



ARGOED POULTRY FARM EXTENSION

NOISE ASSESSMENT

Acoustics Report A1602 R01a
24th August 2020

Report for:	RJ Hughes & Co Argoed Farm Trefeglwys Caersws Powys SY17 5QT
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Appendix A: Measured Noise Levels

1 Introduction

Ion Acoustics is appointed by Berrys on behalf of RJ Hughes & Co to provide advice on external noise associated with a proposed expansion of the existing poultry farm at Argoed Farm, Trefeglwys, Powys. The proposed development would see the existing laying shed repurposed and three additional poultry sheds added, changing the site from a laying facility to broiler rearing and increasing the capacity from 32,000 birds to 220,000 birds per crop.

This assessment has been informed by a baseline noise survey, undertaken from 9th to 16th June 2020. The noise survey was carried out while the existing poultry shed was operational. Noise from this considered to be part of the existing background sound level.

Calculations and computer modelling software have been used to predict the noise levels from the proposed development to the nearest noise-sensitive receptors (dwellings) in the vicinity of the site. The predictions have been compared to noise limits set to protect amenity derived from the baseline survey and guidance on acceptable noise standards.

2 Site and Development

2.1 Site Location and Existing Planning Consent

The existing poultry farm is located on land at Argoed Farm, at Trefeglwys, Powys. The existing poultry shed is a laying shed, accommodating up to 32,000 birds. The wider farm also includes livestock (cattle) and crops. There is also an Anaerobic Digestion (AD) facility located to the south of the existing poultry shed. The AD facility generates power from waste products at the farm and will use the waste from the proposed poultry units as a future feed source. The AD facility was not operational during the noise survey.

The site is in a predominately rural area, with agricultural land in all directions. There are a number of residential receptors in the area. Some are linked to the land owner; others have no connection with the landowner or proposed development. The nearest receptors are identified in Table 1 below and presented in further detail in Figure 1 below

Table 1: Assessment Locations

Location	Relationship to Farm	OS Grid Reference	Approximate Distance from Application Boundary (m)
AL01 – Argoed	Landowner	298904, 291331	150
AL02 – Llys Trannon	Relation	298706, 291438	340
AL03 – Heulwen	None	298538, 291617	540
AL04 – Tan-y-Graig	Relation	298986, 291466	80
AL05 – Caesidanen	None	299545, 291398	300
AL06 – Ddraenen-ddu	None	299548, 291249	300

Figure 1 below presents the site location, red line boundary, noise monitoring locations and the nearest receptor locations.

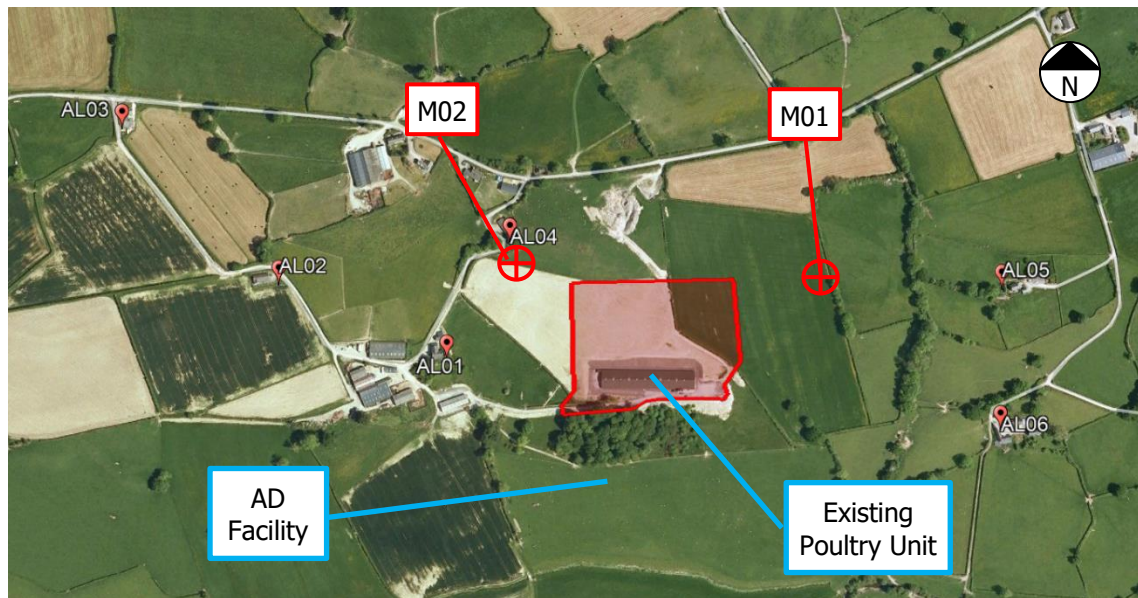


Figure 1: Site, Monitoring and Receptor Location Plan @ Google Earth

To the south-west of the site, at a distance of approximately 750m from the site boundary lies the Mid Wales Shooting Centre. This is understood to be an established shooting venue and is known to host frequent competitions etc. The shooting centre was closed during the baseline noise survey because of the partial lockdown period due to the Coronavirus pandemic. Discussions with the local planning authority indicate that the closure may become permanent at some point in the future as the venue may be redeveloped.

2.2 Proposed Poultry Farm Extension

As indicated above, the development of the farm will see the existing shed converted to raise broiler birds and will also see the construction of three new poultry sheds to the immediate north of the existing shed.

The existing shed currently accommodates 32,000 birds. Ventilation for the existing shed is provided by side wall fans and roof mounted ridge fans. The shed is to be retro fitted to create a broiler space accommodating 55,000 birds. The three new sheds are to accommodate a further 55,000 birds each, giving a total of 220,000 birds.

The site is to be excavated and terraced to accommodate the buildings within the steeply sloped landscape. The southern-most new shed is to be built at the level of the existing shed. The second and third new sheds are to be elevated by around 3m above the existing shed. Figure 2 below shows east and west elevations showing the height difference between the terraces.

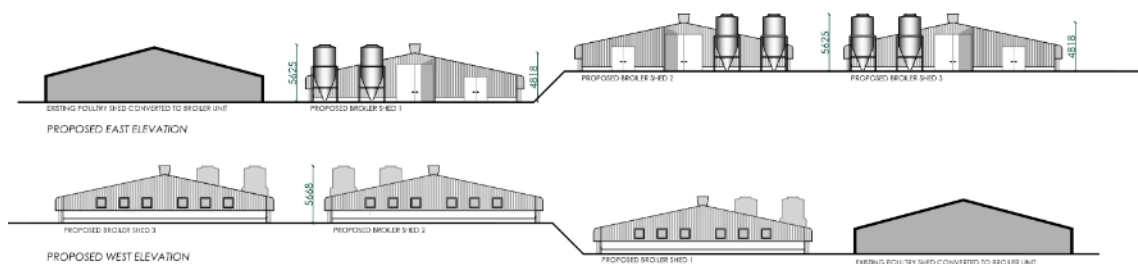


Figure 2: Poultry Farm Elevations

The terracing of the development in this way results in the site being in cutting, below the ground level to the immediate north with a height difference between the site level and ground of up to 8m in places. This provides a partial screening influence between the ventilation fans and the receptors to the north, east and west.

The location and layout of the existing and proposed sheds and the embankments formed are presented in Figure 3 for reference.

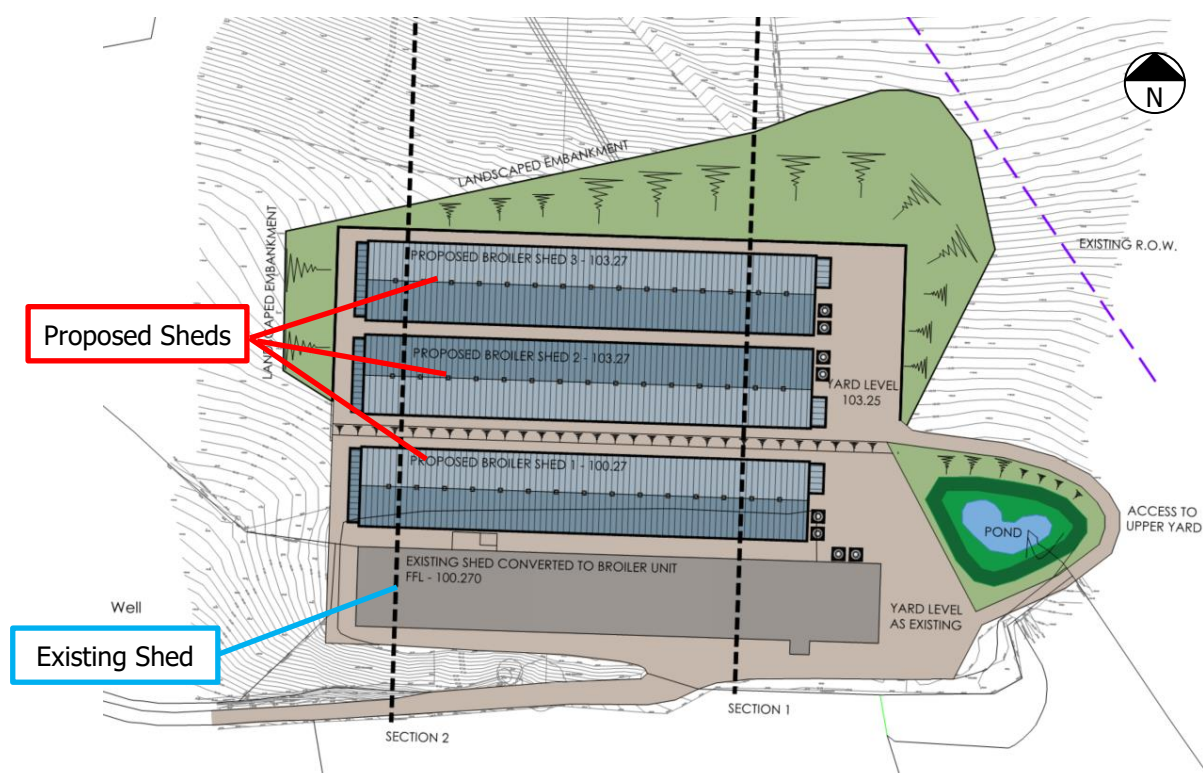


Figure 3: Poultry farm layout plan

Both the new and existing sheds will include the following plant:

- 15 no. Ridge mounted extraction fans;
- 6 no. Gable end fans; and,
- Feed bins.

Further information on the plant complement and operational phases is presented in Section 5 below.

3 Planning Policy and Other Guidance on Noise

3.1 Technical Advice Note (Wales) 11 – October 1997

The current planning guidance in respect of planning and noise in Wales is TAN 11. The document provides guidance on noise sensitive and noise generating developments. With specific regard to noise generating developments, paragraph eight states the following:

8. Local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance. They should also bear in mind that if

subsequent intensification or change of use results in greater intrusion, consideration should be given to the use of appropriate conditions.

Annex B of the document details the assessment of noise from a number of different sources including: road traffic; railway and aircraft. It does not provide specific information on agricultural activities though does reference noise from commercial and industrial developments which are considered to be suitable in this instance. In paragraph B17 the guidance references British Standard 4142:1990. The 1990 iteration of the standard has been replaced by a number of more recent versions, with the most recent being BS4142:2014 +A1:2019.

This latest version has been used to assess noise from the development together with absolute standards given in British Standard BS 8233: 2014 and World Health Organisation (WHO) guidance.

3.2 BS4142: 2014 +A1: 2019 – Assessment Principles

The standard method for assessing industrial / commercial noise affecting nearby housing is British Standard BS 4142 "Method for rating and assessing industrial and commercial sound". A BS 4142 assessment is made by determining the difference between the commercial / industrial noise under consideration and the background sound level as represented by the L_{A90} parameter, determined in the absence of the commercial / industrial noise. The L_{A90} parameter is defined as the level exceeded for 90% of the measurement time. Therefore, it represents the underlying noise in the absence of short-term events.

The industrial / commercial noise under consideration is assessed in terms of the ambient noise level, L_{Aeq} , but a character correction penalty can be applied where the noise exhibits certain characteristics such as distinguishable tones, impulsiveness or, if the noise is distinctively intermittent. The ambient noise level, L_{Aeq} is defined as the steady-state noise level with the same energy as the actual fluctuating sound over the same time period. It is effectively the average noise level during the period. The plant noise level (L_{Aeq}) with the character correction (if necessary) is known as rating level, L_{Ar} , and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The standard then states:

- a) *"Typically, the greater the difference, the greater the magnitude of the impact;*
- b) *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;*
- c) *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context;*
- d) *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound will have an adverse impact or a significant 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, depending on the context."*

The standard outlines a number of methods for defining appropriate 'character corrections' to determine the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency.

BS 4142 states that the 'typical' background noise level should be used, in making the assessment specifically:

"In using the background sound level ... it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods."

BS 4142 further states the following with relation to low background and rating levels:

"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."

The standard also highlights the importance of considering the context in which a sound occurs. The standard indicates that factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact.

3.3 BS 8233: 2014 and WHO criteria

British Standard BS 8233: 2014 and the World Health Organisation (WHO) provide external noise criteria to protect residential amenity. These are detailed in Table 3 below. The guidance generally applies to relatively anonymous noises without character such as road traffic noise and steady broadband plant noise.

Table 3: WHO / BS 8233: 2014 Guideline Noise Levels

Location	Critical Health Effect	07:00 to 23:00	23:00 to 07:00
Outside Bedroom Windows	Sleep Disturbance (Windows Open)	--	45dB LAeq, 8hours ⁽¹⁾
Amenity Spaces (Gardens / Patios)	Moderate Annoyance Serious Annoyance	50dB LAeq, 16 hours ⁽²⁾ 55dB LAeq, 16 hours ⁽²⁾	--
Notes: (1) From WHO Community Noise Guidelines (1999) (2) BS 8233: 2014 and WHO Community Noise Guidelines			

3.4 Land Owner and Linked Properties

The property identified as AL01 (Argoed) on Figure 1 above is known to be the land owner's property and therefore, is linked to the proposed development. As such, the response to noise from the facility would not conform to the impact criteria detailed in BS4142:2014. Given this, the noise impact at the landowner property has been assessed in line with absolute noise limits. The noise limits have been determined to protect sleep and amenity in line with the guidance from the World Health Organisation (WHO) and BS 8233: 2014, detailed in Table 3 above.

Receptors AL02 (Llys Trannon) and AL04 (Tan-y-Graig) are occupied by relatives of the land owner, as are a number of other properties in the area. While they have a link to the land owner, and are likely to be more tolerant to noise from the development, the residents could still be susceptible to noise impacts. To that end, a more relaxed impact criteria is proposed. In this instance, a BS 4142 rating level 5dB above the background noise ($L_{Ar} = L_{A90} + 5dB$) is considered to be a level at which adverse impacts are deemed to occur for these dwellings.

3.5 Local Planning Authority Liaison

Prior to undertaking the baseline noise survey, a telephone discussion was held with Paul Bufton, Senior Environmental Health Officer at Powys County Council. The discussion centred on the timing of the baseline noise survey and the implications of the Coronavirus lockdown restrictions on the prevailing noise climate.

During the discussions, Mr Bufton indicated that, in his opinion, the movement restrictions in place at the time of the survey had little effect on the rural noise climate and that agricultural activities continued in spite of the lockdown measures. In addition, Mr Bufton indicated that the movement restrictions had resulted in the nearby shooting centre being closed reducing the occurrences of shooting noise. Mr Bufton further indicated that the shooting centre is to close in the future and, as a result, the current noise climate would reflect the future scenario.

It is noted that the consultation did not include discussions of assessment methodology or appropriate criteria. The discussions were held in the broadest terms as according to Powys policy, detailed discussions required a formal scoping request which was beyond the scope of this assessment.

4 Baseline Noise Survey

A baseline noise survey was carried out from 9th and 16th June 2020. This was undertaken by means of unattended logging of background and ambient noise levels at two locations representative of the nearest receptor locations. A weather station was also set up to determine the weather conditions.

A number of factors in the immediate vicinity resulted in conservative noise levels during the survey. These include the following:

- The existing, consented AD facility was not operational during the baseline survey. The AD facility is likely to generate some degree of noise which may contribute to the prevailing ambient noise climate;
- The shooting centre was not operational during the baseline survey. While this may become a permanent condition, the shooting centre is a factor in the prevailing noise climate in the area therefore its omission from the measured noise levels could be considered representative of a conservative scenario.

Two Rion NL52 sound levels meters were used and fitted with WS-15 wind shields. The meters were calibrated before and after the survey using a Brüel & Kjær 4231 calibrator. No significant drift in calibration was noted at any of the monitoring locations. In all instances, the noise monitoring stations were unattended apart from the set up and collection periods. The audio signal was recorded (as .wav files) at intervals to enable sound sources to be identified during post-processing.

The noise survey locations are identified in Figure 1 above and described in further detail below:

Monitoring Location M01

The sound level meter at location M01 was located within the field boundary towards the eastern boundary of the Argoed Farm holdings, towards receptor locations AL05 and AL06.

At this location, the microphone and windshield were mounted on a small pole at a height of 1.2m above soft ground, relatively close to the surrounding undergrowth. The meter was set up to log various noise parameters in 15-minute periods, including L_{Aeq} and L_{A90} values.

A photograph of the noise measurement location is shown in Figure 4, below.



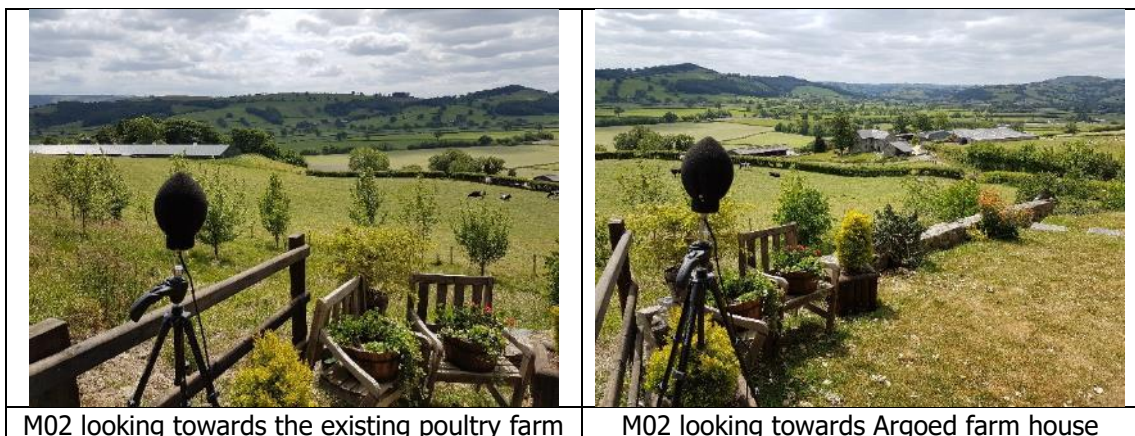
Figure 4 - Photograph of noise measurement location M01

The noise climate at this location was influenced by fan noise from the existing poultry shed. Fan noise was audible as a low level, broadband hum, which was audible during periods when wind noise or other agricultural noise were absent. No other significant noise sources were noted during the attended portions of the survey.

Monitoring Location M02

Monitoring location M02 was located in the garden space of Tan-y-Graig, receptor AL04, at a distance of 160m from the existing poultry shed. The monitoring station was located to the north of the site, in a slightly elevated location relative to the existing site level.

The microphone and windshield were mounted on a tripod at a height of 1.5m above soft ground with no reflective facades within influencing distance.



M02 looking towards the existing poultry farm

M02 looking towards Argoed farm house

Figure 5 - Photograph of noise measurement location M02

The noise climate at this location included audible noise from the existing poultry farm, being 165m from the nearest ridge fan of the shed. The noise climate also included some noise from other agricultural activities including noise from livestock and from sheep shearing activities at the farmstead to the immediate north during the set-up period.

Other noise noted at this location included bird song in the undergrowth and some light wind noise from the wind in the nearby vegetation.

Weather Monitoring Station

The weather monitoring station was slightly removed from noise monitoring location M01; being positioned closer to the existing poultry shed on a piece of stable ground.

The weather conditions were monitored at this location using a Davis Vantage Vue weather station. This logged rainfall, ambient temperature, wind speed and direction for the duration of the survey. Figure 6 below shows the weather monitoring location.



Figure 6 - Photograph of weather monitoring station

5 Survey Results

5.1 Weather Monitoring Survey Results

The weather during the initial set-up period (9th June) was warm, with an ambient air temperature of 16°C and with low wind speeds (1m/s). The wind was generally from the west-south-west.

