

# **Beechlake Developments**

# **ELM FARM, LITTLE BLAKENHAM**

**Odour Assessment** 

Haze Environmental Ltd Droitwich Spa WR9 8UH

hazeenvironmental.com

**PUBLIC** 

PROJECT NO. 00016

OUR REF. NO. 16 ELM FARM, LITTLE BLAKENHAM

**DATE: MARCH 2022** 



# **QUALITY CONTROL**

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft	Final		
Date	18/03/2022	24/03/2022		
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Project number	00016	00016		
Report number	001	001		
File reference 16 Elm Farm, Somersham Road		16 Elm Farm, Somersham Road		

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FIVE YEAR WIND ROSE



# 1. INTRODUCTION

#### 1.1. BACKGROUND

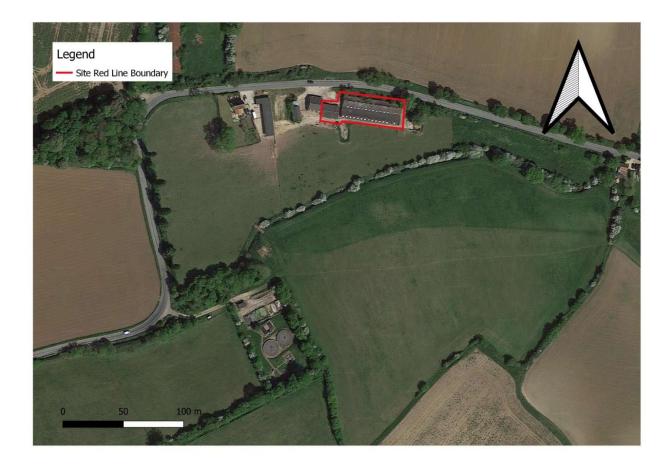
- 1.1.1. Haze Environmental Ltd has been commissioned by Beechlake Developments to undertake an odour assessment to support the change of use application, from agricultural buildings to five residential properties, in Little Blakenham, Ipswich ("the site"). This assessment is required as the site lies immediately to the north of a small Anglian Water Sewage Treatment Works (STW), and any odour generated by this STW has the potential to influence amenity for future residents of the proposed development.
- 1.1.2. This odour review determines whether there are any constraints to the development of the site. Details of the scope of work undertaken and the findings of the odour appraisal, advising what additional studies are required to develop the masterplan and support the planning application, are provided in the following sections.

### 1.2. SITE SETTING

- 1.2.1. The site is located at approximate National Grid Reference (NGR): 609990,248755. The site is bound by Somersham Road to the north, a small STW to the south, and is surrounded by agricultural land. The proposed development is located within the administrative area of Babergh and Mid Suffolk District Council (BMSDC).
- 1.2.2. As the proposed development is introducing new sensitive uses to the site and is also within approximately 150 metres of a STW, potential odour risk is to be assessed. **Figure 1** details the site location. The proposed development plans are detailed in **Appendix A**.



Figure 1 – Site Location and Red Line Boundary





# 2. LEGISLATION, POLICY & GUIDANCE

A summary of the relevant legislation and policy is provided below.

### 2.1. NATIONAL LEGISLATION

#### **ENVIRONMENTAL PROTECTION ACT**

- 2.1.1. Section 79 of Part III of the Environmental Protection Act (1990)<sup>1</sup> gives the following definitions of statutory nuisance:
- 2.1.2. 'Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance', and 'Any accumulation or deposit which is prejudicial to health or a nuisance'.
- 2.1.3. Following this, Section 80 says that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.
- 2.1.4. Currently, in the UK there are no statutory standards for assessing odour nuisance. Even outside the UK, few standards exist owing to the difficulty in defining odour nuisance and problems associated with the measurement of odour and assessing compliance with any odour nuisance standards that may be applied.
- 2.1.5. The four characteristics that are used to describe an odorous emission are as follows:
  - Hedonic tone a judgement of the relative pleasantness or unpleasantness of an odour made by assessors in an odour panel;
  - Quality/Characteristics qualitative descriptors to describe the odour e.g. fishy, fragrant, fruity etc.;
  - Concentration the amount of odour present in a sample of air; and
  - Intensity the magnitude (strength) of perception of an odour.
- 2.1.6. The response to a particular odour will vary depending on the individual and is therefore very subjective; however there is the potential for any odour to be offensive if exposure is frequent and at a high concentration.
- 2.1.7. Odours can be quantified in odour units, which are the amount of odour present in a metre cubed volume of air (ou<sub>E</sub>/m³). It is in these units that an assessment of the potential for an odour to cause annoyance is assessed and 1ou<sub>E</sub>/m³ is the point of detection of an odour. Exposure to odours is usually quantified in terms of a frequency of occurrence of the odour over a year of hourly average concentrations above a certain limit odour concentration.

