

**Land at Delgate Bank
Spalding
Lincolnshire**

PROPOSED POULTRY UNIT

NOISE IMPACT ASSESSMENT

Acoustics Report M2627/R01
5th May 2026

To: Harrison Pick Ltd
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1. Introduction

This acoustic report documents a noise impact assessment for the proposed poultry unit at land at Delgate Bank, Spalding, Lincolnshire; Figures 1 and 2.

The report is divided into the following sections:

- Section 2: Overview of the Development
- Section 3: Noise Assessment Criteria
- Section 4: Background Noise survey
- Section 5: Noise Impact Assessment
- Section 6: Conclusion
- Appendix A: Survey Data
- Appendix B: Calculations
- Appendix C: Fan noise data

2. Overview of the Development

The proposed scheme comprises a single poultry unit at Delgate Bank, Spalding, Lincolnshire; Figures 1 and 2.

The nearest dwellings, labelled Receptors A - F in Figure 1, are approximately between 600m – 1.2km from the proposed development.

For the assessment, the main operational noise sources generated by the proposed poultry unit have been reviewed, namely:

- **Ventilation fans:** The proposed poultry unit will be ventilated using inlet and extract fans, consist of:
 - *Inlet fans:* 20 x Big Dutchman FF091-6ET fans, arranged in two rows of 10 either side of the ridge
 - *Extract fans:* 15 x Big Dutchman EM50 fans, split between an upper row of 5 and lower row of 10, located on the east gable end.

Manufacturers' data sheets for the extract fans are provided in Appendix C.

There will be an unobstructed noise path between the roof inlet duct terminations and Receptors A - F. The gable end extract fans however will be fully acoustically shielded (i.e., the line of sight will be fully blocked) from Receptors A - E by the sheds themselves.

- **Transport noise:** Transport noise includes commercial vehicles on the access road and stock collections/deliveries on the concrete apron to the west of the shed.

There will be an unobstructed noise path to both the access road and concrete apron for Receptors A - E. The poultry development buildings themselves however will provide full acoustic shielding for Receptor F.