The measured weather data for the unattended period indicates that the wind speed was generally low, with a maximum recorded speed of 5m/s though the direction changed to the north-west. The ambient air temperature ranged between 9°C and 21°C. Periods of rain were recorded on every day during the survey though these were generally limited to short duration showers. More extended periods of rain were recorded on the 10th (15:15 to 16:15 and 22:00 to 02:00), 11th (22:15 to 00:15) and 15th (14:15 to 15:15). These are highlighted on the time history charts in Appendix A.

The weather during the collection period was similar to the set-up, with an ambient air temperature was 18°C, dry and with low wind speeds. The prevailing wind direction was from the north / north-west.

5.2 Results of the Unattended Logging

The noise levels measured at the monitoring locations are summarised in Tables 4 and 5 below. The data is presented over the typical daytime (07:00 to 23:00) and night-time (23:00 to 07:00) periods for each day. The data is presented as the logarithmic average of the ambient, L_{Aeq} values and both the arithmetic mean and mode (most common) values for the background noise (L_{A90}). It is noted that the summary covers the whole monitoring period, including periods when rain was recorded. Time history charts and tabulated data are included in Appendix A.

Location M01

Table 4: Noise Monitoring Data Summary – M01

Period		Duration hh:mm	L_{Aeq} , dB	Mean L_{A90} , dB	Mode L_{A90} , dB
9 th June 2020	Daytime	10:30	50.4	32	33
	Night	08:00	48.9	30	27
10 th June 2020	Daytime	16:00	52.6	34	35
	Night	08:00	47.2	35	33
11 th June 2020	Daytime	16:00	49.7	41	41
	Night	08:00	43.1	31	35
12 th June 2020	Daytime	16:00	50.0	37	40
	Night	08:00	43.4	29	27
13 th June 2020 Saturday	Daytime	16:00	49.5	32	32
	Night	08:00	45.4	28	23
14 th June 2020 Sunday	Daytime	16:00	45.4	31	31
	Night	08:00	45.5	30	28
15 th June 2020	Daytime	16:00	49.7	33	32
	Night	08:00	41.1	31	29
16 th June 2020	Daytime	04:45	52.5	32	33

The data in Table 4 above indicates that the prevailing ambient noise climate falls within the range L_{Aeq} 43dB and 53dB with moderately higher noise levels occurring during periods of rain and higher winds. The mean of the background sound level ranges between L_{A90} 29dB and 41dB though the mode demonstrates a slightly greater range. The difference between daytime and night time periods is generally quite moderate though there are a couple of outliers where the difference is up to 10dB in the L_{A90} parameter.

There is no significant difference between week day and weekend periods which is to be expected as the site location is rural in nature and not subject to typical urban working periods i.e. rush hour etc.

Location M02

Table 5: Noise Monitoring Data Summary – M02

Period		Duration hh:mm	L_{Aeq} , dB	Mean L_{A90} , dB	Mode L_{A90} , dB
9 th June 2020	Daytime	10:00	45.6	36	36
	Night	08:00	46.6	33	32
10 th June 2020	Daytime	16:00	48.1	39	38
	Night	08:00	44.0	38	38
11 th June 2020	Daytime	16:00	48.3	40	40
	Night	08:00	41.0	34	36
12 th June 2020	Daytime	16:00	45.0	38	38
	Night	08:00	43.0	36	36
13 th June 2020 Saturday	Daytime	16:00	43.6	38	38
	Night	08:00	45.6	36	35
14 th June 2020 Sunday	Daytime	16:00	50.5	38	37
	Night	08:00	42.3	35	34
15 th June 2020	Daytime	16:00	50.8	39	37
	Night	08:00	44.8	36	35
16 th June 2020	Daytime	04:30	46.5	38	38

As with location M01, the difference between the daytime and night-time period is not particularly pronounced. Indeed, in two instances the ambient noise climate during the night is higher than the preceding daytime period. This is likely a function of changing weather conditions i.e. higher wind speeds and rain.

The mean background sound level (L_{A90}) over the daytime and night ranges between 34dB and 40dB. The mode generally falls within the same range.

As above, there is little to no difference in the noise climate between weekday and weekend periods.

6 Analysis of Measured Sound Levels

BS 4142 requires the use of the 'typical' background sound level though does not stipulate how the typical level is derived. The analysis presented below identifies appropriate 'typical' noise levels for both the daytime and night-time periods at each location. The analysis omits periods of rain and adverse weather conditions.

6.1 Typical Background Sound Level - Daytime

The daytime period covers the hours 07:00 to 23:00 and is expressed as the arithmetic average of the 15min periods over each one-hour period. This analysis omits periods of rain.

Table 6: Background Sound Level Analysis - Daytime

	Location M01 - Background Sound Level, L_{A90} , 1 hour.	Location M02 - Background Sound Level, L_{A90} , 1 hour.
Minimum Measured Value	28	31
Mean (Arithmetic Average)	34	38
Integer Mode (most common)	32	37

The analysis above indicates a moderate difference between the monitoring locations with the background sound level at M01 tending to be lower than that at M02. This is likely a result of the proximity of M02 to the residential dwellings and the farm buildings. In both instances the mode value demonstrates a strong peak at the respective values. As such, the mode value is considered typical of the prevailing noise climate at each location.

6.2 Typical Background Sound Level - Night

The night-time period covers the hours 23:00 to 07:00 and is expressed in 15-minute periods during these hours.

Table 7: Background Sound Level Analysis - Night

	Location M01 - Background Sound Level, L_{A90} , 15mins	Location M02 - Background Sound Level, L_{A90} , 15mins.
Minimum Measured Value	23	23
Mean (Arithmetic Average)	30	35
Integer Mode (most common)	28	35

The distribution of L_{A90} , 15min night-time values at location M01 is dispersed, with a primary peak at 28dB and a secondary peak at 33dB. As such, the mean value of L_{A90} , 15min 30dB is considered typical.

The background sound level at M02 is relatively consistent with a defined peak in the distribution at 35dB. 40% of the L_{A90} values fall within the range 34dB to 36dB therefore the mode value of L_{A90} , 15min 35dB is considered typical.

6.3 Noise Targets

Given the typical background sound levels derived above and the guidance in BS4142, noise targets are proposed in Table 8 below. Generally, these aim to achieve a low noise impact; that is a rating level no higher than the typical background noise value at the identified third-party receptor locations. The limit at locations AL02 and AL04 is based on a level 5dB above the background following the rationale detailed in section 3.6. In all cases noise levels are below WHO guidance levels for sleep disturbance.

Table 8 below presents the monitoring location, the relative receptor locations, the typical background sound level and the appropriate rating level noise target.

Table 8: Appropriate Noise Target

Monitoring Location	Receptor location	Period	Typical Background Sound Level, L_{A90} , dB	Rating Level Noise Target, L_{Ar} , dB
M01	AL05, AL06	Daytime	32	32
		Night	30	30
M02	AL03	Daytime	37	37
		Night	35	35
M02	AL02*, AL04*	Daytime	37	42
		Night	35	40

* NOTE: Property occupied by family member. Noise limit at AL02 is based on achieving $L_{A90} + 5\text{dB}$.

The rating level will apply to the noise level plus any specific character corrections which need to be applied in line with BS4142:2014.

7 Noise Modelling Assessment and Predictions

As part of this assessment a noise model was constructed using IMMI noise mapping software to predict noise levels to the nearest noise sensitive receptor locations in accordance with ISO 9613-2. The input parameters have been assumed:

- Downwind propagation (noise levels under crosswind and upwind conditions will be less);
- Soft ground ($G = 1$) between the noise source and receiver locations;
- Ambient air temperature of 10°C and 70% Relative Humidity; and,
- Barriers and screening influence in calculated in accordance with ISO 9613-2.

The noise sources associated with the computer model are identified below.

7.1 Foundation of the Model

The noise model was constructed utilising the following information:

- Ordnance Survey Open Data topographical data;
- Site layout information provided by Berry's as per Figure 2 & 3 of this report; and,
- Noise information sourced from manufacturers' data sheets.

7.2 Noise Source Information

Ventilation Fans

The majority of the fixed/ static plant associated with the proposed poultry units would be fans/ extract units to provide adequate air flow for the livestock. The information provided indicates that the units would typically be ventilated by means of ridge-mounted fans with gable end fans for additional transitional and tunnel ventilation during periods of high ambient air temperatures. The externally mounted fans are detailed in Table 9 below:

Table 9: Proposed Plant Compliment

Plant	Description	Number	Noise Data*
Fancom Type3680	Ridge Fans	15 per shed (60 in total)	L _{pA} 70dB @2m per fan
Fancom 3480P	Gable End Fans	6 per shed (24 in total)	L _{pA} 77dB @2m per fan
* Noise data for fans at 100% operation obtained from Fancom Agricultural fans data sheet			

The ventilation requirements of the birds within the sheds vary depending on the age of the brood, internal environmental factors (temperature, air quality, relative humidity etc) and external environmental factors (external ambient air temperature etc). Generally speaking, the ventilation characteristics fall in to three categories as follows:

(Minimum Transitional Tunnel) MTT Minimum ventilation

Minimum ventilation is required whenever a brood is within the house to ensure adequate internal environmental conditions prevail throughout the growing period. Minimum ventilation brings fresh air into the house and exhausts any stale air, removing moisture and harmful gases while maintaining an appropriate air temperature. The minimum level of ventilation varies though out the life cycle of the birds with older, larger birds requiring greater ventilation. As such, as the brood grows, more demand is put on the fans to provide adequate ventilation.

The ventilation requirements during the night-time period are lower than the daytime periods due to the reduced activity of the birds and the generally lower external ambient air temperatures etc. To that end, a lower level of demand is put on the ventilation systems during the night-time.

Transitional Ventilation

Transitional ventilation is used to remove excess heat from the sheds when internal temperatures exceed a set criterion. During transitional ventilation, the fans stop running on the minimum ventilation timer cycle and start running continuously for temperature control. Transitional ventilation is limited to periods in the crop cycle when the birds are of sufficient size as to resist the chilling factor of the gable end fans i.e. the later portions of the crop cycle. The transitional phase is generally used to acclimatise the birds to tunnel ventilation.

Transitional ventilation is unlikely to be required during the night-time period due to cooler ambient air temperatures outside and the lack of solar heat gain.

Tunnel ventilation

Tunnel ventilation is only used during the hotter portions of the year when the external air temperatures are high, in excess of 20°C, and when birds are older and more able to withstand chill factors. Tunnel ventilation relies solely on the gable end fans to create a cooling effect for the birds.

Given the lower external ambient air temperatures during the night-time period and the reduced activity levels of the livestock, it is considered highly unlikely that tunnel ventilation would be required during the overnight period.

7.3 Assessment Scenarios

As detailed above, the ventilation requirements, and by extension operational demand on the fans, vary as a function of the age of the birds. The older and larger the birds the greater the ventilation requirements and the more demand is placed on the fans.

The minimum ventilation requirements of the birds can be calculated using the following formula:

$$\text{Total Minimum Ventilation (m}^3\text{/hour)} = \text{Minimum ventilation rate per bird} \times \text{Number of birds in the house}$$

The minimum ventilation rate per bird varies as a function of the bird's age / weight. Details were obtained from the Arbor Acres Broiler Management Handbook.

Using the total minimum ventilation rate, and the maximum capacity of the ventilation fans, the demand placed on the fans, in terms of the percentage 'on time', can be calculated using the following formula:

$$\text{Percentage 'On time'} = \frac{\text{Total minimum ventilation required}}{\text{Maximum capacity of the fans}} \times 100$$

Using the calculated 'on time' and the standard correction formula detailed in BS5228¹, a correction factor was applied to each of the noise sources within the noise model.

Given the variation of the noise sources and the ventilation requirements of the sheds, the following scenarios have been assessed within the scope of this study.

Table 10: Assessment Scenario

Assessment Scenario	Operational Phase		Description	Assessment Period
Scenario A	Minimum Ventilation	Stage 1 Ventilation	Ventilation requirements up to the end of day 14 of flock cycle. 9% on time for ridge fans.	Daytime hours
		Stage 2 Ventilation	Ventilation requirements up to the end of day 21 of flock cycle. 13 % on time for ridge fans.	
		Stage 3 Ventilation	Ventilation requirements up to end of day 28 of the flock cycle. 18% on time for ridge fans.	
	Minimum Ventilation	Stage 4 Ventilation	Minimum ventilation during the night-time period. 9% on time for ridge fans.	Night-time
Scenario B	Transitional Ventilation	Stage 5 Ventilation	Transitional ventilation between ridge and gable end fans. 15% on time for ridge and gable fans	Daytime only
Scenario C	Tunnel Ventilation	Stage 6 Ventilation	Maximum ventilation requirements during the hottest portions of the year. 100% on time for gable fans.	Daytime only
Scenario D	HGV Movements	De-population	Final clearance of the poultry sheds. No fans	Night-time only

¹ BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites

For the purposes of the assessment scenarios, the daytime and night-time periods are defined as follows:

Daytime Hours	07:00 to 23:00
Night-time Hours	23:00 to 07:00

8 Operational Assessment

The assessments summarised within this section of the report have been undertaken to the locations detailed within Figure 1 and Table 1 presented above. It is reiterated that the receptors identified as AL01, AL02 and AL04 are linked to the operations at the farm and as such has been assessed against alternate criterion.

It is noted that a BS4142 noise assessment would typically only consider noise levels from vehicle movements within the proposed red line boundary. In this instance, this would omit the dwellings along the access road, specifically AL02 and AL03. However, in this case, the impact assessment has been extended to include the dwellings AL02 and AL03 along the farm access track to the point where it meets the main, public highway.

The calculations undertaken within this section of the report consider the noise generated by the ventilation requirements and noise generated by vehicle movements separately. In both instances the assessments have been undertaken for both the daytime and night-time periods where appropriate.

8.1 Scenario A – Minimum Ventilation Requirements

The indicative noise contours below present the worst-case assessment of the Stage 3 ventilation, with all the ridge fans operating for the appropriate on time during the assessment period.

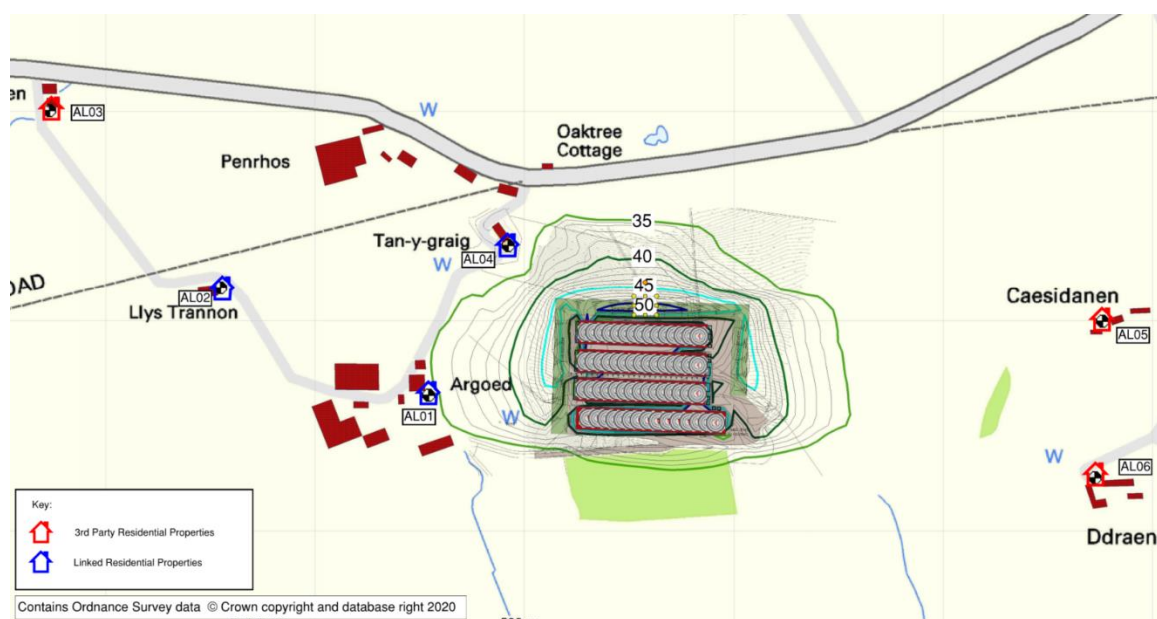


Figure 7: Predicted Daytime Noise Contours – Scenario A (Stage 3)

Using the noise model, levels have been calculated to the receptor locations detailed above. These predicted levels have been used to evaluate the noise impact in accordance with the methodology detailed in BS 4142: 2014.

The noise emitted by the ventilation fans is generally considered to be broadband in nature with no distinguishable tones or impulsive characteristics. That said, the fans operate on an intermittent rotating cycle as demand dictates therefore a +3dB rating level correction has been applied in accordance with the BS4142 assessment methodology.

Table 11: Noise Impact – Scenario A

Ventilation Stage	Receptor	Operational Period	Predicted Specific Level, dB	Rating Level, L _{Ar} dB*	Noise Limits, dB	Difference, dB
Stage 1 Ventilation	AL02	Daytime	23	26	42	-16
	AL03		17	20	37	-17
	AL04		30	33	42	-9
	AL05		22	25	32	-7
	AL06		22	25	32	-7
Stage 2 Ventilation	AL02	Daytime	25	28	42	-14
	AL03		19	22	37	-15
	AL04		32	35	42	-7
	AL05		24	27	32	-5
	AL06		24	27	32	-5
Stage 3 Ventilation	AL02	Daytime	27	30	42	-12
	AL03		21	24	37	-13
	AL04		33	37	42	-5
	AL05		25	28	32	-4
	AL06		25	28	32	-4
Stage 4 Ventilation	AL02	Night-time	25	28	40	-12
	AL03		19	22	35	-13
	AL04		32	35	40	-5
	AL05		24	27	30	-3
	AL06		24	27	30	-3
* NOTE: with +3dB penalty as described above.						

The assessments presented above, representing typical activities at the poultry sheds would fall between 3dB and 17dB below the noise limits derived in Table 11 above. This is considered to indicate a low noise impact at all of the receptors considered in accordance with BS 4142:2014.

8.2 Scenario B – Transitional Ventilation

The transitional stage is the period between typical ridge fan operation and full tunnel ventilation. It is a stage that provides more ventilation for the birds when required though the flock need to be of sufficient age / weight to withstand the chilling factors generated by the increased air movement.

The transitional ventilation stage utilises both the ridge fans and the gable end fans. For the purposes of this assessment these are assumed to incur the same rating level penalties as the Scenario A assessment i.e. +3dB corrections in total. The assessment is shown below in Table 12.

Table 12: Noise Impact Assessment – Scenario B

Ventilation Stage	Receptor	Operational Period	Predicted Specific Level, dB	Rating Level, L _{Ar} dB*	Noise Limit, dB	Difference, dB
Stage 5 Ventilation	AL02	Daytime	28	31	42	-11
	AL03		22	25	37	-12
	AL04		36	39	42	-3
	AL05		25	28	32	-4
	AL06		25	28	32	-4
* NOTE: with +3dB penalty as described above						

Again, the assessment summarised above indicates that the noise generated by the new poultry units would fall below the noise limits derived above and would be a low noise impact in line with BS4142:2014.

8.3 Scenario C – Tunnel Ventilation

Tunnel ventilation is only required during the daytime hours of the hotter portions of the year when the birds are of sufficient size to withstand any chill generated by the increased air flow. It is reiterated that tunnel ventilation is highly unlikely to be required during the overnight period therefore, only the daytime period has been considered.

Tunnel ventilation utilises all the gable end fans and is understood to require they all operate at once i.e. with no intermittency.

Table 13: Noise Impact Assessment – Scenario C

Ventilation Stage	Receptor	Operational Period	Predicted Specific Level, dB	Rating Level, L _{Ar} dB	Noise Limit, dB	Difference, dB
Stage 6 Ventilation	AL02	Daytime	31	31	42	-11
	AL03		26	26	37	-11
	AL04		42	42	42	+/-0
	AL05		18	18	32	-14
	AL06		18	18	32	-14

The predicted levels detailed in Table 13 above indicate that noise generated by the proposed facility would not exceed the proposed noise limits. This would indicate a low impact in accordance with BS4142:2014.

8.4 Land Owner Property – AL01

The residential dwelling at Argoed Farm is owned and occupied by persons which are financially linked with the development.

Given the link to the development, these properties have been assessed in line with the absolute limits detailed in Section 3 above. For the purposes of the assessments presented below, consideration has been given to the typical, minimum ventilation scenarios (ventilation stages 1-4).

