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## Noise Impact Assessment

Proposed Anaerobic Digestion Facility – Deal Farm, Bressingham

**Client:** Storengy (UK) Ltd

**Reference:** 21.159.1.R4

**Issue Date:** 13 June 2022



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## EXECUTIVE SUMMARY

This Assessment has been undertaken to identify the key sources of noise associated with operation of the Facility which may adversely impact upon existing residential amenity from a noise perspective. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts.

This Assessment has relied upon a background sound survey completed in a location considered to be representative of the sound climate at the closest residential dwelling to the Facility. This Assessment has also relied upon manufacture supplied noise data for the fixed plant items and Library data at a similar Site for the mobile plant operations.

The Assessment has shown that during the daytime the rated level of noise falls below the criteria noise level for all residential dwellings and BS4142:2014+A1:2019 provides the following advice for this outcome:

*‘Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.’*

During the night-time the internal level of noise falls below the 30dB internal noise criteria level at the closest receptor with a partially open window.

The predicted level of noise from the Site is sufficiently low enough at the closest residential dwellings to accord with the ‘No Observed Adverse Effect Level’ as detailed in the PPG and as such noise should not be deemed to be a determining factor in the granting of planning permission for this Site.

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## **1 INTRODUCTION**

### **1.1 Appointment**

- 1.1.1 Professional Consult Limited was instructed by Storengy (UK) Ltd ('the Applicant') to prepare a Noise Impact Assessment ('the Assessment') in support of the application for an Anaerobic Digestion (AD) Facility, including two separate covered digestate storage lagoons (to be referred to hereafter as 'the Facility') at Deal Farm in Bressingham IP22 2HG.

### **1.2 The Proposal**

- 1.2.1 Proposals include for the construction of an AD Facility (part retrospective), comprising: 1 no. digester tank and 1 no. secondary digester/digestate storage tank, silage clamps; liquid and dry feed system; digestate separation, handling and pasteurization; biogas upgrading and mains gas-grid connection; carbon capture; CHP; agricultural building; office buildings; weighbridge; 2 no. covered digestate storage lagoons; and associated plant, vehicular accesses, roads and landscaping (including earth bunds)
- 1.2.2 The Facility will include a number of noise-emitting fixed plant items and mobile plant operations. Noise Level data has been supplied for the fixed plant and library data from similar developments has been used for the mobile plant.
- 1.2.3 Figure 1 in Appendix 7 details the proposed Facility.

### **1.3 Site & Locality**

- 1.3.1 The Site is located to the north of Deal Farm within an agricultural area. A piggery is operational in the farm buildings to the south of the Site.
- 1.3.2 The closest noise sensitive dwellings lie to the south west at Deal Farm House, to the south at Sunnyside, and to the south east at Villa Farm.
- 1.3.3 The soundscape at the receptors is comprised predominantly of distant road traffic noise from the surrounding road network and livestock (pigs) and associated farming activity associated with the piggery at Deal Farm

### **1.4 Purpose of Assessment**

- 1.4.1 This Assessment has been undertaken to identify the key sources of noise associated with operation of the Facility which may adversely impact upon existing residential amenity from a noise perspective. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts.
- 1.4.2 This Assessment has relied upon a background sound survey completed in a location considered to be representative of the sound climate at the closest residential dwelling to the Facility. This Assessment has also relied upon manufacture supplied noise data for the fixed plant items and Library data at a similar Site for the mobile plant operations.
- 1.4.3 All acronyms used within this report are defined in the Glossary presented in Appendix 2.

### **1.5 Limitations**

- 1.5.1 The limitations of this report are presented in Appendix 1.

## **1.6 Confidentiality**

- 1.6.1 Professional Consult has prepared this report solely for the use of the Client. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Professional Consult; a charge may be levied against such approval.

## 2 POLICY & GUIDANCE

### 2.1 National Planning Policy Framework & National Planning Practice Guidance

- 2.1.1 The Government updated the National Planning Policy Framework (NPPF) on 20<sup>th</sup> July 2021 and its associated National Planning Practice Guidance (NPPG) on 22<sup>nd</sup> July 2021. Together, the NPPF and NPPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.
- 2.1.2 The NPPG adds further context to the NPPF and it is intended that the two documents should be read together.
- 2.1.3 Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.
- 2.1.4 Local planning authorities' plan-making and decision making should take account of the acoustic environment and in doing so consider:
- ② Whether or not a significant adverse effect is occurring or likely to occur;
  - ② Whether or not an adverse effect is occurring or likely to occur; and
  - ② Whether or not a good standard of amenity can be achieved.
- 2.1.5 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.
- 2.1.6 The Observed Effect Levels are as follows:
- ② Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
  - ② Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
  - ② No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.
- 2.1.7 Table 1 summarises the noise exposure hierarchy, based on the likely average response.

**Table 1. Noise Exposure Hierarchy**

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
<i>Lowest Observed Adverse Effect Level</i>			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
<i>Significant Observed Adverse Effect Level</i>			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.1.8 The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.

2.1.9 These factors include:

- ② The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day - this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;
- ② For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- ② the spectral content of the noise and the general character of the noise. The local topology and topography should also be taken into account along with the existing and, where appropriate, the planned character of the area.

2.1.10 More specific factors to consider when relevant:

- ② where applicable, the cumulative impacts of more than one source should be taken into account along with the extent to which the source of noise is intermittent and of limited duration;
- ② Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on



windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations; and

- ② If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

## 2.2 BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

2.2.1 This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- ② Sound from industrial and manufacturing processes;
- ② Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- ② Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and,
- ② Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

2.2.2 The procedure detailed in the standard compares the measured or predicted noise level 'the specific noise level' from any of the above detailed noise sources with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is 'typical.'

2.2.3 The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:

- ② Daytime (07:00 - 23:00): 1 hour; and
- ② Night-time (23:00 - 07:00): 15 minutes.

2.2.4 There are a number of 'penalties' which can be attributed to the specific sound level, either subjectively or objectively, depending upon the 'acoustic features' of the sound level under investigation as follows. These penalties vary in their weighting depending upon the severity of the acoustic feature, as follows (with regards to the subject method):

### Tonality

- ② +2dB: where the tonality is just perceptible;
- ② +4dB: where the tonality is clearly perceptible; and
- ② +6dB: where the tonality is highly perceptible.

### Impulsivity

- ② +3dB: where the impulsivity is just perceptible;
- ② +6dB: where the impulsivity is clearly perceptible; and
- ② +9dB: where the impulsivity is highly perceptible.

### Intermittency

② +3dB: where the intermittency is readily distinctive against the acoustic environment.

- 2.2.5 Where the assessment is carried out using the objective method, the tonality penalty is either 0dB or 6dB and the impulsivity penalty can range from 0dB up to 9dB in increments of 1dB, depending on the level of impulsivity identified.
- 2.2.6 In addition to the above acoustic features, there is a penalty for 'other sound characteristics' of +3dB where a sound exhibits characteristics that are neither tonal nor impulsive, though is readily distinctive against the acoustic environment.
- 2.2.7 BS4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.
- 2.2.8 Assessment of the rating level relative to the background noise level can yield the following commentary:
- ② Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact;
  - ② A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
  - ② A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and
  - ② The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.
- 2.2.9 Whilst the amended 2019 Standard does make various references to it not being intended to assess noise impacts at indoor locations, section 1.1 does state 'The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident'. Example 6 in the Standard states 'In addition to the rating/background sound level comparison shown in Table A.6, the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows. Other guidance, such as BS 8233, might also be applicable in this instance'.
- 2.2.10 With the above in mind, and for a clear need to ensure that any potential commercial or industrial noise impacts at the building façade do not give rise to internal noise level which causes sleep disturbance in bedrooms, this Assessment will ensure that the predicted rating level (specific sound level including any character corrections) does not exceed 30dB in bedrooms.

