Odour Assessment to Support Pre-planning Consultation for a Proposed Anaerobic Digestion (AD) Site at Lower Leighton Farm, Leighton, Welshpool, Powys, SY21 8HH

On behalf of: Farm Biomethane Ltd

ETL997/2025

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Contents

LIST OF TABLES

LIST OF FIGURES

Abbreviations

acph	Air changes per hour
AD	Anaerobic Digester/Digestion
CEH	Centre for Ecology & Hydrology
CH_4	Methane
CHP	Combined Heat and Power Plant
Defra	Department for the Environment, Food and Rural Affairs
EA	Environment Agency
EU	European Union
h/yr	hours per year
H_2S	Hydrogen sulphide
IAQM	Institute of Air Quality Management
kWe	Kilowatt electrical
MWth	Megawatt thermal
n/a	Not applicable
N_2	Nitrogen
NGR	National grid reference
NH_3	Ammonia
NOx	Nitrogen oxides
NRW	Natural Resources Wales
OCS	Odour Control System
OMP	Odour Management Plan
OT	Odour threshold
PCC	Powys County Council
PVRV	Pressure and vacuum relief valve
SO_2	Sulphur dioxide
S-P-R	Source-Pathway-Receptor
tpa	Tonnes per annum

1 Introduction

This Odour Assessment (OA) has been prepared by Earthcare Technical Ltd (ETL) on behalf of Farm Biomethane Ltd, in support of a planning application for the development of an agricultural Anaerobic Digestion (AD) Facility on land at Lower Leighton Farm, Leighton, Welshpool, Powys, SY21 8HH, on land centred at National Grid Reference (NGR) SJ24130655 ('the AD Plant Site'). Development of the above infrastructure, is hereafter referred to collectively as 'the Proposed Development.' The planning application will be submitted to Powys County Council (PCC).

The AD Plant Site will treat 133,000 tonnes per annum (tpa) of energy crops (silage) and livestock manures and produce approximately 24,465 tpa of solid digestate and 96,004 tpa of liquid digestate.

The design of the AD Plant Site incorporates the latest approaches to covering and containing feedstocks and digestate, and treating odorous air, reducing odour, before air is released to atmosphere.

This Odour Assessment has been undertaken to risk assess the potential impact of the proposal on human receptors.

1.1 Assessment scope

The objective of the assessment presented herein is to assess the likely odour impact risk to human receptors that would occur in the locale as a result of the operation of the Proposed Development.

The risk assessment presented herein follows the framework set out in the Institute of Air Quality Management (IAQM) guidance on the assessment of odour for planning.[1] The IAQM guidance structures the assessment of the emissions, dispersion, and receptors to inform an assessment of the overall odour effect. The qualitative assessment follows this stepwise approach to evaluating the emissions (magnitude, frequency, offensiveness), the dispersion of the emissions (height and momentum of release, factors increasing dispersion), and the human receptors (proximity, sensitivity).

A qualitative risk-based odour assessment has been undertaken that evaluates the potential odour impacts associated with the operational phase of the Proposed Development. The scope of the evaluation includes:

- A process description reviewing the proposed infrastructure at the AD Plant Site and potential for odorous emissions.
- An assessment of the likely magnitude and nature of odour emissions that may be generated from the operation.
- Completion of a qualitative risk-based odour assessment to assess the risk of offsite odour impact occurring during the normal operation of the Proposed Development.

[1] IAQM, Guidance on the assessment of odour for planning – version 1.1, Institute of Air Quality Management, London. www.iaqm.co.uk/text/guidance/odour-guidance-2018

1.2 Environmental Permitting

The AD Plant Site will require a Bespoke Part A installation permit from Natural Resources Wales (NRW) to operate. This means the site cannot operate without first undergoing a rigorous assessment of the infrastructure and proposed operations as well as approval of a detailed Odour Management Plan (OMP). The permit dictates how the operational site is managed and requires that activities are free from odour at levels likely to cause pollution outside of the site boundary, "as perceived by an authorised officer of the EA, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour." A written Environmental Management System will be in place which includes the need for daily odour monitoring, as well as daily checks and monitoring for all aspects of the wider site operation. A complaint procedure providing a clear communication pathway will be in place as part of the OMP should residents wish to raise a concern that will then be addressed.

1.3 Site description

Figure 1 shows the AD Plant Site location and Figure 2 the Site layout including infrastructure.

The AD Plant Site lies approximately 2.1km east of the centre of Welshpool, 1.4km north of Leighton and 2.2km southwest of Buttington, bounded by the B4381 to the north and the B4388 to the east. The Site is currently in arable use and land in the immediate vicinity is in agricultural use. There are nearby agricultural and industrial uses: Leighton Farm, Welshpool substation. The closest residential receptors are Lower Leighton, 77m to the east and Cattle Grid 100m to the northeast. Lower Leighton Village Hall and Leighton CP School lying 100-150m south of the Site. There is also a footpath which crosses through the Site.

The Proposed Development is on land that slopes from the southern boundary to the northern boundary with a fall of 20m; it lies at an elevation of between 72m and 91m. Terrain in the vicinity of the AD Plant Site (within 700m of the Site) and nearby receptors are shown in Figure 3. The Site lies to the west of Afon Hafren/ River Severn, on the edge of the wide valley which runs south-southwest to north-northeast. Terrain rises to 420m within 700m to the southeast of the Site. Receptors that lie to the north or west of the AD Plant Site are at a similar elevation to the Site; receptors that lie to the east, including those to the southeast and northeast along the B4388, are on higher ground, at elevations up to just over 120m.

The prevalence of farming in the vicinity will influence baseline odour at the AD Plant Site. Potential odour due to the AD Plant Site will be 'agricultural' in nature.

1.4 Report structure

The report describes: the relevant legislation and guidance for odour (section 2); the methodology used (section 3); the qualitative risk-based odour assessment is presented in section 4 and the conclusion in section 5.

2 Receptors

Table 1 lists the receptors considered in this Odour Assessment with their distance and bearing from the AD Plant Site boundary; they are shown in Figure 4. The receptors include residential properties, workplaces, agricultural and industrial use, leisure use and a footpath.

The closest residential receptor to the red line boundary is H5, Lower Leighton, 77m to the east and H6, Cattle Grid 100m to the northeast. Lower Leighton Village Hall and Leighton CP School lie 100m and 113m respectively to the south, along the B4388. A footpath currently crosses the Site. Users of the footpath would be expected not to spend any longer on the footpath than it takes to walk along it, therefore their exposure would be limited in time. They would also have a low expectation of amenity with respect to odour as they are using a footpath in an agricultural area.

Table 1 Receptors, distance and bearing from red line boundary

Receptor	Type	Description	Easting	Northing	Distance from the Site*	Bearing from the Site
H0	Footpath	Footpath through Site	324262	306568	0	n/a
H1	Agricultural	Lower Leighton Farm 1	324389	306566	15	SE
H2	Substation	Welshpool substation	324123	306770	16	NE
H3	Agricultural	Lower Leighton Farm 2	324317	306452	40	SE
H4	Leisure	Tennis courts	324234	306333	44	S
H5	Residential	Lower Leighton B4388	324473	306592	77	E
H6	Residential	Cattle Grid B4388	324489	306658	100	NE
H7	Village Hall	Leighton Village Hall	324231	306263	113	S
H8	Primary School	Leighton CP School actual	324220	306234	142	S
H9	Residential	Bytake Cottages	324153	306901	147	NE
H10	Residential	Oaklea	324271	306236	148	S
H11	Business (Veterinary)	Llinthwaite Nant Y Coed	324516	306706	148	NE
H12	Residential	Castle View	324109	306207	185	S
H13	Residential	Brynhafren B4388	324547	306751	200	NE
H14	Residential	Severn Banks	323856	306959	301	NW
H15	Residential	Severn Lodge	323787	306877	321	W
H16	Residential	Shire Oaks	323968	306087	329	S
H17	Residential	Castle Court	324013	306077	329	S
H18	Residential	Rivendell House	323995	306062	347	S
H19	Residential	Church Close	324381	306022	387	SE
H20	Church	Holy Trinity Church	324251	305964	413	S
H21	Industrial/ Business	Castle Court workshops	324022	305986	417	S
H22	Residential	The Wain House Pentre Mill	324804	306417	450	NE
H23	Residential	Walcot B4388	324036	305856	543	S
H24	Residential	Taflog B4388	324036	305856	543	S

Receptor	Type	Description	Easting	Northing	Distance from the Site*	Bearing from the Site
H25	Residential	Pentre House	324417	305864	547	S
H26	Residential	Leighton Arches	323584	307009	560	NW
H27	Residential	The White House B4388	324019	305813	588	S
H28	Residential	West View	324758	307135	631	NE
H29	Residential	Gravel Lodge	323615	305930	652	SW
H30	Residential	Severnleigh B4388	323987	305708	697	S
H31	Industrial/ Business	CDT Sidoli	323364	307061	782	W
H32	Sewage Works	Welshpool STW	323421	307291	849	NW
H33	Residential	Severn Lane	323279	307053	859	W
H34	Agricultural	Hope Farm Barns	324762	307410	873	NE
H35	Residential	Severn Farm	323237	306976	877	W
H36	Residential	3 Henfaes Lane	323230	307190	957	NW
H37	Residential	Ivy Cottage Hope Road	325226	307139	979	NE
H38	Industrial/ Business	Severn Farm Indl Estate	323046	306769	1,023	W
H39	Agricultural/ Livestock	Yorton Farm incl stud	324263	305291	1,086	S
H40	Industrial/ Business	Technocover	323476	307690	1,107	NW
H41	Residential	Old Hope Hope Road	325201	307465	1,169	NE
H42	Residential	Little Hope Hope Road	324975	307690	1,219	NE
Notes: *Distances rounded to the nearest 5m						

3 Process description

3.1 Process description

The proposed site layout is shown in Figure 2.