Table 14: Land Owner Properties

Ventilation Stage	Assessment Period	Predicted Noise Level, L_{Aeq} dB	External Noise Limit, L_{Aeq} dB	Difference, dB
Stage 1	Daytime	31	50	-19
Stage 2	Daytime	33		-17
Stage 3	Daytime	35		-15
Stage 4	Night-time	33	45	-12

The assessment presented above indicate that noise generated by the new poultry units would fall well below the external noise limits at the financially linked dwelling. The predicted noise levels detailed above are such that, if calculated to an internal receptor, the noise levels would fall comfortably within the internal guideline values of the WHO. Given this it is concluded that the additional poultry units would not be detrimental to amenity.

9 Vehicle Movements

The access route to the farm is down the lane past receptors AL02 and AL03. Given the specifics of the site and the route of the access road, it is considered appropriate to assess the noise generated by HGV movements to and from the site in line with the Haul road methodology detailed in BS5228-1. The following attributes have been used in the calculations:

- The source noise of an HGV under acceleration is a sound power level of 105.5dB(A)²; and,
- Vehicle speeds are limited to 10mph (16kph or 4.4m/s).

Information on the vehicle movements to and from the proposed development have been provided by Berrys, and is summarised in Table 15 below.

General vehicle movements to and from the development, including feed and bedding deliveries etc, would only occur during the daytime period, between the hours of 07:00 to 20:00. The exception to this would occur during the thinning and de-population process which happens at night, from 02:00, at the end of each flock cycle.

Table 15: Vehicle Movement Numbers

	Vehicle Type	2 Way Movements	When in the cycle
Bedding Delivery	HGV	2	Day 46
Chick Delivery	HGV	4	Day 1
Feed Delivery	HGV	27	Ongoing
Fuel Delivery	HGV	2	Days 1 and 18
Mortality Collection	LGV	6	Ongoing
Bird thinning	HGV	8	Day 30 - 31
Bird depopulation	HGV	19	Day 35 - 36
Manure removal	0	0	Day 39 - 41
Ongoing maintenance	Light vehicles	12	Ongoing
Total		80	

² Maximum permissible noise level for a vehicle under acceleration as defined by EC directive 92/97/EC.

The information above indicates that over a single crop cycle, 53, two-way vehicle movements occur during the daytime period. This would average to one or two vehicle deliveries per day between the hours detailed above.

The thinning and depopulation processes start during the night-time hours: commencing from 02:00 and continuing until the task is completed. Typically, this may run in to portions of the daytime period i.e. beyond 07:00. During the depopulation scenario, the site would expect one vehicle to arrive at the site, be loaded and leave within an hour.

It is noted that the calculations below centre on the receptors AL02 and AL03, being the most significantly affected by vehicle movements on the site access road.

9.1 Daytime Vehicle Movements

The daytime scenario assumes two HGVs visit the site during a one-hour assessment period as a worst-case assessment. This would equate to four vehicle movements on the access road in a 1-hour assessment period i.e. two vehicles in and two vehicles out.

Table 16: Vehicle Noise Assessment - Daytime

Receptor	Distance from Source ¹ , m	Predicted L _{pA} , dB	On time correction ² , dB	Resultant L _{pA} , 1hr, dB	Noise Target, dB	Difference, dB
AL02	9	56.9	-26.9	30	42	-12
AL03	5	59.5	-29.6	30	37	-7
1 Distance taken from the centre of the access road to the receptor location at the closest approach						
2 On time correction calculated by using the vehicle speed and the path distance of the road segment						

The assessment above indicates that, when averaged over a one-hour assessment period, noise from vehicle movements on the access road would fall significantly below the noise limits. This would indicate that noise associated with vehicle movements would be of low impact during the daytime period.

9.2 Night-time Vehicle Movements - Depopulation

Information from the transport consultant indicates that, during the depopulation scenario, the site would expect one HGV per hour. For the purposes of this assessment, this is taken as being one movement on the access road in a 15-minute assessment period.

Table 17: Vehicle Noise Assessment – Night-time

Receptor	Distance from Source ¹ , m	Predicted L _{pA} , dB	On time correction ² , dB	Resultant L _{pA} , 1hr, dB	Noise Target, dB	Difference, dB
AL02	9	50.9	-14.8	36	40	-4
AL03	5	53.5	-17.5	36	35	+1
1 Distance taken from the centre of the access road to the receptor location at the closest approach						
2 On time correction calculated by using the vehicle speed and the path distance of the road segment						

The assessment above indicates that, during a 15-minute, night-time assessment period, noise from HGV movements would fall below the noise limit at AL02 but would slightly exceed the target at AL03 by 1dB. Nevertheless, in both cases the noise from HGV movements during the night-time period would generally be of low impact especially given the context of the agricultural environment and fact that depopulation will occur on night per crop cycle.

9.3 Uncertainty

BS 4142 requires an assessment of uncertainty. The prediction methodology in ISO 9613³ is thought to be accurate to $\pm 3\text{dB}$ but further uncertainty can occur in the source noise levels. That said, the predicted noise levels are generally low in absolute terms and would remain low even if uncertainty is considered. There is also uncertainty in the background noise measurements. Note however that the survey was carried out over more than six consecutive days reducing uncertainty in the measured noise levels. As such, it was not been deemed necessary to include for an uncertainty margin in respect of the background sound levels and derived limits.

Therefore, uncertainty is not considered to have a significant impact on the assessment outcomes.

10 Summary

A noise assessment has been carried out for the development of the existing poultry farm at Argoed Farm, Trefeglwys, Powys. The development will see the change of use of the existing poultry shed to a broiler house and the construction of three new broiler sheds to the immediate north. Overall, the development of the site will see an increase in the number of birds on site from 32,000 to 220,000 birds per crop.

The assessments have been informed by a baseline and ambient noise survey undertaken between the 9th and 16th June 2020. From this data, appropriate noise limits have been derived in accordance with BS 4142: 2014 to minimise adverse impact.

The assessment indicates that, under the various operational scenarios considered within this report, noise generated by the proposed extension would fall below the noise limits derived from the measured background sound level at all of the linked and third-party receptor locations.

Further assessments indicate that predicted noise levels at the land owner's property would not result in any detrimental impacts in accordance with the WHO guidelines.

Additional consideration of the noise associated with vehicle movements indicates that, generally noise from HGVs would generally fall below the proposed noise limits however, may exceed the background sound level at one location during the night when depopulation occurs. Notwithstanding this, the impact of noise associated with delivery vehicles is considered to be of low impact.

Based on the above, it is considered that there are no noise-related issues associated with the proposed poultry farm development at Argoed Farm which would prevent the proposals being granted planning permission.

³ ISO 9613:1996 Acoustics – Attenuation of sound propagation outdoors

ARGOED POULTRY FARM EXTENSION

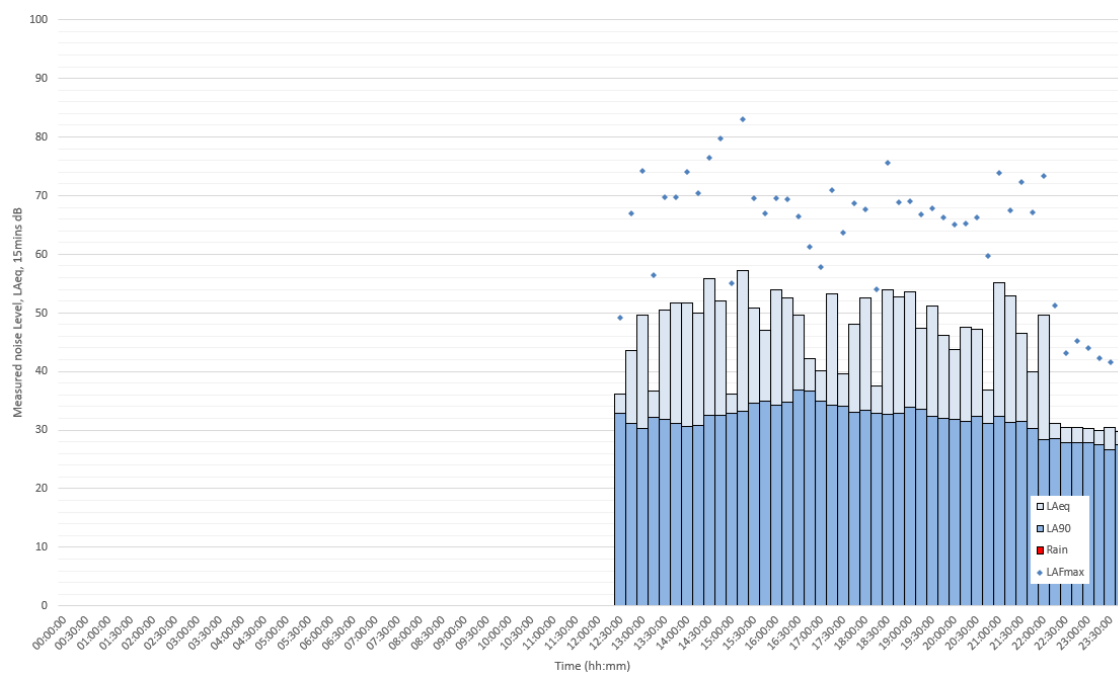
Noise Assessment

Appendix A – Measured Noise Levels

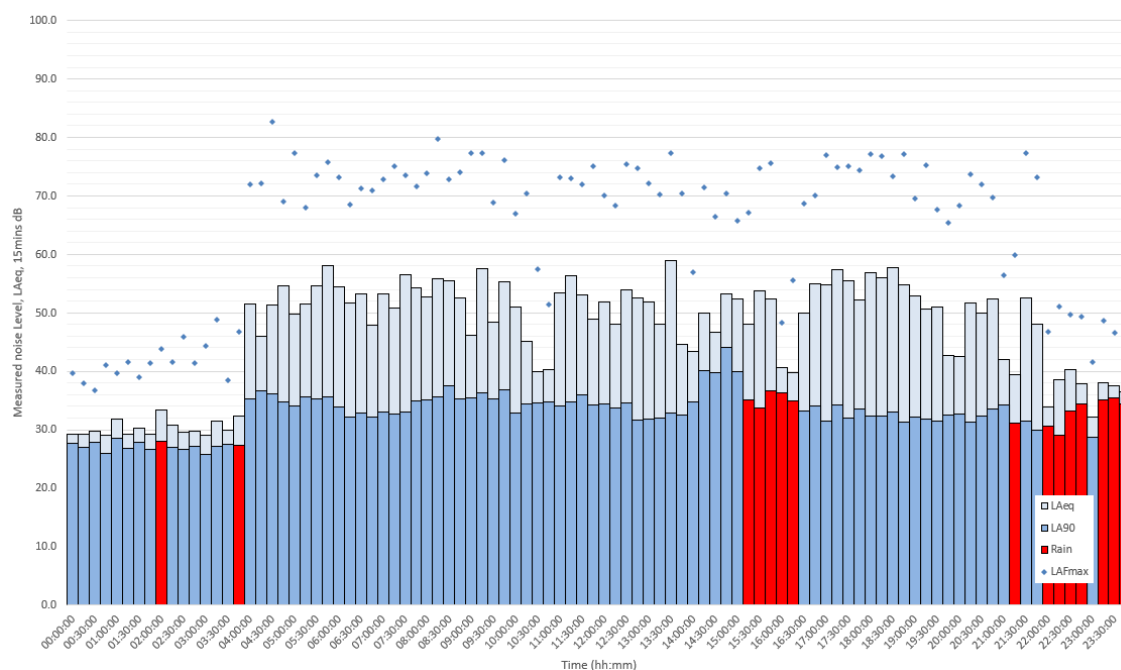


Location M01 – Tan-y-Graig

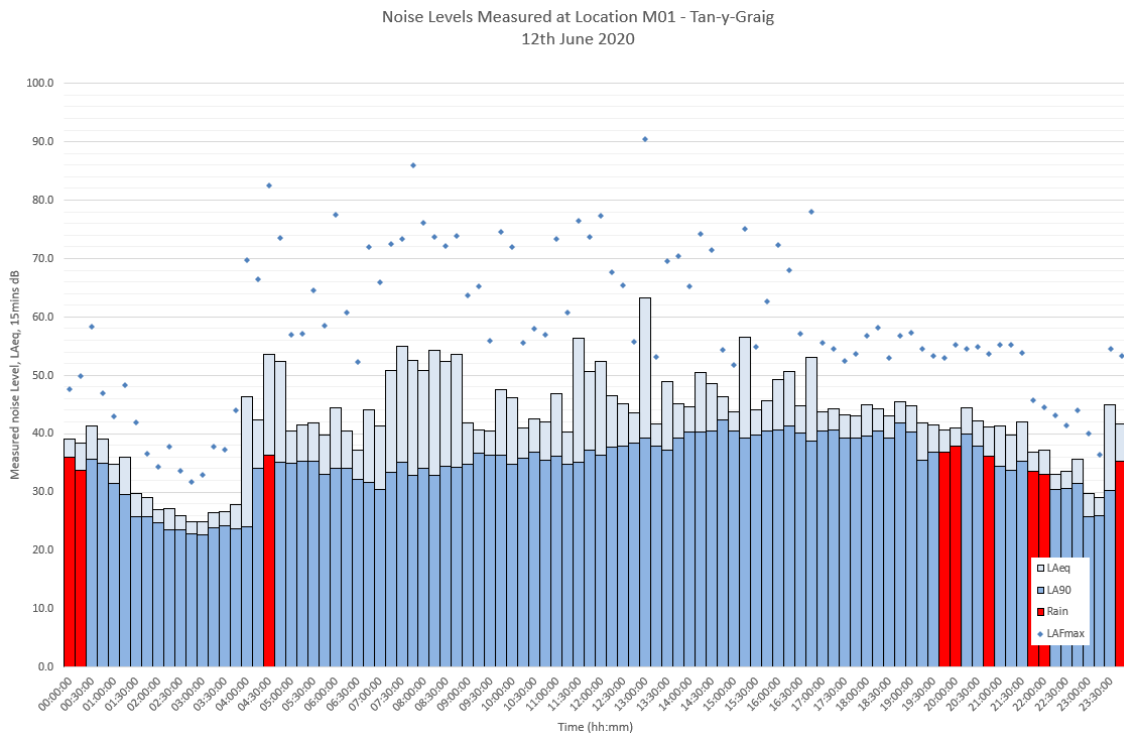
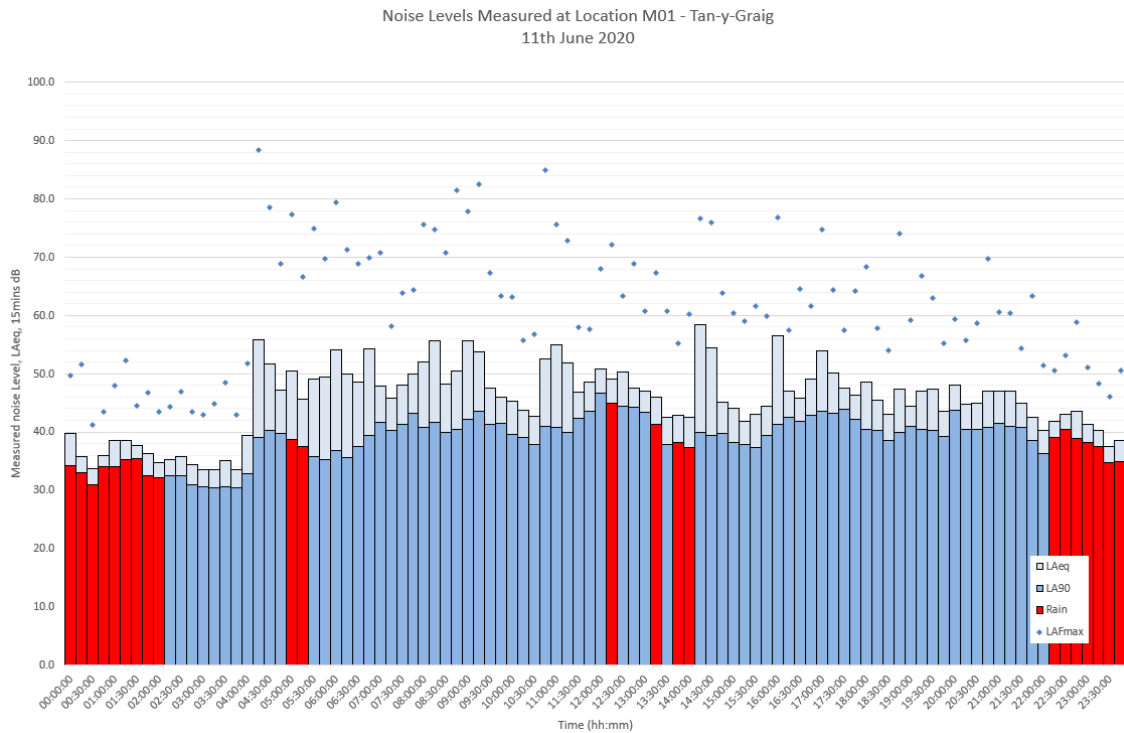
Noise Levels Measured at Location M01 - Tan-y-Graig
9th June 2020



Noise Levels Measured at Location M01 - Tan-y-Graig
10th June 2020



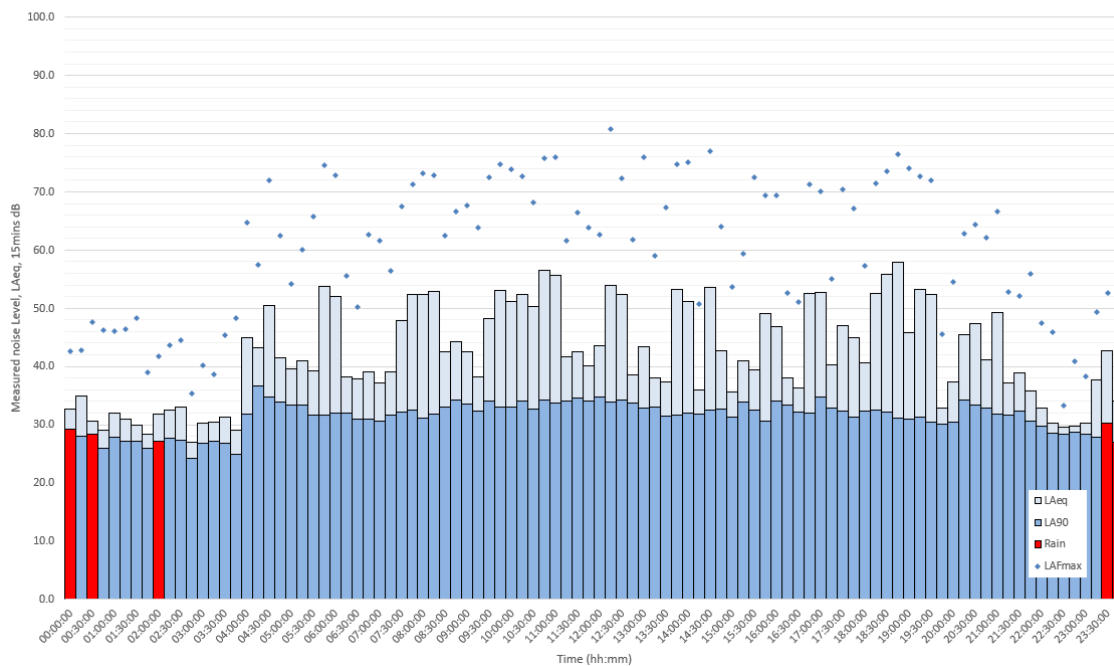
ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



