisance; and*
-  *$C_{98, 1\text{-hour}} < 3 \text{ ou}_E/\text{m}^3$ - complaints are unlikely to occur and exposure below this level are unlikely to constitute significant pollution or significant detriment to amenity unless the locality is highly sensitive or the odour highly unpleasant in nature."*

- 2.34 The CIWEM framework provides a less conservative range of odour concentrations in relation to potential nuisance impacts from WwTWs than those provided in the EA guidance. It suggests that most odours less than $3 \text{ Ou}_E/\text{m}^3$ in concentration would be unlikely to result in a statutory nuisance, unless the odour was characterised as highly unpleasant, or the locality was highly sensitive to odour.

IAQM Odour Guidance

- 2.35 In the absence of agreed standards for odour, the IAQM guidance also summarises key guidance and case law on the issue of development planning and odour risk in order to help define the significance criteria for odour impact assessments.

- 2.36 Of relevance to this assessment, a High Court Judgement relating to odour nuisance from Mogden WwTW stated:

"I would be reluctant to find nuisance if the odour concentration was only 1.5 OU_E per m³ but as the odour concentration rises to 5 OU_E per m³ I consider that this is the area where nuisance from Mogden STW would start and that by the time that 5 OU_E per m³ or above is reached nuisance will certainly be established."

- 2.37 The above conclusion by the Judge in the Mogden case sets a precedent that the 1.5OU_E.m⁻³ (C_{98,1hour}) threshold should not normally be appropriate for opposing residential development close to WwTWs.

- 2.38 It is also pertinent to acknowledge the conclusions of a relatively recent Public Inquiry into a residential development near to the Cockermouth WwTW, in Cumbria, where the inspector concluded:

"I am mindful that the assessment based on a 98th percentile 1-hour average odour concentration (C_{98,1hour}) would not result in a totally odour free scenario, as there is a likelihood of some occasional odour issues with sites such as the WWTW. However, any period of exposure to unpleasant odour should be short lived at some 2% of a year. Moreover, there are varying degrees of odour from sewage treatment..."

Should odours fall within medium offensiveness, rather than low, the C_{98, 1hour} 3 ou_E/m³ level modelled by the appellant indicates that it would not impinge on the appeal dwellings."

Gloucester Appeal

- 2.39 In another recent planning appeal decision in Gloucester (ref: APP/U1620/W/22/3296510), in granting the appeal the inspector stated:

"Although odour is to a degree a subjective matter, I am nevertheless satisfied the up to three odour unit concentration provides an appropriate benchmark to determine acceptability of potential impacts when using dispersion modelling results. Excluding housing from the three odour unit contours modelled would, I agree, facilitate acceptable living conditions for new residents within the appeal site."

- 2.40 The Mogden, Cockermouth and Gloucester WwTWs all accept septic effluent and include sludge handling (and in some cases, also sludge treatment) processes. Despite this, all three cases exemplify that the application of a 3 OU_E.m⁻³ benchmark is commonly considered appropriate where the majority of odour sources at a WwTW are considered to be of 'moderate' offensiveness.

- 2.41 Two further examples where the 3 OU_E.m⁻³ concentration was deemed an appropriate benchmark when considering the suitability of residential development near WwTWs are discussed below.

Cork's Farm, Marchwood

- 2.42 In 2022, Phlorum undertook an odour assessment for a residential scheme (New Forest District Council Planning Reference: 22/10449) near SW's Slowhill Copse WwTW. The WwTW accepts and treats septic sludge, but Phlorum deemed the $3 \text{ Ou}_E.\text{m}^{-3}$ threshold to be appropriate based on how the weight of evidence collected (i.e. sniff tests, complaints analysis and dispersion modelling results) offered good agreement with this benchmark.
- 2.43 SW's typical stance is to object to all development which falls within the most stringent $1.5 \text{ Ou}_E.\text{m}^{-3}$ threshold, irrespective of the overall offensiveness of odours expected to emanate from their specific WwTWs. SW objected to the Cork's Farm residential scheme on this basis, but the Environmental Health Officer (EHO) concluded that the $3 \text{ Ou}_E.\text{m}^{-3}$ benchmark was more appropriate given the evidence presented by Phlorum, and the development was approved by the case officer in June 2023.

Ford Airfield, Arun

- 2.44 Phlorum was commissioned by Arun District Council (ADC) to provide independent odour advice for a major residential development at Ford Airfield (Planning Reference: F/4/20/OUT). In response to Hoare Lee's odour assessment, SW, Phlorum and ADC all raised concerns regarding the assessment's lack of reliance on observational evidence when determining the overall suitability of the site for residential development, noting that observational data (i.e. sniff tests and complaints analyses) did not align with the results of predictive techniques (i.e. dispersion modelling).
- 2.45 Following further assessment work by Hoare Lee, ADC approved the application in July 2023, subject to conditions. SW maintained their objection, partly on the basis that some of the development would fall within their requested $1.5 \text{ Ou}_E.\text{m}^{-3}$ benchmark. However, Hoare Lee, Phlorum and ADC all agreed with the use of the $3 \text{ Ou}_E.\text{m}^{-3}$ threshold, given that Ford WwTW's odour sources were considered 'moderately offensive' overall. ADC's EHO noted that whilst the development site might not be 'odour-free', odour complaints would be unlikely up to the $3 \text{ Ou}_E.\text{m}^{-3}$ benchmark.
- 2.46 Ford WwTW is a large WwTW which serves a much greater population than the Cowfold WwTW. Ford WwTW also receives sludge, cake and cess imports from other WwTWs and digests them on-site, so the site's potential for highly offensive odour releases can be considered greater than at Cowfold WwTW.

A General Note on Odour Nuisance

- 2.47 It should be noted that the stated range of nuisance thresholds are simply guidance odour concentrations to indicate the likelihood of odour complaints occurring at or above the respective concentrations. Odour offensiveness remains a subjective human sensory response to airborne chemicals, and the test of statutory nuisance is to determine whether actual complaints relating to the emission of these chemicals might be reasonable.

- 2.48 Coupled with the difficulties and uncertainties surrounding the monitoring and modelling of odour emissions, the review of odour complaints from uses close to, and particularly downwind of, an established odour source, such as a WwTW, can often provide the most compelling evidence as to the reasonableness of any offensive odours emitted from it.