3.1.1 Feedstock storage and handling

The AD plant will process approximately 133,000 tpa of crops (silage) and livestock manures.

Silage

Silage will be brought in from nearby farms by lorry (Heavy Goods Vehicle) during harvest time to be stored in the clamps. As fresh cut crops, the silage does not have a significant odour. Loads will be deposited onto the **2No. Clamps** (each 90m x 35m, 20,600t total capacity) where they are compressed for storage (ensiled) and covered with an impermeable membrane to exclude oxygen from the ensiled silage to aid preservation of the feedstock and hence ensure the best gas yield, this also excludes rainwater ingress.

Leachate is produced from the ensiled material. The leachate runs forwards (from southeast to northwest) within the clamps into the silage drainage channels and then to the underground leachate tank (80,000 litres capacity). The **Leachate Tank Vent** will exhaust passively to air and will be a source of odour.

Compacted silage will be cut from the clamp face using a top loader; it will be slightly moist and therefore not give rise to dust. It will be transferred once or twice each day from the working face of the clamps to the **2No. feed hoppers** in the **Waste Reception Building** (80m x 32.65m), from where it is loaded into the primary digesters. Each loading phase will take approximately 2 hours/day. Standard operating procedures will include the clearing of any silage deposits dropped during loading. The **working face of the clamps** will be a source of odour.

Silage dropped during delivery or daily cutting of silage to feed the digesters will be cleared at the end of each loading phase.

Run-off from the hardstanding and bunded area will drain to the 1No. **Dirty Water Tank**, from where it will be reused in the process. The Dirty Water Tank will vent to the Waste Reception Building where the potentially odorous air is treated (odour reduced) before exhaust to atmosphere. The Dirty Water Tank will not be a source of odour.

2No. Surface Water Lagoons (2,495m^3 and 288m^3 capacity) will hold rainwater from other hardstanding areas and will not be a source of odour.

Other solid feedstocks

Other solid feedstocks: manures, will be delivered throughout the year and will be deposited in the Waste Reception Building once the roller door is shut. They are loaded into the Primary Digesters from the 2No. Feed hoppers in the Waste Reception Building where the potentially odorous air is treated (odour reduced) before exhaust to atmosphere.

Liquid feedstocks

Liquid feedstocks such as slurry, will be delivered by a combination of pipeline from Lower Leighton Farm and via tanker throughout the year. Liquid manures will be pumped from to the 1No. **Slurry Storage Tank** and, if necessary, the 1No. **Liquid Input Reception Tank**. The air displaced from the tanks would exhaust to the Waste Reception Building where the potentially odorous air is treated (odour reduced) before exhaust to atmosphere.

Waste Reception Building Odour Control System

Vehicles will access the Waste Reception Building via fast-acting roller shutter doors. The building will be served by an **Odour Control System (OCS)** with at least two air changes per hour (acph) providing a slight negative pressure with respect to the outside, meaning air from inside the building will tend not to leave the building even if the door is open. The air will pass through a wet **Scrubber** and an **Activated Carbon Filter**, before exhausting to atmosphere at 15.5m in height. The OCS will serve to abate emissions of odour, NH_3 and hydrogen sulphide (H_2S). The OCS will be a source of residual odour.

3.1.2 Biogas generation

In the **2No. Primary Digesters** and **2No. Post Digester** biogas is generated from the AD process and is stored in the domes above the digesters. The digester tanks will each have pressure and vacuum relief valves (PVRVs) as a safety measure to emit biogas or take in air if there is an over-pressure or under-pressure event respectively. PVRVs will not operate during normal operation, only as an emergency contingency and so releases of biogas and the associated odour from the PVRVs would be short-lived.

There will be a desulphurisation process at the AD Plant. The injection of low levels of oxygen and the addition of ferric chloride will reduce H_2S levels within the digester tanks and resultant biogas.

3.1.3 Use of biogas and combustion sources

1No. 1,200kWe combined heat and power plant (**CHP**) fired by natural gas will provide heat and power to the facility; it is expected to operate 8,600 hours per year. 1No. 800kWtho biogas-fired **Boiler** will provide heat to the facility if the CHP is unable to provide sufficient heat. An emergency **Flare** (Gasflare MTU 2000 or equivalent) will operate to burn up to 2,000Nm^3/h biogas in the event of an over-pressure in the digesters, conservatively assumed to operate < 250 hours per year. An emergency standby diesel generator will provide power when the CHPs are not operational if the National Grid cannot supply sufficient power, therefore, it would be used only as an emergency backup operating typically less than 12 hours per year (for testing each month) and operating less than 500 hours per year as a 3-year rolling average. The combustion sources are not expected to be a source of odour.

3.1.4 Digestate separation and storage

Whole digestate from the AD process will be pumped to 4No. **Screw Press Separators** in the Waste Reception Building, for separation into a digestate liquor and a fibre fraction. Solid digestate drops onto the floor and is stored until it is removed from the AD Plant Site. Odour will

be treated by the Waste Reception Building OCS before release to atmosphere via the OCS exhaust.

The liquid digestate (liquor) will either be re-circulated within the AD system, stored in the 2No. **Existing Storage Tanks**, 1No. **Thin Fraction Buffer Tank** or will be transferred via a sealed pipeline to the 1No. 3,170m^3 **Digestate Lagoon**. The Digestate Lagoon will have an engineered cover which will be made gas-tight by a concrete ring between the lining and cover. Any gas captured from the space between the digestate and the cover, and emissions from the Existing Storage Tanks, Thin Fraction Buffer Tank, will exhaust to the Waste Reception Building where the potentially odorous air is treated (odour reduced) before exhaust to atmosphere. The cover will be fitted with PVRVs which would operate in the unlikely event of an under-pressure or an over-pressure event. There will be no emissions to air and hence no odour from the Digestate Lagoon, Existing Storage Tanks and Thin Fraction Buffer Tank during normal operation.

At the **Offtake** point tankers will be filled with liquid digestate from the Digestate Lagoon and removed from Site. When tankers are filled with liquid digestate air from the tanker vents to atmosphere as it is displaced. Filling of tankers at the Offtake will be a small, intermittent source of odour.

4 Legislation, policy and guidance

The legislation and guidance relevant to this assessment is summarised below.

4.1 National legislation and policies

4.1.1 Environmental Protection Act

The Environmental Protection Act 1990[2] outlines that a local authority can require measures to be taken where 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";* or where *"fumes or gases are emitted from premises so as to be prejudicial to health or cause a nuisance."*

4.1.2 2024 Welsh Act

The 2024 Welsh Act[3] sets air quality targets and updated the Local Air Quality Management regime. It is supported by the Clean Air Plan for Wales[4] and existing UK-wide regulatory frameworks. These sit alongside retained EU-derived standards and local authority duties for assessment and management of air quality Planning policy.

4.1.3 Environment (Air Quality and Soundscapes) (Wales) Act 2024

The 2024 Act creates a Wales-specific framework for national air quality targets and amends existing legislation on local air quality management, smoke control, clean/low emission zones, road user charging and vehicle idling.[5]

4.1.4 Planning Policy Wales

Odour in Wales is mainly controlled through general planning policy, Planning Policy Wales,[6] and emerging Technical Advice Notes (TAN) plus separate regulatory guidance from Natural Resources Wales (NRW) on odour as "pollution" in environmental permitting. Planning Policy Wales treats odour as part of amenity and environmental quality that planning should manage at plan and project level. There is no Wales specific odour TAN equivalent to England's, so local authorities rely on UK wide odour guidance for planning alongside NRW permitting standards and site-specific Odour Management Plans.