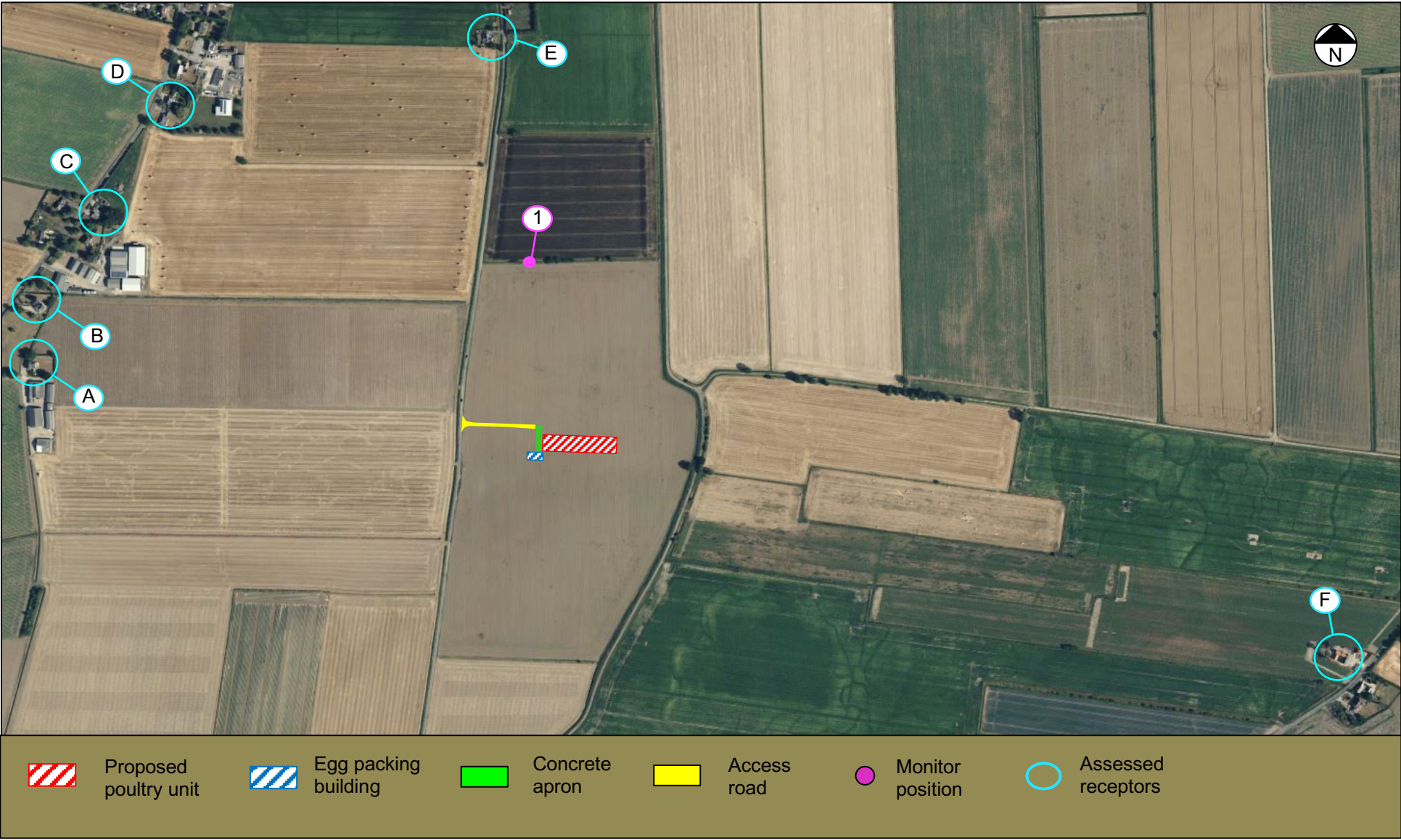


Figure 1. Aerial view (source: www.bing.com) showing footprint of proposed poultry unit, assessed receptors and monitor position