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3. Cowfold WwTW

- 3.1 Wastewater treatment at Cowfold WwTW uses an activated sludge process. Incoming sewage is first screened and then dosed with chemicals for nutrient removal. It is then mixed with a carefully managed culture of bacteria known as activated sludge.
- 3.2 This mixture is aerated in two large treatment tanks, allowing for further removal of nutrients that could otherwise pollute the receiving watercourse. The treated water then passes through a settlement tank and a cloth filter/ mecana unit before being discharged into the river.
- 3.3 Settled sludge is pumped to the sludge holding tank, where it is 'de-watered' before being tankered off-site. Sludge removal occurs twice per week, typically on Wednesdays, by two 4-gallon tankers.
- 3.4 The annual average influent flow rate at the WwTW in 2023 was 5.85 L/s, which dropped to 5.36 L/s in the summer months. The WwTW serves a Population Equivalent (P.E.) to 1,253, so can be considered a reasonably small treatment facility.
- 3.5 In 2020, the WwTW underwent a series of significant upgrade works, in which the activated sludge plant was installed and the Capitox aeration tank and reed bed were both decommissioned.
- 3.6 SW has requested that the locations of plant on-site should not be shared, but the below list comprises the odour-producing processes and plant at Cowfold WwTW:
- 🌿 Inlet works, with screen and grit removal;
 - 🌿 Activated sludge (AS) feeder pumping station;
 - 🌿 AS plant – anoxic
 - 🌿 2x AS plant – aerated
 - 🌿 Humus tank;
 - 🌿 Storm tank;
 - 🌿 Sludge holding tank (SHT); and
 - 🌿 Sludge dewatering tank (SDT).

4. Methodology

Overview

- 4.1 There are a number of individual tools that can be used to investigate odour. As the IAQM guidance¹⁰ states, *“because the various assessment tools have different applications, strengths and limitations, they are often used in combination”*, whilst the Defra guidance emphasises that *“confidence in the conclusions can be increased by using multiple assessment tools”*.
- 4.2 These tools may be sensory, observational, or predictive. Based on the information available and the sensitivity of the end-use, the following techniques were identified as most suitable:
- 🌿 Sniff tests (a sensory odour assessment technique);
 - 🌿 Complaints analysis (observational technique) – review of complaints which are held by HDC and SW; and
 - 🌿 Detailed atmospheric dispersion modelling (predictive technique) using observational emissions data obtained through olfactometric sampling at the WwTW.

Sniff Testing

- 4.3 Sniff tests involve the use of the human nose to detect odour. These surveys offer a subjective measure of odour impact based on the assessor’s opinion of the frequency, intensity, duration, and offensiveness of any odours.
- 4.4 It is recognised that sniff tests only provide a snapshot of the local odour environment and so the surveys were carried out and timed in an attempt to best capture conservative conditions at the application site (i.e., when the weather was dry and mild, and winds were light).
- 4.5 The approach to the odour surveys followed the methodologies recommended in the Environment Agency’s odour guidance⁸ and the IAQM’s latest guidance on the assessment of odour for planning¹⁰, as referred to in Section 2 of this report.
- 4.6 A number of steps were taken to safeguard the quality of each odour survey, as per IAQM guidance. These included:
- 🌿 The olfactory sensitivity of the assessor has been identified using UKAS-accredited methods and established to be within either the ‘Normal’ or ‘Highly Sensitive’ range;
 - 🌿 The odour assessor was in full health, with no cold, flu, or COVID-19 symptoms;
 - 🌿 The assessor had a rest period following the short travel time to the site;

-  The assessor consumed no confectionery, soft drinks, or food prior to the survey.
- 4.7 A total of three surveys were undertaken between 25th July and 26th September 2025, in line with the minimum number of surveys recommended by the IAQM for assessment purposes.
- 4.8 The surveys each 'sampled' between 15 and 17 locations in the vicinity of the WwTW to provide a qualitative description of any odours detected, as well as their intensity and frequency.
- 4.9 The wind direction during the surveys was generally north-easterly (the application site is downwind of the WwTW). When this was not the case, "proxy" locations were used, also downwind of the WwTW, to ensure a conservative approach to the survey.
- 4.10 At each survey location, 20 samples of odour were taken using the assessor's sense of smell. As advocated in the latest IAQM odour guidance, the German National Guidelines (VDI 3940:1993) for the determination of odorants in ambient air was used to assess the intensity of odours. The VDI standard intensity (I) scale ranges from 0 (no odour), through 1 (slight/very weak), to 6 (extremely strong). Additional notes were taken at each survey location, describing the odour (if recognisable) and the location's sensitivity.
- 4.11 This information was recorded on an odour assessment reporting sheet, which incorporates both the EA and IAQM guidance. The reporting sheet also includes additional information, where appropriate, such as: ambient stressors; locations of other odour sources in the area; and meteorological conditions during the survey. The reporting sheets are provided in Appendix A. Survey location points are indicated on Figure 2, with key results summarised in Figure 3.
- 4.12 From this information, the odour exposure at each sample point can be defined, by comparing the average intensity from the VDI scale with the percentage odour time during the sample. IAQM guidance provides a matrix for this (IAQM guidance Table 15), which is provided in Appendix B, for reference.

Odour Dispersion Modelling

Odour Dispersion Model Set-up

- 4.13 The atmospheric dispersion modelling assessment was undertaken using the Defra approved ADMS 6 detailed dispersion model (version 6.0.2.1). For completeness, the odour dispersion modelling considered all known open-to-air sources of odour from the WwTW, including:
 -  Inlet Works;
 -  AS Pumping Station;
 -  AS Plant - Anoxic;
 -  2x AS Plant – Aerated;

-  Humus Tank;
-  SHT;
-  SDT;
-  Storm Tank; and
-  Tanker Extraction Point.

- 4.14 Sludge held in the SHT is extracted and taken off-site for further treatment by dedicated tanker extraction vehicles. SW's Environmental Information Regulations (EIR) team has confirmed that these sludge collections will take place no more than twice per week, meaning that odours generated during this process will be very short-lived. Nonetheless, this odour emitting process has been included, for completeness.

Emission Rates

- 4.15 A suitable emission profile for the WwTW has been produced, incorporating site-specific sampling data collected on the 29th of September 2025. Each emission rate is anticipated to represent a rate equal to or above what would feasibly be expected from these processes annually, especially when acknowledging that emission rates from the most odorous processes would likely be less in winter, due to increased dilution and reduced bioactivity.
- 4.16 Table 4.1, below, lists the odour emission rates used for each process or WwTW component. The site-specific sampling data were collected using olfactometry by Silsoe Odours Limited following best-practice methods. Full results from the sampling are provided in Appendix C. Where sources were not sampled, emission rates were obtained either from sources directly upstream (ensuring that the value used tends towards conservatism), or from Dr. Michael Bull's latest Odour Emission Database¹³, which comprises hundreds of collated odour emission rates from various WwTW sources. The sampled emission rate at the Inlet Works was lower than expected, and it is appreciated that emissions from this source can be highly variable; as such, the median rate from Dr. Michael Bull's database was used for this specific source, for conservatism.
- 4.17 All odour sources were assumed to emit at a velocity of 0.01 m.s⁻¹ to represent their ambient release to air.