[2] UK Government (1990) Environmental Protection Act 1990, CHAPTER 43

[3] Infrastructure (Wales) Act 2024, 2024 asc 3, Available at: https://www.legislation.gov.uk/asc/2024/3/contents [Accessed: 18 December 2025]

[4] Welsh Government (2020) Clean Air Plan for Wales, Available at: https://www.gov.wales/clean-air-plan-wales [Accessed: 18 December 2025]

[5] Environment (Air Quality and Soundscapes) (Wales) Act 2024, Available at: Environment (Air Quality and Soundscapes) (Wales) Act 2024 [Accessed: 18 December 2025]

[6] Welsh Government, Planning Policy Wales, Available at: https://www.gov.wales/planning-policy-wales [Accessed 18 December 2025]

4.2 Local policies

4.2.1 Powys County Council

The Powys Local Development Plan (2011-2026)[7] was adopted by Powys County Council on the 17th of April 2018. It sets out the Council's strategy for the sustainable development of the area. There are two policies relevant to odour: PM13 and W2:

- Policy DM13 – Design and Resources
  It states that development proposal: 'must be able to demonstrate a good quality design and shall have regard to the qualities and amenity of the surrounding area, local infrastructure and resources.' At point 11 it specifies:

  '11. The amenities enjoyed by the occupants or users of nearby or proposed properties shall not be unacceptably affected by levels of noise, dust, air pollution, litter, odour, hours of operation, overlooking or any other planning matter.'

- Policy W2 – Waste Management Proposals
  Development proposals for waste management will be permitted where they are supported by a Waste Planning Assessment and where they meet the following criteria:

  '3. There would be no adverse impact on amenity, human health or the environment due to noise, dust, odour or air quality.'

The Local Development Plan point out that NRW has a statutory duty in the regulation of waste and that the planning system must not duplicate those controls. Nevertheless, local planning authorities should be satisfied that proposals are capable of effective regulation, therefore planning applications must demonstrate how matters such as noise, dust, odour, air quality, surface water and pollution of groundwater will be controlled so as to avoid harm or a loss of amenity.

Work is now progressing on a Replacement Local Development Plan (2022 - 2037).

4.3 Guidance

4.3.1 IAQM Guidance on the assessment of odour for planning

Guidance developed by the IAQM[1] provides a framework for the assessment of odour impacts for planning applications and significance criteria against which the significance of the impacts can be assessed. The assessment presented herein follows the IAQM guideline criteria that is discussed in more detail in Section 3.

4.3.2 Environment Agency H4 Guidance

Environment Agency (EA) H4 Odour Management guidance[8] provides guiding principles on odour regulation, assessment, and control. H4 sets out criteria identifying the type of odours which may

[7] Powys County Council (2018) Adopted LDP (2011-2026), Available at: https://en.powys.gov.uk/article/4898/Adopted-LDP-2011---2026 [Accessed: 18 December 2025]

[8] EA (2011) H4 Odour Management – How to Comply with your Permit. Horizontal Guidance Note IPPC H4.

be classified as 'most offensive' e.g., processes involving septic effluent or sludge, 'moderately offensive' e.g., intensive livestock rearing, and 'less offensive' e.g., brewery.

4.3.3 Best Available Techniques Reference Document

The 'Best Available Techniques Reference Document for Waste Treatment'[9] sets out indicative Best Available Technique (BAT) or appropriate measures for the AD of organic materials and provides practical guidance on measures that can be employed to prevent or minimise release of emissions to air including odour. The BAT Associated Emissions Level (BAT-AEL) for odour from channelled emissions, such as a stack, is 200-1,000ou_E/m^3 for odour.

4.3.4 Waste treatment: appropriate measures for permitted facilities

In Wales, the appropriate measures for the biological treatment of waste, particularly biowaste, are guided by the EA's updated guidance. This EA guidance[10] applies to aerobic and anaerobic processes including AD including the combustion or upgrading of the resulting biogas and treating the digestate (AD can include wet, dry, and dry-batch digestion). There is overlap between BAT and necessary measures for waste operations. The EA uses the term 'appropriate measures' to cover both sets of requirements.

[9] Best Available Techniques (BAT) Reference Document for Waste Treatment, European IPPC Bureau, 2018.

[10] Environment Agency (25 November 2024) Biological waste treatment: appropriate measures for permitted facilities. Available at: (https://www.gov.uk/guidance/biological-waste-treatment-appropriate-measures-for-permitted-facilities/1-when-appropriate-measures-apply).

5 Methodology

5.1 Assessment approach

Adverse impacts of odour may include dis-amenity, 'annoyance', 'nuisance' and possibly complaints.[1] The distinction between the terms is defined by the IAQM as:

- annoyance – the adverse effect occurring from immediate exposure, and
- nuisance – the adverse effect caused cumulatively, by repeated events of annoyance.

Currently, there are no statutory standards for assessing odour annoyance in the UK.

The factors that will determine the degree of odour impact are summarised by the FIDOR acronym[11,8] as follows:

- **F**requency of detection (frequent odour incidents are more likely to result in complaints),
- **I**ntensity as perceived (intense/ strong odours are more likely to result in complaints),
- **D**uration of exposure (more complaints are likely with prolonged exposure),
- **O**ffensiveness at a particular intensity (concentration) (increased risk of complaints associated with more offensive odours), and
- **R**eceptor sensitivity (tolerance to odours will be reduced in areas where high levels of amenity are expected).

The adopted approach is based on the framework for assessing odour impact set out in IAQM guidance on the assessment of odours for planning. The approach represents a qualitative risk assessment technique, considered appropriate for the screening of odour impacts, and given the scale and location of odorous processes at the Proposed Development in relation to the nearest unrelated third-party receptor locations.

The IAQM method follows the Source-Pathway-Receptor (S-P-R) approach to establishing whether an odour impact could occur. The approach considers the source emission and the pathway that could lead to odour exposure (both a function of FIDO), and the sensitivity of receptors exposed to the odour. As outlined in the guidance, the S-P-R concept is based on:

Effect ≈ Dose x Response.

Where: -

- Dose (impact) is determined by F-I-D-O,
- Response is determined by receptor sensitivity, and
- The effect is the result of the changes on a receptor.[8]

Consistent with IAQM approach, the assessment establishes the 'source odour potential' (source magnitude) at the Proposed Development; the 'pathway effectiveness' in terms of proximity and prevailing wind direction; and potential odour effects based on the nature of

[11] Defra (2010), Odour Guidance for Local Authorities (March 2010)

receptors in the locale of the Proposed Development. The framework set out by IAQM used to estimate the risk of impact occurring and likely magnitude of the impact is outlined below.

Table 2, summarised from Table 9 of the IAQM guidance,[1] provides criteria to assist with determining the risk factors for the odour source, pathway and receptor sensitivity.

Table 2 Risk factors for the odour source, pathway and receptor sensitivity

Source Odour Potential	**Pathway Effectiveness**	**Receptor**
Factors affecting source odour potential include: • magnitude of odour release • how odorous the compounds are • unpleasantness of the odour	Factors affecting odour transfer to receptor: • distance from source to receptor • frequency (%) of winds from source to receptor or, qualitatively, the direction of receptors • mitigation measures to reduce transfer • effectiveness of dispersion/ dilution in reducing transfer • topography and terrain	Air quality practitioner to apply professional judgement to determine whether a receptor falls into one of the following categories:
Large source odour potential	**Highly effective pathway**	**High sensitivity receptor**
Large-scale, odorous sources, odours unpleasant (-2) to very unpleasant (-4) hedonic tone, process classed as 'Most offensive' in H4,[8] compounds with low odour thresholds (OTs), open air operation with no mitigation/ control.	Small separation distance/ receptor is adjacent to source, high frequency (%) of winds from source to receptor or, qualitatively, receptors downwind of source with respect to prevailing wind, open processes with low-level releases.	Users expect high level of amenity, people may be present continuously or for extended periods e.g., residences, hospitals, schools, tourist.
Medium source odour potential	**Moderately effective pathway**	**Medium sensitivity receptor**
Medium-scale, moderately odorous compounds, odours with neutral (0) to unpleasant (-2) hedonic tone, process classed as 'Moderately offensive' in H4,[8] some mitigation in place but significant residual odour.	Receptor is local to the source; releases are elevated where mitigation relies on dispersion but compromised by building effects.	Users expect reasonable level of amenity, not present continuously or for extended periods e.g., places of work, commercial, recreational facilities.
Small source odour potential	**Ineffective pathway**	**Low sensitivity receptor**
Small-scale, mildly odorous compounds with high OTs, odours with neutral (0) to very pleasant (+4) hedonic tone, process classed as 'Less offensive' in H4,[8] effective mitigation in place e.g., BAT, with little/ no residual odour.	Large separation distance/ receptor is remote from source, low frequency (%) of winds from source to receptor or, qualitatively, receptors upwind of source with respect to prevailing wind, where mitigation relies on dispersion, releases are high-level and not compromised by building effects.	Users would not reasonably expect a high-level of amenity, transient exposure/ present for limited periods only e.g., industrial, farms, footpaths and roads.
Notes: Source - Adapted from IAQM, Guidance on the assessment of odour for planning – version 1.1[1]		