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<sup>&</sup>lt;sup>1</sup> Environmental Protection Act (1990) – Part III



- 2.1.8. In the case of odour, pollution is considered in terms of causing offence to the sense of smell, i.e. causing annoyance to people who live in the area or are there for some other reason, through exposure to odour. The point at which 'pollution' in the form of offence to the sense of smell is occurring, is taken to be the point at which there is 'reasonable cause for annoyance'.
- 2.1.9. The aim of the legislation is to achieve 'no reasonable cause for annoyance' by persons beyond the boundary of the installation, i.e. sensitive receptors, as far as is possible using Best Available Techniques (BAT). The legislation requires that the amount that is spent on taking measures to reduce odour should be in proportion to the annoyance caused or potential to cause annoyance. Good practice should be adhered to at all times by installations. If a large number of complaints are received then an installation may need to expend more effort to reduce odour. Odour can also be controlled under the Statutory Nuisance provisions of Part III of the Environmental Protection Act.

# 2.2. GUIDANCE

### **H4 ODOUR MANAGEMENT**

2.2.1. A series of indicative odour exposure 'acceptability' criteria have been derived by the Environment Agency<sup>2</sup> for different types of industrial odour, including Waste Water Treatment Works ( WWTW) odour, based on their relative offensiveness and the 98th percentile of hourly average odour concentrations modelled over a year. These criteria apply to all locations that would be sensitive to an odour i.e. both existing and proposed residential development. Odour from wastewater treatment could be considered to be one of the most offensive odours and therefore should be assessed against the 'acceptability' criteria of 1.5ou<sub>E</sub>/m<sup>3</sup> given in the Environment Agency's H4 publication.

# 2.2. NATIONAL PLANNING POLICY

#### NATIONAL PLANNING POLICY FRAMEWORK

- 2.2.1. The National Planning Policy Framework (NPPF) (2019)<sup>3</sup> sets out the planning policy for England and places a general presumption in favour of sustainable development, stressing the importance of local development plans, and states that the planning system should perform an environmental role to minimise pollution. One of the twelve core planning principles notes that planning should "contribute to --- reducing pollution". To prevent unacceptable risks from pollution, planning decisions should ensure that new development is appropriate for its location. The NPPF states that the effects of pollution on health and the sensitivity of the area and the development should be taken into account.
- 2.2.2. The NPPF is now supported by Planning Practice Guidance (PPG)Air Quality (2019)<sup>4</sup>, which includes guiding principles on how planning can take account of the impacts of new development on air quality, but also

<sup>&</sup>lt;sup>2</sup> Environment Agency (2011). H4 Odour Management.

<sup>&</sup>lt;sup>3</sup> Ministry of Housing, Communities & Local Government (2019). National Planning Policy Framework.

<sup>&</sup>lt;sup>4</sup> Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance – Air Quality.



makes clear that, "Odour and dust can also be a planning concern, for example, because of the effect on local amenity".

2.2.3. It also provides guidance on options for mitigating impacts, outlining that "Mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact".

#### 2.3. LOCAL PLANNING POLICY

#### **BABERGH AND MID SUFFOLK JOINT LOCAL PLAN**

- 2.3.1. The Local Plan<sup>5</sup> details policy for shaping the local communities and guiding future development over the period to 2037. In particular the following can relate to odour:
- 2.3.2. Policy LP05 Replacement Dwellings and Additional Dwellings on Sub-Divided Plots Within Settlement Boundaries states that:

"Within settlement boundaries, proposals to replace existing dwellings and sub-divide existing residential plots and garden curtilages to create a new dwelling providing the proposal complies with policy (Residential extensions and conversions policy) criteria the proposal will be permitted.

Specifically, the proposal must provide and maintain: --- Acceptable levels of amenity with reasonable access to light, privacy, free from unacceptable noise, odour, smoke, dust, light or any other pollutants and impacts".