¹³ Michael Bull & Associates (2025). Odour Emissions Database. Accessible at <https://www.odourconsultant.co.uk/odour-emissions-database/>.

Table 4.1: Modelled odour emission rates from Cowfold WwTW

Source	Source Type	Approx. Total Area (m ²)	Emission Height (m)	Modelled Odour Emission Rate (OU _E .m ⁻² .s ⁻¹)
Inlet Works ⁽¹⁾	Area	27.5	0.5	17.5
AS Pumping Station ⁽²⁾	Area	3.5	0.5	17.5
AS Plant – Anoxic ⁽²⁾	Area	34.5	5	17.5
2x AS Plant – Aerated	Area	68.5	5	2.8
Humus Tank	Area	68.5	4	1.3
SHT ⁽³⁾	Area	33	1.5	4.9
SDT	Area	33	1.5	3.3
Storm Tank ⁽⁴⁾	Area	52	3	2
Tanker Extraction Point ⁽⁵⁾	Point	-	1	2526

Notes:

⁽¹⁾ Due to spatial constraints, only a headspace sample could be taken at the Inlet Works. The geometric mean odour concentration was sampled at 264 OU.m⁻³. Assuming odours emit passively out of this open-topped source, this would approximate to an emission rate of 2.11 OU.m⁻².s⁻¹, which is at the lower end of what might be expected from this process. For conservatism, the value used in the model was obtained from Michael Bull's Odour Emission database – Median values were used, which are representative of rates expected at a typical WwTW.

⁽²⁾ It was not possible for Silsoe Odours Ltd to sample at this location. Values taken from the most representative upstream treatment process, for conservatism.

⁽³⁾ Silsoe Odours Ltd suggested that the low emission rate is due to the sludge already having been partially treated in the aeration tanks prior to being transferred to the SHT. At many WwTWs, the sludge is mostly obtained through gravitational settling before any treatment, so this source would normally be more odorous and more septic than is the case at Cowfold WwTW.

⁽⁴⁾ It was not possible for Silsoe Odours Ltd to sample at this location. The value used in the model was obtained from Michael Bull's Odour Emission database – Median values were used, which are representative of rates expected at a typical WwTW. Emissions from this source are assumed to be emitting all year round, despite the site operator confirming that the tank is normally empty.

⁽⁵⁾ Emission rate is in OU.s⁻¹ and has been calculated on the assumption that it takes 60 minutes to fill 2x 4000-gallon tankers. At Olfasense UK's recommendation, the tankers are predicted to emit at a concentration of 250,000 OU.m⁻³. A temporal variation factor has been applied in the model which assumes tankers would be present for one hour per day, accounting for the fact that these tankers would not frequently be present at the site.

Meteorology and Surface Roughness

- 4.18 Detailed, hourly sequential, meteorological data are used by the model to determine odour transportation and levels of dilution by the wind and vertical air movements. Meteorological data used in the model were obtained from a site-specific Numerical Weather Prediction (NWP) model, provided by Air Pollution Services (APS). The NWP data is for the 3km grid square within which the application site and WwTW are situated. Five years of meteorological data were used, in line with best practice IAQM guidance, to identify the year representative of worst-case meteorological conditions. Wind Roses for each year/dataset are included in Figure 5.

Terrain

- 4.19 Terrain can influence the dispersion of pollutants in the local area. With the presence of a gradual slope (increasing elevation in a northerly direction) in the local area, it was considered necessary to account for local terrain using the Environment Agency's 2m Lidar Composite Digital Terrain data¹⁴.

Modelled Receptors

- 4.20 As the purpose of this assessment is to understand which areas of the site might be constrained by odour, no specific discrete receptor locations have been modelled.
- 4.21 Instead, a contour plot showing the pattern of dispersion of odour across the WwTW and the surrounding area has been produced (see Figure 4). The grid originated at UK grid reference 521300, 121900 with 81 × 61 points modelled (5m grid spacing). The grid was modelled to show the pattern of dispersion at ground level breathing height (1.5m).

Uncertainty

- 4.22 Dispersion modelling is affected by a number of inherent uncertainties, which include:
-  Model uncertainty – associated with model formulations;
 -  Data uncertainty – associated with uncertainties and assumptions of the input data (e.g. emissions estimates and meteorological assumptions);
 -  Variability – associated with the inherent randomness of measurements used.

¹⁴ Environment Agency. 2023. LiDAR Composite DTM 2022 2m Dataset. Available from: <https://environment.data.gov.uk/dataset/09ea3b37-df3a-4e8b-ac69-fb0842227b04>

- 4.23 When considering odour dispersion modelling, a major source of uncertainty relates to the choice of odour emission rates as many factors can influence the emission rate of a particular process at a specific time. For example, it is widely recognised that odour emissions from WwTW tend to be greater in summer as warmer weather increases bioactivity and reduced rainfall results in more concentrated sewage effluent.
- 4.24 To manage the uncertainty associated with the modelling process, a number of conservative steps have been taken, which include:
- 🌿 The use of five years of hourly sequential site-specific meteorological data to account for variability in meteorological conditions, with only the 'worst-case' meteorological year then selected for analysis;
 - 🌿 The model assumes no reduction in predicted odour emission rates during winter;
 - 🌿 Modelled emission rates are mostly estimated based on site-specific olfactometric sampling data collected in September 2025. This is within the 'ideal' surveying window recommended by SW. Where emission rates seemed lower than expected, a higher rate was obtained from library data; and
 - 🌿 It was assumed that all processes except the tanker extraction point would emit odours for 100% of the year, despite some processes (e.g. the storm tanks) often being empty.

Consultation

Horsham District Council

- 4.25 HDC has provided information on complaints made against the Cowfold WwTW.

Southern Water

- 4.26 SW's EIR Team were contacted to provide information on any complaints relating to odour from the facility, as well as confirmation on the regularity of tanker visits, and details of the processes present at Cowfold WwTW.
- 4.27 SW's technical odour consultant, Olfasense UK Ltd, was contacted regarding the proposed scope of assessment. Olfasense stated that it would seem sensible to undertake olfactometric sampling of the WwTW odour sources given its potential proximity to the proposed development. Phlorum agreed, and the sampling was undertaken at the earliest possible opportunity, the 29th of September 2025.
- 4.28 The results of the olfactometric sampling were shared with Olfasense, and discussions were had to agree specific methodological details for the dispersion modelling. Their advice has been incorporated fully within this assessment, with the choice of odour sources to include in the model, and their associated odour emission rates, all agreed.