Hedonic tone (Table 2) refers to the degree of pleasantness or unpleasantness associated with an odour. The scale used, ranges typically, from a score of +4 for very pleasant odours such as baking to a score of -4 for foul smells such as rotting flesh.[8] Neutral odours, such as raw potato,

have a hedonic tone score of 0. Hedonic tone is just one part of determining the "Offensiveness" in "FIDOR." [1]

Based on the risk criteria in Table 2, the Source odour potential is categorised as small, medium or large and the pollutant pathway from source to receptor categorised as ineffective, moderately effective or highly effective. The risk ratings for each are then considered together to predict risk of odour exposure (impact) at each receptor location using the matrix in Table 3.

The prediction of the likely odour effect at each sensitive receptor can then be determined.

Table 3 Risk of odour exposure (impact) at the receptor location

		Source odour potential		
		Low	**Medium**	**High**
Pathway effectiveness	**Highly effective**	Low risk	Medium risk	High risk
	Moderately effective	Negligible risk	Low risk	Medium risk
	Ineffective	Negligible risk	Negligible risk	Low risk

Source: IAQM, Guidance on the assessment of odour for planning – version 1.1[1]

The next step is to estimate the effect of the odour impact at each receptor location, based on receptor sensitivity using the matrix in Table 4.

Table 4 Likely magnitude of odour effect at the specific receptor location

Risk of odour exposure	**Receptor sensitivity**		
	Low	**Medium**	**High**
High	Slight adverse effect	Moderate adverse effect	Substantial adverse effect
Medium	Negligible effect	Slight adverse effect	Moderate adverse effect
Low	Negligible effect	Negligible effect	Slight adverse effect
Negligible	Negligible effect	Negligible effect	Negligible effect

Source: IAQM, Guidance on the assessment of odour for planning – version 1.1[1]

5.1.1 Significance of results

Generally, where the overall effect at a receptor is "Moderate adverse" or "Substantial adverse", the effect is likely to be considered significant.[1] The need for professional judgement from a competent and suitably experienced air quality professional is emphasised by the IAQM guidance. A 'significant' effect does not mean that the proposal is unacceptable, further consideration should be given to additional mitigation measures and balanced against benefits of the proposal.

6 Odour impact assessment

6.1 Source odour potential

In Table 5 each potential odour source is described: the nature of the emission; description of abatement; intensity and offensiveness of odour emissions; and the frequency and duration of the emissions. The nature of the odours arising at the AD Plant Site are agricultural in character and hence would be hard to distinguish from odours arising on the surrounding farmland.

Using the scheme in Table 2, the source odour potential of each source has been determined. The sources with the greatest odour potential, rated as **Medium**, are:

- Working face of the clamps
- Waste Reception Building OCS exhaust.

Sources with smaller (**Small**) odour potential are:

- Delivery of silage to the Silage Clamps
- Offtake of liquid digestate by tanker.
- Leachate tank vent

The following sources have been assessed as having **Negligible** odour potential due to the low intensity and offensiveness of the emissions and/or because the only emissions would be from PVRVs during abnormal operating conditions:

- Delivery of solid feedstocks to the Waste Reception Building
- Delivery of liquid feedstocks by pipeline or tanker to reception tanks
- Surface Water Lagoon
- PVRVs on the 2No. Primary Digesters, 2No. Post Digester and Digestate Lagoon
- Combustion sources: CHP, Boiler, emergency Flare, backup generator

The overall AD Plant Site Odour Potential for the AD Plant is considered, conservatively, to be **Medium**. Note this a conservative designation as there are only two sources rated as Medium.

Table 5 Potential odour sources and their odour potential (with controls)

Process	Odour source	Nature of emission and description of abatement	Intensity and offensiveness	Frequency and duration
Delivery of silage to the Clamps	Silage	Silage (freshly cut crops) will be delivered by lorry during the harvest periods. It is deposited on the Clamps, compressed for storage (ensiled) and covered with an impermeable membrane to prevent water damaging the silage. **Source odour potential: Small**	**(Fresh-cut) silage** - low intensity and offensiveness, sweet/ fermented odour. The silage will be from agricultural operations on nearby farms and therefore odours released during transfer and storage will be analogous to baseline odours.	Deliveries of freshly cut crop to the AD Plant Site would occur primarily during harvest time.
Delivery of solid feedstocks to the Waste Reception Building	Straw, vegetable residues and manures, agricultural wastes	Solid feedstock will be delivered by lorry and be deposited in the odour-controlled Building when the roller shutter doors are closed. The Building is held at a slight negative pressure. **Source odour potential: Negligible**	**Manures** – medium to high intensity and offensiveness.	Deliveries throughout the year
Delivery of liquid feedstocks	Slurry	Liquid manures will be delivered by tanker and some will be pumped from Lower Leighton Farm into the 1No. Slurry Storage Tank and, if necessary, the 1No. Liquid Input Reception Tank. The air displaced from the tanks would exhaust to the Waste Reception Building where the potentially odorous air is treated (odour reduced) before exhaust to atmosphere. **Source odour potential: Negligible**	**Cattle slurry** – medium to high intensity and offensiveness,	Deliveries throughout the year
Storage in Clamps and working face of the Clamps	Silage	The (working) face of the clamps will be uncovered to allow loading of the feed hoppers each day. The silage will be cut (disturbed) for loading into the feed hoppers for several hours/day. **Source odour potential: Medium**	**Silage** – low to medium intensity and offensiveness, sweet/ fermented odour. Medium categorisation is likely when it is disturbed. Correct storage conditions off-site should ensure silage product not degraded and/or malodorous.	Loading phases will last for 4 hours per day in total.
Leachate tank vent	Diluted leachate	The contents of the Leachate Tanks are diluted with rainwater and surface water and therefore its odour potential is very low. Moreover, the contents will be	**Leachate** – low odour potential especially if dilute	Continuous

Process	Odour source	Nature of emission and description of abatement	Intensity and offensiveness	Frequency and duration
		pumped frequently from the tank to be used in the process, so there will be little liquid resident in the Leachate Tanks. **Source odour potential: Small**		
Surface water lagoon	Surface water	Run-off of clean water from other hardstanding areas. **Source odour potential: Negligible**	**Surface water** – odourless.	Throughout the year
Waste Reception Building OCS exhaust: **Storage of solid feedstocks, feed hopper loading, screw press separator, storage of solid digestate, odorous air from Slurry Storage Tank, Liquid Input Reception Tank, Existing Storage Tanks and Thin Fraction Buffer Tank**	Silage, straw, vegetable residues and manures; solid digestate; odorous air from tanks	Storage of solid feedstocks, separation of whole digestate and storage of solid digestate will be continuous. Loading of the feed hoppers will take place for 4h per day. Exhaust from the liquid feedstock tankers will be intermittent and low in volume. The OCS will operate continuously with at least two acph (68,600m^3/h) providing a slight negative pressure with respect to the outside, meaning air from inside the building will tend not to leave the building even if the door is open. The air will pass through a wet scrubber and Activated Carbon Filter before exhausting to atmosphere. The OCS will abate emissions of odour, NH_3 and H_2S. **Source odour potential: Medium**	**Silage** - medium intensity and offensiveness, in particular when disturbed. **Manures** – medium to high intensity and offensiveness. **(Whole) digestate** – medium intensity and offensiveness. **Solid digestate** – low to medium intensity and offensiveness **Odorous air** from tank vents – medium to high intensity and offensiveness.	Continuous operation of the OCS
Anaerobic digestion, Digesters	'Raw biogas' and/or whole digestate (substrate)	The digestion process takes place in sealed, airtight vessels. There are no emissions, other than from PVRVs; a safety feature that operate only in (abnormal) over or under-pressure scenarios. PVRV emissions released at height that will ensure effective emissions dispersal. **Source odour potential: Negligible**	**Biogas -** high intensity and offensiveness, (sweet, sulphurous). Sealed system, therefore, no source odour potential at the AD Plant other than infrequent operation of the PVRV (safety devices).	Intermittent and brief release of biogas from PVRVs, only under abnormal operating conditions.