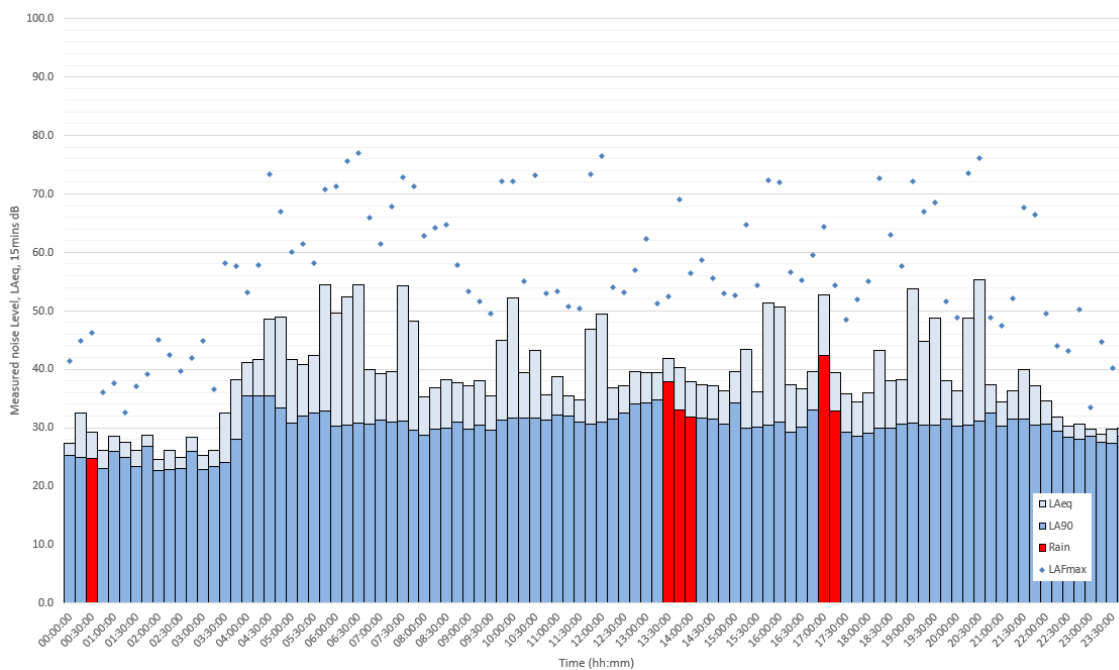
ARGOED POULTRY FARM EXTENSION Noise Assessment Appendix A – Measured Noise Levels



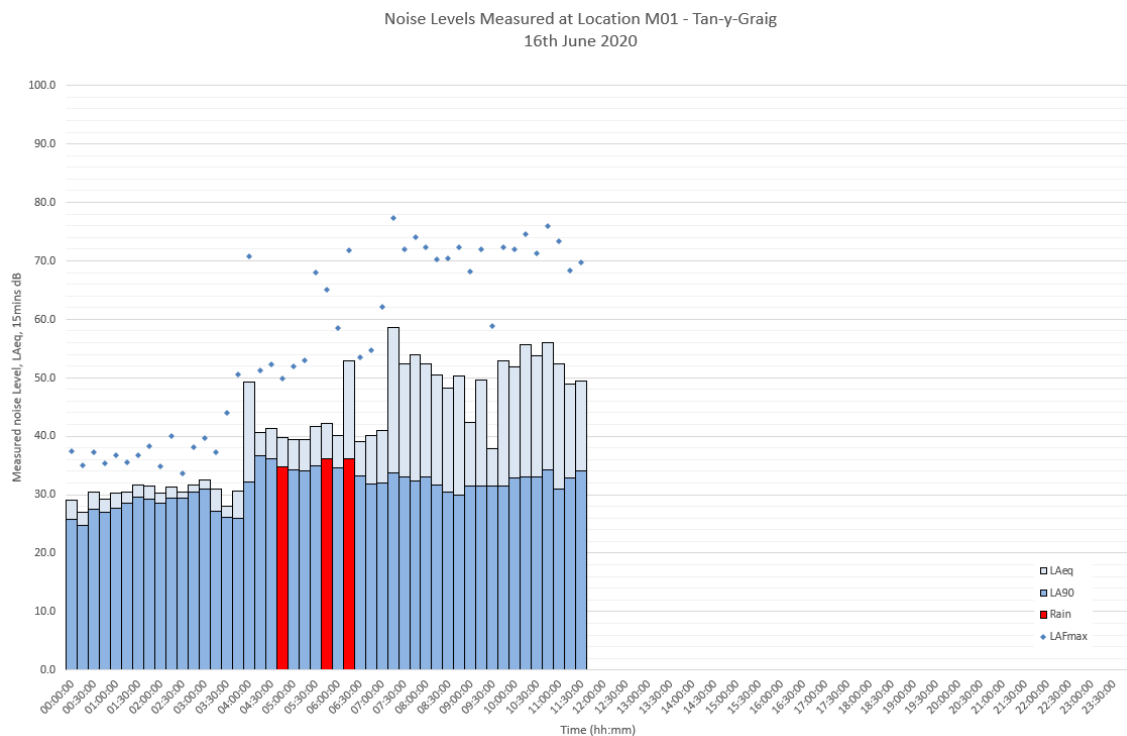
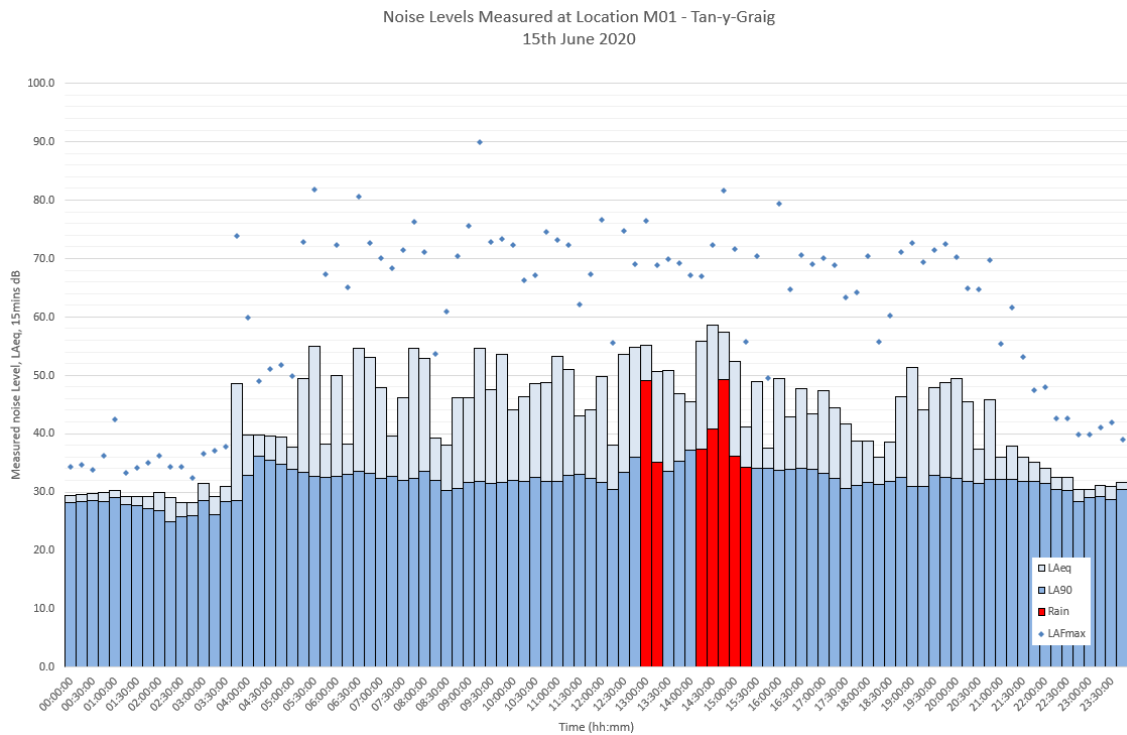
Noise Levels Measured at Location M01 - Tan-y-Graig
13th June 2020



Noise Levels Measured at Location M01 - Tan-y-Graig
14th June 2020



ARGOED POULTRY FARM EXTENSION Noise Assessment Appendix A – Measured Noise Levels



ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
09/06/2020 12:30	36.2	49.2	32.8	10/06/2020 00:30	29.7	36.7	27.8	10/06/2020 12:30	54.0	75.5	34.6
09/06/2020 12:45	43.5	66.9	31.2	10/06/2020 00:45	29.1	41.1	25.9	10/06/2020 12:45	52.6	74.7	31.6
09/06/2020 13:00	49.6	74.2	30.2	10/06/2020 01:00	31.8	39.6	28.5	10/06/2020 13:00	51.8	72.2	31.8
09/06/2020 13:15	36.7	56.5	32.2	10/06/2020 01:15	29.3	41.5	26.9	10/06/2020 13:15	48.1	70.2	32.0
09/06/2020 13:30	50.5	69.8	31.9	10/06/2020 01:30	30.3	39.0	27.8	10/06/2020 13:30	59.0	77.4	32.9
09/06/2020 13:45	51.6	69.7	31.2	10/06/2020 01:45	29.3	41.4	26.7	10/06/2020 13:45	44.6	70.5	32.5
09/06/2020 14:00	51.7	74.0	30.7	10/06/2020 02:00	33.4	43.8	28.0	10/06/2020 14:00	43.4	56.9	34.7
09/06/2020 14:15	49.9	70.5	30.8	10/06/2020 02:15	30.8	41.5	27.0	10/06/2020 14:15	50.0	71.5	40.1
09/06/2020 14:30	55.9	76.4	32.5	10/06/2020 02:30	29.5	45.9	26.6	10/06/2020 14:30	46.6	66.4	39.8
09/06/2020 14:45	52.0	79.7	32.6	10/06/2020 02:45	29.8	41.4	27.2	10/06/2020 14:45	53.3	70.4	44.0
09/06/2020 15:00	36.2	55.1	32.8	10/06/2020 03:00	29.1	44.3	25.8	10/06/2020 15:00	52.3	65.8	40.0
09/06/2020 15:15	57.2	83.1	33.2	10/06/2020 03:15	31.4	48.9	27.2	10/06/2020 15:15	48.0	67.2	35.1
09/06/2020 15:30	50.9	69.6	34.6	10/06/2020 03:30	30.0	38.4	27.5	10/06/2020 15:30	53.7	74.7	33.8
09/06/2020 15:45	47.1	67.0	34.9	10/06/2020 03:45	32.3	46.7	27.3	10/06/2020 15:45	52.4	75.6	36.6
09/06/2020 16:00	53.9	69.5	34.3	10/06/2020 04:00	51.5	72.0	35.3	10/06/2020 16:00	40.6	48.3	36.3
09/06/2020 16:15	52.6	69.3	34.7	10/06/2020 04:15	46.0	72.2	36.6	10/06/2020 16:15	39.8	55.5	35.0
09/06/2020 16:30	49.6	66.5	36.8	10/06/2020 04:30	51.4	82.6	36.1	10/06/2020 16:30	50.0	68.7	33.2
09/06/2020 16:45	42.2	61.2	36.7	10/06/2020 04:45	54.7	69.0	34.7	10/06/2020 16:45	54.9	70.1	34.1
09/06/2020 17:00	40.1	57.9	35.0	10/06/2020 05:00	49.8	77.4	34.0	10/06/2020 17:00	54.8	77.0	31.4
09/06/2020 17:15	53.3	71.0	34.2	10/06/2020 05:15	51.5	68.0	35.6	10/06/2020 17:15	57.3	74.9	34.2
09/06/2020 17:30	39.6	63.7	34.0	10/06/2020 05:30	54.6	73.5	35.2	10/06/2020 17:30	55.4	75.1	32.0
09/06/2020 17:45	48.0	68.7	33.1	10/06/2020 05:45	58.0	75.7	35.7	10/06/2020 17:45	52.2	74.4	33.6
09/06/2020 18:00	52.5	67.6	33.3	10/06/2020 06:00	54.4	73.1	33.9	10/06/2020 18:00	56.8	77.2	32.3
09/06/2020 18:15	37.5	54.1	32.9	10/06/2020 06:15	51.7	68.5	32.2	10/06/2020 18:15	56.0	76.8	32.4
09/06/2020 18:30	54.0	75.6	32.7	10/06/2020 06:30	53.3	71.2	32.8	10/06/2020 18:30	57.7	73.4	33.0
09/06/2020 18:45	52.7	68.8	32.9	10/06/2020 06:45	47.8	70.9	32.2	10/06/2020 18:45	54.8	77.1	31.3
09/06/2020 19:00	53.5	69.1	33.9	10/06/2020 07:00	53.3	72.9	33.0	10/06/2020 19:00	52.9	69.5	32.1
09/06/2020 19:15	47.4	66.8	33.6	10/06/2020 07:15	50.8	75.0	32.7	10/06/2020 19:15	50.6	75.3	31.9
09/06/2020 19:30	51.2	67.8	32.4	10/06/2020 07:30	56.6	73.6	33.0	10/06/2020 19:30	51.0	67.7	31.5
09/06/2020 19:45	46.2	66.2	32.0	10/06/2020 07:45	54.3	71.7	35.0	10/06/2020 19:45	42.7	65.4	32.5
09/06/2020 20:00	43.7	65.0	31.9	10/06/2020 08:00	52.7	73.8	35.1	10/06/2020 20:00	42.5	68.4	32.7
09/06/2020 20:15	47.5	65.3	31.5	10/06/2020 08:15	55.8	79.7	35.7	10/06/2020 20:15	51.7	73.7	31.3
09/06/2020 20:30	47.2	66.3	32.4	10/06/2020 08:30	55.5	72.8	37.6	10/06/2020 20:30	49.9	72.0	32.3
09/06/2020 20:45	36.8	59.7	31.2	10/06/2020 08:45	52.6	74.1	35.3	10/06/2020 20:45	52.3	69.7	33.5
09/06/2020 21:00	55.1	73.8	32.3	10/06/2020 09:00	46.2	77.4	35.4	10/06/2020 21:00	42.0	56.4	34.3
09/06/2020 21:15	52.9	67.4	31.3	10/06/2020 09:15	57.5	77.3	36.3	10/06/2020 21:15	39.5	59.9	31.2
09/06/2020 21:30	46.5	72.4	31.4	10/06/2020 09:30	48.4	68.8	35.3	10/06/2020 21:30	52.5	77.4	31.4
09/06/2020 21:45	39.9	67.1	30.2	10/06/2020 09:45	55.3	76.2	36.8	10/06/2020 21:45	48.1	73.2	29.9
09/06/2020 22:00	49.6	73.4	28.4	10/06/2020 10:00	51.0	67.0	32.8	10/06/2020 22:00	33.9	46.8	30.7
09/06/2020 22:15	31.1	51.2	28.6	10/06/2020 10:15	45.1	70.4	34.4	10/06/2020 22:15	38.5	51.0	29.1
09/06/2020 22:30	30.5	43.1	27.9	10/06/2020 10:30	39.9	57.4	34.6	10/06/2020 22:30	40.3	49.7	33.2
09/06/2020 22:45	30.5	45.2	27.9	10/06/2020 10:45	40.2	51.4	34.8	10/06/2020 22:45	37.9	49.3	34.5
09/06/2020 23:00	30.2	44.0	27.9	10/06/2020 11:00	53.4	73.1	34.1	10/06/2020 23:00	32.2	41.6	28.8
09/06/2020 23:15	29.9	42.3	27.5	10/06/2020 11:15	56.4	73.0	34.8	10/06/2020 23:15	38.1	48.7	35.1
09/06/2020 23:30	30.4	41.6	26.6	10/06/2020 11:30	53.1	71.9	36.0	10/06/2020 23:30	37.6	46.6	35.5
09/06/2020 23:45	29.7	34.6	27.5	10/06/2020 11:45	49.0	75.0	34.2	10/06/2020 23:45	36.5	44.6	34.4
10/06/2020 00:00	29.3	39.7	27.6	10/06/2020 12:00	51.9	70.0	34.4	11/06/2020 00:00	39.7	49.7	34.2
10/06/2020 00:15	29.3	37.9	27.0	10/06/2020 12:15	48.1	68.3	33.7	11/06/2020 00:15	35.8	51.6	33.1

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
11/06/2020 00:30	33.7	41.3	31.0	11/06/2020 12:30	50.3	63.3	44.5	12/06/2020 00:30	41.4	58.4	35.7
11/06/2020 00:45	36.0	43.5	34.1	11/06/2020 12:45	47.5	68.8	44.3	12/06/2020 00:45	39.1	46.9	35.0
11/06/2020 01:00	38.5	48.0	34.0	11/06/2020 13:00	47.1	60.8	43.4	12/06/2020 01:00	34.7	42.9	31.5
11/06/2020 01:15	38.5	52.3	35.3	11/06/2020 13:15	46.0	67.3	41.4	12/06/2020 01:15	36.0	48.4	29.6
11/06/2020 01:30	37.7	44.6	35.5	11/06/2020 13:30	42.6	60.8	37.9	12/06/2020 01:30	29.8	42.0	25.7
11/06/2020 01:45	36.3	46.7	32.6	11/06/2020 13:45	42.8	55.3	38.2	12/06/2020 01:45	29.1	36.6	25.8
11/06/2020 02:00	34.7	43.5	32.1	11/06/2020 14:00	42.5	60.3	37.4	12/06/2020 02:00	27.0	34.3	24.7
11/06/2020 02:15	35.3	44.4	32.5	11/06/2020 14:15	58.4	76.7	39.9	12/06/2020 02:15	27.1	37.8	23.5
11/06/2020 02:30	35.8	47.0	32.6	11/06/2020 14:30	54.4	75.9	39.5	12/06/2020 02:30	25.9	33.7	23.5
11/06/2020 02:45	34.4	43.5	31.0	11/06/2020 14:45	45.1	63.8	39.7	12/06/2020 02:45	25.0	31.7	22.8
11/06/2020 03:00	33.6	43.0	30.6	11/06/2020 15:00	44.0	60.4	38.3	12/06/2020 03:00	25.0	33.0	22.6
11/06/2020 03:15	33.6	44.8	30.5	11/06/2020 15:15	41.8	59.1	37.9	12/06/2020 03:15	26.4	37.8	23.8
11/06/2020 03:30	35.1	48.5	30.7	11/06/2020 15:30	43.1	61.6	37.4	12/06/2020 03:30	26.7	37.3	24.2
11/06/2020 03:45	33.6	43.0	30.4	11/06/2020 15:45	44.5	59.9	39.5	12/06/2020 03:45	27.8	44.0	23.7
11/06/2020 04:00	39.4	51.8	32.8	11/06/2020 16:00	56.6	76.8	41.4	12/06/2020 04:00	46.3	69.8	24.0
11/06/2020 04:15	55.8	88.4	39.1	11/06/2020 16:15	47.0	57.4	42.5	12/06/2020 04:15	42.3	66.4	34.0
11/06/2020 04:30	51.7	78.6	40.2	11/06/2020 16:30	45.8	64.6	41.8	12/06/2020 04:30	53.5	82.5	36.3
11/06/2020 04:45	47.2	68.8	39.7	11/06/2020 16:45	49.1	61.7	42.9	12/06/2020 04:45	52.3	73.5	35.1
11/06/2020 05:00	50.5	77.4	38.7	11/06/2020 17:00	53.9	74.8	43.5	12/06/2020 05:00	40.4	57.0	35.0
11/06/2020 05:15	45.6	66.6	37.6	11/06/2020 17:15	50.2	64.3	43.2	12/06/2020 05:15	41.5	57.2	35.2
11/06/2020 05:30	49.1	74.9	35.8	11/06/2020 17:30	47.6	57.4	43.9	12/06/2020 05:30	41.8	64.5	35.2
11/06/2020 05:45	49.4	69.7	35.3	11/06/2020 17:45	46.4	64.2	42.1	12/06/2020 05:45	39.8	58.5	33.0
11/06/2020 06:00	54.1	79.4	36.8	11/06/2020 18:00	48.6	68.4	40.5	12/06/2020 06:00	44.4	77.5	34.1
11/06/2020 06:15	50.0	71.3	35.7	11/06/2020 18:15	45.5	57.8	40.2	12/06/2020 06:15	40.4	60.7	34.1
11/06/2020 06:30	48.5	68.9	37.5	11/06/2020 18:30	43.1	54.1	38.6	12/06/2020 06:30	37.2	52.3	32.1
11/06/2020 06:45	54.3	69.9	39.4	11/06/2020 18:45	47.3	74.1	40.0	12/06/2020 06:45	44.1	71.9	31.7
11/06/2020 07:00	47.9	70.7	41.7	11/06/2020 19:00	44.5	59.2	41.0	12/06/2020 07:00	41.3	66.0	30.5
11/06/2020 07:15	45.8	58.1	40.2	11/06/2020 19:15	47.0	66.8	40.5	12/06/2020 07:15	50.8	72.5	33.4
11/06/2020 07:30	48.0	63.9	41.3	11/06/2020 19:30	47.4	63.0	40.2	12/06/2020 07:30	55.0	73.4	35.1
11/06/2020 07:45	50.0	64.3	43.2	11/06/2020 19:45	43.5	55.2	39.2	12/06/2020 07:45	52.5	86.0	32.9
11/06/2020 08:00	52.1	75.6	40.8	11/06/2020 20:00	48.1	59.4	43.7	12/06/2020 08:00	50.8	76.1	34.0
11/06/2020 08:15	55.7	74.7	41.6	11/06/2020 20:15	44.7	55.7	40.4	12/06/2020 08:15	54.3	73.7	32.8
11/06/2020 08:30	48.2	70.8	39.9	11/06/2020 20:30	45.0	58.6	40.5	12/06/2020 08:30	52.3	72.2	34.4
11/06/2020 08:45	50.5	81.4	40.4	11/06/2020 20:45	47.1	69.8	40.8	12/06/2020 08:45	53.5	73.8	34.2
11/06/2020 09:00	55.6	77.8	42.1	11/06/2020 21:00	47.1	60.5	41.5	12/06/2020 09:00	41.9	63.6	34.8
11/06/2020 09:15	53.8	82.5	43.5	11/06/2020 21:15	47.1	60.4	41.0	12/06/2020 09:15	40.6	65.2	36.6
11/06/2020 09:30	47.5	67.3	41.3	11/06/2020 21:30	44.9	54.4	40.8	12/06/2020 09:30	40.5	55.9	36.4
11/06/2020 09:45	46.0	63.3	41.5	11/06/2020 21:45	42.5	63.4	38.6	12/06/2020 09:45	47.6	74.5	36.3
11/06/2020 10:00	45.3	63.2	39.6	11/06/2020 22:00	40.2	51.4	36.4	12/06/2020 10:00	46.1	71.9	34.8
11/06/2020 10:15	43.8	55.8	39.1	11/06/2020 22:15	41.8	50.6	39.0	12/06/2020 10:15	40.9	55.6	35.8
11/06/2020 10:30	42.7	56.7	37.9	11/06/2020 22:30	43.0	53.2	40.5	12/06/2020 10:30	42.6	58.0	36.8
11/06/2020 10:45	52.6	84.9	41.0	11/06/2020 22:45	43.6	58.9	38.9	12/06/2020 10:45	42.0	57.0	35.5
11/06/2020 11:00	54.9	75.6	40.8	11/06/2020 23:00	41.3	51.0	38.3	12/06/2020 11:00	46.8	73.3	36.2
11/06/2020 11:15	51.9	72.9	39.9	11/06/2020 23:15	40.3	48.3	37.5	12/06/2020 11:15	40.2	60.8	34.7
11/06/2020 11:30	46.9	58.0	42.3	11/06/2020 23:30	37.6	46.0	34.8	12/06/2020 11:30	56.4	76.5	35.1
11/06/2020 11:45	48.6	57.7	43.6	11/06/2020 23:45	38.6	50.6	34.9	12/06/2020 11:45	50.6	73.7	37.2
11/06/2020 12:00	50.8	68.0	46.7	12/06/2020 00:00	39.1	47.6	36.0	12/06/2020 12:00	52.3	77.4	36.4
11/06/2020 12:15	49.1	72.2	45.0	12/06/2020 00:15	38.4	49.9	33.8	12/06/2020 12:15	46.5	67.6	37.7