- 2.3.3. Policy LP17 Environmental Protection states that to protect the environment all developments must have regard to the following: "Pollution Pollution and Environmental Amenity:
  - a. Prevent, or where not practicable, reduce all forms of possible pollution including, but not limited to; air, land, ground and surface water, odour, noise, light and any other general amenity, including public amenity and visual amenity impacts. This must be demonstrated to the satisfaction of the LPA by the impact assessments where appropriate".
- 2.3.4. Policy LP26 Design and Residential Amenity states that "all new development must be of high-quality design, with a clear vision as to the positive contribution the development will make to its context. In order to achieve this development proposals shall:

i. Protect the health and amenity of occupiers and surrounding uses by avoiding development that is overlooking, overbearing, results in a loss of daylight, and/or unacceptable levels of light pollution, noise, vibration, odour, emissions and dust; Including any other amenity issues".

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<sup>&</sup>lt;sup>5</sup> Babergh and Mid Suffolk District Council (2020). Joint Local Plan.



# 2.4. GUIDANCE

# **INSTITUTE OF AIR QUALITY MANAGEMENT GUIDANCE**

- 2.4.1. The latest UK guidance on odour was published by the Institute of Air Quality Management (IAQM) in 2018<sup>6</sup>. The IAQM guidance sets out assessment methods which may be utilised in the assessment of odours for planning applications. It is the only UK odour guidance document which contains a method for estimating the significance of potential odour impacts.
- 2.4.2. The IAQM guidance endorses the use of multiple assessment tools for odours, stating that, "best practice is to use a multi-tool approach where practicable". This is in order to improve the robustness of the assessment conclusions. Some of the methods outlined in the IAQM guidance have been adopted in this odour assessment.

<sup>&</sup>lt;sup>6</sup> IAQM (2018). Guidance on the assessment of odour for planning.



# 3. SCOPE & METHODOLOGY

#### 3.1. SCOPE

- 3.1.1. The scope of the assessment has been determined in the following way:
  - Obtain, from the local Environmental Health Officer at BMSDC, any information they have about activities undertaken at the STW that may generate odour. In addition, any details of complaints made regarding odour from the STW by existing residents in the area to establish whether there is a history of odour nuisance attributable to the STW and the size of the area affected; and
  - Review of local wind direction information to understand the frequency of winds that may blow any
    odour from the STW towards the proposed development. For this task, wind direction data has been
    collected from the nearest suitable meteorological observation station for the latest five calendar
    years.

### 3.2. METHODOLOGY FOR PREDICITON OF IMPACTS

#### COMMUNICATION WITH BABERGH AND MID SUFFOLK DISTRICT COUNCIL

- 3.2.1. Preapplication advice was provided by BMSDC in which the requirement for an odour assessment was confirmed. The preapplication advice relating to odour stated:
- 3.2.2. "In order for this service to provide further comments in respect of the application, we would require confirmation as to whether the sewage works is operational and, if so, an odour assessment to be undertaken and report submitted to identify any potential sources of odour associated with the sewage treatment operations showing emission estimates in European Odour Units".
- 3.2.3. The Environmental Health Department at BMSDC was consulted with via email on Tuesday 15<sup>th</sup> of March, to discuss the methodology of the odour assessment and obtain any odour complaints received in the vicinity of the Site or relating to existing operations in the area. However, at the time of writing the report, no response had been received.
- 3.2.4. The assessment methodology followed for this assessment is detailed below:
  - Review of existing odour sources a desk-based review of existing potential odour sources was undertaken, in addition to a site walkover, to identify any operations in the vicinity of the site that may give rise to odorous emissions.
  - Review of sensitive receptor locations the location of proposed receptors sensitive to odours was
    reviewed to identify the closest sensitive receptors to the site, and the level of amenity that may be
    expected at the receptors considered.
  - Review of meteorological conditions local meteorological conditions were reviewed with regards to the development proposals and the location of identified existing sensitive receptors and odour sources, and the prevailing wind direction determined.
  - Review of odour complaints odour complaints were requested from BMSDC to identify any
    established odour annoyance or nuisance in the vicinity of the site.
  - Odour sniff testing an odour sniff testing survey was undertaken in accordance with IAQM guidance<sup>7</sup> to define baseline odour conditions in the vicinity of the site.



Review of potential mitigation – a review of the development proposals, including layout, was
undertaken to identify any mitigation measures to minimise exposure of proposed sensitive receptors
to odours, where necessary.