Process	Odour source	Nature of emission and description of abatement	Intensity and offensiveness	Frequency and duration
Liquid digestate storage – Digestate Lagoon	Liquid digestate (liquor)	The Lagoon will have an engineered cover which will be made gas-tight by a concrete ring between the lining and cover. Any gas captured from the space between the digestate and the cover will be extracted and fed back into the digesters. The engineered cover will incorporate a PVRV for over-pressure situations as a safety feature and when activated there will be an intermittent release of odorous air. **Source odour potential: Negligible**	**Liquid digestate** – medium intensity and offensiveness	Continuous
Offtake of liquid digestate	Liquid digestate (liquor)	Some liquid digestate will be taken off-site by tractor-tanker or tanker on public roads. During filling, the tanker vent through which air from the tanker is displaced, will be a source of odour. The odour emission will be short in duration (20 minutes per tanker). **Source odour potential: Small**	**Liquid digestate** – medium intensity and offensiveness	6-7 tankers per day during staffed hours 7am-7pm; filling is expected to take 20 minutes per tanker.
Combustion	Combusted biogas/ Natural gas	1No. 1,600kWe CHP fired by natural gas, operating 8,600h/year – exhaust will not be odorous 1No. 600kWtho Boiler fired by biogas, operating 1,000h/year. 1No. emergency flare, capacity 2,000Nm^3/h biogas. Installed as a safety feature only and will be used infrequently, less than 3% of hours per year. Emissions released at height that will ensure effective emissions dispersal. **Source odour potential: Negligible**	**Combusted biogas** – very low intensity and offensiveness. The combustion of biogas will destroy any potential odorous compounds.	Flare – expected to operate no more than 3% of the time. Boiler – 1,000 h/yr in normal operation.

6.2 Pathway effectiveness and risk of odour exposure

The principal sources of odour will be the working face of the clamps and the Waste Reception Building OCS exhaust (OCS exhaust).

The impact of the change in levels on the Site (20m change) and the surrounding terrain is complex. While the windrose in Figure 5, shows a strong 'channelling' of wind directions to those along the valley, the impact of changes in terrain height on dispersion are not straightforward to deduce, other than by carrying out detailed modelling.

There are scattered trees in the vicinity of the Site that would not significantly affect dispersion of odours. On-site infrastructure (large tanks, vessels) in addition to the nearby Lower Leighton Farm buildings will increase turbulence and hence dispersion in the near to medium field. Near field dispersion will also be affected by potential entrainment in the lee of structures.

Figure 4 shows the windrose data, derived from Global Forecasting System (GFS) meteorological data for the Proposed Development site for a 5-year period. The windrose data is summarised numerically in Table 6. It shows the prevailing wind direction is west-southwesterly, with frequent winds also from the southwest, west and south-southwest. Prevalence of winds from these directions means that those receptors that lie to the northeast (from north-northeast through to east) will be those most frequently 'downwind' of the site. For ground and near-ground level sources, low wind speed and stable atmospheric conditions will give rise to the highest concentrations at the closest receptors (H1 to H13).

Table 6 Wind analysis (location: latitude 52.368°, longitude 0.683°)

Speed in m/s/ Direction	<0.3	0.3 - 1.0	1.0 - 2.5	2.5 - 5.0	5.0 - 7.5	7.5 - 10.0	10.0 - 12.5	>12.5	Total probability (out of 100)
N	0.03	0.35	1.71	1.25	0.47	0.05	0.03	0.00	3.88
NNE	0.03	0.28	1.91	1.82	0.40	0.04	-	-	4.47
NE	0.02	0.28	1.88	1.98	0.57	0.10	-	-	4.84
ENE	0.02	0.27	1.58	1.61	0.72	0.10	-	-	4.29
E	0.03	0.31	1.23	1.12	0.49	0.13	-	-	3.31
ESE	0.01	0.35	1.10	0.73	0.31	0.10	0.02	-	2.62
SE	0.02	0.32	1.30	1.09	0.42	0.17	0.00	-	3.33
SSE	0.03	0.30	1.55	1.44	0.71	0.34	0.05	-	4.42
S	0.02	0.34	2.14	2.52	1.33	0.39	0.05	-	6.80
SSW	0.02	0.31	2.36	3.54	1.86	0.75	0.22	0.03	9.10
SW	0.03	0.30	2.85	4.92	3.17	1.67	0.54	0.16	13.63
WSW	0.02	0.38	3.71	4.99	3.72	1.82	0.73	0.20	15.56
W	0.02	0.36	2.57	2.99	2.37	1.30	0.36	0.12	10.08
WNW	0.03	0.44	1.45	1.54	1.38	0.60	0.22	0.04	5.68
NW	0.02	0.39	1.28	1.49	0.77	0.23	0.04	0.02	4.24
NNW	0.01	0.32	1.31	1.30	0.62	0.12	0.02	0.05	3.75
Total probability (out of 100)	0.35	5.31	29.94	34.32	19.31	7.89	2.26	0.62	**100**

Speed in m/s/ Direction	<0.3	0.3 - 1.0	1.0 - 2.5	2.5 - 5.0	5.0 - 7.5	7.5 - 10.0	10.0 - 12.5	>12.5	Total probability (out of 100)
Source: A&S Modelling & Data https://asmodata.co.uk/) Green-filled cells show the top 10% wind direction/wind speed combinations in terms of frequency.									

6.3 Receptor sensitivity

Figure 4 shows the receptors which include residential properties, a primary school, village hall, agricultural, industrial, leisure premises and a footpath.

Receptor sensitivities have been determined following the guidance in Table 2. The sensitivity assigned depends on the land use and the expectation of amenity e.g. a person working at a site used for an odorous activity will have a low expectation of amenity. Therefore, residential receptors, the school and village hall have been assigned as 'High' sensitivity. The leisure use and some industrial receptors have been assigned 'Medium' and agricultural, Wastewater Treatment Works, electricity substation and a footpath have been assigned 'Low' sensitivity.

6.4 Determination of likely odour effect of the Proposed Development

In accordance with the matrix provided in Table 4, the Estimated Odour Effect of the Proposed development at all receptor locations has determined and is shown in Table 7. At 12 receptors the Odour Effect was determined to be 'Negligible,' and at 24 receptors, 'Slight.' As described in section 3.1.1, impacts that are 'Negligible' or 'Slight adverse' will normally be categorised as 'not significant.'

At six residential receptors the Odour Effect was determined to be 'Moderate,' and are therefore potentially significant. These receptors are:

- H5, Lower Leighton B4388, 77m to the east
- H6, Cattle Grid B4388, 100m to the northeast
- H9, Bytake Cottages, 147m to the northeast
- H11, Llinthwaite Nant Y Coed, 148m to the northeast
- H13, Brynhafren B4388, 200m to the northeast
- H22, The Wain House Pentre Mill, 450m to the northeast

The IAQM guidance[1] emphasises the need for professional judgement in reaching conclusions about significance. The assessment has been conservative in respect of assuming the working face of the clamp would emit odour at the same level throughout the day, whereas working of the face will take place for up to four hours per day, not continuously; when undisturbed, silage has a lower odour intensity. The OCS will exhaust at height (15.5m) with a considerable momentum, leading to good dispersion.

The Proposed Development is in an agricultural area and therefore the baseline level of odour will be agricultural in nature. Nonetheless, odour effects cannot be ruled out insignificant and further assessment is recommended.