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
12/06/2020 12:30	45.1	65.4	37.9	13/06/2020 00:30	30.7	47.7	28.4	13/06/2020 12:30	52.3	72.3	34.3
12/06/2020 12:45	43.5	55.8	38.4	13/06/2020 00:45	29.0	46.3	26.0	13/06/2020 12:45	38.6	61.8	33.8
12/06/2020 13:00	63.3	90.4	39.2	13/06/2020 01:00	32.0	46.0	27.8	13/06/2020 13:00	43.4	75.9	32.9
12/06/2020 13:15	41.7	53.1	37.8	13/06/2020 01:15	30.9	46.4	27.2	13/06/2020 13:15	38.1	59.1	33.0
12/06/2020 13:30	49.0	69.5	37.2	13/06/2020 01:30	30.0	48.3	27.2	13/06/2020 13:30	37.3	67.3	31.4
12/06/2020 13:45	45.2	70.5	39.3	13/06/2020 01:45	28.4	39.0	26.0	13/06/2020 13:45	53.3	74.8	31.7
12/06/2020 14:00	44.6	65.3	40.3	13/06/2020 02:00	31.9	41.7	27.1	13/06/2020 14:00	51.1	75.0	32.0
12/06/2020 14:15	50.4	74.2	40.3	13/06/2020 02:15	32.5	43.7	27.7	13/06/2020 14:15	36.0	50.7	31.8
12/06/2020 14:30	48.5	71.4	40.4	13/06/2020 02:30	33.0	44.5	27.4	13/06/2020 14:30	53.5	77.0	32.5
12/06/2020 14:45	46.3	54.3	42.3	13/06/2020 02:45	27.0	35.3	24.3	13/06/2020 14:45	42.7	64.0	32.7
12/06/2020 15:00	43.7	51.7	40.5	13/06/2020 03:00	30.3	40.2	26.9	13/06/2020 15:00	35.6	53.6	31.3
12/06/2020 15:15	56.6	75.1	39.2	13/06/2020 03:15	30.5	38.6	27.1	13/06/2020 15:15	40.9	59.3	33.9
12/06/2020 15:30	44.1	54.9	39.8	13/06/2020 03:30	31.3	45.4	26.9	13/06/2020 15:30	39.5	72.5	32.5
12/06/2020 15:45	45.6	62.7	40.4	13/06/2020 03:45	29.0	48.3	25.0	13/06/2020 15:45	49.1	69.3	30.7
12/06/2020 16:00	49.2	72.4	40.6	13/06/2020 04:00	45.0	64.7	31.9	13/06/2020 16:00	46.9	69.4	34.1
12/06/2020 16:15	50.7	68.0	41.3	13/06/2020 04:15	43.2	57.4	36.6	13/06/2020 16:15	38.1	52.6	33.4
12/06/2020 16:30	44.8	57.2	40.1	13/06/2020 04:30	50.4	71.9	34.8	13/06/2020 16:30	36.4	51.1	32.2
12/06/2020 16:45	53.0	78.1	38.8	13/06/2020 04:45	41.5	62.5	33.9	13/06/2020 16:45	52.5	71.3	32.0
12/06/2020 17:00	43.8	55.6	40.5	13/06/2020 05:00	39.6	54.2	33.4	13/06/2020 17:00	52.7	70.0	34.7
12/06/2020 17:15	44.3	54.6	40.6	13/06/2020 05:15	41.0	60.0	33.3	13/06/2020 17:15	40.3	55.1	32.8
12/06/2020 17:30	43.2	52.4	39.3	13/06/2020 05:30	39.3	65.8	31.6	13/06/2020 17:30	47.0	70.4	32.4
12/06/2020 17:45	43.1	53.6	39.3	13/06/2020 05:45	53.7	74.6	31.6	13/06/2020 17:45	44.9	67.1	31.3
12/06/2020 18:00	45.0	56.7	39.6	13/06/2020 06:00	52.1	72.8	32.0	13/06/2020 18:00	40.7	57.3	32.4
12/06/2020 18:15	44.3	58.1	40.4	13/06/2020 06:15	38.3	55.6	32.0	13/06/2020 18:15	52.6	71.4	32.5
12/06/2020 18:30	43.0	53.0	39.3	13/06/2020 06:30	37.8	50.3	30.9	13/06/2020 18:30	55.8	73.6	32.2
12/06/2020 18:45	45.5	56.8	41.8	13/06/2020 06:45	39.1	62.6	30.9	13/06/2020 18:45	57.9	76.5	31.1
12/06/2020 19:00	44.7	57.3	40.2	13/06/2020 07:00	37.1	61.6	30.7	13/06/2020 19:00	45.8	74.1	30.9
12/06/2020 19:15	41.9	54.6	35.5	13/06/2020 07:15	39.1	56.4	31.7	13/06/2020 19:15	53.2	72.6	31.3
12/06/2020 19:30	41.5	53.4	36.8	13/06/2020 07:30	47.9	67.4	32.1	13/06/2020 19:30	52.3	71.9	30.5
12/06/2020 19:45	40.7	52.9	36.8	13/06/2020 07:45	52.3	71.3	32.6	13/06/2020 19:45	32.9	45.5	30.1
12/06/2020 20:00	41.0	55.2	37.8	13/06/2020 08:00	52.4	73.2	31.2	13/06/2020 20:00	37.3	54.6	30.4
12/06/2020 20:15	44.5	54.6	40.0	13/06/2020 08:15	52.9	72.9	31.8	13/06/2020 20:15	45.5	62.8	34.3
12/06/2020 20:30	42.1	54.9	37.9	13/06/2020 08:30	42.6	62.4	33.0	13/06/2020 20:30	47.3	64.4	33.3
12/06/2020 20:45	41.1	53.6	36.1	13/06/2020 08:45	44.3	66.7	34.3	13/06/2020 20:45	41.2	62.2	32.8
12/06/2020 21:00	41.3	55.2	34.4	13/06/2020 09:00	42.5	67.7	33.5	13/06/2020 21:00	49.2	66.7	31.8
12/06/2020 21:15	39.8	55.2	33.7	13/06/2020 09:15	38.3	63.9	32.3	13/06/2020 21:15	37.1	52.8	31.7
12/06/2020 21:30	42.0	53.8	35.3	13/06/2020 09:30	48.3	72.5	34.0	13/06/2020 21:30	38.9	52.1	32.3
12/06/2020 21:45	36.8	45.8	33.5	13/06/2020 09:45	53.0	74.7	33.1	13/06/2020 21:45	35.8	55.9	30.7
12/06/2020 22:00	37.2	44.6	33.0	13/06/2020 10:00	51.2	73.8	33.0	13/06/2020 22:00	32.9	47.5	29.7
12/06/2020 22:15	33.1	43.1	30.4	13/06/2020 10:15	52.4	72.7	34.0	13/06/2020 22:15	30.3	45.9	28.5
12/06/2020 22:30	33.6	41.4	30.7	13/06/2020 10:30	50.3	68.1	32.7	13/06/2020 22:30	29.5	33.3	28.4
12/06/2020 22:45	35.6	44.0	31.4	13/06/2020 10:45	56.6	75.8	34.2	13/06/2020 22:45	29.7	40.9	28.7
12/06/2020 23:00	29.7	40.0	25.8	13/06/2020 11:00	55.6	75.9	33.8	13/06/2020 23:00	30.2	38.3	28.4
12/06/2020 23:15	29.0	36.4	25.9	13/06/2020 11:15	41.7	61.7	34.1	13/06/2020 23:15	37.7	49.3	27.8
12/06/2020 23:30	44.9	54.5	30.2	13/06/2020 11:30	42.6	66.4	34.6	13/06/2020 23:30	42.7	52.7	30.2
12/06/2020 23:45	41.6	53.3	35.3	13/06/2020 11:45	40.1	63.9	34.0	13/06/2020 23:45	34.0	48.8	27.0
13/06/2020 00:00	32.7	42.6	29.2	13/06/2020 12:00	43.5	62.7	34.8	14/06/2020 00:00	27.4	41.4	25.2
13/06/2020 00:15	34.9	42.8	28.0	13/06/2020 12:15	53.9	80.8	33.9	14/06/2020 00:15	32.6	44.9	24.9

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
14/06/2020 00:30	29.2	46.3	24.8	14/06/2020 12:30	37.2	53.1	32.6	15/06/2020 00:30	29.8	33.8	28.6
14/06/2020 00:45	26.2	36.1	23.1	14/06/2020 12:45	39.6	56.9	34.0	15/06/2020 00:45	29.9	36.2	28.3
14/06/2020 01:00	28.5	37.6	26.0	14/06/2020 13:00	39.5	62.3	34.2	15/06/2020 01:00	30.3	42.5	29.0
14/06/2020 01:15	27.5	32.6	25.0	14/06/2020 13:15	39.5	51.3	34.8	15/06/2020 01:15	29.3	33.3	27.9
14/06/2020 01:30	26.2	37.1	23.4	14/06/2020 13:30	41.8	52.4	37.9	15/06/2020 01:30	29.2	34.2	27.6
14/06/2020 01:45	28.8	39.1	26.8	14/06/2020 13:45	40.2	69.0	33.0	15/06/2020 01:45	29.3	35.0	27.1
14/06/2020 02:00	24.5	45.1	22.6	14/06/2020 14:00	37.8	56.5	31.8	15/06/2020 02:00	29.9	36.2	26.8
14/06/2020 02:15	26.1	42.5	22.9	14/06/2020 14:15	37.4	58.6	31.6	15/06/2020 02:15	29.0	34.3	24.9
14/06/2020 02:30	25.0	39.7	23.1	14/06/2020 14:30	37.1	55.6	31.5	15/06/2020 02:30	28.2	34.4	25.8
14/06/2020 02:45	28.4	41.9	26.0	14/06/2020 14:45	36.4	52.9	30.7	15/06/2020 02:45	28.2	32.4	26.0
14/06/2020 03:00	25.2	44.8	22.8	14/06/2020 15:00	39.6	52.6	34.3	15/06/2020 03:00	31.4	36.6	28.5
14/06/2020 03:15	26.1	36.6	23.4	14/06/2020 15:15	43.4	64.7	30.0	15/06/2020 03:15	29.3	37.1	26.1
14/06/2020 03:30	32.5	58.1	24.0	14/06/2020 15:30	36.2	54.3	30.1	15/06/2020 03:30	31.0	37.7	28.3
14/06/2020 03:45	38.2	57.6	28.1	14/06/2020 15:45	51.4	72.4	30.4	15/06/2020 03:45	48.6	73.8	28.6
14/06/2020 04:00	41.2	53.1	35.5	14/06/2020 16:00	50.6	71.9	30.9	15/06/2020 04:00	39.8	59.9	32.8
14/06/2020 04:15	41.7	57.8	35.4	14/06/2020 16:15	37.4	56.6	29.2	15/06/2020 04:15	39.7	49.0	36.1
14/06/2020 04:30	48.5	73.3	35.4	14/06/2020 16:30	36.6	55.2	30.1	15/06/2020 04:30	39.6	51.0	35.5
14/06/2020 04:45	48.9	67.0	33.3	14/06/2020 16:45	39.6	59.6	33.1	15/06/2020 04:45	39.4	51.8	34.7
14/06/2020 05:00	41.7	60.0	30.8	14/06/2020 17:00	52.7	64.3	42.4	15/06/2020 05:00	37.7	49.8	33.9
14/06/2020 05:15	40.8	61.4	32.0	14/06/2020 17:15	39.5	54.3	32.9	15/06/2020 05:15	49.4	72.9	33.3
14/06/2020 05:30	42.4	58.1	32.5	14/06/2020 17:30	35.8	48.5	29.2	15/06/2020 05:30	54.9	81.9	32.7
14/06/2020 05:45	54.4	70.8	32.8	14/06/2020 17:45	34.5	51.9	28.6	15/06/2020 05:45	38.3	67.3	32.5
14/06/2020 06:00	49.6	71.3	30.3	14/06/2020 18:00	35.9	55.0	29.1	15/06/2020 06:00	50.0	72.3	32.7
14/06/2020 06:15	52.4	75.6	30.4	14/06/2020 18:15	43.3	72.6	29.9	15/06/2020 06:15	38.3	65.1	33.1
14/06/2020 06:30	54.5	76.9	30.8	14/06/2020 18:30	38.1	63.0	30.0	15/06/2020 06:30	54.6	80.6	33.5
14/06/2020 06:45	40.0	65.9	30.7	14/06/2020 18:45	38.2	57.7	30.7	15/06/2020 06:45	53.0	72.6	33.2
14/06/2020 07:00	39.2	61.5	31.3	14/06/2020 19:00	53.7	72.1	30.8	15/06/2020 07:00	47.9	70.0	32.3
14/06/2020 07:15	39.6	67.9	30.9	14/06/2020 19:15	44.7	66.9	30.4	15/06/2020 07:15	39.6	68.4	32.7
14/06/2020 07:30	54.3	72.9	31.2	14/06/2020 19:30	48.8	68.6	30.4	15/06/2020 07:30	46.1	71.5	32.0
14/06/2020 07:45	48.3	71.2	29.6	14/06/2020 19:45	38.0	51.6	31.5	15/06/2020 07:45	54.7	76.3	32.3
14/06/2020 08:00	35.3	62.9	28.8	14/06/2020 20:00	36.4	48.8	30.2	15/06/2020 08:00	52.9	71.1	33.5
14/06/2020 08:15	36.8	64.2	29.8	14/06/2020 20:15	48.7	73.5	30.4	15/06/2020 08:15	39.3	53.6	32.0
14/06/2020 08:30	38.3	64.8	30.0	14/06/2020 20:30	55.3	76.1	31.2	15/06/2020 08:30	38.1	61.0	30.3
14/06/2020 08:45	37.7	57.8	31.0	14/06/2020 20:45	37.3	48.9	32.6	15/06/2020 08:45	46.2	70.5	30.7
14/06/2020 09:00	37.1	53.3	29.7	14/06/2020 21:00	34.5	47.5	30.3	15/06/2020 09:00	46.1	75.6	31.7
14/06/2020 09:15	38.0	51.6	30.4	14/06/2020 21:15	36.3	52.2	31.4	15/06/2020 09:15	54.6	89.9	31.9
14/06/2020 09:30	35.5	49.5	29.6	14/06/2020 21:30	39.9	67.7	31.5	15/06/2020 09:30	47.6	72.9	31.5
14/06/2020 09:45	45.0	72.1	31.3	14/06/2020 21:45	37.1	66.5	30.5	15/06/2020 09:45	53.6	73.4	31.7
14/06/2020 10:00	52.2	72.1	31.6	14/06/2020 22:00	34.6	49.6	30.7	15/06/2020 10:00	44.0	72.4	32.0
14/06/2020 10:15	39.5	55.0	31.6	14/06/2020 22:15	31.9	44.0	29.4	15/06/2020 10:15	46.3	66.3	31.8
14/06/2020 10:30	43.3	73.1	31.7	14/06/2020 22:30	30.2	43.2	28.3	15/06/2020 10:30	48.6	67.1	32.6
14/06/2020 10:45	35.7	52.9	31.3	14/06/2020 22:45	30.6	50.2	28.1	15/06/2020 10:45	48.8	74.6	31.8
14/06/2020 11:00	38.8	53.4	32.1	14/06/2020 23:00	29.8	33.5	28.6	15/06/2020 11:00	53.2	73.2	31.8
14/06/2020 11:15	35.5	50.8	32.0	14/06/2020 23:15	28.9	44.7	27.5	15/06/2020 11:15	51.0	72.4	32.9
14/06/2020 11:30	34.8	50.4	31.0	14/06/2020 23:30	29.8	40.2	27.4	15/06/2020 11:30	43.1	62.2	33.1
14/06/2020 11:45	46.8	73.3	30.7	14/06/2020 23:45	30.0	33.7	28.6	15/06/2020 11:45	44.1	67.3	32.4
14/06/2020 12:00	49.5	76.5	31.0	15/06/2020 00:00	29.4	34.4	28.2	15/06/2020 12:00	49.7	76.7	31.7
14/06/2020 12:15	36.9	54.0	31.4	15/06/2020 00:15	29.5	34.6	28.3	15/06/2020 12:15	38.1	55.6	30.5