### 3 NOISE SURVEYS

#### 3.1 Background Sound Survey

3.1.1 Professional Consult has completed a background sound survey in a location considered to be representative of the noise climate at the closest residential dwellings to the Site, as follows:

② Noise Measurement Position 1: Located to the east of the Site off Common Road between 13:15 on Wednesday 3<sup>rd</sup> November – 11:15 on Monday 8<sup>th</sup> November 2021. Noise measurements were taken in free-field conditions and noise sources at the microphone location comprised of road traffic noise on the surrounding road network. Construction work was taking place at the facility during the weekdays.

3.1.2 During the survey intermittent construction noise was noted during the weekday and high winds were noted on Sunday 7<sup>th</sup> November. Therefore, the measured levels during periods of good weather will be used to inform the assessment.

3.1.3 Table 2 details the measured background sound levels during the weekend, periods of bad weather have been omitted from the analysis.

**Table 2. Measured Background Sound Levels**

Measurement Position	Period	Range of Measured 15min Background Noise Levels and (Typical Background Sound Level), L <sub>A90,15mins</sub> (dB)
1	Weekend - daytime (07:00 – 23:00)	25.8 – 46.5 (40*)
	Weekend – Night-Time (23:00 – 07:00)	25.0 – 33.2 (27*)

\*Mode average

3.1.4 Figure 1 in Appendix 6 details the full measured ambient and background sound levels.

#### 3.2 Noise Survey Equipment

3.2.1 The following equipment was used for the Noise Survey.

**Table 3. Noise Measurement Equipment**

Measurement Position	Equipment Description	Manufacturer & Type No	Serial No.	Calibration Due Date
1	Sound Level Meter	01dB Fusion	12211	23 January 2022
	Pre-amplifier	01dB PRE22	1915082	
	Microphone	GRAS 40CE	331766	
	Calibrator	01dB CAL-31	89095	30 June 2022

- 3.2.2 The sound level meter was field calibrated prior to and following the noise survey and there was no drift beyond the allowable limit of 1dB.
- 3.2.3 During the noise surveys the weather conditions were conducive to the measurement of environmental noise, i.e. wind speeds of no more than 5m/s and dry conditions and Table 4 details the measured weather conditions. High winds were noted during the evening on Sunday 6<sup>th</sup> November 2021.

**Table 4. Range of Measured Wind Speeds**

Period	Range of Measured Wind Speeds (m/s)	Rainfall Recorded?
Background Sound Survey	0 – 6.2	No

## 4 NOISE IMPACT ASSESSMENT

### 4.1 Assessment Information & Inputs

4.1.1 The following noise sensitive residential receptors have been identified and accounted for in this Assessment.

**Table 5. Identified Receptors**

Identifier	Receptor	Type	Noise Model Receiver Location
R1	Deal Farmhouse	Residential - 2 Storey Dwelling	Daytime at garden area, 1.5m above ground level. Night-time At façade, 4.5m above ground level
R2	Sunnyside	Residential – Bungalow	Daytime at garden area, 1.5m above ground level. Night-time At façade, 1.5m above ground level
R3	Villa Farm	Residential - 2 Storey Dwelling	Daytime at garden area, 1.5m above ground level. Night-time At façade, 4.5m above ground level
R4	Holly Farm	Residential - 2 Storey Dwelling	Daytime at garden area, 1.5m above ground level. Night-time At façade, 4.5m above ground level
R5	Old Boyland Hall	Residential - 2 Storey Dwelling	Daytime at garden area, 1.5m above ground level. Night-time At façade, 4.5m above ground level
R6	Poplar Tree Farm	Residential - 2 Storey Dwelling	Daytime at garden area, 1.5m above ground level. Night-time At façade, 4.5m above ground level
R7	Clay Hall	Residential - 2 Storey Dwelling	Daytime at garden area, 1.5m above ground level. Night-time At façade, 4.5m above ground level.

### 4.2 Calculation of Specific Noise Levels at Receptors

4.2.1 Manufacturer data has been supplied for all noise producing fixed plant items. Table 6 detailed the noise levels and the calculated sound power level used in the CadnaA noise modelling software. It is assumed all plant apart from the flare stack will operate 24-hours. As the flare stack is emergency only, a time correction for a 25% on-time has been applied to the noise level.

**Table 6. Supplied Noise Level Data & Calculation of Sound Power Level – Fixed Plant**

Item / Operation	Measured Noise Level, SEL (dB)	Measurement Distance (m)	Calculated Sound Power Level, L <sub>WA</sub> (dB)	Height Above Local Ground Level (m)
Gas compressor	88	1	96.0	3.0
Gas to grid compressor	90	1	98.0	2.1
Grid entry unit (GEU)	80	1	88.0	2.7
Reject operated valve (ROV)	86	1	94.0	2.5
Atex Fan (Middle MS skid)	80	1	88.0	2.9
CHP	65	10	83.0	2.5

Boiler	65	10	83.0	2.7
Flare	65	10	77.0	6.5
Feeding system incl. Crusher	69	10	87.0	2.0
Feeding & discharging separator pumps	80	1	88.0	1.5
Separator	80	1	88.0	4.5
Booster	77	1	85.0	1.0
Chiller	50	10	68.0	1.0
Technical container	65	10	83.0	3.4
Airtexx – O2 Generator	65	10	83.0	2.5
Airblower – Tecon – Gas membrane roof	74	1	82.0	1.5

4.2.2 In addition to the fixed plant items library data has been used to the proposed mobile plant which include a telehandler, HGV delivery and Tractor deliveries. Table 7 details the library data used and the assumed movements and on-times.

**Table 7. Calculation of Sound Power Level – Mobile Plant**

Measured Plant	Measured Noise Level, $L_{Aeq,T}$ (dB)	Noise Measurement Distance (m)	Known 'On-time' / Hour (mins)	Known Quantity / Hour	Time & Quantity Corrected Noise Level, $L_{Aeq,1hr}$ (dB)	Calculated Sound Power Level, $L_{WA}$ (dB)
Telehandler	74.3	4	20	1	69.5	83.5
Tractor pulling fully loaded wagon	61.5	10	0.33	1.8*	41.5	59.5
HGV Tanker Drive by	71.6	2	0.33	0.8**	48.0	59.0

\*Hourly value based on worst-case situation of 18 tractor/trailer movements in the period 08:00 – 18:00 during peak month of September

\*\* Hourly value based on worst-case situation of 8 HGV movements in the period 08:00 – 18:00 during peak month of September

4.2.3 In order to calculate an accurate overall specific sound pressure level at the identified residential receptors, a noise model has been built using CadnaA and the following inputs have been included in the model:

- ② Proposed Scheme Layout;
- ② Site elevations have been taken as existing using 1m contours;
- ② The proposed earth bunds and landscaping have been included in the noise model;
- ② Vertical area sources have been used for the facades of the buildings and an area source for the roof;
- ② Point sources have been used for all fixed plant items and the Telehandler. It is assumed that all fixed plant can operate in any given 1-hour daytime and 15-minute night-time period;
- ② Line sources have been used for the Tractor and HGV delivery, and it is understood that these movements will normally occur between the hours of 08:00 – 18:00, and

- ② A reflection order of 2 has been used in all calculations and a ground absorption of 0.8 for soft ground; and
- ② Noise levels generated using ISO 9613-1 and ISO 9613-2 "Acoustics - Attenuation of sound during propagation outdoors" as incorporated into CadnaA software.