Assessment of Significance

- 4.29 Both the EA and IAQM advocate a multi-tool approach for the assessment of odour. This is because it is widely recognised that each tool has its own individual strengths and limitations. A judgement of significance based on one single tool will, therefore, lack the “weight of evidence” required for the assessment of such a subjective topic.
- 4.30 The overall judgement of the odour effect takes into consideration the odour dispersion modelling, complaints analysis and the odour surveys. Given the uncertainties and limitations surrounding odour dispersion modelling, and in line with IAQM guidance, significant weight has been placed on the results of the ground-based sniff tests and complaints analysis.

Conclusions on Significance

- 4.31 IAQM guidance states that odour assessments should reach a conclusion on the significance of a predicted effect. However, it is noted that a potentially significant effect is not grounds to conclude that a proposed development is unacceptable.
- 4.32 As previously stated, there are no prescribed standards for odour concentrations stated in published guidance, though a great deal of consideration is given to the level of odour that might cause annoyance, which is included within the IAQM guidance.
- 4.33 Table 7 and 16 of the IAQM guidance (provided in Appendix B) describe a general relationship between the level of odour exposure experienced by a receptor of a given sensitivity, and the magnitude of adverse effect that is likely to result.
- 4.34 The odour effect in this assessment has been determined using both the qualitative and quantitative methods previously described, according to the corresponding IAQM odour effect descriptor table (Table 16 for qualitative, Table 7 for quantitative).
- 4.35 The subsequent significance of effect will vary for each proposed receptor location, within the proposed development. For example, those receptors close to the WwTW might be exposed to significantly adverse odour concentrations, whereas those further away might not. Additionally, different land-uses are expected to have different sensitivities to odour, depending on the likely frequency of presence at a land-use and the level of expected amenity. Table 2 of the IAQM guidance provides an indicative list of different receptor sensitivities (provided in Appendix B).
- 4.36 Where the magnitude of effect for a chosen receptor location is greater than “slight adverse”, according to the IAQM criteria, the effect could potentially be considered significant.

5. Assessment of Impacts

Site Baseline Olfactory Surveys

- 5.1 Three odour surveys ('sniff-tests') were carried out in and around the vicinity of the application site and WwTW between the 25th of July and 26th of September 2025. A summary of the meteorological conditions during each of the three surveys is provided in Table 5.1, below. The first of the three surveys was undertaken by two surveyors.

Table 5.1: Meteorological Conditions for Baseline Olfactory Surveys

Survey	Date	Weather	Temperature (°C)	Beaufort Wind Scale	Wind Direction	Atmospheric Stability
1	25 th July 2025	Dry, 4/8 th Cloud	24	1	South-Westerly	Unstable
2	19 th August 2025	Dry, 7/8 th Cloud	18	1-2	North-Easterly	Neutral
3	26 th September 2025	Dry, 1/8 th Cloud	18	3	North-Easterly	Slightly Unstable

- 5.2 Table 5.1 highlights that a variety of meteorological conditions were covered across the three surveys, with atmospheric conditions ranging from unstable to neutral. It is estimated that these conditions occur between 70% and 90% of the time in the UK⁸.
- 5.3 Surveys were generally undertaken when winds were blowing in the direction of the application site (blowing from the north-east). The first survey was undertaken when winds were blowing generally from the south-west, so "proxy" sniff-test locations were used, downwind of the WwTW, to capture the odours from the WwTW at that time.
- 5.4 Anecdotally, the assessor reviewed weather forecasts daily to identify suitable survey days and noticed that wind directions heading from the WwTW towards the application site were infrequent.
- 5.5 Following best practice guidance, odour surveys always started either upwind or well-distanced from the source of odours, to prevent the likelihood of odour fatigue affecting the assessor.
- 5.6 The survey locations and a summary of the results are provided in Table 5.2, below. The locations are also provided in Figure 2, with the absolute maximum odour scores shown in Figure 3. The survey sheets are also provided in Appendix A.

- 5.7 The summary table below shows the results of whichever of the three odour surveys identified the strongest odours at each location. As such, the table from which conclusions are drawn are presenting and considering the worst-case odour results only, which is deemed to be an appropriately conservative method.

Table 5.2: Odour Survey Results

Location				Average Intensity	Maximum Intensity	Odour Pervasiveness (% of strong recognisable odours)	Odour Exposure
#	Distance from WwTW (m)	UK Grid Coordinates					
		X	Y				
1	250	521613	122353	0	0	0	Negligible
2	140	521667	122200	0	0	0	Negligible
3	160	521733	122112	0	0	0	Negligible
4	100	521670	122130	0	0	0	Negligible
5	60	521618	122129	0	1	0	Negligible
6	50	521618	122103	0	0	0	Negligible
7	80	521654	122082	0	0	0	Negligible
8	50	521618	122081	0	1	0	Negligible
9	40	521607	122094	0	1	0	Negligible
10	30	521588	122104	0	0	0	Negligible
11	40	521585	122119	0	0	0	Negligible
12	30	521553	122123	2	3	0	Negligible
13	120	521424	122110	0	0	0	Negligible
14	40	521492	122010	1	3	0	Negligible
15	40	521491	122052	1	2	0	Negligible
16	160	521373	122070	0	2	0	Negligible
17	180	521346	122035	0	3	0	Negligible
18	170	521361	121992	0	1	0	Negligible
19	120	521410	122062	0	2	0	Negligible
20	120	521406	122024	0	1	0	Negligible
21	140	521405	121971	0	2	0	Negligible
22	105	521429	121989	0	2	0	Negligible
23	80	521433	122020	0	3	0	Negligible
24	75	521439	122054	0	3	0	Negligible
25	55	521460	122038	0	2	0	Negligible
26	65	521463	122007	0	2	0	Negligible
27	85	521458	121977	0	2	0	Negligible
28	55	521486	121987	1	3	0	Negligible
29	30	521488	122034	0	4	5	Negligible
30	15	521505	122020	1	3	0	Negligible

- 5.8 Firstly, it is important to note that some of the distinguishable odours (i.e. those with a score of at least 3 on the VDI standard intensity scale) detected were not anticipated to originate from the WwTW. At Location #17, odour was believed to emanate from horse manure associated with the land's current use, and at Location #23, the likely odour source was nearby wildflowers.
- 5.9 Odours associated with the WwTW were often described as 'earthy', and were likely associated with the SHT. The strong odour at Location #29 was a sharp but typical wastewater smell. According to SEPA guidance¹¹, these have hedonic tone scores of between -2.34 and -1.94, and are considered to be *unpleasant*.
- 5.10 On only one occurrence during the three sniff tests was a strong odour (at least 4 on the VDI standard intensity scale) detected, 30m downwind of the WwTW boundary (Location #29). Apart from this, odours were all barely recognisable, faint and impersistent. "Barely recognisable" WwTW-related odours could be identified up to 75m from the WwTW boundary (Location #24). Following IAQM guidance, all locations had an odour exposure score of *Negligible*, which is not significant.