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



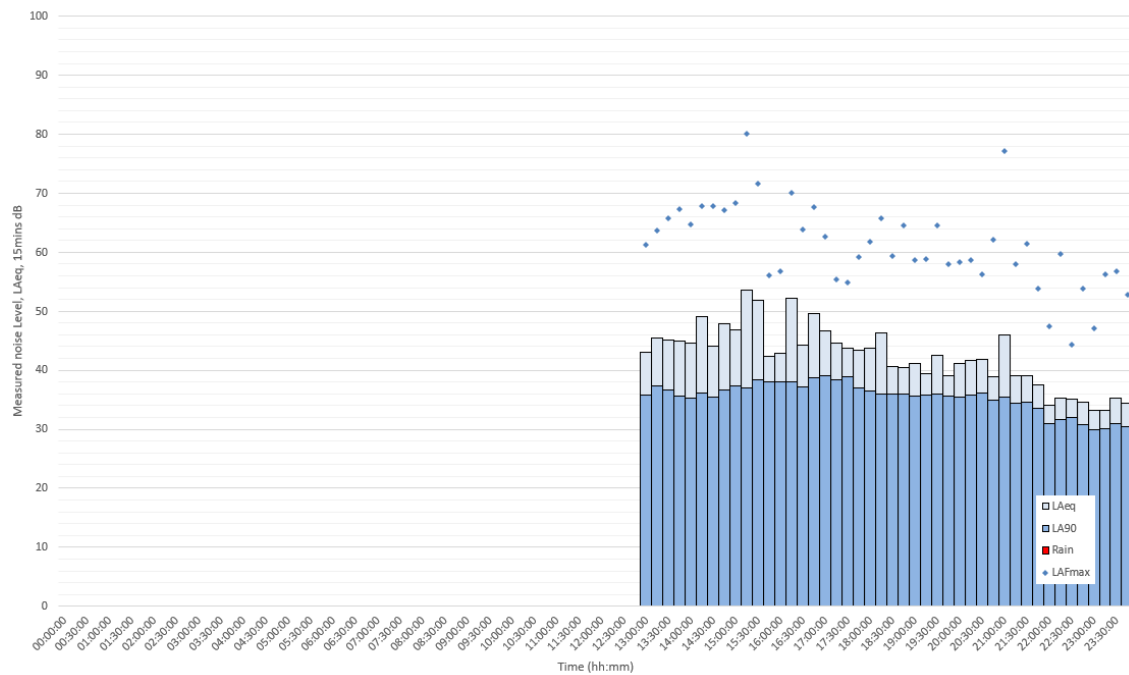
Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
15/06/2020 12:30	53.6	74.7	33.4	16/06/2020 00:30	30.4	37.3	27.5
15/06/2020 12:45	54.8	69.1	35.9	16/06/2020 00:45	29.2	35.3	27.0
15/06/2020 13:00	55.2	76.5	49.1	16/06/2020 01:00	30.2	36.7	27.6
15/06/2020 13:15	50.7	68.8	35.1	16/06/2020 01:15	30.5	35.6	28.6
15/06/2020 13:30	50.9	69.9	33.6	16/06/2020 01:30	31.7	36.8	29.5
15/06/2020 13:45	46.9	69.2	35.2	16/06/2020 01:45	31.4	38.3	29.3
15/06/2020 14:00	45.5	67.2	37.1	16/06/2020 02:00	30.3	34.9	28.5
15/06/2020 14:15	55.8	66.9	37.3	16/06/2020 02:15	31.3	40.1	29.4
15/06/2020 14:30	58.6	72.4	40.8	16/06/2020 02:30	30.5	33.7	29.4
15/06/2020 14:45	57.4	81.6	49.2	16/06/2020 02:45	31.6	38.2	30.4
15/06/2020 15:00	52.3	71.7	36.2	16/06/2020 03:00	32.5	39.7	31.0
15/06/2020 15:15	41.1	55.8	34.3	16/06/2020 03:15	31.0	37.2	27.1
15/06/2020 15:30	48.9	70.5	34.1	16/06/2020 03:30	28.1	44.0	26.1
15/06/2020 15:45	37.6	49.6	34.1	16/06/2020 03:45	30.6	50.6	26.0
15/06/2020 16:00	49.5	79.4	33.8	16/06/2020 04:00	49.2	70.8	32.1
15/06/2020 16:15	42.8	64.7	33.9	16/06/2020 04:15	40.7	51.3	36.7
15/06/2020 16:30	47.7	70.6	34.1	16/06/2020 04:30	41.4	52.3	36.1
15/06/2020 16:45	43.4	69.1	33.9	16/06/2020 04:45	39.8	49.9	34.8
15/06/2020 17:00	47.3	70.1	33.2	16/06/2020 05:00	39.4	52.0	34.3
15/06/2020 17:15	44.4	68.9	32.4	16/06/2020 05:15	39.5	53.0	34.0
15/06/2020 17:30	41.6	63.4	30.6	16/06/2020 05:30	41.7	68.0	35.0
15/06/2020 17:45	38.7	64.2	31.1	16/06/2020 05:45	42.1	65.1	36.2
15/06/2020 18:00	38.8	70.4	31.7	16/06/2020 06:00	40.1	58.5	34.6
15/06/2020 18:15	36.0	55.8	31.3	16/06/2020 06:15	52.9	71.8	36.2
15/06/2020 18:30	38.6	60.2	31.9	16/06/2020 06:30	39.0	53.5	33.2
15/06/2020 18:45	46.4	71.1	32.6	16/06/2020 06:45	40.1	54.7	31.8
15/06/2020 19:00	51.4	72.7	30.9	16/06/2020 07:00	40.9	62.2	32.0
15/06/2020 19:15	44.0	69.4	31.0	16/06/2020 07:15	58.6	77.4	33.7
15/06/2020 19:30	47.9	71.4	32.8	16/06/2020 07:30	52.4	71.9	33.1
15/06/2020 19:45	48.8	72.5	32.5	16/06/2020 07:45	53.9	74.0	32.4
15/06/2020 20:00	49.5	70.3	32.3	16/06/2020 08:00	52.3	72.4	33.0
15/06/2020 20:15	45.5	64.9	31.9	16/06/2020 08:15	50.5	70.3	31.7
15/06/2020 20:30	37.4	64.8	31.5	16/06/2020 08:30	48.3	70.5	30.5
15/06/2020 20:45	45.8	69.7	32.1	16/06/2020 08:45	50.3	72.4	30.0
15/06/2020 21:00	35.9	55.4	32.1	16/06/2020 09:00	42.4	68.1	31.4
15/06/2020 21:15	37.9	61.6	32.1	16/06/2020 09:15	49.6	71.9	31.4
15/06/2020 21:30	35.9	53.1	31.8	16/06/2020 09:30	37.8	58.8	31.4
15/06/2020 21:45	35.1	47.4	31.8	16/06/2020 09:45	52.9	72.3	31.5
15/06/2020 22:00	34.1	47.9	31.4	16/06/2020 10:00	51.8	72.0	32.8
15/06/2020 22:15	32.5	42.7	30.4	16/06/2020 10:15	55.6	74.5	33.1
15/06/2020 22:30	32.6	42.6	30.2	16/06/2020 10:30	53.8	71.2	33.0
15/06/2020 22:45	30.5	39.8	28.3	16/06/2020 10:45	56.0	75.9	34.3
15/06/2020 23:00	30.5	39.8	29.1	16/06/2020 11:00	52.3	73.4	30.9
15/06/2020 23:15	31.1	41.0	29.2	16/06/2020 11:15	48.9	68.4	32.9
15/06/2020 23:30	30.9	41.9	28.8	16/06/2020 11:30	49.4	69.8	34.0
15/06/2020 23:45	31.6	39.0	30.4				
16/06/2020 00:00	29.0	37.4	25.7				
16/06/2020 00:15	27.0	35.0	24.7				

ARGOED POULTRY FARM EXTENSION Noise Assessment Appendix A – Measured Noise Levels

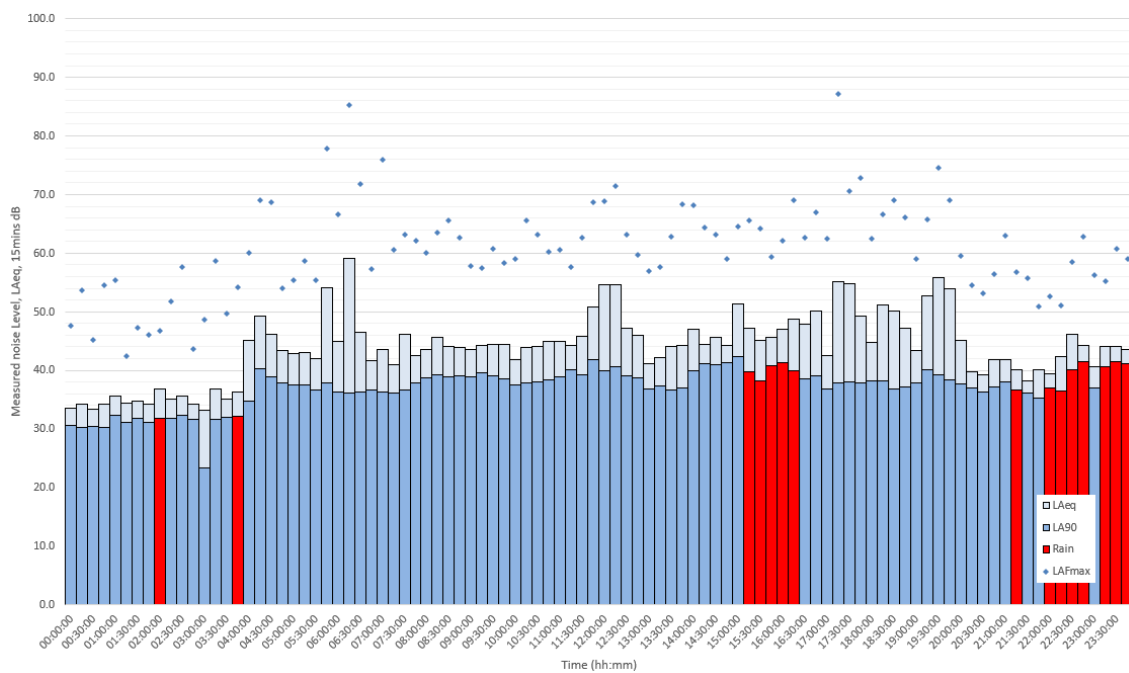


Location M02

Noise Levels Measured at Location M02 - Argoed Farm
9th June 2020



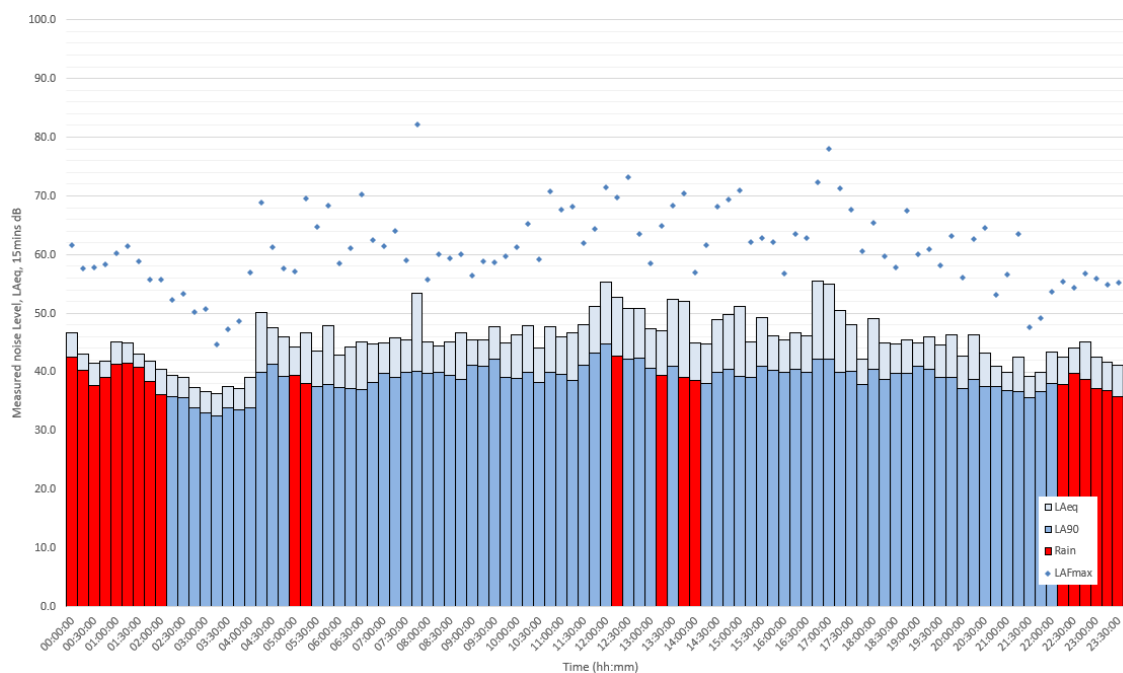
Noise Levels Measured at Location M02 - Argoed Farm
10th June 2020



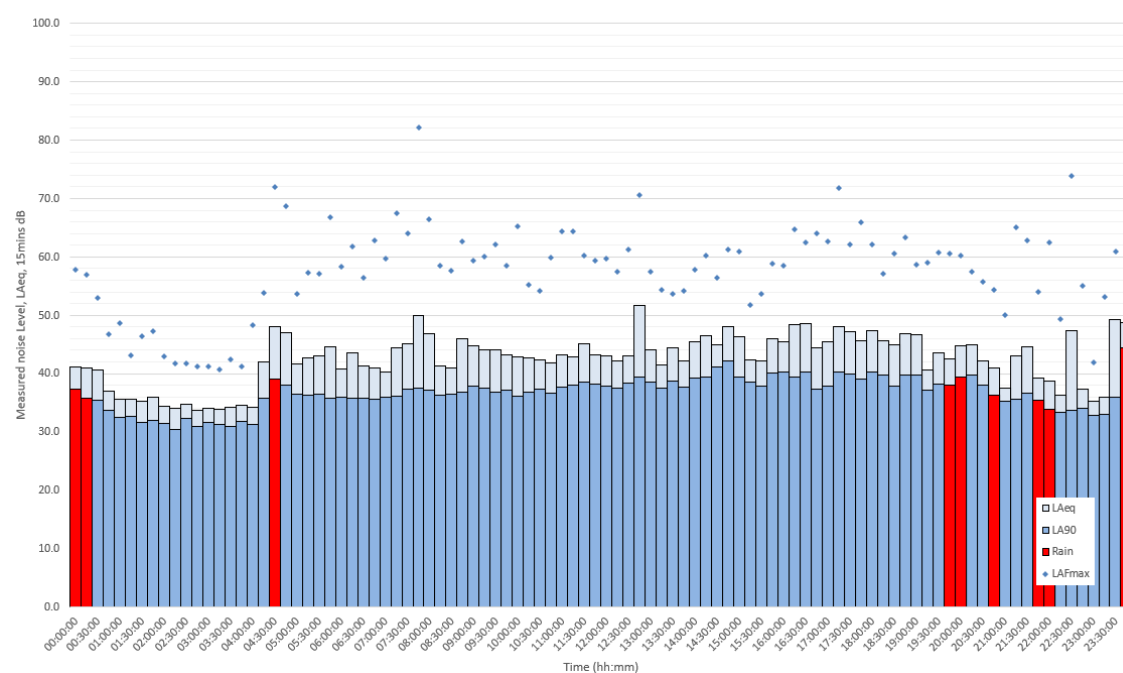
ARGOED POULTRY FARM EXTENSION Noise Assessment Appendix A – Measured Noise Levels



Noise Levels Measured at Location M02 - Argoed Farm
11th June 2020



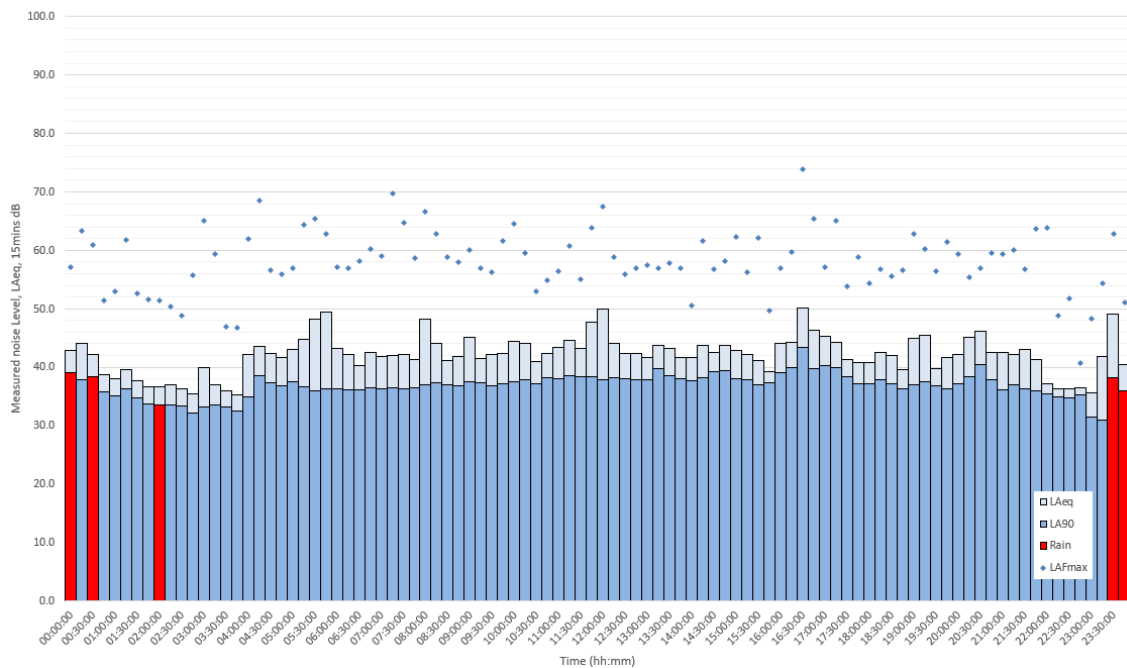
Noise Levels Measured at Location M02 - Argoed Farm
12th June 2020



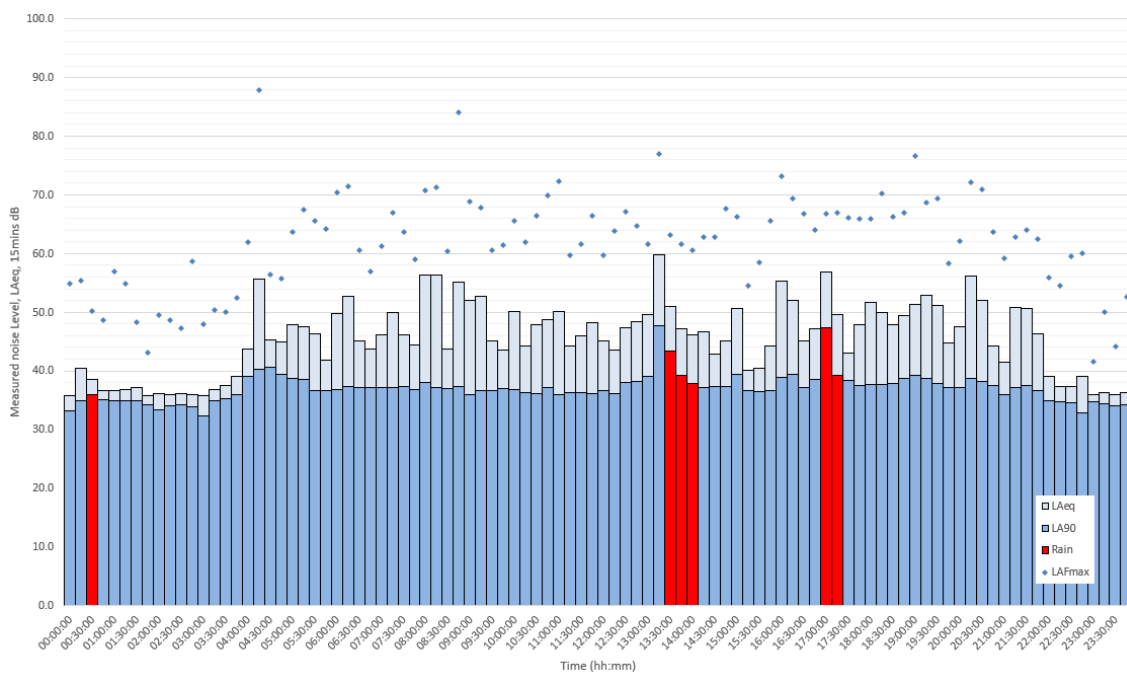
ARGOED POULTRY FARM EXTENSION Noise Assessment Appendix A – Measured Noise Levels



Noise Levels Measured at Location M02 - Argoed Farm
13th June 2020



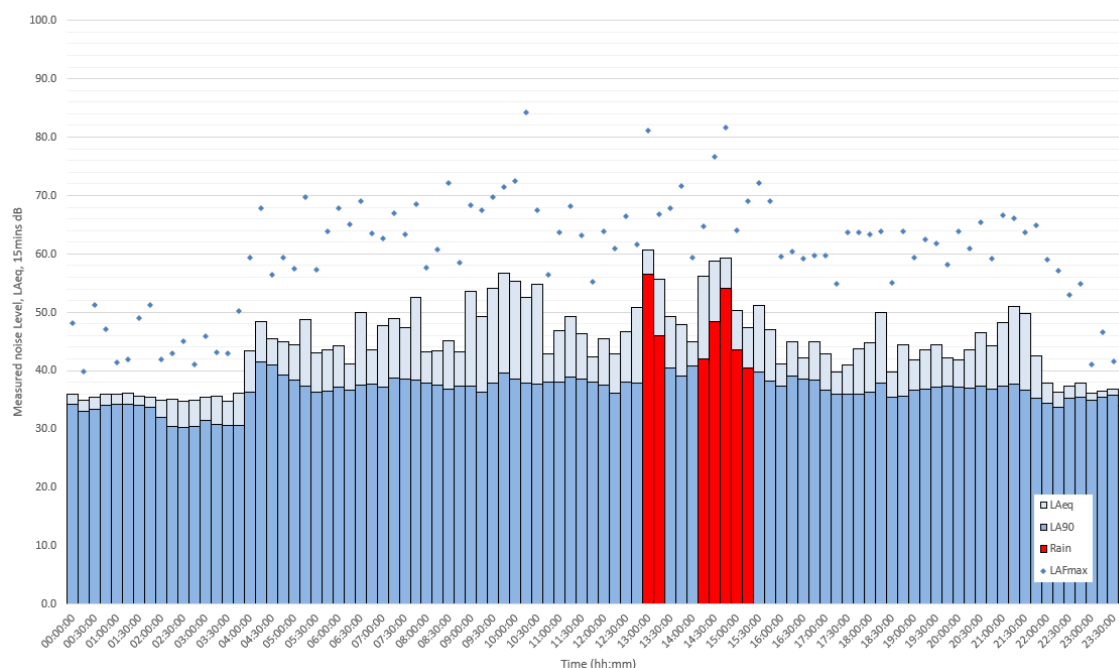
Noise Levels Measured at Location M02 - Argoed Farm
14th June 2020