Table 7 Summary of the likely odour effects at each receptor

Receptor	Type	Description	Distance from red line boundary	Receptor bearing from Site	Approx. % of time winds from source to receptor	Source odour potential	Pathway effectiveness	Risk of odour exposure	Receptor sensitivity	Likely odour effect
H0	Footpath	Footpath through Site	324262	306568	100.00	Medium	Highly	Medium	Low	Negligible
H1	Agricultural	Lower Leighton Farm 1	324389	306566	4.24	Medium	Highly	Medium	Low	Negligible
H2	Substation	Welshpool substation	324123	306770	13.63	Medium	Highly	Medium	Low	Negligible
H3	Agricultural	Lower Leighton Farm 2	324317	306452	4.24	Medium	Highly	Medium	Low	Negligible
H4	Leisure	Tennis courts	324234	306333	3.88	Medium	Highly	Medium	Medium	Slight
H5	Residential	Lower Leighton B4388	324473	306592	10.08	Medium	Highly	Medium	High	**Moderate**
H6	Residential	Cattle Grid B4388	324489	306658	13.63	Medium	Highly	Medium	High	**Moderate**
H7	Village Hall	Leighton Village Hall	324231	306263	3.88	Medium	Moderately	Low	High	Slight
H8	Primary School	Leighton CP School actual	324220	306234	3.88	Medium	Moderately	Low	High	Slight
H9	Residential	Bytake Cottages	324153	306901	13.63	Medium	Highly	Medium	High	**Moderate**
H10	Residential	Oaklea	324271	306236	3.88	Medium	Moderately	Low	High	Slight
H11	Business (Veterinary)	Llinthwaite Nant Y Coed	324516	306706	13.63	Medium	Highly	Medium	High	**Moderate**
H12	Residential	Castle View	324109	306207	3.88	Medium	Moderately	Low	High	Slight
H13	Residential	Brynhafren B4388	324547	306751	13.63	Medium	Highly	Medium	High	**Moderate**
H14	Residential	Severn Banks	323856	306959	3.33	Medium	Moderately	Low	High	Slight
H15	Residential	Severn Lodge	323787	306877	3.31	Medium	Moderately	Low	High	Slight
H16	Residential	Shire Oaks	323968	306087	3.88	Medium	Moderately	Low	High	Slight
H17	Residential	Castle Court	324013	306077	3.88	Medium	Moderately	Low	High	Slight
H18	Residential	Rivendell House	323995	306062	3.88	Medium	Moderately	Low	High	Slight
H19	Residential	Church Close	324381	306022	4.24	Medium	Moderately	Low	High	Slight
H20	Church	Holy Trinity Church	324251	305964	3.88	Medium	Moderately	Low	High	Slight
H21	Industrial/ Business	Castle Court workshops	324022	305986	3.88	Medium	Moderately	Low	High	Slight
H22	Residential	The Wain House Pentre Mill	324804	306417	13.63	Medium	Highly	Medium	High	**Moderate**

Receptor	Type	Description	Distance from red line boundary	Receptor bearing from Site	Approx. % of time winds from source to receptor	Source odour potential	Pathway effectiveness	Risk of odour exposure	Receptor sensitivity	Likely odour effect
H23	Residential	Walcot B4388	324036	305856	3.88	Medium	Moderately	Low	High	Slight
H24	Residential	Taflog B4388	324036	305856	3.88	Medium	Moderately	Low	High	Slight
H25	Residential	Pentre House	324417	305864	3.88	Medium	Moderately	Low	High	Slight
H26	Residential	Leighton Arches	323584	307009	3.33	Medium	Moderately	Low	High	Slight
H27	Residential	The White House B4388	324019	305813	3.88	Medium	Moderately	Low	High	Slight
H28	Residential	West View	324758	307135	13.63	Medium	Moderately	Low	High	Slight
H29	Residential	Gravel Lodge	323615	305930	4.84	Medium	Moderately	Low	High	Slight
H30	Residential	Severnleigh B4388	323987	305708	3.88	Medium	Moderately	Low	High	Slight
H31	Industrial/ Business	CDT Sidoli	323364	307061	3.31	Medium	Ineffective	Negligible	Medium	Negligible
H32	Sewage Works	Welshpool STW	323421	307291	3.33	Medium	Ineffective	Negligible	Low	Negligible
H33	Residential	Severn Lane	323279	307053	3.31	Medium	Ineffective	Negligible	High	Negligible
H34	Agricultural	Hope Farm Barns	324762	307410	13.63	Medium	Moderately	Low	Low	Negligible
H35	Residential	Severn Farm	323237	306976	3.31	Medium	Ineffective	Negligible	High	Negligible
H36	Residential	3 Henfaes Lane	323230	307190	3.33	Medium	Ineffective	Negligible	High	Negligible
H37	Residential	Ivy Cottage Hope Road	325226	307139	13.63	Medium	Moderately	Low	High	Slight
H38	Industrial/ Business	Severn Farm Indl Estate	323046	306769	3.31	Medium	Ineffective	Negligible	Medium	Negligible
H39	Agricultural/ Livestock	Yorton Farm incl stud	324263	305291	3.88	Medium	Ineffective	Negligible	Medium	Negligible
H40	Industrial/ Business	Technocover	323476	307690	3.33	Medium	Ineffective	Negligible	Medium	Negligible
H41	Residential	Old Hope Hope Road	325201	307465	13.63	Medium	Moderately	Low	High	Slight
H42	Residential	Little Hope Hope Road	324975	307690	13.63	Medium	Moderately	Low	High	Slight

7 Conclusion

This Odour Assessment has been prepared to risk assess the potential odour effect of the planning application for the development of an agricultural AD Facility on land at Lower Leighton Farm, Leighton, Welshpool.

The AD Plant Site will treat 133,000 tpa of waste, it will require a Bespoke Part A installation permit from the EA in order to operate. This means the site cannot operate without first undergoing a rigorous assessment of the infrastructure and proposed operations as well as approval of a detailed OMP. A written environmental management system will be in place which includes the need for daily odour monitoring, as well as daily checks and monitoring for all aspects of the wider site operation. A complaint procedure providing a clear communication pathway will be in place as part of the OMP should residents wish to raise a concern that will then be addressed.

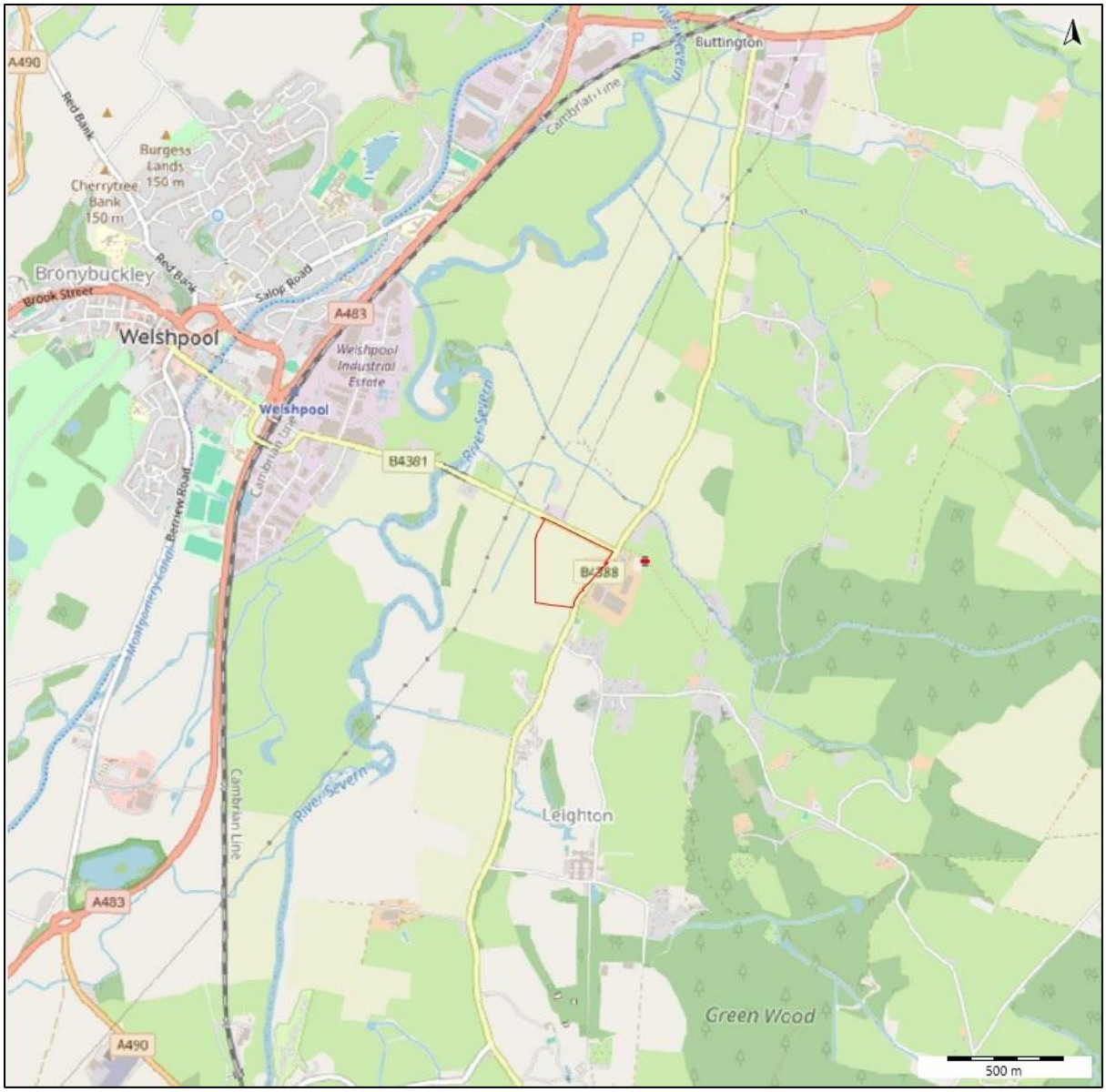
The approach adopted in this assessment is based on a qualitative risk assessment technique, that follows IAQM (2018) guidance for assessing odour impact for planning. The framework set out by IAQM has been used to estimate the risk of impact occurring and likely magnitude of the impact and was considered appropriate for the screening of odour impacts given the scale and location of odorous processes at the Proposed Development in relation to the nearest receptor locations.