4.2.4 Figure 1 in Appendices 4 & 5 details the grid noise maps during the daytime and night-time periods respectively. Analysis of the grid noise maps indicates the following calculated specific sound pressure levels at the closest receptors to the Facility.

**Table 8. Calculated Specific Sound Pressure Level at Receptors – Daytime**

Receptor	Calculated Overall Specific Noise Level, $L_{Aeq,1hr}$ (dB)
R1	36.5
R2	35.1
R3	35.0
R4	31.6
R5	28
R6	27.7
R7	22.9

**Table 9. Calculated Specific Sound Pressure Level at Receptors – Night-Time**

Receptor	Calculated Overall Specific Noise Level, $L_{Aeq,1hr}$ (dB)
R1	38.1
R2	34.9
R3	30.7
R4	31.5
R5	28.2
R6	27.7
R7	23.6

4.2.5 The following has been considered in determining if any acoustic features exist in the predicted noise level at the closest residential receptor:

- ② **Tonality:** In determining if any tones exist in the measured noise levels, the methodology set out in BS4142:2014 has been followed using the subjective method;
- ② **Impulsivity:** In determining if any impulsiveness is evident in the measured noise levels, the methodology set out in BS4142:2014 has been followed using the subjective method;
- ② **Intermittency:** Whether or not the measured operations turn on or off during the assessment reference periods; and
- ② **Other sound characteristics:** Where no penalties are allocated for the above features, but there will be an audible noise at the closest receptor.

4.2.6 Table 10 allocates the character corrections.

**Table 10. Allocation of Character Corrections**

Noise Source	Tonality Correction (dB)	Impulsivity Correction (dB)	Intermittency Correction (dB)	Other Sound Characteristics Correction (dB)	Comments
Fixed Plant	2	0	0	0	Low level tonality may be perceptible.
Mobile Plant	0	0	0	0	The Site access road has been located off Common Road, therefore vehicle movement to the Site are screened at the closest receptors to the south. Also given the agricultural use of Deal Farm to the south the low volume of movements are not considered perceptible over the existing uses.
<b>Highest Correction for Assessment Period</b>	<b>+2</b>	<b>0</b>	<b>0</b>	<b>0</b>	-
<b>Overall Correction to be added to Specific Noise at Receptors</b>	<b>+2</b>				-

4.2.7 It should be noted that mobile plant on Site do not use reversing alarms and so there is no impulsivity correction applicable for vehicle movements.

4.2.8 Table 11 completes the BS4142 Assessment.

**Table 11. BS4142 Assessment**

Receptor	Period	Calculated Overall Specific Noise Level, $L_{Aeq,1hr}$ (dB)	Total Overall Character Correction (dB)	Calculated Rated Level, $L_{A,r}$ (dB)	Criteria Noise Level (dB)	Difference +/- (dB)
R1	Daytime	36.5	2	38.5	40	-1.5
	Night-Time	38.1	2	40.1	27	+13.1
R2	Daytime	35.1	2	37.1	40	-2.9
	Night-Time	34.9	2	36.9	27	+9.9



R3	Daytime	35	2	37	40	-3
	Night-Time	30.7	2	32.7	27	+5.7
R4	Daytime	31.6	2	33.6	40	-6.4
	Night-Time	31.5	2	33.5	27	+6.5
R5	Daytime	28	2	30	40	-10
	Night-Time	28.2	2	30.2	27	+3.2
R6	Daytime	27.7	2	29.7	40	-10.3
	Night-Time	27.7	2	29.7	27	+2.7
R7	Daytime	22.9	2	24.9	40	-15.1
	Night-Time	23.6	2	25.6	27	-1.4

4.2.9 A review of Table 11 indicates that during the daytime, the rated level of noise falls below the typical background sound level (the criteria noise level) and BS4142:2014+A1:2019 provides the following advice for this outcome:

*‘Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.’*

4.2.10 During the night-time there are exceedances at Receptors R1 to R6. It is reasonable to assume that residents of the dwelling are unlikely to be using their garden area during night-time hours and so for this period, it is of greater importance to consider internal noise impacts within a bedroom and this assessment is presented in Table 12. Internal noise impacts have been calculated with windows open.

**Table 12. Calculation of Internal Specific Noise Level with an Open Window**

Receptor	Overall Calculated Specific Noise Level at Receptor, $L_{Aeq\ t}$ (dB)	Sound Reduction of a Partially Open Window (dB)	Calculated Internal Noise Level, $L_{Aeq\ t}$ (dB)	Internal Noise Criteria for Bedrooms, $L_{Aeq\ 8hr}$ (dB)	Difference +/- (dB)
R1	38.1	15	23.1	30	-6.9
R2	34.9	15	19.9	30	-10.1
R3	30.7	15	15.7	30	-14.3
R4	31.5	15	16.5	30	-13.5
R5	28.2	15	13.2	30	-16.8
R6	27.7	15	12.7	30	-17.3

R7	23.6	15	8.6	30	-21.4
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4.2.11 Table 12 shows that the internal level of noise falls below the 30dB internal noise criteria level for bedrooms at the closest receptor with a partially open window. Consideration of internal night-time noise levels for bedrooms, rather than external noise levels, is a requirement specified in BS4142 as it is reasonably expected that people will not be outdoors during night-time hours.

4.2.12 It should also be noted that the predicted noise levels assumes that all fixed plant is operational in any given daytime and night-time period and thus a worst-case scenario.

### 4.3 Digestate Lagoons

4.3.1 Proposals include for two digestate lagoons all of which are located a significant distance from any residential dwellings and it should be noted that there will be no road traffic vehicles which will access the lagoons, other than agricultural vehicles via the surrounding fields. Given that the existing soundscape is comprised, in part, of agricultural vehicle noise, it is considered that noise from any agricultural vehicles accessing the lagoons will not be discernible over and above the existing situation.