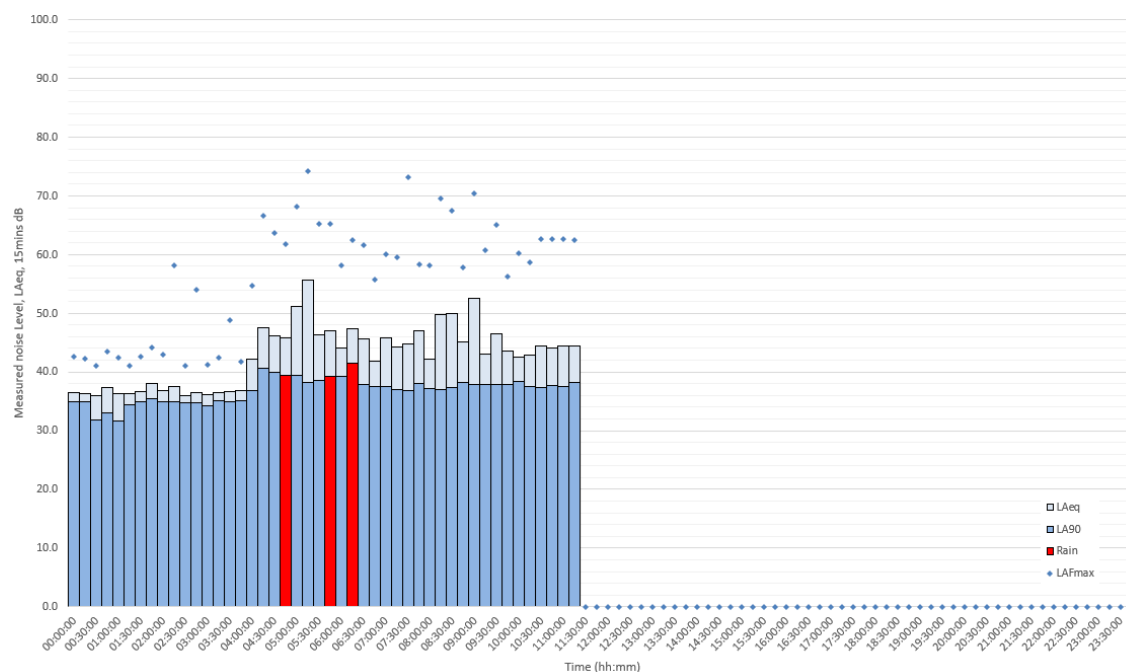
ARGOED POULTRY FARM EXTENSION Noise Assessment Appendix A – Measured Noise Levels



Noise Levels Measured at Location M02 - Argoed Farm
15th June 2020



Noise Levels Measured at Location M02 - Argoed Farm
16th June 2020



ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
09/06/2020 13:00	43.1	61.2	35.8	10/06/2020 01:00	35.7	55.4	32.3	10/06/2020 13:00	41.2	57.0	36.9
09/06/2020 13:15	45.5	63.6	37.3	10/06/2020 01:15	34.4	42.4	31.2	10/06/2020 13:15	42.2	57.6	37.4
09/06/2020 13:30	45.2	65.7	36.6	10/06/2020 01:30	34.8	47.2	31.8	10/06/2020 13:30	44.0	62.8	36.6
09/06/2020 13:45	44.9	67.3	35.6	10/06/2020 01:45	34.3	46.0	31.2	10/06/2020 13:45	44.2	68.4	37.0
09/06/2020 14:00	44.6	64.8	35.3	10/06/2020 02:00	36.8	46.7	31.9	10/06/2020 14:00	47.1	68.2	39.9
09/06/2020 14:15	49.1	67.9	36.2	10/06/2020 02:15	35.1	51.7	31.8	10/06/2020 14:15	44.5	64.4	41.2
09/06/2020 14:30	44.1	67.9	35.5	10/06/2020 02:30	35.7	57.6	32.4	10/06/2020 14:30	45.7	63.2	41.0
09/06/2020 14:45	47.9	67.2	36.7	10/06/2020 02:45	34.3	43.7	31.7	10/06/2020 14:45	44.3	59.0	41.3
09/06/2020 15:00	46.8	68.3	37.3	10/06/2020 03:00	33.2	48.7	23.4	10/06/2020 15:00	51.3	64.5	42.3
09/06/2020 15:15	53.6	80.1	37.0	10/06/2020 03:15	36.9	58.6	31.6	10/06/2020 15:15	47.2	65.5	39.8
09/06/2020 15:30	51.8	71.6	38.4	10/06/2020 03:30	35.1	49.7	32.0	10/06/2020 15:30	45.2	64.2	38.3
09/06/2020 15:45	42.4	56.1	38.0	10/06/2020 03:45	36.3	54.2	32.2	10/06/2020 15:45	45.7	59.4	40.8
09/06/2020 16:00	42.9	56.7	38.0	10/06/2020 04:00	45.2	60.1	34.8	10/06/2020 16:00	47.0	62.2	41.3
09/06/2020 16:15	52.2	70.1	38.0	10/06/2020 04:15	49.3	69.1	40.2	10/06/2020 16:15	48.7	69.0	40.0
09/06/2020 16:30	44.2	63.8	37.1	10/06/2020 04:30	46.2	68.7	38.9	10/06/2020 16:30	47.8	62.7	38.6
09/06/2020 16:45	49.6	67.6	38.8	10/06/2020 04:45	43.4	54.1	37.9	10/06/2020 16:45	50.1	67.0	39.1
09/06/2020 17:00	46.7	62.7	39.1	10/06/2020 05:00	42.8	55.4	37.5	10/06/2020 17:00	42.5	62.4	36.8
09/06/2020 17:15	44.6	55.4	38.4	10/06/2020 05:15	43.0	58.7	37.5	10/06/2020 17:15	55.2	87.1	37.9
09/06/2020 17:30	43.7	54.9	38.9	10/06/2020 05:30	42.0	55.4	36.7	10/06/2020 17:30	54.8	70.6	38.0
09/06/2020 17:45	43.4	59.2	37.0	10/06/2020 05:45	54.1	77.8	37.9	10/06/2020 17:45	49.2	72.8	37.9
09/06/2020 18:00	43.8	61.8	36.5	10/06/2020 06:00	44.9	66.7	36.4	10/06/2020 18:00	44.8	62.5	38.2
09/06/2020 18:15	46.3	65.7	36.0	10/06/2020 06:15	59.1	85.2	36.2	10/06/2020 18:15	51.1	66.6	38.2
09/06/2020 18:30	40.6	59.4	35.9	10/06/2020 06:30	46.5	71.8	36.4	10/06/2020 18:30	50.2	69.0	36.9
09/06/2020 18:45	40.4	64.5	36.0	10/06/2020 06:45	41.6	57.3	36.7	10/06/2020 18:45	47.2	66.1	37.1
09/06/2020 19:00	41.2	58.6	35.6	10/06/2020 07:00	43.6	75.9	36.4	10/06/2020 19:00	43.4	59.0	37.8
09/06/2020 19:15	39.4	58.9	35.8	10/06/2020 07:15	40.9	60.6	36.1	10/06/2020 19:15	52.8	65.7	40.1
09/06/2020 19:30	42.5	64.5	36.0	10/06/2020 07:30	46.1	63.1	36.6	10/06/2020 19:30	55.9	74.5	39.2
09/06/2020 19:45	39.1	58.0	35.7	10/06/2020 07:45	42.5	62.1	37.9	10/06/2020 19:45	53.9	69.1	38.4
09/06/2020 20:00	41.1	58.3	35.5	10/06/2020 08:00	43.6	60.1	38.7	10/06/2020 20:00	45.2	59.5	37.7
09/06/2020 20:15	41.7	58.7	35.8	10/06/2020 08:15	45.7	63.5	39.2	10/06/2020 20:15	39.7	54.6	37.0
09/06/2020 20:30	41.8	56.2	36.2	10/06/2020 08:30	44.1	65.6	38.9	10/06/2020 20:30	39.3	53.2	36.4
09/06/2020 20:45	38.9	62.1	35.0	10/06/2020 08:45	43.9	62.6	39.1	10/06/2020 20:45	41.9	56.4	37.1
09/06/2020 21:00	46.0	77.2	35.4	10/06/2020 09:00	43.5	57.8	38.9	10/06/2020 21:00	41.8	63.0	38.0
09/06/2020 21:15	39.0	58.0	34.5	10/06/2020 09:15	44.2	57.4	39.6	10/06/2020 21:15	40.1	56.8	36.7
09/06/2020 21:30	39.0	61.5	34.6	10/06/2020 09:30	44.4	60.8	39.1	10/06/2020 21:30	38.3	55.7	36.2
09/06/2020 21:45	37.5	53.8	33.5	10/06/2020 09:45	44.5	58.3	38.5	10/06/2020 21:45	40.1	50.9	35.2
09/06/2020 22:00	34.0	47.4	30.9	10/06/2020 10:00	41.8	59.0	37.5	10/06/2020 22:00	39.4	52.6	37.0
09/06/2020 22:15	35.2	59.7	31.7	10/06/2020 10:15	43.9	65.5	37.9	10/06/2020 22:15	42.4	51.0	36.5
09/06/2020 22:30	35.1	44.3	32.0	10/06/2020 10:30	44.1	63.1	38.0	10/06/2020 22:30	46.1	58.5	40.1
09/06/2020 22:45	34.6	53.8	30.8	10/06/2020 10:45	44.9	60.2	38.4	10/06/2020 22:45	44.2	62.8	41.5
09/06/2020 23:00	33.2	47.1	29.9	10/06/2020 11:00	44.9	60.5	38.9	10/06/2020 23:00	40.7	56.2	37.0
09/06/2020 23:15	33.2	56.2	30.1	10/06/2020 11:15	44.3	57.7	40.1	10/06/2020 23:15	44.1	55.2	40.7
09/06/2020 23:30	35.3	56.8	31.0	10/06/2020 11:30	45.8	62.6	39.2	10/06/2020 23:30	44.1	60.8	41.5
09/06/2020 23:45	34.4	52.8	30.4	10/06/2020 11:45	50.9	68.7	41.9	10/06/2020 23:45	43.6	59.1	41.1
10/06/2020 00:00	33.6	47.6	30.6	10/06/2020 12:00	54.7	68.9	39.9	11/06/2020 00:00	46.7	61.7	42.5
10/06/2020 00:15	34.2	53.7	30.3	10/06/2020 12:15	54.6	71.4	40.6	11/06/2020 00:15	43.0	57.6	40.2
10/06/2020 00:30	33.3	45.2	30.4	10/06/2020 12:30	47.2	63.2	39.1	11/06/2020 00:30	41.5	57.8	37.7
10/06/2020 00:45	34.3	54.5	30.3	10/06/2020 12:45	45.9	59.7	38.7	11/06/2020 00:45	41.9	58.4	39.0

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
11/06/2020 01:00	45.1	60.2	41.4	11/06/2020 13:00	47.3	58.5	40.7	12/06/2020 01:00	35.6	48.6	32.5
11/06/2020 01:15	44.9	61.4	41.5	11/06/2020 13:15	47.1	64.9	39.5	12/06/2020 01:15	35.7	43.1	32.7
11/06/2020 01:30	43.1	58.9	40.8	11/06/2020 13:30	52.4	68.3	40.9	12/06/2020 01:30	35.2	46.5	31.7
11/06/2020 01:45	41.9	55.7	38.4	11/06/2020 13:45	52.0	70.5	39.1	12/06/2020 01:45	35.9	47.3	32.0
11/06/2020 02:00	40.5	55.7	36.1	11/06/2020 14:00	45.0	57.0	38.6	12/06/2020 02:00	34.5	43.0	31.4
11/06/2020 02:15	39.4	52.3	35.8	11/06/2020 14:15	44.8	61.7	38.0	12/06/2020 02:15	34.0	41.8	30.4
11/06/2020 02:30	39.1	53.4	35.7	11/06/2020 14:30	48.9	68.2	39.9	12/06/2020 02:30	34.7	41.8	32.3
11/06/2020 02:45	37.3	50.3	33.9	11/06/2020 14:45	49.8	69.3	40.4	12/06/2020 02:45	33.8	41.2	30.9
11/06/2020 03:00	36.7	50.7	33.1	11/06/2020 15:00	51.2	71.0	39.3	12/06/2020 03:00	34.0	41.2	31.6
11/06/2020 03:15	36.4	44.7	32.6	11/06/2020 15:15	45.2	62.2	39.1	12/06/2020 03:15	33.9	40.8	31.3
11/06/2020 03:30	37.6	47.3	33.9	11/06/2020 15:30	49.3	62.8	40.9	12/06/2020 03:30	34.2	42.5	31.0
11/06/2020 03:45	37.2	48.6	33.5	11/06/2020 15:45	46.2	62.1	40.3	12/06/2020 03:45	34.6	41.3	31.8
11/06/2020 04:00	39.1	56.9	33.9	11/06/2020 16:00	45.4	56.8	39.9	12/06/2020 04:00	34.2	48.3	31.3
11/06/2020 04:15	50.2	68.8	39.9	11/06/2020 16:15	46.7	63.5	40.4	12/06/2020 04:15	42.0	53.8	35.8
11/06/2020 04:30	47.5	61.2	41.4	11/06/2020 16:30	46.1	62.9	40.0	12/06/2020 04:30	48.0	72.0	39.0
11/06/2020 04:45	46.0	57.6	39.3	11/06/2020 16:45	55.4	72.4	42.2	12/06/2020 04:45	47.0	68.7	38.0
11/06/2020 05:00	44.3	57.1	39.4	11/06/2020 17:00	55.0	78.0	42.1	12/06/2020 05:00	41.6	53.7	36.5
11/06/2020 05:15	46.7	69.6	38.1	11/06/2020 17:15	50.5	71.3	40.0	12/06/2020 05:15	42.7	57.3	36.4
11/06/2020 05:30	43.6	64.8	37.5	11/06/2020 17:30	48.1	67.7	40.1	12/06/2020 05:30	43.1	57.2	36.5
11/06/2020 05:45	47.8	68.3	37.8	11/06/2020 17:45	42.1	60.6	37.9	12/06/2020 05:45	44.6	66.8	35.8
11/06/2020 06:00	42.8	58.5	37.4	11/06/2020 18:00	49.1	65.4	40.4	12/06/2020 06:00	40.8	58.4	36.0
11/06/2020 06:15	44.3	61.1	37.2	11/06/2020 18:15	44.9	59.8	38.7	12/06/2020 06:15	43.5	61.8	35.8
11/06/2020 06:30	45.1	70.2	37.0	11/06/2020 18:30	44.8	57.9	39.7	12/06/2020 06:30	41.4	56.5	35.8
11/06/2020 06:45	44.8	62.4	38.3	11/06/2020 18:45	45.4	67.4	39.8	12/06/2020 06:45	40.9	62.8	35.6
11/06/2020 07:00	45.0	61.5	39.7	11/06/2020 19:00	45.0	60.1	41.0	12/06/2020 07:00	40.3	59.7	36.0
11/06/2020 07:15	45.8	64.0	39.0	11/06/2020 19:15	45.9	60.9	40.5	12/06/2020 07:15	44.5	67.5	36.1
11/06/2020 07:30	45.4	59.0	40.0	11/06/2020 19:30	44.6	58.1	39.1	12/06/2020 07:30	45.2	64.1	37.4
11/06/2020 07:45	53.4	82.1	40.1	11/06/2020 19:45	46.4	63.2	39.0	12/06/2020 07:45	50.0	82.2	37.5
11/06/2020 08:00	45.1	55.8	39.7	11/06/2020 20:00	42.7	56.1	37.1	12/06/2020 08:00	46.9	66.5	37.1
11/06/2020 08:15	44.4	60.1	40.0	11/06/2020 20:15	46.4	62.7	38.8	12/06/2020 08:15	41.3	58.5	36.3
11/06/2020 08:30	45.1	59.4	39.5	11/06/2020 20:30	43.2	64.6	37.6	12/06/2020 08:30	40.9	57.7	36.5
11/06/2020 08:45	46.6	60.0	38.7	11/06/2020 20:45	40.9	53.2	37.5	12/06/2020 08:45	45.9	62.6	36.8
11/06/2020 09:00	45.4	56.5	41.1	11/06/2020 21:00	40.0	56.6	36.9	12/06/2020 09:00	44.7	59.3	37.9
11/06/2020 09:15	45.5	58.8	40.9	11/06/2020 21:15	42.5	63.5	36.6	12/06/2020 09:15	44.1	60.0	37.5
11/06/2020 09:30	47.7	58.6	42.2	11/06/2020 21:30	39.3	47.6	35.7	12/06/2020 09:30	44.0	62.1	36.9
11/06/2020 09:45	44.9	59.7	39.0	11/06/2020 21:45	39.9	49.2	36.6	12/06/2020 09:45	43.2	58.5	37.2
11/06/2020 10:00	46.3	61.2	38.9	11/06/2020 22:00	43.4	53.6	38.0	12/06/2020 10:00	42.9	65.3	36.1
11/06/2020 10:15	47.9	65.2	40.0	11/06/2020 22:15	42.5	55.4	37.8	12/06/2020 10:15	42.7	55.3	36.9
11/06/2020 10:30	44.1	59.2	38.2	11/06/2020 22:30	44.0	54.3	39.7	12/06/2020 10:30	42.4	54.2	37.3
11/06/2020 10:45	47.7	70.7	39.9	11/06/2020 22:45	45.2	56.7	38.7	12/06/2020 10:45	41.8	59.9	36.7
11/06/2020 11:00	45.9	67.6	39.6	11/06/2020 23:00	42.6	56.0	37.1	12/06/2020 11:00	43.2	64.3	37.7
11/06/2020 11:15	46.6	68.1	38.5	11/06/2020 23:15	41.6	54.8	36.8	12/06/2020 11:15	42.9	64.3	38.1
11/06/2020 11:30	48.1	61.9	41.1	11/06/2020 23:30	41.1	55.2	35.8	12/06/2020 11:30	45.1	60.3	38.5
11/06/2020 11:45	51.1	64.4	43.2	11/06/2020 23:45	39.3	51.1	35.5	12/06/2020 11:45	43.2	59.3	38.2
11/06/2020 12:00	55.3	71.5	44.8	12/06/2020 00:00	41.2	57.8	37.3	12/06/2020 12:00	43.1	59.7	37.8
11/06/2020 12:15	52.7	69.7	42.7	12/06/2020 00:15	41.0	56.9	35.8	12/06/2020 12:15	42.2	57.5	37.6
11/06/2020 12:30	50.8	73.1	42.2	12/06/2020 00:30	40.6	52.9	35.4	12/06/2020 12:30	43.1	61.3	38.4
11/06/2020 12:45	50.8	63.5	42.4	12/06/2020 00:45	37.0	46.7	33.7	12/06/2020 12:45	51.6	70.6	39.5