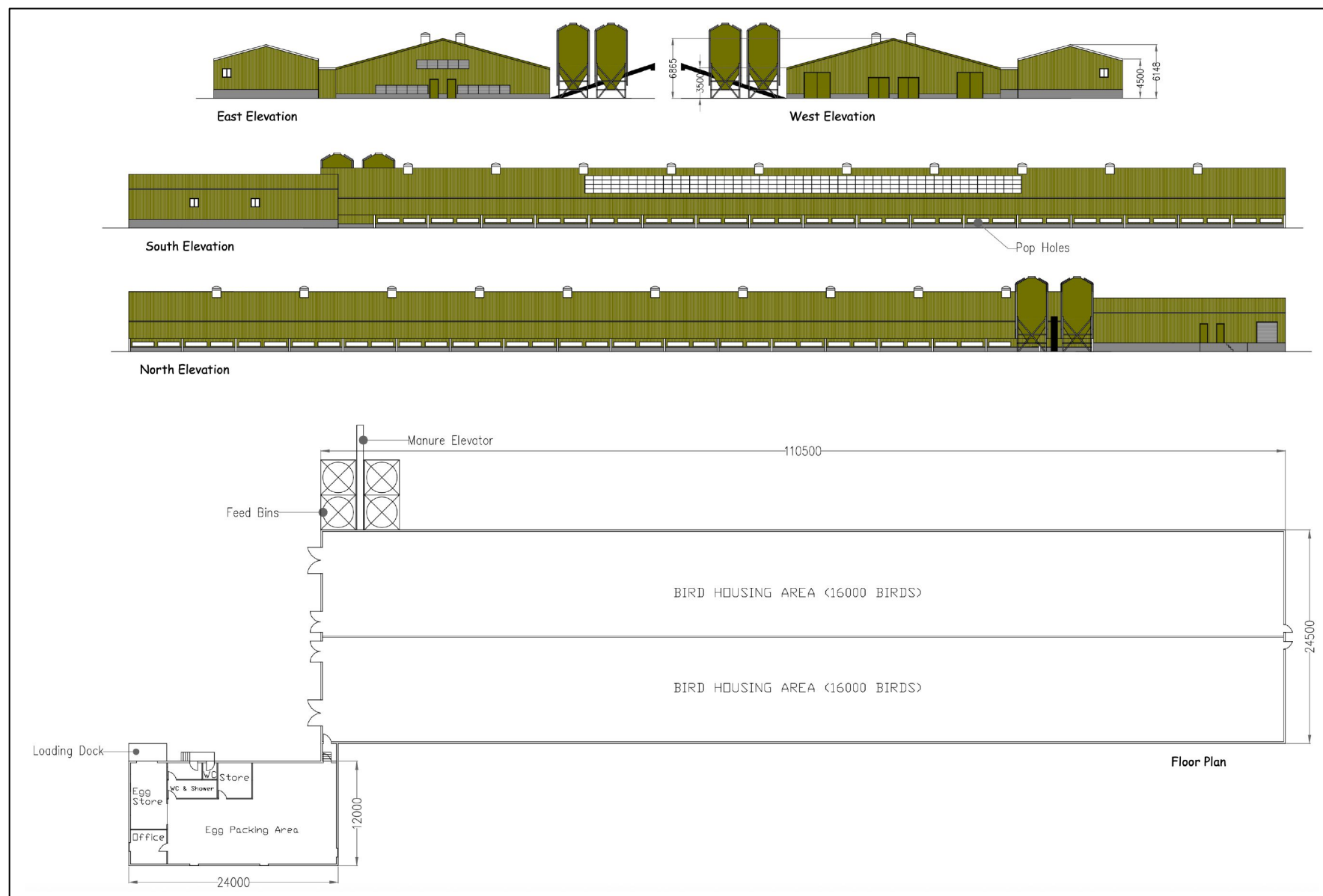


Figure 2. Proposed poultry unit elevations and floor plan

3. Noise Assessment Criteria

To review the noise impact of the proposed poultry unit's ventilation fans and transport related activity noise emissions, the following guidance documents have been considered;

3.1 BS4142:2014+A1:2019

BS4142 provides a methodology to assess the impact of industrial and commercial noise affecting dwellings, whereby the 'typical' background noise level is deducted from the industrial noise Rating Level (industrial noise corrected to account for the 'on-time' and noise character of the noise source. The following guidance is given based on the established difference:

- A difference of around +10dB or more is likely to be an indication of significant adverse impact, depending on context
- A difference of +5dB is likely to be an indication of an adverse impact, depending on context
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact 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 context

Context, as defined in BS4142:2014, includes the consideration of the following factors:

- The absolute level of the noise emissions
- Character and level of the residual sound compared to the character and level of the Specific Level
- Sensitivity of the receptor and any acoustic design measures (e.g., façade sound insulation, use of mechanical ventilation and acoustic screening) incorporated at premises used for residential purposes

To take account of industrial/commercial noise sources that do not operate continually an 'on-time' correction is applied using:

$$- 10 \log (r/r_{ref})$$

Where:

r_{ref} = reference time (1hr between 07:00 – 23:00hrs and 15 minutes between 23:00 – 07:00hrs)

r = total 'on-time' during the reference period

Note that the shorter reference time interval between 23:00 – 07:00hrs is designed to penalise industrial/commercial noise events that occur during the night.

BS4142 provides four noise character correction categories with associated penalties that must be applied when determining the Rating Level, namely:

- **Tonality:**
 - Not perceptible = 0dB
 - Just perceptible = +2dB
 - Clearly perceptible = +4dB
 - Highly perceptible = +6dB
- **Impulsivity:**
 - Not perceptible = 0dB
 - Just perceptible = +3dB
 - Clearly perceptible = +6dB
 - Highly perceptible = +9dB

- **Intermittency:** +3dB if the intermittency of operation is readily distinctive against the residual noise environment
- **Other:** +3dB applied if the specific sound is neither tonal or impulsive but features noise characteristics that are readily distinctive against the residual noise environment

With regard to noise ingress (noise from outside to inside), BS4142 states that *'The standard is not intended to be applied to the assessment of indoor sound levels'* and the assessment methodology *'... is not intended to be used to assess the extent of the impact at indoor locations'*; in the worked Examples 6 and 8 given in BS4142, comparison with BS8233 noise ingress limits is used to review potential acceptability.