Following this approach, the overall Source Odour Potential for the AD Plant Site was determined to be Medium. Of the 42 receptors considered the odour effect was determined to be insignificant at 36 and potentially significant at the remaining six receptors, all of which are residential receptors. They lie between 77m and 450m from the red line boundary of the Site to the east and the northeast, downwind of the prevailing wind direction.

While several conservative (pessimistic) assumptions have been made (Section 6.4), the conclusion of this qualitative assessment is that there may be significant effects at six receptors, the change in level across the Site and the surrounding terrain, lead to the conclusion that further assessment is required. Detailed modelling of odour impacts is recommended as well as the preparation and submission to PCC of a detailed Odour Management Plan for the Site.

Figures

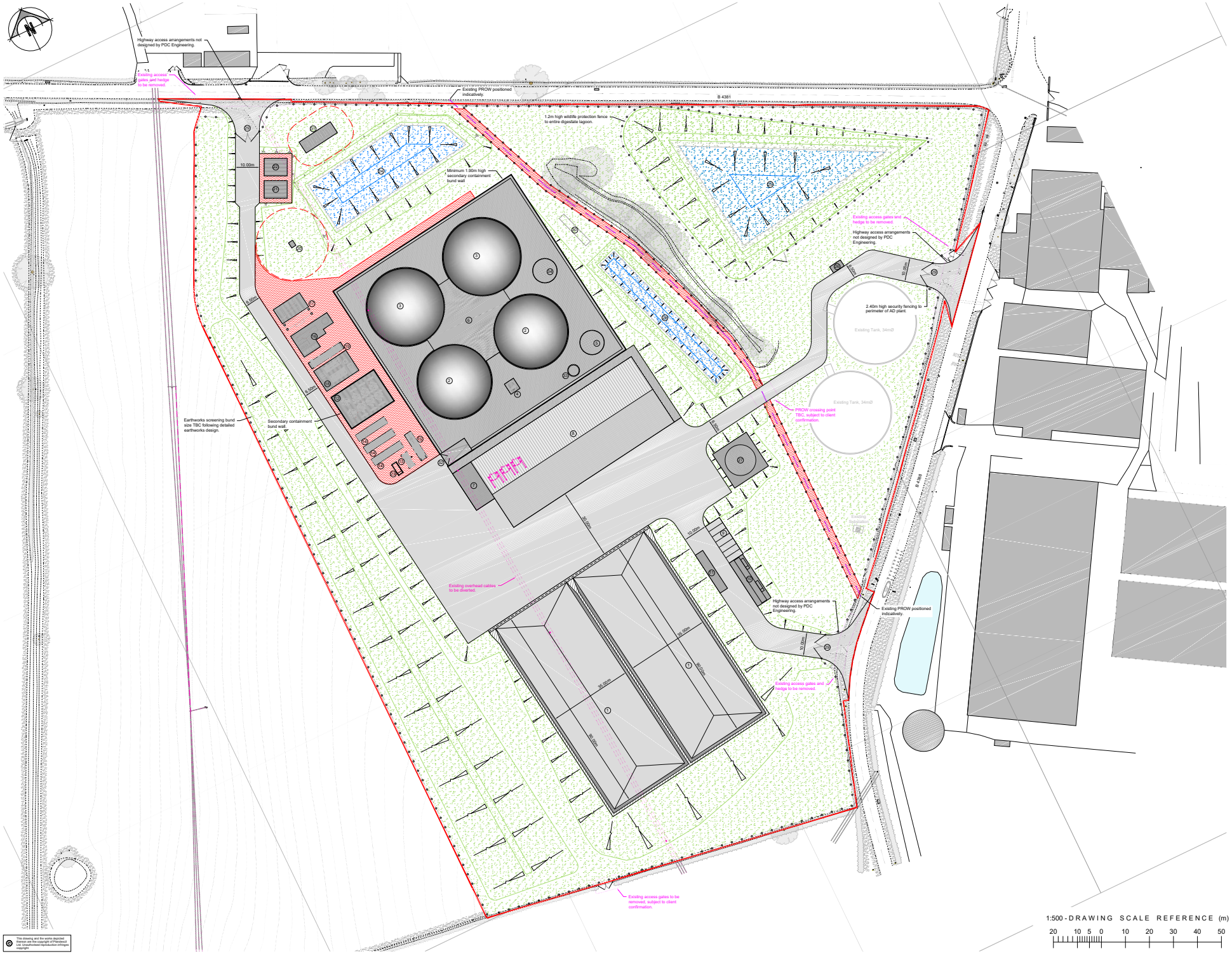
Figure 1 Site location and red line boundary



Background image ©OpenStreetMap contributors www.openstreetmap.org/copyright

Figure 2 Site layout, sheets 1 and 2

@ pdc Planning Design Civil, Proposed Site Layout, 29754/910 Rev E, 22-12-25, original size A0



GENERAL NOTES:

1. All dimensions noted are in metres unless stated otherwise.
2. All levels to be above Ordnance Survey Datum defined levels (A.O.Dm) unless noted otherwise.
3. Do not scale from this drawing, if dimensions are not clear ask.
4. This document has been created in accordance with PDC Engineering Terms & Conditions along with the scope of works provided by the client to PDC Engineering. Any use of this document other than for its original purpose is prohibited, PDC Engineering accept no liability for any third party uses of this document.
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   - 29754/001 - Topographical Survey - October 2025
7. This drawing is to be read in conjunction with all other relevant received drawings, documents and schedules relating to the project.
   - Swing Biomethane Ltd. drawing "LowerLeighton 07-2025 V4bs2-Modal" (pdf), received 07/10/2025.

PROPOSED PLANT LEGEND:

1	Silage Clamp (2No. 90m x 35m, Approximate 20,600t Capacity Total)
2	Digester (2No. 30.50mØ, 16.50m High)
3	Post Digester (2No. 32.00mØ, 16.50m High)
4	Ferric Chloride Tank
5	Slurry Storage Tank (10.00mØ, 8.00m High)
6	Technical Building
7	Odour Control Unit
8	Reception & Digestate Storage Building (80.00m x 32.65m)
9	Car Park Spaces (7No.)
10	Site Office
11	Weighbridge
12	Heated Tanks & Buffer Tanks (Bunded)
13	Boiler
14	Heat Recovery Container (3No.)
15	CHP
16	CO_2 Recovery
17	CO_2 Liquefaction
18	Gas Pre-Treatment Container
19	Gas Upgrading
20	Flare (15.00m Exclusion Zone)
21	GEU
22	Transformer
23	Emergency Generator
24	Surface Water Storage Lagoon
25	Digestate Storage Lagoon (Approximate 3,170m³ Capacity)
26	Digestate Off-take Point
27	Fire Water Above Ground Storage Tank (350m³)
28	Surface Water Storage Lagoon
29	Site Access Gate (3No.)
30	Leachate Tank (Below Ground, 80,000l Storage)
31	Propane Storage Tanks
32	Containment Bund Access Gate
33	Thin Friction Buffer Tank (4.50mØ, 6.00m High)
34	Liquid Reception Tank (10.00mØ, 8.00m High)

GENERAL KEY:

- Site Boundary - 81,040m²/8.10ha (TBC by Client)
- Proposed Hardstanding
- Proposed Concrete Surfacing
- Proposed Hardcore Surfacing
- Proposed Landscaping
- Existing Overhead Electric Cables
- Existing PROW (Shown Indicatively)
- Proposed Site Fencing

ISSUED FOR CLIENT REVIEW

Rev	Date	Rev By	Chkd	Description
E	22-12-25	KDW	TCH	Amended to Suit Client Comments
D	12-12-25	KDW	JHB	Updated to Suit Earthworks Design
C	28-11-25	KDW	JA	Minor Amendments
B	27-11-25	KDW	JA	Amended to Suit Client Comments
A	26-11-25	KDW	AF	Amended to Suit Client Comments
0	13-11-25	-	JA	First Issue

PLANNING DESIGN CIVIL

Units T6 & T7 Snetterton Business Park
Harling Road Snetterton Norfolk NR16 2JU
Telephone: (01953) 452001
E-mail: pdc@pdcengineering.co.uk www.pdcengineering.co.uk
PDC Engineering a Plandescil Ltd Company

civil • structural • environmental • surveying

Client

Farm Biomethane Ltd.