## 5 CONCLUSION

- 5.1.1 Professional Consult Limited was instructed by Storengy (UK) Ltd to prepare a Noise Impact Assessment in support of the application for an Anaerobic Digestion Facility, including two separate covered digestate storage lagoons at Deal Farm in Bressingham IP22 2HG.
- 5.1.2 Proposals include for the construction of an Anaerobic Digestion Facility (part retrospective), comprising: 1 no. digester tank and 1 no. secondary digester/digestate storage tank, silage clamps; liquid and dry feed system; digestate separation, handling and pasteurization; biogas upgrading and mains gas-grid connection; carbon capture; CHP; agricultural building; office buildings; weighbridge; 2 no. covered digestate storage lagoons; and associated plant, vehicular accesses, roads and landscaping (including earth bunds).
- 5.1.3 The Facility will include a number of noise-emitting fixed plant items and mobile plant operations. Noise Level data has been supplied for the fixed plant and library data from similar developments has been used for the mobile plant.
- 5.1.4 The Site is located to the north of Deal Farm within an agricultural area. A piggery is operational in the farm buildings to the south of the Site.
- 5.1.5 The closest noise sensitive dwellings lie to the south west at Deal Farm House, to the south at Sunnyside, and to the south east at Villa Farm.
- 5.1.6 The soundscape at the receptors is comprised predominantly of distant road traffic noise from the surrounding road network and livestock (pigs) and associated farming activity associated with the piggery at Deal Farm
- 5.1.7 This Assessment has been undertaken to identify the key sources of noise associated with operation of the Facility which may adversely impact upon existing residential amenity from a noise perspective. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts.
- 5.1.8 This Assessment has relied upon a background sound survey completed in a location considered to be representative of the sound climate at the closest residential dwelling to the Facility. This Assessment has also relied upon manufacture supplied noise data for the fixed plant items and Library data at a similar Site for the mobile plant operations.
- 5.1.9 The Assessment has shown that during the daytime the rated level of noise falls below the criteria noise level for all residential dwellings and BS4142:2014+A1:2019 provides the following advice for this outcome:
- ‘Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.’*
- 5.1.10 During the night-time the internal level of noise falls below the 30dB internal noise criteria level at the closest receptor with a partially open window.
- 5.1.11 The predicted level of noise from the Site is sufficiently low enough at the closest residential dwellings to accord with the ‘No Observed Adverse Effect Level’ as detailed in the PPG and as such noise should not be deemed to be a determining factor in the granting of planning permission for this Site.

## **APPENDIX 1: LIMITATIONS**

This report and its findings should be considered in relation to the terms of reference and objectives agreed between Professional Consult Limited and the Client.

The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

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## APPENDIX 2: GLOSSARY OF ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or  $L_{Aeq}$ ,  $L_{A90}$  etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

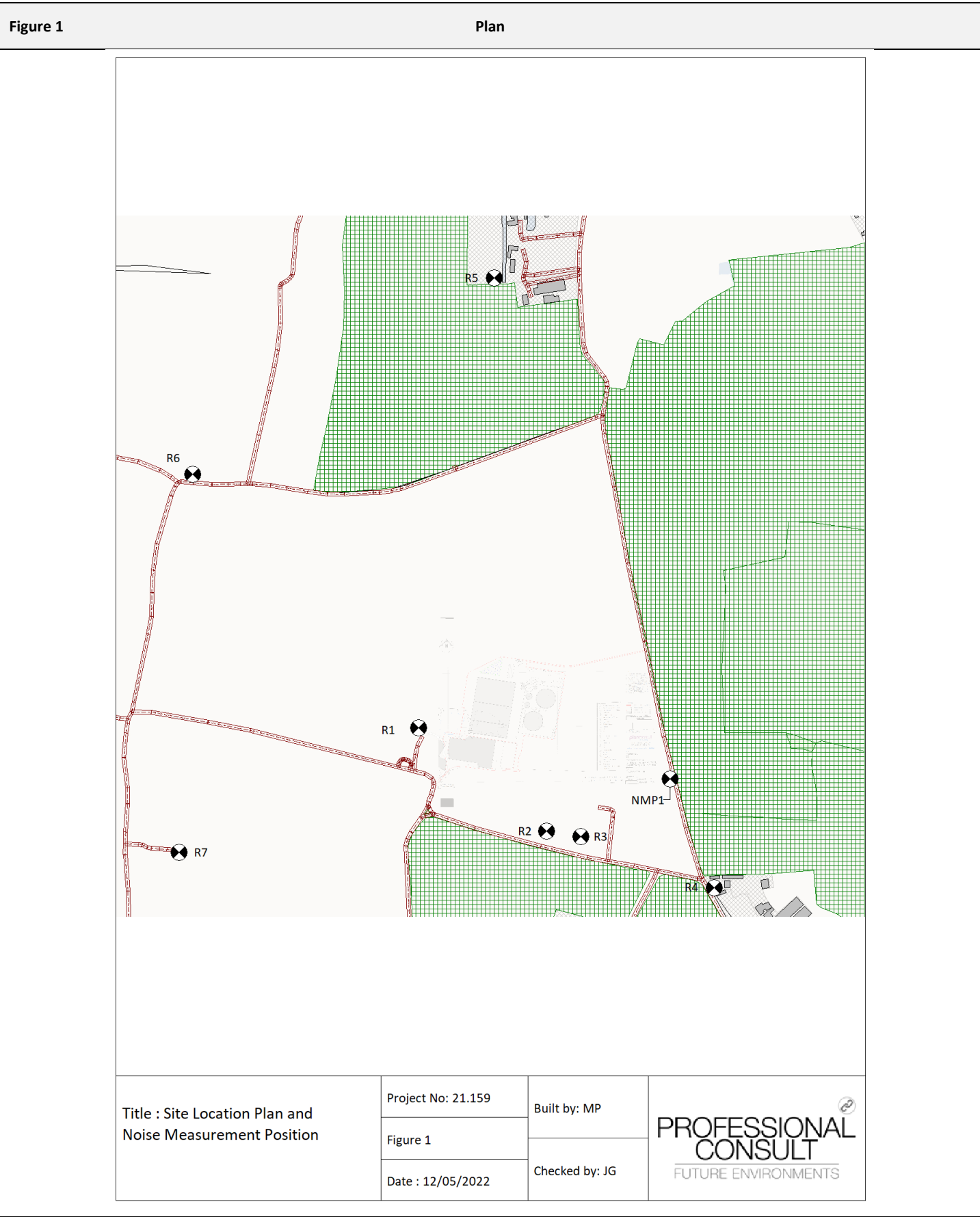
**Table 1: Typical Sound Pressure Levels**

Sound Pressure Level (dB)	Location/Example
0	Threshold of hearing
20 - 30	Quiet bedroom at night
30 - 40	Living room during the day
40 - 50	Typical office
50 - 60	Inside a car
60 - 70	Typical high street
70 - 90	Inside factory
100 - 110	Burglar alarm at 1m away
110 - 130	Jet aircraft on take off
140	Threshold of pain

**Table 2: Terminology**

Descriptor	Explanation
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10 <sup>-5</sup> Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
L <sub>Aeq, T</sub>	L <sub>Aeq</sub> is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L <sub>Amax</sub>	L <sub>Amax</sub> is the maximum A - weighted sound pressure level recorded over the period stated. L <sub>Amax</sub> is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L <sub>10</sub> & L <sub>90</sub>	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L <sub>10</sub> is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L <sub>90</sub> is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L <sub>10</sub> index to describe traffic noise.
Free-field Level	2A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Fast	A time weighting used in the root mean square section of a sound level meter with a 125millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000millisecond time constant.