# 4. REVIEW OF EXISITING ODOUR SOURCES

### 4.1. SEWAGE TREATMENT WORKS

4.1.1. Somersham STW works (Suffolk), is a small Sewage Treatment Works, located along Somersham Road, Little Blakenham over an area of 0.31 hectares. The neighbouring land is mainly agricultural use, with several residential properties within 500m, the closest located approximately 145m to the north of the STW. The quantity of sludge produced in dry tonnes of solids per year at this STW are 18 tonnes/year. This site is classified as secondary biological filtration with trickling filters and RCBs (Figure 2). Sludge produced here is likely to be a mixture of primary and secondary sludge.

Figure 2 – Aerial Photograph of Somersham Sewage Treatment Works





# 5. REVIEW OF SENSITIVE RECEPTORS

# **5.1. SENSITIVE RECEPTORS**

5.1.1. There are currently several sensitive receptors within 500m of the STW. The closest sensitive receptor (Elm Farm) is the residential property which is located approximately 145m to the north (along Somersham Lane, adjacent to the proposed development). The proposed development will therefore introduce new sensitive receptors within approximately 150 metres of the STW. As the proposed development is residential, it is judged to be of high sensitivity as a receptor.



# 6. REVIEW OF METEOROLOGICAL CONDITIONS

# 6.1. METEOROLOGICAL STATIONS

- 6.1.1. The nearest UK Met Office meteorological station to the site is located at Wattisham, approximately 7.9km to the north west of the site. This meteorological station is considered to be the most suitable source of wind direction data for this appraisal. Wind direction data for this meteorological station has therefore been obtained for 2017 to 2021 inclusive. The five-year average wind rose for 2017 2021 for the Church Lawford meteorological recording station is detailed in Appendix B.
- 6.1.2. Table 1 below shows the results of the wind direction frequency analysis.

**Table 1 - Wind Direction Frequency Analysis** 

Sector*	Average % Occurrence
348.75 <sup>0</sup> – 11.25 <sup>0</sup> (north)	5.1
11.25 <sup>0</sup> – 33.75 <sup>0</sup> (north north-east)	3.7
33.75 <sup>0</sup> – 56.25 <sup>0</sup> (north-east)	3.8
56.25 <sup>0</sup> – 78.75 <sup>0</sup> (east north-east)	3.7
78.75° – 101.25° (east)	4.0
101.25° – 123.75° (east south-east)	2.8
123.75° – 146.25° (south-east)	3.5
146.25 <sup>0</sup> – 168.75 <sup>0</sup> (south south-east)	4.0
168.75 <sup>0</sup> – 191.25 <sup>0</sup> (south)	7.7
191.25° – 213.75° (south south-west)	7.5
213.75 <sup>0</sup> – 236.25 <sup>0</sup> (south-west)	8.4
236.25° – 258.75° (west south-west)	10.9
258.75° – 281.25° (west)	11.7
281.25 <sup>o</sup> – 303.75 <sup>o</sup> (west north-west)	4.8
303.75 <sup>0</sup> – 326.25 <sup>0</sup> (north-west)	4.6
326.25 <sup>0</sup> – 348.75 <sup>0</sup> (north north-west)	4.4

<sup>\*</sup> The direction that the wind is coming from



6.1.3. The wind direction analysis shows that the predominant wind direction in the area is from the west south west to west. The wind direction of greatest influence in dispersing any odour from the STW across the proposed site is a south westerly to westerly wind, which occurs for 31% of the year (approximately a third of the year).



# 7. REVIEW OF ODOUR COMPLAINTS

7 1	INFORMATION FROM F	RARERGH AND MID	SUFFOLK DISTRICT COUNCIL
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7.1.1. There is currently no information available on complaints received regarding odour from the STW.



# 8. ODOUR SNIFF TESTING SURVEYS

8.1.1. An odour sniff test survey was carried out at the site and in the vicinity of the site on the 8<sup>th of</sup> March 2022. Weather conditions on the day were sunny and dry, with temperatures around 7-8 degrees centigrade. There was a moderate breeze on the day (4 on the Beaufort scale) with winds blowing from the south east at the time of sampling (therefore generally away from the site from the odour source).

# 8.2. ODOUR SURVEY ONE – 8<sup>TH</sup> MARCH 2022

8.2.1. During the sniff testing, odour was not detectable at the site, and was barely detectable at the boundary of the STW. Sniff testing was undertaken at regular 5-minute intervals at each location and the intensity level, using the criteria in **Table 2**, was assigned.