Complaints Analysis

- 5.11 SW were asked whether they had received any odour complaints relating to the WwTW in the past decade. They confirmed that they had received two odour complaints, the first on the 24th of July 2015 and the second on the 22nd of July 2016. Although SW could not provide a specific address from the complainants, they were able to provide the first 5 digits of the postcode, and it is understood that these complaints were likely made by residents located to the north of the WwTW.
- 5.12 HDC were also asked whether they had received any odour complaints relating to the WwTW. They corroborated that a complaint had been received on the 24th of July 2015.
- 5.13 SW's EIR team suggested that the former reed bed, which was decommissioned in 2020, might have been a key contributing factor to the occurrence of odour complaints in the local area. Since the site was fully upgraded in 2020, no complaints have been received, despite the nearest existing residents being located just 75m to the north-east of the nearest odorous process at the WwTW.
- 5.14 This provides evidence that odours emanating from the WwTW have not caused a statutory nuisance at existing residential areas in the vicinity of the WwTW site.

Dispersion Modelling

- 5.15 The results of dispersion modelling assessments are sensitive to the input parameters used. In particular, models are sensitive to the emission parameters, meteorological conditions, grid resolution, terrain data, and building parameters. As discussed in Paragraph 4.24, a considerable level of conservatism has been built into the model to increase the robustness of the assessment.
- 5.16 Figure 4 shows the predicted pattern of odour dispersion across the local area, including the development site. The greatest odours are constrained to the northeastern corner of the WwTW and the surrounding woodland.
- 5.17 Some areas within the adjacent allotments to the east of the WwTW are predicted to experience odours above $5 \text{ Ou}_E.\text{m}^{-3}$, which would be considered to cause at least moderately adverse odour effects according to IAQM guidance. Existing residential areas and associated gardens are predicted to be exposed to 98th percentile odour concentrations of no greater than $1.8 \text{ Ou}_E.\text{m}^{-3}$, which would be considered to cause no worse than a slightly adverse odour effect according to IAQM guidance.
- 5.18 The figure shows that odour concentrations are generally predicted to be below the $3 \text{ Ou}_E.\text{m}^{-3}$ significance threshold across the application site. At the far northeastern corner of the site (across an area of 0.06 ha), the 98th percentile odour concentration is predicted to exceed the $3 \text{ Ou}_E.\text{m}^{-3}$ threshold, which would be considered to cause moderately adverse odour effects according to IAQM guidance.
- 5.19 The $1.5 \text{ Ou}_E.\text{m}^{-3}$ contour extends further into the northeast of the site (across an additional 0.21 ha), where slightly adverse odour effects might be expected, according to IAQM guidance.

6. Discussion

- 6.1 The odour assessment has used a suite of tools, including observational, sensory, and predictive techniques to assess the likely impact of odours from the WwTW to significantly impact the proposed development.

Observational and Sensory Tools

- 6.2 Since 2015, it is understood that only two odour complaints have been made to either SW or HDC, despite existing residences being located just 75m to the north of the WwTW's nearest odorous process. No complaints have been received since major upgrade works were undertaken at the WwTW in 2020.
- 6.3 As the application site is on greenfield land and there are no sensitive receptors directly between the site and WwTW, a lack of complaints in the general direction of the site does not necessarily mean there is no odour risk.
- 6.4 Three odour surveys (sniff tests) were carried out between 25th July and 26th September 2025. The sniff tests were planned to coincide with commonly observed and conservative meteorological conditions and found that no odours associated with the WwTW could be detected beyond 75m away from the WwTW, and where these were detected, they were generally faint and very intermittent. This is the same distance from the WwTW as the nearest existing residences. No strong odours were detected further than 30m away from the WwTW.
- 6.5 Based on the results of the surveys and complaints data, it is reasonable to assume that under typical meteorological conditions, the WwTW would be unlikely to significantly impact the proposed receptors on the application site, especially where residences are located further than 30m away from the WwTW boundary.

Dispersion Modelling

- 6.6 To complement the above assessment tools, odour dispersion modelling was undertaken. A conservative approach was taken to the modelling assessment, as described in Paragraph 4.24, to account for inherent uncertainties associated with odour modelling.
- 6.7 As discussed between Paragraphs 2.23 and 2.46, odour concentrations below 3 O_{uE}.m⁻³ are considered unlikely to cause statutory nuisance.
- 6.8 The modelling results show that only a 0.06 ha area of land at the far northeastern corner of the application site is predicted to exceed this threshold. The other 2.43 ha within the application site all falls below the 3 O_{uE}.m⁻³ significance threshold.
- 6.9 As such, based on this (dispersion modelling) source of evidence in isolation, any proposed residences constructed outside of the northeastern-most 0.06 ha area are likely to be exposed to levels of odour no worse than *slightly adverse* according to IAQM guidance, which is considered not significant.

Comparing the Modelled Results Against Observational Evidence

- 6.10 All collected evidence indicates that odour complaints from the proposed development would be unlikely, providing the developer does not construct residential units in the northeastern-most corner of the site.
- 6.11 At sniff test location #29, a single strong odour was detected which, due to its brevity, led to a *Negligible* odour exposure score. The modelled odour concentration at this location is $2.2 \text{ Ou}_E\cdot\text{m}^{-3}$, which is below the $3 \text{ Ou}_E\cdot\text{m}^{-3}$ threshold, so this *Negligible* sniff test result aligns with the modelled area of insignificance.
- 6.12 The nearest existing residences are predicted to experience odour concentrations of approximately $1.8 \text{ Ou}_E\cdot\text{m}^{-3}$. The fact that no odour complaints have been received since the WwTW's upgrades supports the use of the $3 \text{ Ou}_E\cdot\text{m}^{-3}$ concentration as the likely nuisance threshold for this assessment, rather than the more stringent $1.5 \text{ Ou}_E\cdot\text{m}^{-3}$ criterion.