3.2 Noise Ingress (BS8233:2014)

BS8233 provides guidance noise ingress limits for habitable rooms within residential premises, namely;

- Living rooms: $L_{Aeq,16hr}$ 35dB (day)
- Dining room/area: $L_{Aeq,16hr}$ 40dB (day)
- Bedrooms: $L_{Aeq,16hr}$ 35dB (day), $L_{Aeq,8hr}$ 30dB (night)

In order to avoid sleep disturbance, in accordance with guidance given in PROPG, individual noise events should not exceed 45 dB $L_{Amax,F}$ more than 10 times within bedrooms during the night period.

The above noise limits must be met with windows closed and trickle vents (if applicable) open.

Where the external noise source has a specific character, such as a strong low-frequency content or is irregular enough to attract attention, BS8233 advises lower noise limits might be appropriate.

Taking into account the characteristics of the potential noise emissions from the proposed poultry units (intermittent and some noise sources may include impulsive elements) we consider noise ingress levels 5dB below BS8233 noise ingress limits will be considered acceptable.

Purge ventilation, which could be required on occasion to mitigate against overheating, may require open windows. It is generally accepted that there is a compromise between providing rapid ventilation via an open window and the unavoidable higher noise ingress levels (a façade with an open window provides around a 13dB reduction between outside to inside).

For this situation 'Acoustics Ventilation and Overheating - Residential Design Guide: 2020' (AVO) advises that 'reasonable' internal conditions for habitable rooms may be considered to be noise ingress levels up to 5dB above BS8233's noise ingress limits.

In line with AVO's guidance, we therefore consider that 'reasonable' poultry development noise ingress levels via an open window will be 5dB above are suggested noise ingress level with windows closed; this equates to parity with the noise ingress limits given in BS8233.

4. Background Noise Survey

- **Survey dates:** Monday 13th – Tuesday 14th April 2026
- **Weather;** Table A2, Appendix A:
 - Precipitation: Dry
 - Wind speed
 - Maximum recorded wind speed: 4.0 m/s, recorded at two points during the survey - 12:40 and 13:50hrs.
 - Median wind speed: 0.9 m/s across the 159 readings. Wind speeds were notably low throughout much of the survey, with 31 readings (19.5%) recording a calm of 0 m/s, predominantly during the overnight period.
 - Wind direction: The prevailing wind direction was consistently from a southerly quadrant throughout the survey. Of the 159 recorded readings, 153 (96.2%) were from southerly directions, predominantly recorded as SW (55.3%), S (17.6%), SSW (15.7%), SSE (5.0%) and WSW (2.5%). The remaining six readings — all recorded between 14:50 and 15:40 on the second day and associated with near-calm or calm conditions (≤ 0.4 m/s) — were from NNW, NNE, W and WNW, and are consistent with light, variable airs at the end of the survey rather than any meaningful shift in prevailing conditions. Overall, the wind direction data indicates stable and consistent meteorological conditions throughout the survey period, with no evidence of conditions that would have adversely affected the noise measurements.
- **Noise monitor locations:** With the microphone attached to a tripod, the noise monitor was located at Position 1 as shown in Figure 1.
- **Weather station location:** Weather station, mounted on a tripod, located at Position 1; Figure 1
- **Equipment:**
 - Weather Station: Kestrel type 5500
 - Noise monitors: Brüel & Kjær Type 2238
- **Monitor configuration:**
 - Weather station: Configured to measure the average wind speed and temperature over consecutive 10-minute periods
 - Noise Monitors: configured to measure consecutive 15-minute samples of noise.
- **Calibration:** Noise monitor calibrated before and after the survey using a Brüel & Kjær Type 4231 calibrator with no deviations found

All noise measurements are free-field. Full tabulated results are given in Tables A1 and A2, Appendix A.