**Table 2 - VDI Odour Intensity Scale** 

Odour Strength	Intensity Level	Comments			
No odour / not perceptible	0	No odour when compared to the clean site			
The Odou	r Detection Thresh	old (ODT) of $1ou_{E}m^{-3}$ is somewhere between 0 and 1			
Slight / very weak	1	There is probably some doubt as to whether the odour is actually present			
Slight / weak	2	The odour is present but cannot be described using precise words or terms			
Distinct	3	The odour is barely recognisable			
VDI 3940 says that the recognition threshold intensity is generally 3-10 higher than the ODT (i.e. 3- $10 \text{ ou}_{\text{E}}\text{m}^{-3}$ )					
Strong	4	The odour character is easily recognisable			
Very strong	5	The odour is offensive. Exposure to this level would be considered undesirable			
Extremely strong	6	The odour is offensive. An instinctive reaction would be to mitigate against further exposure			

8.2.2. A summary of the results of the survey are included in Table 3. In addition to the intensity, the percentage of time that odour was detected over the five-minute monitoring period is also provided.

**Table 3 - Sniff Testing Results** 

Survey Location (Figure 8.1)	Distance from STW boundary (m)	Character	Pleasantness	VDI Intensity Level	Percentage Odour Time (approx.)
1	172	Farmyard	U	3	Constant
2	163	Farmyard	N	1	10%
3	156	Fresh	N	0	0%
4	150	Fresh	N	0	0%
5	140	Fresh	N	0	0%

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6	116	Fresh	N	0	0%
7	142	Fresh	N	0	0%
8	48	Rotten Eggs	U	1	10%
9	1.5	Rotten Eggs	U	1	10%
10	1.5	Rotten Eggs	U	2	21-30%

8.2.3. Note: For Character, F = fresh; G = greasy; N = No odour. For Pleasantness, P = Pleasant; N = Neutral; U = Unpleasant.

Figure 3 - Survey Locations



# **LOCATIONS WITH NO ODOUR**

8.2.4. The majority of locations sampled across the site had neutral or no distinctive odour present. During the sample periods at these locations, no distinct odour was observed.

# **LOCATIONS WITH A PLEASANT ODOUR**

8.2.5. None of the locations samples had a distinct pleasant odour.

# LOCATIONS WITH AN UNPLEASANT ODOUR

8.2.6. Across the sites sampled, there were only a limited number of locations where an unpleasant odour was observed, however these were generally faint odours and did not occur on every breath (generally less than



10% of the 5-minute sampling time). The exception was the location sampled adjacent to the manure heap on Elm Farm (location 1) and also at the boundary of the STW (location 10). At survey location 1, the odour detected was not from the STW. It is assumed that on development of the site, the manure heap will no longer be situated adjacent to the residential properties. At survey location 10, whilst odour from the STW was detected, this was at the boundary of the STW and therefore within close proximity of the odour source. However, there was only a slight odour detection and this was not observed on every breath,

# 8.3. SUMMARY OF ODOUR SNIFF TESTING

- 8.3.1. Following the completion of the odour sniff testing survey and a review of meteorological data, it was considered that the risk of odours associated with the STW to influence amenity for future residents was insignificant. This was considered on the basis of:
  - The result of the sniff testing survey showing in general an unpleasant odour was not detected at the site; and
  - Odour control at the STW appears appropriate as only a faint odour was observed at the boundary of the STW.



# 9. CONSIDERATION OF SITE DESIGN AND MITIGATION

- 9.1.1. Whilst the prevailing wind direction at the site is from the south west to west, resulting in dispersion of air across the STW towards the site, this only occurs for approximately a third of the year. In addition, at the majority of sampled locations, no odours were detected during the described visit. Therefore, as it is very unlikely that there will be detectable odours at the site, it is not necessary to amend the current layout designs.
- 9.1.2. Whilst there is a small risk of detectable odours on rare occasions, this is unlikely to be of sufficient scale or frequency to render the site unsuitable for residential development. Overall, the risk of odour effects at the proposed development is deemed to be insignificant.