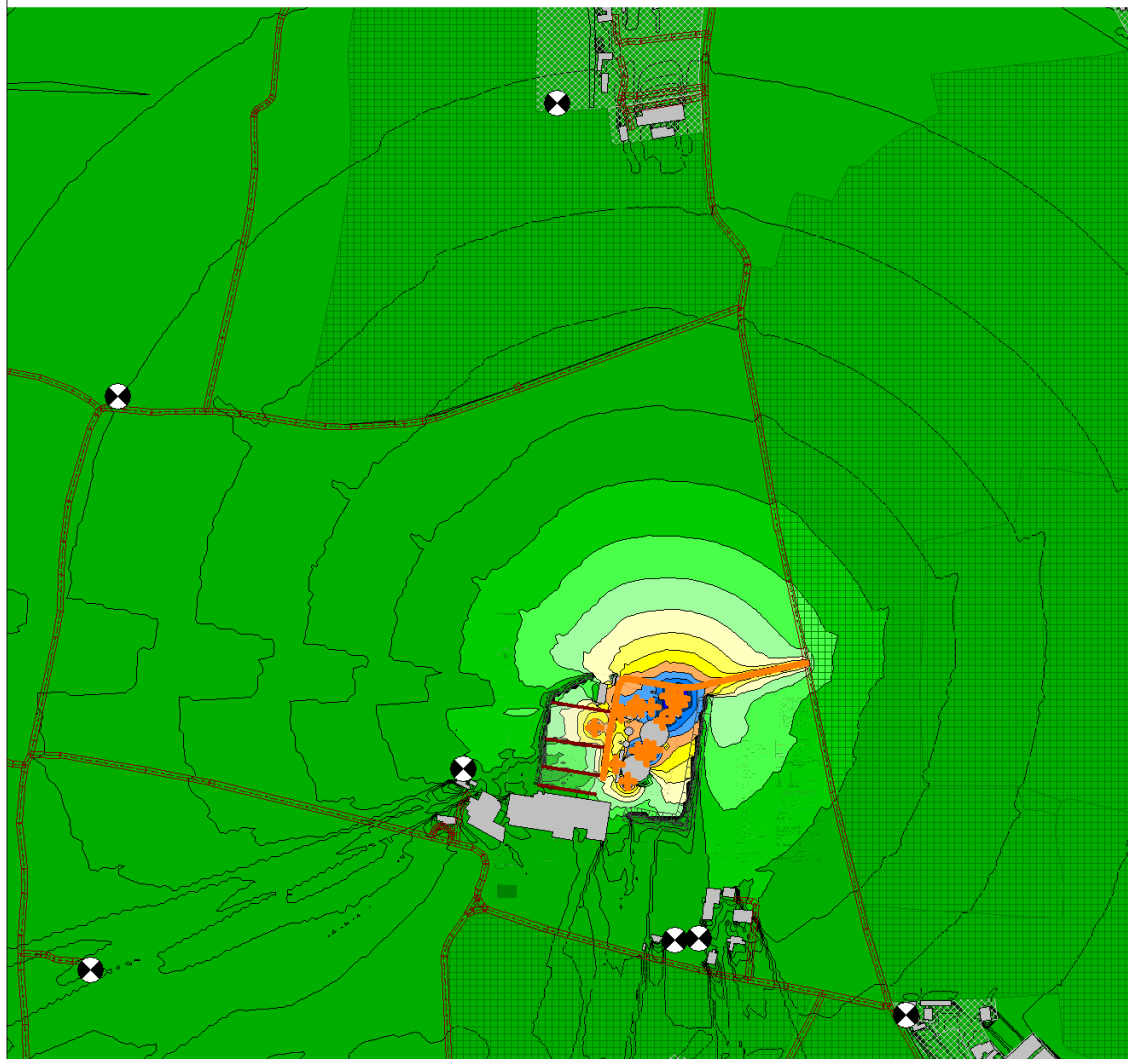
APPENDIX 3: BACKGROUND SOUND MEASUREMENT LOCATION & RECEPTORS



#### APPENDIX 4: CADNA-A GRID NOISE MAP – DAYTIME

Figure 1

Daytime



##### Noise Map Objects

- Point Source
- Line Source
- Road
- Parking Lot
- Building
- Cylinder
- Barrier
- Embankment
- Foliage
- Receiver
- Calculation Area

##### Level LAeq 1 hour in dB(A)

- ... < 37.5
- 37.5 <= ... < 40.0
- 40.0 <= ... < 42.5
- 42.5 <= ... < 45.0
- 45.0 <= ... < 47.5
- 47.5 <= ... < 50.0
- 50.0 <= ... < 52.5
- 52.5 <= ... < 55.0
- 55.0 <= ... < 57.5
- 57.5 <= ... < 60.0
- 60.0 <= ... < 62.5
- 62.5 <= ... < 65.0
- 65.0 <= ...