4.1 Survey observations

During the setting up and collection of the noise monitors, it was observed that the general noise environment was quiet, consisting of occasional vehicle passes on the adjacent road and birdsong.

4.2 Typical background noise level, L_{A90} , at Position 1

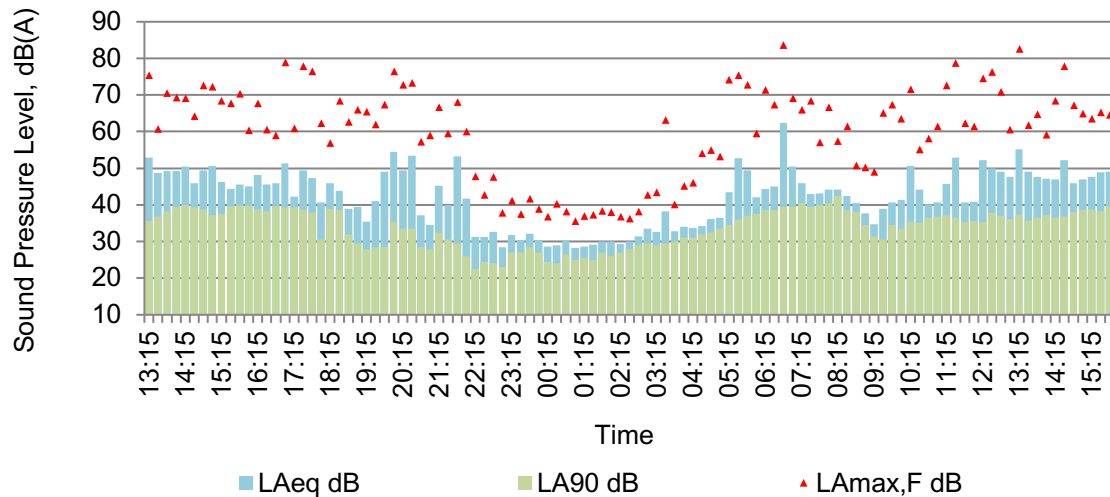
Figure 3 shows the variation in the measured maximum ($L_{Amax,F}$), ambient (L_{Aeq}) and background (L_{A90}) noise levels obtained at Position 1.

Reviewing the survey data, typical background noise levels at Position 1 have been established as:

- Day (07:00 – 20:00hrs): L_{A90} 38dB
- Evening (20:00 – 23:00hrs): L_{A90} 31dB
- Night (23:00 – 07:00hrs): L_{A90} 27dB

The above typical background noise levels are considered to be representative of the local area and those that will occur at Receptors A - F.

Figure 3. Position 1 noise monitor data (free-field)



5. Noise Impact Assessment

5.1 Calculation of aggregate noise emissions at Receptors A - F

The full calculations of the noise emissions from the ventilation fans and transport activities are provided in Tables B1 – B8, Appendix B. The resultant BS4142 Rating and Assessment Levels at Receptors A - F are given in Table 1.

5.2 Source noise data

- **Ventilation fans:**
 - Roof inlet fans:
 - Type: Big Dutchman FF091-6ET
 - Sound pressure level: 49dB(A) at 7m, 45° lateral; see Appendix C for manufacturers data sheet
 - Total number of fans: 20, arranged in two rows of 10 either side of the ridge
 - Gable end extract fans:
 - Type: Big Dutchman EM50
 - Sound pressure level: 76dB(A) at 2m, 45° lateral; see Appendix C for manufacturers data sheet
 - Total number of fans: 15, split between a row of 5 at high level and 10 at low level, located on the east gable end; Figure 2.