Project

Lower Leighton AD Plant, Land off B4388 & B4381, Welshpool, SY21 8HQ

Drawing Title

Proposed Site Layout

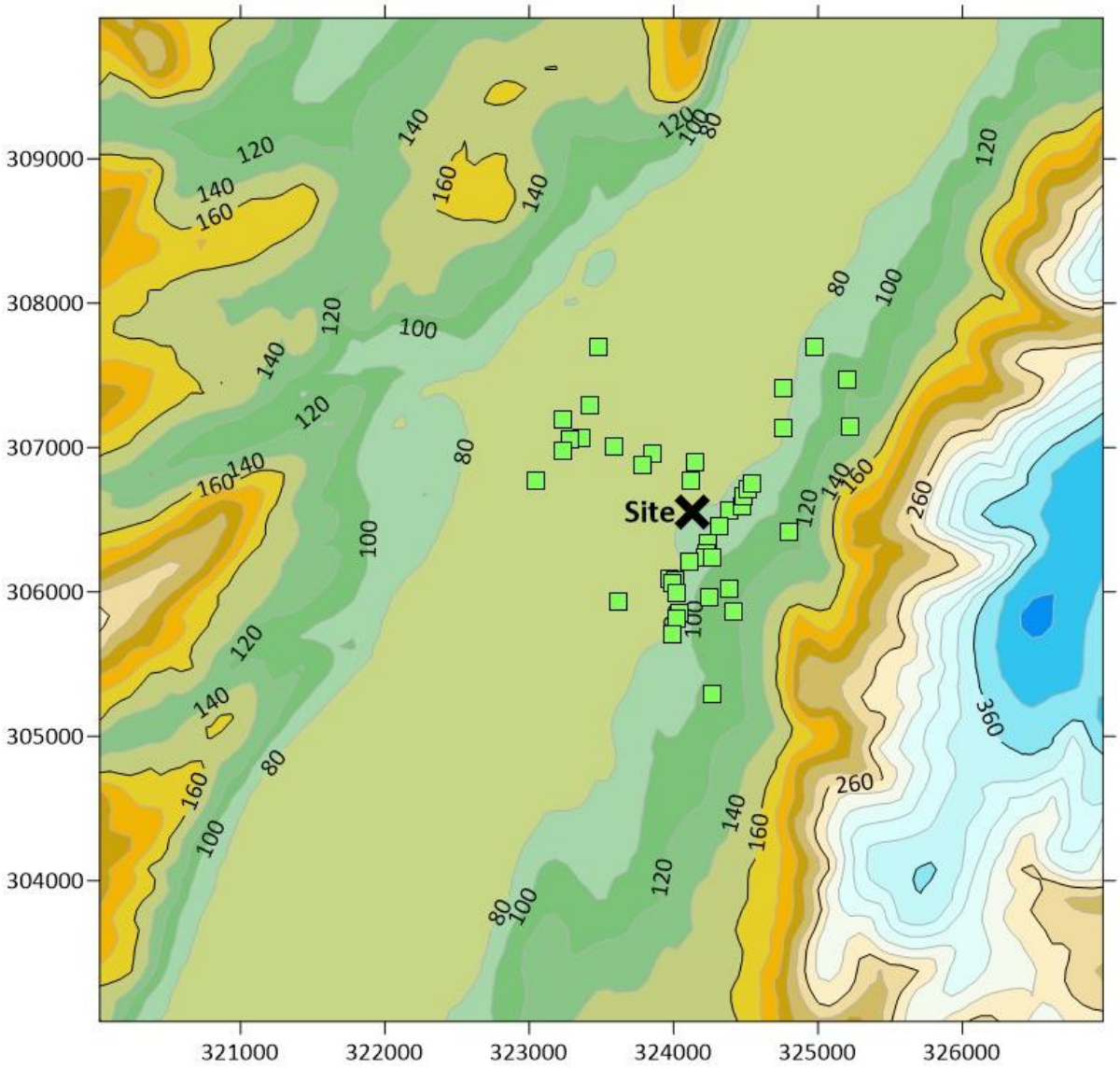
1:500 - DRAWING SCALE REFERENCE (m)

20 10 5 0 10 20 30 40 50

Scale	U.N.O.	Date	Drawn By
1:500 (A0)		November 2025	KDW

Drawing No. 29754/910 Rev E

Figure 3 Terrain in the vicinity of the Site



Notes: green squares show the human receptors

Elevation (m)

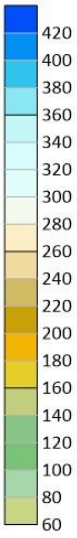


Figure 4 Human receptors

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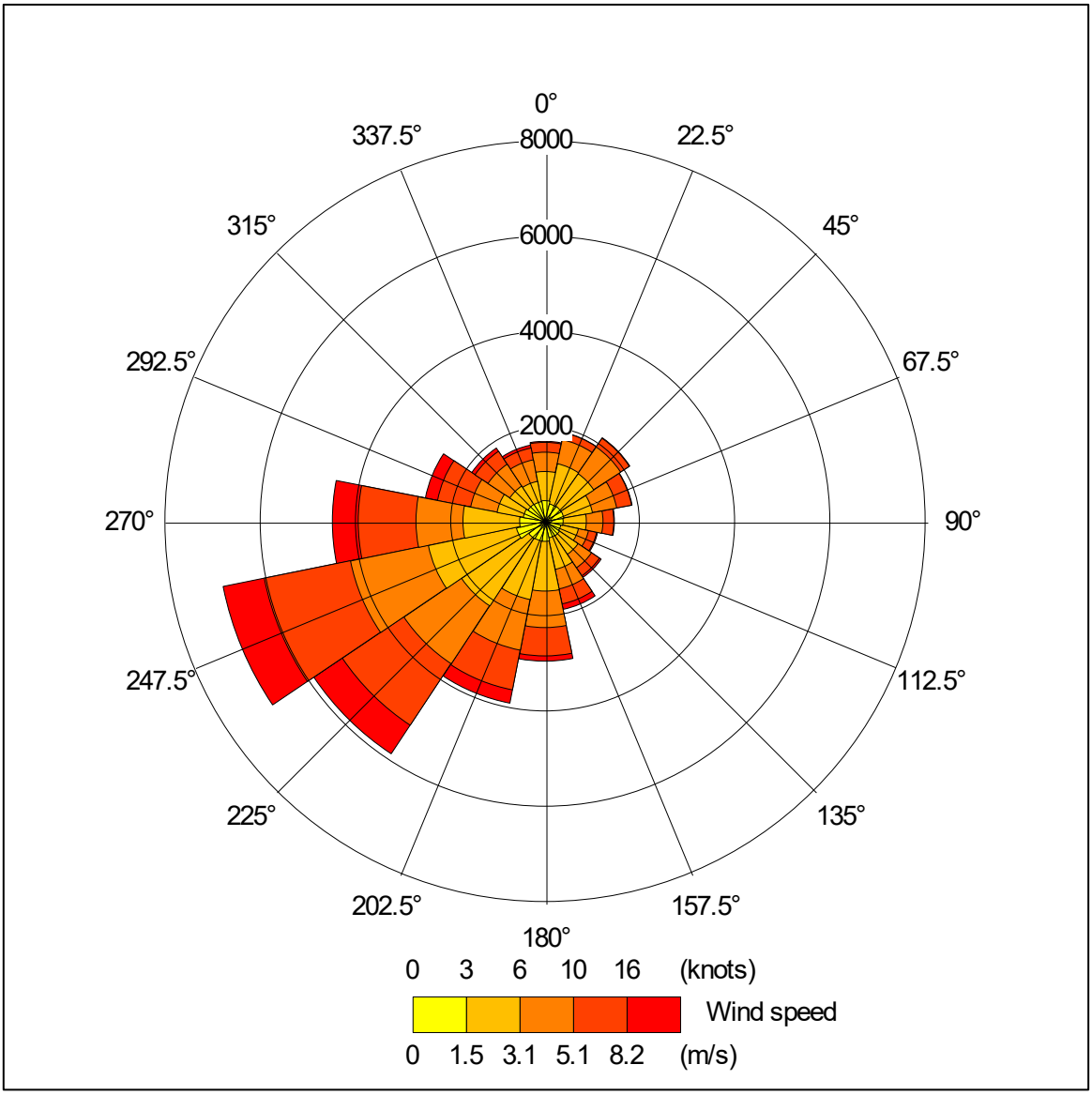
Figure 5 Wind rose (for location: latitude 52.651°, longitude -3.119°)



Source of meteorological data: A&S Modelling & Data (https://asmodata.co.uk/)