Significance of Odour

- 6.13 For the purpose of this assessment, multiple assessment tools have been used. Comparing the complaints and odour survey data with the modelled odour contour corroborates the finding that significantly adverse odours are unlikely to occur in areas of modelled concentrations below $3 \text{ Ou}_E\cdot\text{m}^{-3}$.
- 6.14 As such, this assessment strongly suggests that whilst proposed residential units might be able to detect odours from the WwTW on occasion, any units located away from the $3 \text{ Ou}_E\cdot\text{m}^{-3}$ contour would be unlikely to experience odours that could cause an actionable nuisance.
- 6.15 Providing no highly sensitive land uses are located within the northeastern corner of the site, where the $3 \text{ Ou}_E\cdot\text{m}^{-3}$ concentration is exceeded, odours emanating from the WwTW are not anticipated to have the potential to significantly impact the amenity of future users of the proposed development.

7. Conclusions

- 7.1 This odour assessment has relied on a number of tools, including a detailed atmospheric dispersion modelling assessment of the Cowfold Wastewater Treatment Works, analysis of complaints data and sniff testing, to consider the potential for odours to significantly affect future users of the proposed residential development.
- 7.2 Only two complaints have been lodged in relation to the Treatment Works since 2015, to either Horsham District Council or to Southern Water, and none since the facility was upgraded in 2020.
- 7.3 Only one strong and brief odour associated with the Treatment Works was detected across the application site during the three sniff tests, 30m from the boundary of the Treatment Works. Apart from this, all detected odours were barely perceptible and very intermittent.
- 7.4 A conservative odour dispersion modelling assessment was undertaken, utilising site-specific odour emissions data collected in September 2025. The modelling predicted that odour concentrations would be below the relevant odour threshold for potentially significant odour impacts across the majority of the site, except for a 0.06-hectare area in the northeastern-most corner.
- 7.5 Considering the conclusions drawn from the sensory, observational, and predictive odour assessment tools, it is concluded that the proposed development would not be significantly impacted by odours emanating from the WwTW, providing any residences are built away from the aforementioned northeastern-most corner.
- 7.6 As such, the proposed development should be considered compliant with the requirements of the National Planning Policy Framework and Local Policy, as proposed receptors would not be expected to be adversely impacted by odours. Odour should not, therefore, be a constraint to the planning process.

Figures and Appendices

Figure 1: Site Location Plan



Figure 1: Site Location Plan

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Figure 2: Odour Survey Locations



Figure 3: Maximum Surveyed Odours

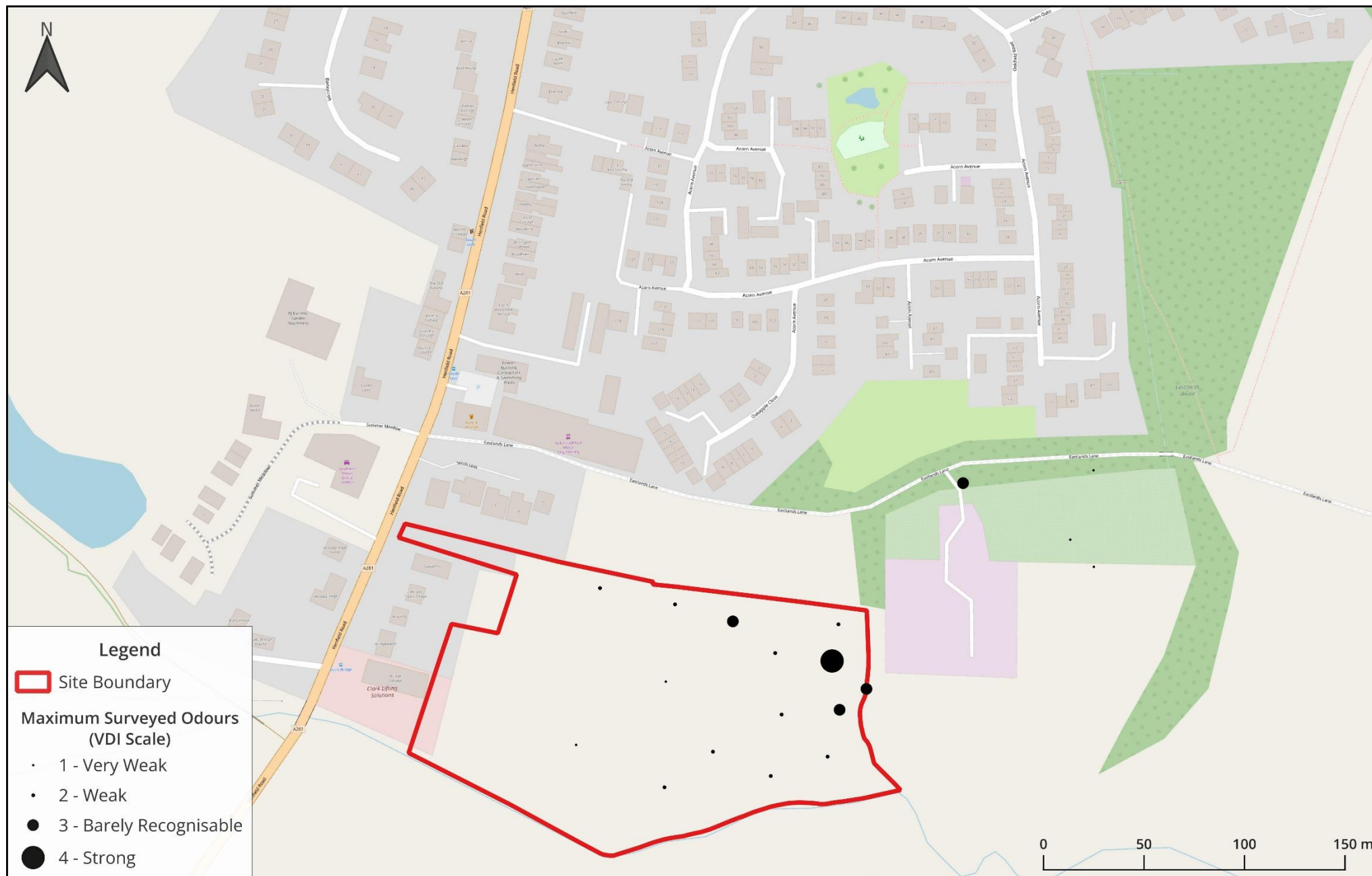


Figure 3: Maximum Surveyed Odours

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Figure 4: Modelled Odour Contours