- **Transport noise:** Inhouse measured source noise levels:
 - Stock delivery/collection (HGV arriving/departing, maneuvering and loading/unloading using a diesel forklift): $L_{Aeq,1hr}$ 60dB, $L_{Aeq,15 mins}$ 62dB, $L_{Amax,F}$ 79dB at 20m
 - HGV pass on access road – SEL 87dB at 5m

5.3 Ventilation fan operation

The temperature within the sheds is determined by a combination of the heat generated by the birds themselves, the external temperature and the ventilation provided by the inlet/extract fans.

To provide sufficient ventilation of the bird generated heat, as required to maintain the ideal internal operating temperature of around 20°C, up to 25% of the ventilation fans will be required to operate (either intermittently or on variable speed).

With the influence of the external temperature additional ventilation fans may be required in order to maintain the ideal operating internal temperature. Here the fans are operated in Stages, triggered with each 1°C rise above the ideal internal temperature. The highest Stage will typically only be triggered when the internal temperature rises above 23°.

The operation of 100% of the ventilation fans are only expected to occur during the day period when the external temperatures have the potential to be higher.

During the evening and night, when the external temperature will fall, there will be a corresponding decrease in the number of ventilation fans needed above those for bird generated heat alone; the expected percentage of ventilation fans required to maintain the set temperature are 50% and 25% for the evening and night periods respectively.

For a robust assessment however, the calculations have reviewed the following scenarios:

- Day (07:00 – 20:00hrs): 100% ventilation fans operating
- Evening (20:00 – 23:00hrs): 50% ventilation fans operating
- Night (23:00 – 07:00hrs): 25% ventilation fans operating

5.4 Transport vehicle operation

Loading/unloading of the HGVs for the proposed poultry unit will be undertaken using a forklift on the concrete apron at the west end of the shed; Figure 1.

The majority of transport movements, including the egg collections, will only occur during the working day (07:00 – 20:00hrs). However, in order to avoid stressing the birds catching is typically undertaken during the night.

5.5 Derivation of aggregate Specific Level

The following corrections have been applied to the source noise data:

- **Ventilation fans:**
 - *Directivity correction:*
 - *Roof inlet fans:* correction to convert the fan noise data from the manufacturers stated level at 45° lateral to 90° lateral (the propagation angle for the assessed dwellings), determined using the corrections given in Duct Directivity Index Applications (Day H. Hansen C & Bennett B, Acoustics Australia 96 Vol. 37 December (2009) No. 3). For the calculation a typical frequency spectra has been used
 - *Gable end extract fans:* correction to convert the fan noise data from the manufacturers stated level at 45° from the termination to the propagation angle for the assessed dwellings, determined using the corrections given

in Figure 11.2, p322, Noise Control in Building Services, SRL Ltd. For the calculation a typical frequency spectra has been used

- *Reflections:* 3dB added to account for reflections off the poultry shed facade
- *Distance correction:* $20 \times \log (d_1/d_0)$, where d_1 = distance between the noise source and receptor and d_0 is the reference distance.
- *Shielding attenuation:* Where the line of sight between the noise source and dwelling is fully blocked by a solid barrier 10dB shielding correction has been applied in accordance with BS5228-1 2009.
- *Ground absorption correction:* ISO 9613-2: Attenuation of sound during propagation outdoors, Formula 10:

$$A_{gr} = 4.8 - (2h_m/d)[17 + (300/d)]$$

Where,

h_m = mean height of the propagation path above ground

d = distance from source to receptor

Note that the ground absorption correction has been taken to be 0dB when a shielding attenuation correction has already been applied.

- *Atmospheric attenuation:* ISO 9613-2: Attenuation of sound during propagation outdoors, Formula 8:

$$A_{atm} = \alpha d/100$$

Where,

α = is the atmosphere attenuation coefficient for a temperature of 10°C and 70% relative humidity

d = distance from source to receptor

In accordance with ISO 9613-2 the attenuation at 500Hz has been used as only the dB(A) value of the extract fans are known

- *On-time correction:* it has been assumed that the fans are operating continuously and consequently no 'on-time' correction has been applied.