##### Title:

Daytime Grid Noise Map at  
1.5m above ground level

Project No: 21.159

Figure 1

Date : 28/05/2022

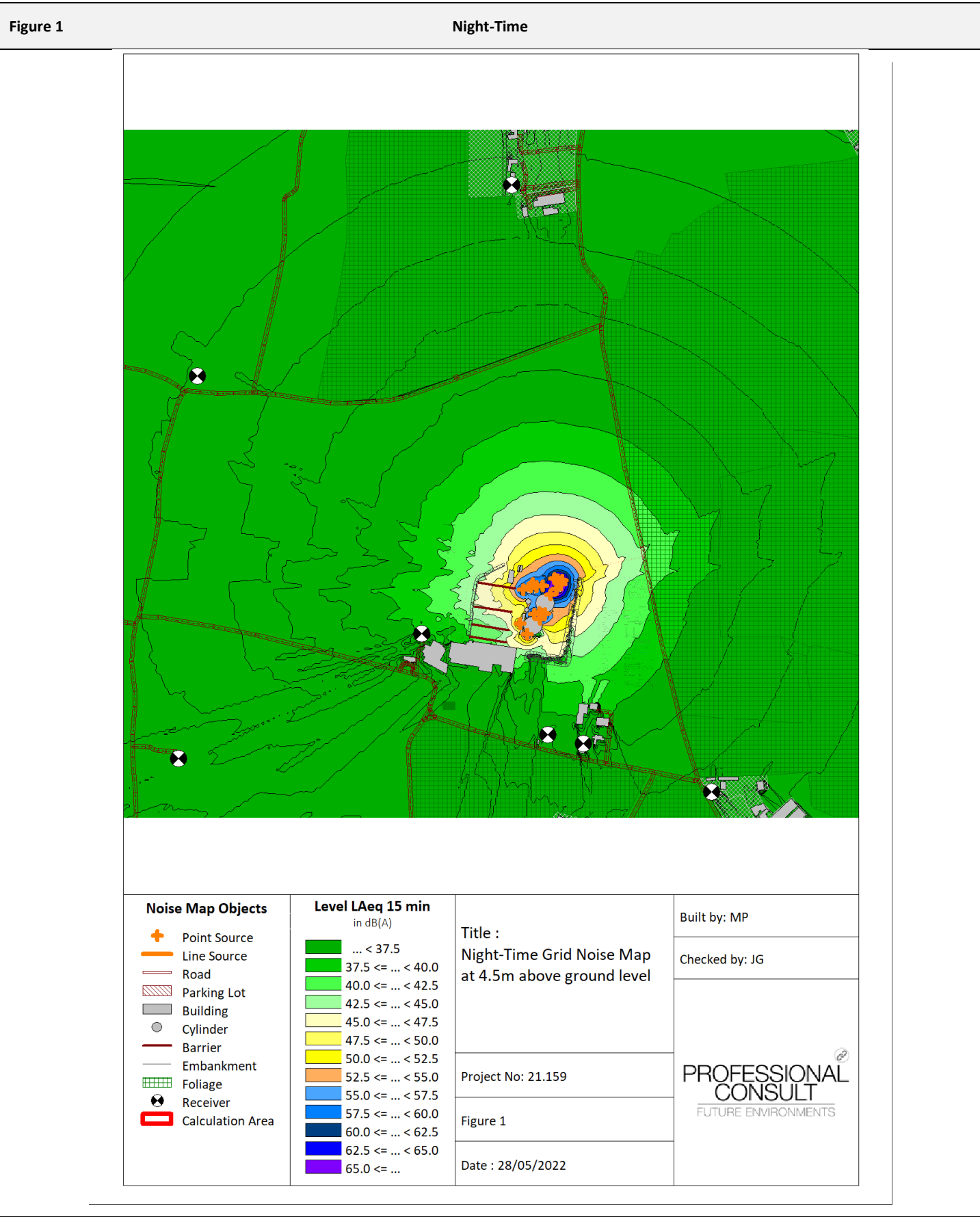
Built by: MP

Checked by: JG

PROFESSIONAL  
CONSULT  
FUTURE ENVIRONMENTS



APPENDIX 5: CADNA-A GRID NOISE MAP – NIGHT-TIME



## APPENDIX 6: MEASURED BACKGROUND SOUND LEVELS

Measurement Start Period	Measured Sound Pressure Level (dB)	
	L <sub>Aeq,15mins</sub>	L <sub>A90,15mins</sub>
03/11/2021 13:15	54.4	35.7
03/11/2021 13:30	56	36.1
03/11/2021 13:45	49.5	35.9
03/11/2021 14:00	54.4	36.9
03/11/2021 14:15	53.2	38.5
03/11/2021 14:30	53.1	36.3
03/11/2021 14:45	56.1	41.6
03/11/2021 15:00	55	42.5
03/11/2021 15:15	65	40.8
03/11/2021 15:30	55.6	40.3
03/11/2021 15:45	55.7	40.4
03/11/2021 16:00	59.1	47.5
03/11/2021 16:15	59.7	46.7
03/11/2021 16:30	58.8	47.7
03/11/2021 16:45	56.3	41.6
03/11/2021 17:00	60.5	43.5
03/11/2021 17:15	54.9	39.8
03/11/2021 17:30	56.4	44.4
03/11/2021 17:45	59.2	40.6
03/11/2021 18:00	56	38.5
03/11/2021 18:15	52.3	33.8
03/11/2021 18:30	52	31.4
03/11/2021 18:45	56.5	36
03/11/2021 19:00	50.7	32.4
03/11/2021 19:15	51	32.9
03/11/2021 19:30	53	32.2
03/11/2021 19:45	34.7	30
03/11/2021 20:00	50.2	30.3
03/11/2021 20:15	35.7	30.9
03/11/2021 20:30	56.2	31.8
03/11/2021 20:45	50.3	34.1
03/11/2021 21:00	40.4	33.6
03/11/2021 21:15	47.5	32.7
03/11/2021 21:30	51.5	35.3
03/11/2021 21:45	43.5	35.4
03/11/2021 22:00	50.6	38.5
03/11/2021 22:15	47.8	36
03/11/2021 22:30	51.6	39.9
03/11/2021 22:45	52.1	34.1
03/11/2021 23:00	53.7	31.8
03/11/2021 23:15	44.2	36.4
03/11/2021 23:30	45.7	36.3
03/11/2021 23:45	44.7	36
04/11/2021 00:00	57.3	34

04/11/2021 00:15	48.7	38.1
04/11/2021 00:30	50.3	38.6
04/11/2021 00:45	47.5	37.5
04/11/2021 01:00	53.6	41.4
04/11/2021 01:15	48.7	36.4
04/11/2021 01:30	51.9	37.8
04/11/2021 01:45	53.7	41.4
04/11/2021 02:00	55.3	42.7
04/11/2021 02:15	56.8	46.2
04/11/2021 02:30	56.8	45
04/11/2021 02:45	54.4	42.5
04/11/2021 03:00	55.4	42.3
04/11/2021 03:15	51.2	40.7
04/11/2021 03:30	54.3	41.4
04/11/2021 03:45	54.5	39.1
04/11/2021 04:00	54.5	38.2
04/11/2021 04:15	54.3	40.8
04/11/2021 04:30	53.2	40.1
04/11/2021 04:45	57.8	43.8
04/11/2021 05:00	52.1	39.4
04/11/2021 05:15	48.9	37.3
04/11/2021 05:30	51.7	38.7
04/11/2021 05:45	50.1	39
04/11/2021 06:00	52	38.2
04/11/2021 06:15	53.2	38.9
04/11/2021 06:30	57.2	39.3
04/11/2021 06:45	57.2	37.6
04/11/2021 07:00	56.3	38.9
04/11/2021 07:15	60.4	38.4
04/11/2021 07:30	57.4	38.7
04/11/2021 07:45	57.8	38.7
04/11/2021 08:00	58.7	40.4
04/11/2021 08:15	59.4	40.6
04/11/2021 08:30	59.3	40.3
04/11/2021 08:45	57.1	41.4
04/11/2021 09:00	56.9	42.7
04/11/2021 09:15	57.5	43.2
04/11/2021 09:30	57.2	44.1
04/11/2021 09:45	59	42.4
04/11/2021 10:00	62.1	44.6
04/11/2021 10:15	60.5	45.6
04/11/2021 10:30	60	46.4
04/11/2021 10:45	61.3	47.6
04/11/2021 11:00	62.4	45.7
04/11/2021 11:15	49.5	37.4
04/11/2021 11:30	58.7	41.8
04/11/2021 11:45	60.3	46.9

Reference: 21.159.1.R4  
 Date: 13 June 2022  
 Project: Proposed Anaerobic Digestion Facility – Deal Farm, Bressingham