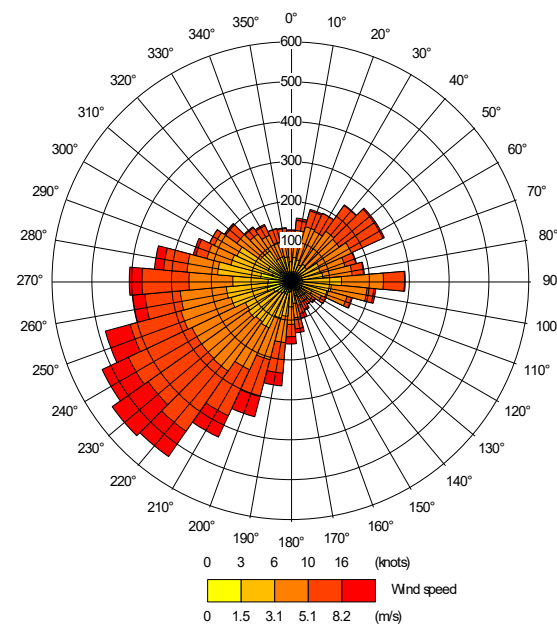
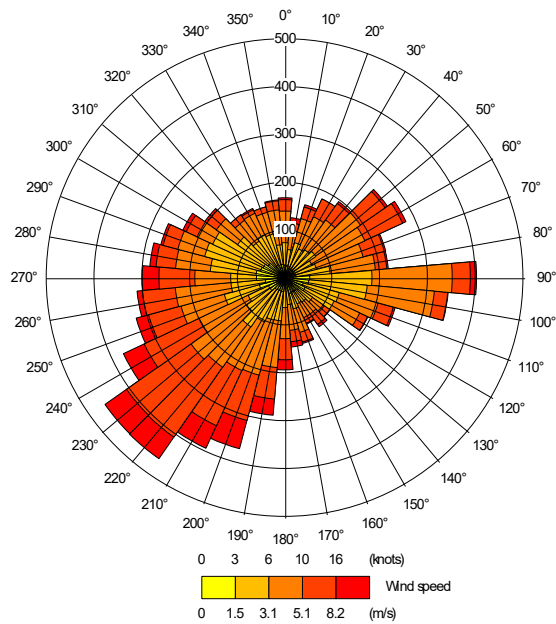
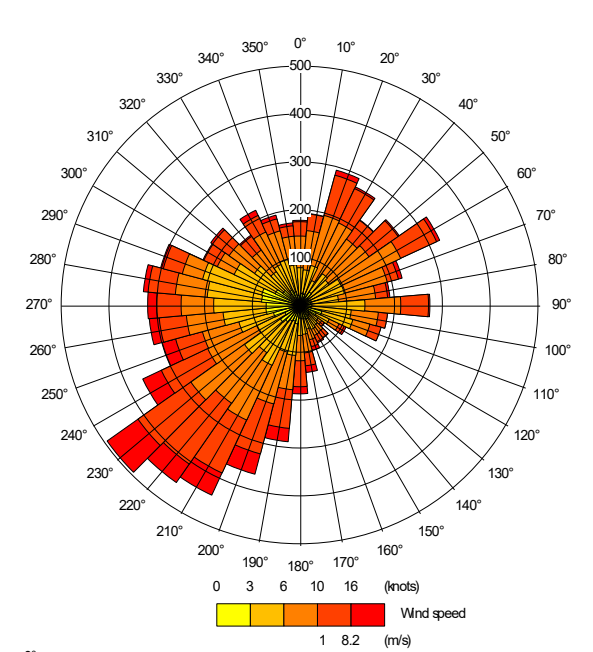
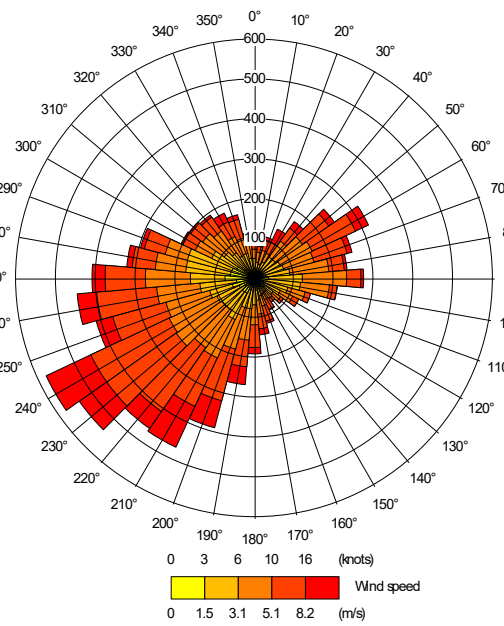
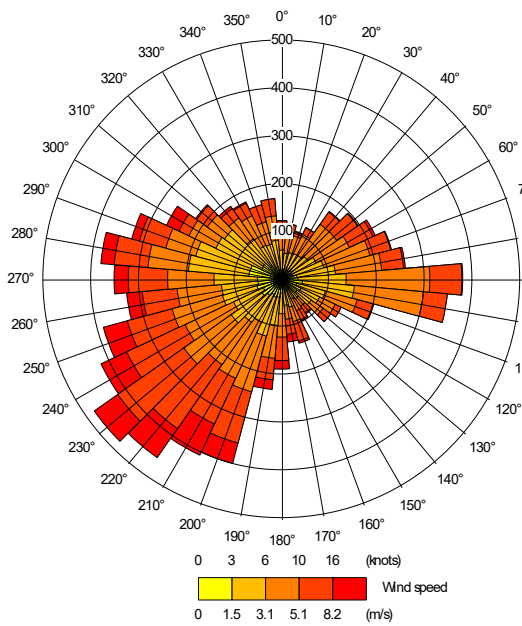
Figure 4: Modelled Odour Contours

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Figure 5: Wind Roses for NWP Data (2019-2023)



Appendix A: Odour Survey Sheets

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Avg. Intensity	% Time	Description/Source	Odour Exposure
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
5	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0%	N/A	Negligible
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
9	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0%	N/A	Negligible
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
12	2	3	1	1	2	2	0	3	3	2	2	3	3	2	3	3	3	2	2	1	2	0%	Earthy	Negligible
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible

Weather: Dry and 4/8th Cloud
 Wind Direction (From): SW
 Beaufort Wind Scale: 1 (Light Air)
 Temperature: 24°C
 Pressure: 1019mb
 Relative Humidity: 53%