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
12/06/2020 13:00	44.0	57.4	38.5	13/06/2020 01:00	38.0	52.9	35.1	13/06/2020 13:00	41.7	57.5	37.9
12/06/2020 13:15	41.5	54.4	37.5	13/06/2020 01:15	39.6	61.8	36.4	13/06/2020 13:15	43.7	56.9	39.7
12/06/2020 13:30	44.4	53.7	38.8	13/06/2020 01:30	37.7	52.6	34.8	13/06/2020 13:30	43.3	57.9	38.6
12/06/2020 13:45	42.1	54.2	37.7	13/06/2020 01:45	36.7	51.6	33.8	13/06/2020 13:45	41.6	56.9	38.0
12/06/2020 14:00	45.4	57.8	39.3	13/06/2020 02:00	36.7	51.4	33.5	13/06/2020 14:00	41.7	50.6	37.7
12/06/2020 14:15	46.5	60.3	39.5	13/06/2020 02:15	37.0	50.4	33.5	13/06/2020 14:15	43.8	61.7	38.3
12/06/2020 14:30	44.9	56.4	41.2	13/06/2020 02:30	36.4	48.8	33.3	13/06/2020 14:30	42.5	56.7	39.3
12/06/2020 14:45	48.0	61.2	42.2	13/06/2020 02:45	35.5	55.8	32.2	13/06/2020 14:45	43.8	58.1	39.4
12/06/2020 15:00	46.3	60.9	39.5	13/06/2020 03:00	39.9	65.0	33.2	13/06/2020 15:00	42.8	62.3	38.1
12/06/2020 15:15	42.3	51.8	38.6	13/06/2020 03:15	37.0	59.4	33.5	13/06/2020 15:15	42.1	56.2	37.8
12/06/2020 15:30	42.2	53.6	37.9	13/06/2020 03:30	36.0	46.9	33.2	13/06/2020 15:30	41.2	62.1	37.0
12/06/2020 15:45	46.0	58.9	40.1	13/06/2020 03:45	35.3	46.7	32.6	13/06/2020 15:45	39.3	49.7	37.3
12/06/2020 16:00	45.4	58.5	40.2	13/06/2020 04:00	42.1	62.0	34.9	13/06/2020 16:00	44.0	57.0	39.1
12/06/2020 16:15	48.4	64.8	39.4	13/06/2020 04:15	43.6	68.5	38.6	13/06/2020 16:15	44.2	59.7	40.0
12/06/2020 16:30	48.6	62.4	40.3	13/06/2020 04:30	42.4	56.6	37.4	13/06/2020 16:30	50.2	73.8	43.4
12/06/2020 16:45	44.5	64.1	37.3	13/06/2020 04:45	41.7	56.0	36.9	13/06/2020 16:45	46.3	65.4	39.7
12/06/2020 17:00	45.5	62.7	37.8	13/06/2020 05:00	43.1	56.9	37.5	13/06/2020 17:00	45.3	57.1	40.2
12/06/2020 17:15	48.1	71.8	40.3	13/06/2020 05:15	44.8	64.3	36.7	13/06/2020 17:15	44.3	65.0	40.0
12/06/2020 17:30	47.2	62.1	40.0	13/06/2020 05:30	48.2	65.4	35.9	13/06/2020 17:30	41.4	53.8	38.4
12/06/2020 17:45	45.7	65.9	39.1	13/06/2020 05:45	49.4	62.9	36.4	13/06/2020 17:45	40.8	58.9	37.1
12/06/2020 18:00	47.4	62.1	40.2	13/06/2020 06:00	43.3	57.2	36.3	13/06/2020 18:00	40.8	54.4	37.1
12/06/2020 18:15	45.7	57.1	39.7	13/06/2020 06:15	42.2	57.0	36.2	13/06/2020 18:15	42.6	56.8	37.8
12/06/2020 18:30	44.9	60.6	37.8	13/06/2020 06:30	40.2	58.1	36.1	13/06/2020 18:30	42.0	55.6	37.1
12/06/2020 18:45	46.8	63.3	39.8	13/06/2020 06:45	42.6	60.3	36.5	13/06/2020 18:45	39.6	56.6	36.4
12/06/2020 19:00	46.7	58.6	39.7	13/06/2020 07:00	41.9	59.1	36.4	13/06/2020 19:00	45.0	62.9	37.0
12/06/2020 19:15	40.7	59.0	37.1	13/06/2020 07:15	42.0	69.7	36.5	13/06/2020 19:15	45.4	60.2	37.5
12/06/2020 19:30	43.6	60.8	38.3	13/06/2020 07:30	42.1	64.7	36.4	13/06/2020 19:30	39.7	56.5	36.9
12/06/2020 19:45	42.6	60.6	38.1	13/06/2020 07:45	41.4	58.7	36.5	13/06/2020 19:45	41.6	61.4	36.4
12/06/2020 20:00	44.8	60.3	39.5	13/06/2020 08:00	48.3	66.7	37.0	13/06/2020 20:00	42.1	59.4	37.2
12/06/2020 20:15	44.9	57.4	39.7	13/06/2020 08:15	44.1	62.8	37.4	13/06/2020 20:15	45.2	55.4	38.4
12/06/2020 20:30	42.2	55.8	38.0	13/06/2020 08:30	41.2	58.8	37.0	13/06/2020 20:30	46.2	57.0	40.4
12/06/2020 20:45	40.9	54.4	36.3	13/06/2020 08:45	41.8	58.0	36.9	13/06/2020 20:45	42.5	59.5	37.8
12/06/2020 21:00	37.6	50.0	35.3	13/06/2020 09:00	45.2	60.0	37.6	13/06/2020 21:00	42.5	59.4	36.2
12/06/2020 21:15	43.1	65.1	35.7	13/06/2020 09:15	41.5	57.0	37.4	13/06/2020 21:15	42.1	60.0	37.0
12/06/2020 21:30	44.6	62.9	36.7	13/06/2020 09:30	42.2	56.3	36.9	13/06/2020 21:30	43.0	56.8	36.4
12/06/2020 21:45	39.3	54.1	35.4	13/06/2020 09:45	42.3	61.6	37.2	13/06/2020 21:45	41.3	63.6	36.0
12/06/2020 22:00	38.7	62.5	33.9	13/06/2020 10:00	44.4	64.6	37.5	13/06/2020 22:00	37.2	63.9	35.4
12/06/2020 22:15	36.4	49.4	33.3	13/06/2020 10:15	44.0	59.5	37.8	13/06/2020 22:15	36.3	48.8	35.0
12/06/2020 22:30	47.3	73.8	33.8	13/06/2020 10:30	41.0	53.0	37.1	13/06/2020 22:30	36.4	51.8	34.8
12/06/2020 22:45	37.3	55.1	34.0	13/06/2020 10:45	42.3	54.9	38.3	13/06/2020 22:45	36.5	40.7	35.3
12/06/2020 23:00	35.3	41.9	32.9	13/06/2020 11:00	43.4	56.5	38.0	13/06/2020 23:00	35.6	48.3	31.5
12/06/2020 23:15	36.0	53.1	33.1	13/06/2020 11:15	44.6	60.8	38.5	13/06/2020 23:15	41.8	54.3	30.9
12/06/2020 23:30	49.2	60.9	36.0	13/06/2020 11:30	43.3	55.0	38.4	13/06/2020 23:30	49.1	62.8	38.2
12/06/2020 23:45	48.8	67.9	44.5	13/06/2020 11:45	47.7	63.9	38.4	13/06/2020 23:45	40.4	51.1	35.9
13/06/2020 00:00	42.8	57.1	39.1	13/06/2020 12:00	49.9	67.5	37.8	14/06/2020 00:00	35.8	54.9	33.2
13/06/2020 00:15	44.1	63.3	37.8	13/06/2020 12:15	44.0	58.9	38.3	14/06/2020 00:15	40.4	55.4	34.9
13/06/2020 00:30	42.1	61.0	38.4	13/06/2020 12:30	42.3	55.9	38.1	14/06/2020 00:30	38.6	50.2	35.9
13/06/2020 00:45	38.7	51.5	35.8	13/06/2020 12:45	42.4	56.9	37.8	14/06/2020 00:45	36.7	48.6	35.1

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
14/06/2020 01:00	36.7	56.9	35.0	14/06/2020 13:00	49.6	61.7	39.1	15/06/2020 01:00	35.9	41.4	34.3
14/06/2020 01:15	36.9	54.8	35.0	14/06/2020 13:15	59.8	76.9	47.7	15/06/2020 01:15	36.2	42.0	34.3
14/06/2020 01:30	37.1	48.4	34.9	14/06/2020 13:30	51.0	63.1	43.4	15/06/2020 01:30	35.6	49.0	34.0
14/06/2020 01:45	35.8	43.1	34.2	14/06/2020 13:45	47.2	61.6	39.2	15/06/2020 01:45	35.4	51.3	33.7
14/06/2020 02:00	36.1	49.5	33.4	14/06/2020 14:00	46.1	60.6	37.8	15/06/2020 02:00	34.9	42.0	32.0
14/06/2020 02:15	35.9	48.6	34.1	14/06/2020 14:15	46.6	62.9	37.1	15/06/2020 02:15	35.1	43.0	30.4
14/06/2020 02:30	36.1	47.3	34.2	14/06/2020 14:30	42.8	62.9	37.3	15/06/2020 02:30	34.7	45.1	30.3
14/06/2020 02:45	36.0	58.7	33.9	14/06/2020 14:45	45.2	67.7	37.4	15/06/2020 02:45	34.9	41.0	30.4
14/06/2020 03:00	35.8	48.0	32.3	14/06/2020 15:00	50.7	66.3	39.4	15/06/2020 03:00	35.5	45.9	31.4
14/06/2020 03:15	36.8	50.4	34.9	14/06/2020 15:15	40.1	54.5	36.6	15/06/2020 03:15	35.6	43.2	30.8
14/06/2020 03:30	37.5	50.0	35.2	14/06/2020 15:30	40.5	58.5	36.5	15/06/2020 03:30	34.7	43.0	30.7
14/06/2020 03:45	39.0	52.5	35.9	14/06/2020 15:45	44.3	65.6	36.6	15/06/2020 03:45	36.1	50.2	30.6
14/06/2020 04:00	43.7	62.0	39.0	14/06/2020 16:00	55.3	73.2	38.9	15/06/2020 04:00	43.4	59.3	36.3
14/06/2020 04:15	55.6	87.8	40.2	14/06/2020 16:15	52.1	69.4	39.4	15/06/2020 04:15	48.4	67.8	41.5
14/06/2020 04:30	45.3	56.5	40.7	14/06/2020 16:30	45.2	66.8	37.1	15/06/2020 04:30	45.4	56.4	41.0
14/06/2020 04:45	45.0	55.8	39.5	14/06/2020 16:45	47.2	64.1	38.6	15/06/2020 04:45	44.9	59.4	39.2
14/06/2020 05:00	47.8	63.7	38.8	14/06/2020 17:00	56.9	66.8	47.4	15/06/2020 05:00	44.5	57.4	38.4
14/06/2020 05:15	47.6	67.4	38.5	14/06/2020 17:15	49.6	66.9	39.3	15/06/2020 05:15	48.8	69.8	37.4
14/06/2020 05:30	46.3	65.5	36.6	14/06/2020 17:30	43.0	66.1	38.4	15/06/2020 05:30	43.0	57.3	36.3
14/06/2020 05:45	41.8	64.2	36.6	14/06/2020 17:45	47.9	66.0	37.6	15/06/2020 05:45	43.6	63.9	36.5
14/06/2020 06:00	49.8	70.5	36.8	14/06/2020 18:00	51.6	65.9	37.7	15/06/2020 06:00	44.3	67.9	37.1
14/06/2020 06:15	52.8	71.4	37.4	14/06/2020 18:15	50.0	70.3	37.7	15/06/2020 06:15	41.2	65.0	36.6
14/06/2020 06:30	45.1	60.5	37.2	14/06/2020 18:30	47.9	66.2	37.9	15/06/2020 06:30	50.0	69.1	37.5
14/06/2020 06:45	43.8	56.9	37.2	14/06/2020 18:45	49.5	66.9	38.8	15/06/2020 06:45	43.6	63.5	37.7
14/06/2020 07:00	46.1	61.3	37.2	14/06/2020 19:00	51.3	76.6	39.2	15/06/2020 07:00	47.7	62.7	37.2
14/06/2020 07:15	50.0	66.9	37.2	14/06/2020 19:15	52.9	68.7	38.8	15/06/2020 07:15	48.9	67.0	38.7
14/06/2020 07:30	46.1	63.6	37.4	14/06/2020 19:30	51.2	69.3	37.9	15/06/2020 07:30	47.3	63.3	38.5
14/06/2020 07:45	44.5	59.0	36.9	14/06/2020 19:45	44.7	58.4	37.2	15/06/2020 07:45	52.5	68.5	38.4
14/06/2020 08:00	56.4	70.8	38.1	14/06/2020 20:00	47.6	62.2	37.2	15/06/2020 08:00	43.3	57.7	37.8
14/06/2020 08:15	56.4	71.2	37.1	14/06/2020 20:15	56.1	72.1	38.7	15/06/2020 08:15	43.4	60.8	37.5
14/06/2020 08:30	43.8	60.4	37.0	14/06/2020 20:30	52.0	71.0	38.3	15/06/2020 08:30	45.1	72.1	36.9
14/06/2020 08:45	55.1	84.0	37.3	14/06/2020 20:45	44.3	63.7	37.6	15/06/2020 08:45	43.2	58.5	37.4
14/06/2020 09:00	52.0	68.9	36.0	14/06/2020 21:00	41.5	59.2	36.0	15/06/2020 09:00	53.6	68.4	37.3
14/06/2020 09:15	52.8	67.9	36.7	14/06/2020 21:15	50.8	62.9	37.1	15/06/2020 09:15	49.3	67.5	36.4
14/06/2020 09:30	45.1	60.5	36.6	14/06/2020 21:30	50.6	64.0	37.5	15/06/2020 09:30	54.1	69.8	37.9
14/06/2020 09:45	43.6	61.4	37.0	14/06/2020 21:45	46.4	62.5	36.7	15/06/2020 09:45	56.7	71.5	39.6
14/06/2020 10:00	50.1	65.5	36.8	14/06/2020 22:00	39.1	56.0	34.9	15/06/2020 10:00	55.3	72.5	38.5
14/06/2020 10:15	44.3	61.9	36.3	14/06/2020 22:15	37.4	54.6	34.7	15/06/2020 10:15	52.6	84.3	37.9
14/06/2020 10:30	47.8	66.4	36.1	14/06/2020 22:30	37.4	59.5	34.6	15/06/2020 10:30	54.8	67.4	37.7
14/06/2020 10:45	48.7	69.9	37.1	14/06/2020 22:45	39.1	60.1	32.9	15/06/2020 10:45	42.9	56.4	38.0
14/06/2020 11:00	50.2	72.4	36.0	14/06/2020 23:00	36.0	41.5	34.7	15/06/2020 11:00	46.8	63.6	38.1
14/06/2020 11:15	44.2	59.7	36.3	14/06/2020 23:15	36.3	50.0	34.5	15/06/2020 11:15	49.3	68.2	38.9
14/06/2020 11:30	45.9	61.7	36.4	14/06/2020 23:30	35.9	44.1	34.1	15/06/2020 11:30	46.4	63.2	38.6
14/06/2020 11:45	48.3	66.5	36.2	14/06/2020 23:45	36.4	52.7	34.3	15/06/2020 11:45	42.3	55.3	38.1
14/06/2020 12:00	45.1	59.7	36.6	15/06/2020 00:00	36.0	48.1	34.3	15/06/2020 12:00	45.5	63.8	37.6
14/06/2020 12:15	43.5	63.8	36.2	15/06/2020 00:15	35.0	39.9	33.1	15/06/2020 12:15	42.8	61.0	36.1
14/06/2020 12:30	47.4	67.1	38.1	15/06/2020 00:30	35.4	51.2	33.4	15/06/2020 12:30	46.6	66.4	38.0
14/06/2020 12:45	48.4	64.7	38.2	15/06/2020 00:45	36.0	47.1	34.1	15/06/2020 12:45	50.8	61.6	37.8

ARGOED POULTRY FARM EXTENSION
Noise Assessment
Appendix A – Measured Noise Levels



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
15/06/2020 13:00	60.6	81.2	56.5	16/06/2020 01:00	36.4	42.4	31.7
15/06/2020 13:15	55.7	66.8	46.0	16/06/2020 01:15	36.3	41.0	34.5
15/06/2020 13:30	49.3	67.8	40.4	16/06/2020 01:30	36.7	42.7	34.9
15/06/2020 13:45	47.8	71.6	39.1	16/06/2020 01:45	38.0	44.1	35.4
15/06/2020 14:00	44.9	59.4	40.8	16/06/2020 02:00	36.9	42.9	35.0
15/06/2020 14:15	56.1	64.8	42.0	16/06/2020 02:15	37.6	58.2	34.9
15/06/2020 14:30	58.8	76.7	48.4	16/06/2020 02:30	36.0	41.1	34.7
15/06/2020 14:45	59.3	81.7	54.1	16/06/2020 02:45	36.5	54.1	34.8
15/06/2020 15:00	50.3	64.0	43.6	16/06/2020 03:00	36.1	41.2	34.2
15/06/2020 15:15	47.3	69.0	40.4	16/06/2020 03:15	36.5	42.4	35.1
15/06/2020 15:30	51.1	72.1	39.7	16/06/2020 03:30	36.6	48.8	35.0
15/06/2020 15:45	47.1	69.1	38.3	16/06/2020 03:45	36.8	41.7	35.1
15/06/2020 16:00	41.2	59.5	37.3	16/06/2020 04:00	42.2	54.7	36.9
15/06/2020 16:15	44.9	60.4	39.0	16/06/2020 04:15	47.6	66.7	40.7
15/06/2020 16:30	42.2	59.2	38.5	16/06/2020 04:30	46.1	63.7	39.9
15/06/2020 16:45	45.0	59.7	38.4	16/06/2020 04:45	45.8	61.8	39.4
15/06/2020 17:00	42.8	59.7	36.6	16/06/2020 05:00	51.1	68.2	39.5
15/06/2020 17:15	39.7	54.9	36.0	16/06/2020 05:15	55.6	74.3	38.2
15/06/2020 17:30	40.9	63.6	35.9	16/06/2020 05:30	46.4	65.2	38.6
15/06/2020 17:45	43.8	63.7	35.9	16/06/2020 05:45	47.0	65.2	39.3
15/06/2020 18:00	44.7	63.3	36.4	16/06/2020 06:00	44.1	58.1	39.2
15/06/2020 18:15	50.0	63.8	37.8	16/06/2020 06:15	47.4	62.4	41.5
15/06/2020 18:30	39.8	55.0	35.4	16/06/2020 06:30	45.6	61.6	37.8
15/06/2020 18:45	44.4	63.8	35.6	16/06/2020 06:45	41.8	55.8	37.5
15/06/2020 19:00	41.8	59.3	36.7	16/06/2020 07:00	45.8	60.1	37.6
15/06/2020 19:15	43.6	62.5	36.9	16/06/2020 07:15	44.2	59.6	37.0
15/06/2020 19:30	44.5	61.8	37.1	16/06/2020 07:30	44.7	73.2	36.9
15/06/2020 19:45	42.1	58.1	37.3	16/06/2020 07:45	47.1	58.3	38.0
15/06/2020 20:00	41.8	63.8	37.1	16/06/2020 08:00	42.1	58.1	37.1
15/06/2020 20:15	43.5	61.0	37.0	16/06/2020 08:15	49.7	69.6	37.0
15/06/2020 20:30	46.5	65.4	37.3	16/06/2020 08:30	49.9	67.5	37.4
15/06/2020 20:45	44.2	59.2	36.9	16/06/2020 08:45	45.1	57.8	38.2
15/06/2020 21:00	48.2	66.6	37.4	16/06/2020 09:00	52.5	70.4	37.8
15/06/2020 21:15	51.0	66.1	37.7	16/06/2020 09:15	43.0	60.7	37.8
15/06/2020 21:30	49.7	63.7	36.7	16/06/2020 09:30	46.5	65.1	37.9
15/06/2020 21:45	42.6	64.9	35.2	16/06/2020 09:45	43.5	56.2	37.8
15/06/2020 22:00	37.9	59.0	34.4	16/06/2020 10:00	42.5	60.2	38.4
15/06/2020 22:15	36.4	57.1	33.7	16/06/2020 10:15	42.8	58.7	37.5
15/06/2020 22:30	37.4	53.0	35.2	16/06/2020 10:30	44.5	62.7	37.4
15/06/2020 22:45	37.9	54.9	35.5	16/06/2020 10:45	44.1	62.6	37.7
15/06/2020 23:00	36.1	41.0	34.9	16/06/2020 11:00	44.5	62.6	37.6
15/06/2020 23:15	36.5	46.6	35.4	16/06/2020 11:15	44.4	62.5	38.3
15/06/2020 23:30	36.9	41.6	35.8	16/06/2020 11:30	0.0	0.0	0.0
15/06/2020 23:45	35.6	40.9	34.1	16/06/2020 11:45	0.0	0.0	0.0
16/06/2020 00:00	36.5	42.7	35.0	16/06/2020 12:00	0.0	0.0	0.0
16/06/2020 00:15	36.4	42.2	34.9				
16/06/2020 00:30	35.9	41.0	31.8				
16/06/2020 00:45	37.3	43.4	33.1				