04/11/2021 12:00	59	44
04/11/2021 12:15	64.4	44.5
04/11/2021 12:30	65	48.7
04/11/2021 12:45	60	48.2
04/11/2021 13:00	61.5	45
04/11/2021 13:15	63.9	46.7
04/11/2021 13:30	66	49.2
04/11/2021 13:45	61.4	46.5
04/11/2021 14:00	60.8	46.2
04/11/2021 14:15	58.3	46.6
04/11/2021 14:30	56.5	42.5
04/11/2021 14:45	56.6	40.8
04/11/2021 15:00	59.4	41.1
04/11/2021 15:15	59.7	44.3
04/11/2021 15:30	66.3	47.8
04/11/2021 15:45	59	46
04/11/2021 16:00	62.3	47.1
04/11/2021 16:15	65.4	48.7
04/11/2021 16:30	61.1	44.7
04/11/2021 16:45	60.4	46.8
04/11/2021 17:00	61.8	44.5
04/11/2021 17:15	62.1	48.5
04/11/2021 17:30	60.6	47.2
04/11/2021 17:45	60.5	46.1
04/11/2021 18:00	61.7	48.4
04/11/2021 18:15	62.3	48.3
04/11/2021 18:30	61.6	45.6
04/11/2021 18:45	58.8	44
04/11/2021 19:00	56.3	45.4
04/11/2021 19:15	60.5	47.3
04/11/2021 19:30	56.5	43.7
04/11/2021 19:45	59	44.5
04/11/2021 20:00	56.9	42.8
04/11/2021 20:15	58.5	44.7
04/11/2021 20:30	59.3	44.8
04/11/2021 20:45	54.7	41.3
04/11/2021 21:00	52.9	38.1
04/11/2021 21:15	50.9	38.3
04/11/2021 21:30	45.6	37.1
04/11/2021 21:45	51.3	38.1
04/11/2021 22:00	53.8	35.8
04/11/2021 22:15	40.9	34.3
04/11/2021 22:30	53.3	33.5
04/11/2021 22:45	42.7	34.7
04/11/2021 23:00	40.9	32.1
04/11/2021 23:15	52.9	35.6
04/11/2021 23:30	49	34.5

04/11/2021 23:45	39.1	29.9
05/11/2021 00:00	34.6	28.5
05/11/2021 00:15	37.1	31.4
05/11/2021 00:30	49.9	34.5
05/11/2021 00:45	44.8	37.2
05/11/2021 01:00	48.4	38.2
05/11/2021 01:15	45.9	34
05/11/2021 01:30	41.4	32.6
05/11/2021 01:45	41.8	36.7
05/11/2021 02:00	41	34.7
05/11/2021 02:15	40.1	33.6
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05/11/2021 02:45	39.2	33
05/11/2021 03:00	40.5	35.1
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05/11/2021 09:15	57.1	39.1
05/11/2021 09:30	51	39
05/11/2021 09:45	50.1	39.2
05/11/2021 10:00	53.2	38.9
05/11/2021 10:15	55.1	36.8
05/11/2021 10:30	54.8	35.4
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05/11/2021 11:00	57.7	36.5
05/11/2021 11:15	57.9	38.9

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05/11/2021 11:30	50	37.7
05/11/2021 11:45	55.4	38.2
05/11/2021 12:00	53.7	38.5
05/11/2021 12:15	55	39.8
05/11/2021 12:30	53.6	41.7
05/11/2021 12:45	56.4	41
05/11/2021 13:00	53.8	36.9
05/11/2021 13:15	55.1	38.3
05/11/2021 13:30	53	38.4
05/11/2021 13:45	53.9	39.5
05/11/2021 14:00	50.4	37.1
05/11/2021 14:15	54.5	35.9
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05/11/2021 19:30	49.5	28.9
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05/11/2021 20:00	48.6	28.3
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05/11/2021 22:00	49.1	26.8
05/11/2021 22:15	49.9	27.2
05/11/2021 22:30	44.5	26.5
05/11/2021 22:45	27.8	25.8
05/11/2021 23:00	44.4	27.4

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05/11/2021 23:15	42.4	27.3
05/11/2021 23:30	34.3	27.8
05/11/2021 23:45	34	27.7
06/11/2021 00:00	34	28.5
06/11/2021 00:15	36	28.9
06/11/2021 00:30	36.8	29.1
06/11/2021 00:45	33	27.4
06/11/2021 01:00	34	27.1
06/11/2021 01:15	30.2	25.8
06/11/2021 01:30	29.8	25.9
06/11/2021 01:45	29.6	25.9
06/11/2021 02:00	33.8	26.9
06/11/2021 02:15	31.9	27
06/11/2021 02:30	32	26.6
06/11/2021 02:45	32.9	27.9
06/11/2021 03:00	38.2	29.6
06/11/2021 03:15	36	26.6
06/11/2021 03:30	27.5	25.1
06/11/2021 03:45	28.4	25
06/11/2021 04:00	32.7	25.1
06/11/2021 04:15	29.7	25.8
06/11/2021 04:30	31	26.4
06/11/2021 04:45	31	27
06/11/2021 05:00	29	26.5
06/11/2021 05:15	29.2	26.6
06/11/2021 05:30	31.9	27.3
06/11/2021 05:45	32.8	28.1
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06/11/2021 06:15	53.9	28.6
06/11/2021 06:30	56.5	30.7
06/11/2021 06:45	52.9	33.2
06/11/2021 07:00	51.4	33.8
06/11/2021 07:15	55.2	33.7
06/11/2021 07:30	51.4	32.4
06/11/2021 07:45	54.2	32.6
06/11/2021 08:00	53.5	32
06/11/2021 08:15	56.7	34.6
06/11/2021 08:30	55	34.5
06/11/2021 08:45	51.3	33.9
06/11/2021 09:00	52.5	34
06/11/2021 09:15	48.7	34.8
06/11/2021 09:30	50.5	35.9
06/11/2021 09:45	54.7	37.1
06/11/2021 10:00	54.6	37.8
06/11/2021 10:15	50.8	41.2
06/11/2021 10:30	53.1	40.7
06/11/2021 10:45	55.4	40.6

06/11/2021 11:00	54	39.8
06/11/2021 11:15	55.1	41.9
06/11/2021 11:30	50.8	40.9
06/11/2021 11:45	51.8	38.6
06/11/2021 12:00	53.5	39.1
06/11/2021 12:15	54.9	39.7
06/11/2021 12:30	51.7	41.2
06/11/2021 12:45	56.4	39.5
06/11/2021 13:00	53.3	42.9
06/11/2021 13:15	54	39.8
06/11/2021 13:30	65.6	41.7
06/11/2021 13:45	54.3	42.9
06/11/2021 14:00	53.5	39.1
06/11/2021 14:15	56.2	45.3
06/11/2021 14:30	54.5	43.1
06/11/2021 14:45	56.3	43.4
06/11/2021 15:00	53.8	44.1
06/11/2021 15:15	55.5	44.2
06/11/2021 15:30	53.3	42.5
06/11/2021 15:45	55.5	43.6
06/11/2021 16:00	58.4	46.5
06/11/2021 16:15	55.3	42
06/11/2021 16:30	54.8	42.9
06/11/2021 16:45	55.4	41.9
06/11/2021 17:00	54	39.6
06/11/2021 17:15	56.4	38.9
06/11/2021 17:30	55.3	39.5
06/11/2021 17:45	55.4	40
06/11/2021 18:00	48.5	37.7
06/11/2021 18:15	51.3	36.4
06/11/2021 18:30	51.4	38.3
06/11/2021 18:45	53.1	40.5
06/11/2021 19:00	52.3	41.2
06/11/2021 19:15	53.9	43.8
06/11/2021 19:30	56.2	45
06/11/2021 19:45	55.9	44.5
06/11/2021 20:00	57.3	45.2
06/11/2021 20:15	57.6	44
06/11/2021 20:30	57.1	44.1
06/11/2021 20:45	56.6	44.6
06/11/2021 21:00	56	44.5
06/11/2021 21:15	54.3	42.1
06/11/2021 21:30	53.5	42.4
06/11/2021 21:45	50.9	39.8
06/11/2021 22:00	50.6	39.3
06/11/2021 22:15	52.4	42.7
06/11/2021 22:30	56	43.4