Date: 25/07/2025

Time: 14:15 - 15:40

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Avg. Intensity	% Time	Description/Source	Odour Exposure
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
8	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
12	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	3	3	2	0	1	0%	Earthy	Negligible
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible

Weather: Dry and 4/8th Cloud
 Wind Direction (From): SW
 Beaufort Wind Scale: 1 (Light Air)
 Temperature: 24°C
 Pressure: 1019mb
 Relative Humidity: 53%



Date: 25/07/2025
 Time: 14:15 - 15:40

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Avg. Intensity	% Time	Description/Source	Odour Exposure
16	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
18	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
22	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
26	0	0	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
27	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
28	0	0	3	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	0%	Wastewater	Negligible
14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
29	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5%	Wastewater	Negligible
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible

Weather: Dry and 7/8th Cloud

Wind Direction (From): NE

Beaufort Wind Scale: 1 (Light Air) - 2 (Light Breeze)

Temperature: 18°C

Relative Humidity: 78%



Date: 19/08/2025

Time: 08:15 - 09:35

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Avg. Intensity	% Time	Description/Source	Odour Exposure
16	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0%	N/A	Negligible
17	0	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	2	0	1	0	0	0%	Horse Manure	Negligible
18	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0%	N/A	Negligible
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0%	N/A	Negligible
20	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
21	2	0	0	0	1	2	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0%	N/A	Negligible
22	2	0	0	2	0	0	0	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0%	N/A	Negligible
23	0	1	0	0	2	0	0	0	0	3	0	0	0	0	1	0	0	0	1	0	0	0%	Sweet/ Floral	Negligible
24	0	1	0	0	2	0	0	0	3	0	0	0	0	1	0	0	0	0	1	0	0	0%	Earthy/ Manure	Negligible
25	1	0	1	0	2	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0%	N/A	Negligible
26	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0%	N/A	Negligible
27	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	1	2	0	0%	N/A	Negligible
28	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0%	N/A	Negligible
14	2	3	0	0	0	0	1	0	1	0	0	0	1	0	0	2	0	0	2	0	1	0%	Musty	Negligible
29	2	1	0	0	0	2	0	0	0	0	0	0	1	3	0	2	0	1	0	0	1	0%	Clean Wastewater	Negligible
15	1	0	1	2	1	1	0	1	0	0	0	0	0	1	1	1	0	2	0	0	1	0%	N/A	Negligible
30	0	0	0	2	0	1	3	2	0	1	0	0	0	0	2	1	0	1	1	1	1	0%	Clean Wastewater	Negligible

Weather: Dry and Sunny
 Wind Direction (From): NE
 Beaufort Wind Scale: 3 (Gentle Breeze)
 Temperature: 18°C
 Relative Humidity: 40%



Date: 26/09/2025
 Time: 15:00 - 16:05

Appendix B: IAQM Odour Exposure Matrices

Table B.1: Receptor Sensitivity to Odours

Sensitivity	Examples and Rationale
High sensitivity	Surrounding land where: • Users can reasonably expect a high level of amenity; and • People would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples may include residential dwellings, hospitals, schools and tourist / cultural attractions.
Medium sensitivity	Surrounding land where: • Users would expect to enjoy a reasonable level of amenity, but wouldn't reasonably expect to enjoy the same level of amenity as in their home; or • People wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples may include places of work, commercial / retail premises and playing fields / outdoor recreational space.
Low sensitivity	Surrounding land where: • The enjoyment of amenity would not reasonably be expected; or • There is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples may include industrial uses, farms, footpaths and roads.

For the sensitivity of people to odour, the IAQM recommends that the Air Quality Practitioner uses professional judgement to identify where on the spectrum between high and low sensitivity a receptor lies. Based on Table 2 of the IAQM Guidance.

Table B.2: Odour Effect Descriptors (“Moderately Offensive Odours”)

Odour Exposure Level (C_{98} , $OU_E \cdot m^3$)	Receptor Sensitivity		
	Low	Medium	High
≥ 10	Moderate	Substantial	Substantial
5 - <10	Slight	Moderate	Moderate
3 - <5	Negligible	Slight	Moderate
1.5 - <3	Negligible	Negligible	Slight
0.5 - <1.5	Negligible	Negligible	Negligible
<0.5	Negligible	Negligible	Negligible

It should be noted that Table B.2 applies equally to cases where there are increases and decreases in odour exposure as a result of a development, in which case the appropriate terms “adverse” or “beneficial” should be added to the descriptors. Based on Table 7 of the IAQM Guidance.

Table B.3: Matrix to assess odour exposure at time and place of sampling

Average Intensity Level (VDI Scale)	Percentage Odour Time (%)				
	10%	11 to 20%	21 to 30%	31 to 40%	≥ 41%
6	Large	Very Large	Very Large	Very Large	Very Large
5	Medium	Large	Large	Very Large	Very Large
4	Small	Medium	Medium	Large	Large
3	Small	Medium	Medium	Medium	Medium
2	Small	Small	Medium	Medium	Medium
1	Small	Small	Small	N/A	N/A

Based on Table 15 of the IAQM Guidance.

Table B.4: Matrix to assess odour exposure at time and place of sampling

Overall Odour Exposure	Receptor Sensitivity		
	Low	Medium	High
Very Large	Substantial	Substantial	Substantial
Large	Moderate	Moderate	Substantial
Medium	Slight	Slight	Moderate
Small	Negligible	Negligible	Slight

Based on Table 16 of the IAQM Guidance.

Appendix C: Silsoe Odours Olfactometric Sampling Data

4. Results of Odour Measurements

The Laboratory results are contained in Appendix 1.

Table 4: Summary of results for Cowfold site emission rates on 29 September 2025

Source	Mean H ₂ S, (ppm)	Geomean Odour Concentration (ou _E /m ³)	Temperature (°C)	Surface Odour Emission Rate (ou _E / m ² / s)
Humus	0.000	216	18.4	1.3
Aeration Tank 2	0.000	464	19.6	2.8
Dewatering Tank	0.001	546	16.5	3.3
Sludge Tank	0.000	731	19.0	4.9
Inlet works	0.001	264	17.0	-

The **depth** of the inlet works approximated to **1.5m**, with a **length** of **15.2m** and **0.3m** in **width** (of liquid flow -though this is subject to load coming into the inlet)



Figure 10: Image of AM and PM Inlet Flow rates taken at 11:45AM and 13:02PM respectively.

AM: {FTT = 3.13l/s, FFT = 3.11l/s, FTW = 3.07l/s}; PM: {FTT = 3.42l/s, FFT = 3.39l/s, FTW = 3.35l/s}



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