# 10. CONCLUSIONS

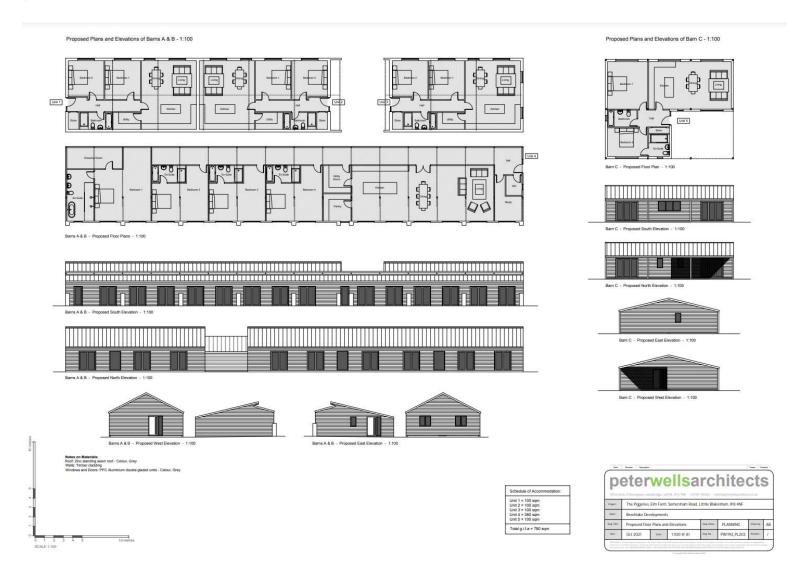
- 10.1.1. An odour assessment was undertaken to consider the potential for odours associated with a STW to influence amenity for future residents at Elm Farm. An odour sniff testing survey was undertaken in addition to a review of meteorological conditions and details of the STW.
- 10.1.2. Overall, it is considered that the risk of odour effects at the proposed site from the nearby STW is insignificant. This judgement is based on the balance of evidence from the results of the odour risk assessment and the site visit conducted on the 8th of March 2022. This initial assessment of potential odour complaints arising as a consequence of the STW adjacent to the proposed development at Elm Farm, Somersham Lane, Little Blakenham, Ipswich, concludes that the site appears to have a low risk of odour.
- 10.1.3. Whilst the prevailing wind direction from the south west to west results in dispersion of air across the STW towards the proposed site, this only occurs for approximately a third of the year. In addition, no odours were detected on the site itself during the site visit. Therefore, as it is judged to be very unlikely for any detectable odours at the site, it is not necessary to amend the current layout designs for the site.
- 10.1.4. Whilst there is a small risk of detectable odours on rare occasions, this is unlikely to be of sufficient scale or frequency to render the site unsuitable for residential development. Overall, the risk of odour effects at the proposed site is deemed to be insignificant.
- 10.1.5. It should be noted that this odour assessment has been completed using a limited screening methodology and therefore the conclusions are appropriately broad and conservative. Further evidence to support the case that the site is suitable for residential development could be gathered through further odour assessment work including additional site visits, community surveys, and dispersion modelling.

# **Appendix A**

# PROPOSED DEVELOPMENT PLAN







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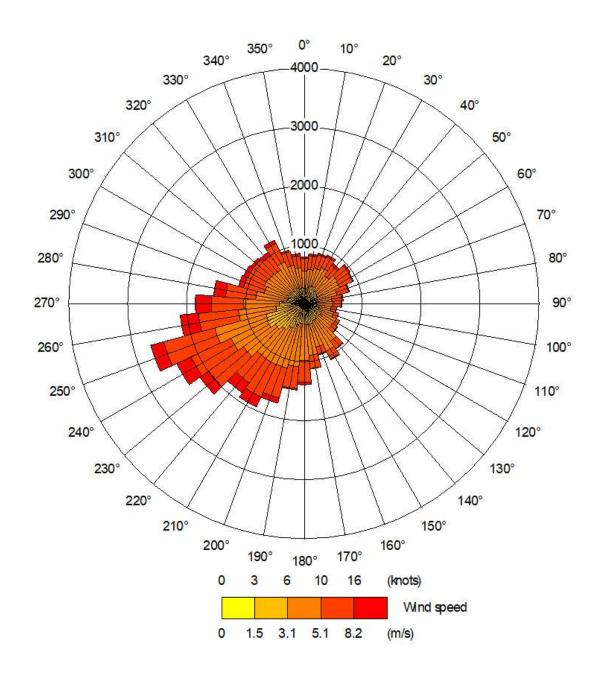
# **Appendix B**

# **FIVE YEAR WIND ROSE**





# Wattisham 2017-2021





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