06/11/2021 22:45	56.1	46.6
06/11/2021 23:00	56	44.5
06/11/2021 23:15	54.2	41.2
06/11/2021 23:30	54.9	43.1
06/11/2021 23:45	49.9	39.6
07/11/2021 00:00	50.9	41.2
07/11/2021 00:15	55.6	40.7
07/11/2021 00:30	50.7	39.3
07/11/2021 00:45	52.9	39.7
07/11/2021 01:00	51.5	41.9
07/11/2021 01:15	50.2	35.1
07/11/2021 01:30	47	36.6
07/11/2021 01:45	48.1	37.9
07/11/2021 02:00	42.7	34
07/11/2021 02:15	41.8	30.6
07/11/2021 02:30	40.3	32.2
07/11/2021 02:45	40.4	30.2
07/11/2021 03:00	34.1	28
07/11/2021 03:15	39.2	30.6
07/11/2021 03:30	42.7	32.8
07/11/2021 03:45	40	32.8
07/11/2021 04:00	36.9	29.6
07/11/2021 04:15	37.8	30.9
07/11/2021 04:30	35.1	28.9
07/11/2021 04:45	38.9	30.6
07/11/2021 05:00	37.6	29.6
07/11/2021 05:15	34.3	28.5
07/11/2021 05:30	38.4	30.8
07/11/2021 05:45	43.6	33.2
07/11/2021 06:00	41.1	32.3
07/11/2021 06:15	48.1	31.7
07/11/2021 06:30	50.5	33.8
07/11/2021 06:45	46.4	36.2
07/11/2021 07:00	39.3	35.3
07/11/2021 07:15	52.3	34.3
07/11/2021 07:30	40.2	33.1
07/11/2021 07:45	36.3	30.4
07/11/2021 08:00	43.7	30.6
07/11/2021 08:15	41.5	32
07/11/2021 08:30	51.2	32.8
07/11/2021 08:45	53.1	36.8
07/11/2021 09:00	53.5	41.9
07/11/2021 09:15	53.8	40.4
07/11/2021 09:30	51.3	41.5
07/11/2021 09:45	58.5	44.8
07/11/2021 10:00	57.2	43
07/11/2021 10:15	59.3	46.6

07/11/2021 10:30	59.7	46.8
07/11/2021 10:45	59.8	46.9
07/11/2021 11:00	63.3	50.1
07/11/2021 11:15	67.4	50
07/11/2021 11:30	66.6	50.2
07/11/2021 11:45	68.5	52.6
07/11/2021 12:00	68.7	52
07/11/2021 12:15	62.9	49.1
07/11/2021 12:30	65.8	53.5
07/11/2021 12:45	67.3	51.9
07/11/2021 13:00	65.9	49.5
07/11/2021 13:15	61.1	48
07/11/2021 13:30	63.9	50.4
07/11/2021 13:45	61.7	47
07/11/2021 14:00	58.7	44.4
07/11/2021 14:15	54.3	42
07/11/2021 14:30	52.8	38.4
07/11/2021 14:45	54.9	41
07/11/2021 15:00	55.4	40.5
07/11/2021 15:15	53.3	38.7
07/11/2021 15:30	41.3	33.8
07/11/2021 15:45	54.4	34.9
07/11/2021 16:00	50.2	33.8
07/11/2021 16:15	54.5	35.3
07/11/2021 16:30	50.9	37.1
07/11/2021 16:45	52.7	34.4
07/11/2021 17:00	51.2	31.4
07/11/2021 17:15	54.3	29.5
07/11/2021 17:30	39.9	31.9
07/11/2021 17:45	47.9	36.2
07/11/2021 18:00	48.2	33.8
07/11/2021 18:15	48.8	33.4
07/11/2021 18:30	49.2	34.6
07/11/2021 18:45	51.7	33.1
07/11/2021 19:00	49	31.6
07/11/2021 19:15	44.9	30.6
07/11/2021 19:30	51.1	30.2
07/11/2021 19:45	49.9	29.9
07/11/2021 20:00	50.7	30.1
07/11/2021 20:15	47.2	30.1
07/11/2021 20:30	34.3	30.3
07/11/2021 20:45	33.6	29.5
07/11/2021 21:00	46.9	29.3
07/11/2021 21:15	33.5	29.3
07/11/2021 21:30	33.6	30
07/11/2021 21:45	32.7	29.5
07/11/2021 22:00	31.9	28.3

07/11/2021 22:15	29.7	27.6
07/11/2021 22:30	30.4	27.5
07/11/2021 22:45	31.2	28.1
07/11/2021 23:00	31.1	27.9
07/11/2021 23:15	30.9	28
07/11/2021 23:30	33.1	28.1
07/11/2021 23:45	29.8	27.1
08/11/2021 00:00	30.2	27.6
08/11/2021 00:15	31	27.8
08/11/2021 00:30	31.2	27.7
08/11/2021 00:45	32.5	28.3
08/11/2021 01:00	30.9	28.4
08/11/2021 01:15	32	28
08/11/2021 01:30	31.4	28.5
08/11/2021 01:45	33.7	30.2
08/11/2021 02:00	33.2	29.3
08/11/2021 02:15	34.6	29.5
08/11/2021 02:30	33.1	28.8
08/11/2021 02:45	31.4	28.6
08/11/2021 03:00	31.7	27.7
08/11/2021 03:15	30	28
08/11/2021 03:30	30.7	28.4
08/11/2021 03:45	30.4	28.6
08/11/2021 04:00	30.1	27.9
08/11/2021 04:15	30.8	28.3
08/11/2021 04:30	30.3	28.3
08/11/2021 04:45	30	28.1
08/11/2021 05:00	30.3	28.4
08/11/2021 05:15	30.9	28.7
08/11/2021 05:30	30.8	29.1
08/11/2021 05:45	50.6	30.6
08/11/2021 06:00	49	29.9
08/11/2021 06:15	51.9	30.2
08/11/2021 06:30	59	33.5
08/11/2021 06:45	54.9	35.2
08/11/2021 07:00	54.6	34.2
08/11/2021 07:15	59.5	34.5
08/11/2021 07:30	58.5	35.7
08/11/2021 07:45	58.5	37.5
08/11/2021 08:00	54.7	38.2
08/11/2021 08:15	57.6	37.8
08/11/2021 08:30	58.6	46.2
08/11/2021 08:45	56.6	42.2
08/11/2021 09:00	53.6	41.5
08/11/2021 09:15	55.6	40.4
08/11/2021 09:30	52.6	37.8
08/11/2021 09:45	54	37.7

Reference: 21.159.1.R4  
Date: 13 June 2022  
Project: Proposed Anaerobic Digestion Facility – Deal Farm, Bressingham

08/11/2021 10:00	51.5	36.7
08/11/2021 10:15	56.8	34.6
08/11/2021 10:30	51.5	34.8
08/11/2021 10:45	52.4	38.1
08/11/2021 11:00	54.1	39.2

\*Red denotes period of bad weather

APPENDIX 7: PROPOSED AD FACILITY

Figure 1