- **Stock delivery/collection noise emissions (concrete apron):** The following corrections have been applied to the source noise data:

- *Distance correction:* $20 \times \log (d_1/d_0)$, where d_1 = distance between the noise source and receptor and d_0 is the reference distance.
- *Shielding attenuation:* Where the line of sight between the noise source and dwelling is fully blocked by a solid barrier 10dB shielding correction has been applied in accordance with BS5228-1 2009.
- *Ground absorption correction:* ISO 9613-2: Attenuation of sound during propagation outdoors, Formula 10:

$$A_{gr} = 4.8 - (2h_m/d)[17 + (300/d)]$$

Where,

h_m = mean height of the propagation path above ground

d = distance from source to receptor

In accordance with ISO 9613-2 the ground absorption correction is assumed to be zero when the line of sight of the noise source is partially or fully blocked by a solid body (i.e., when a shielding correction is applicable)

- *Atmospheric attenuation:* ISO 9613-2: Attenuation of sound during propagation outdoors, Formula 8:

$$A_{atm} = \alpha d/100$$

Where,

α = is the atmosphere attenuation coefficient for a temperature of 10°C and 70% relative humidity

d = distance from source to receptor

In accordance with ISO 9613-2 the attenuation at 500Hz has been used as only the dB(A) value of the extract fans are known

- **Transport movements on the access road:** The Specific Level of HGV movements on the access road have been calculated using:

$$L_{Aeq(T)} = SEL - 20 \times \log((d_1/d_0) - A_{gnd} - A_{atmos} + 10 \times \log(N) - 10 \times \log(T)$$

Where,

- SEL = Sound Exposure Level
- d_1 = distance between centre of the access road and the noise source
- d_0 = measurement distance from the noise source (5m)
- A_{gnd} = ground absorption correction
- A_{atmos} = atmospheric attenuation
- N = number of HGV passes in time period T; 2/hr during the day/evening (i.e., an HGV arriving and departing) and 1 within a 15-minute period during the night
- T = Time period in seconds; 3600 seconds during the day/evening periods and 900 seconds during the night

Tables B1 – B8, Appendix B provide the full calculations with the resultant aggregate Specific Levels at the Receptors A - F.

5.6 Rating Level

To establish the Rating Level the following BS4142 character corrections have been applied to the Specific Level:

- **Ventilation fans:** 0dB; inhouse measurements of Big Dutchman fans at other poultry site have found that they are not tonal or contain impulsive elements. Their individual operation will not be readily distinctive against the residual noise to be characterised as intermittent.
- **Stock collection/deliveries:** Stock delivery/collections will be intermittent, with the potential for 'highly perceptible' impulsive noise whilst operating the forklift (note that we have observed that with careful operation of the forklift, i.e. slowing loading crates, impulsive noise can be minimized). To account for the intermittency/impulsive noise characteristics, a 6dB character corrections has been applied
- **HGVs on access road:** 3dB to account for intermittency

5.7 Assessment Level

We define Assessment Level = RL – min L_{A90} dB, where:

RL = Rating Level, dB(A); see Appendix B

L_{A90} dB = established typical background noise level, L_{A90}

Table 1 provides the resultant Assessment Levels at Receptors A - F.

Where the Rating Level is at parity with the typical background noise level (Assessment Level = 0 dB) BS4142 states that the Specific Level will have a low impact; an adverse impact is indicated where the Rating Level is ≥ 5 dB and <10 dB above the typical background noise level.

Table 1. Typical background and calculated Rating and Assessment Levels at Receptors A - F											
Noise Source		Receptor	Day: 07:00 - 20:00hrs			Evening: 20:00 - 23:00hrs			Night: 23:00 - 07:00hrs		
			Representative e LA90 dB	Rating Level, dB	Assessment Level, dB	Representative e LA90 dB	Rating Level, dB	Assessment Level, dB	Representative e LA90 dB	Rating Level, dB	Assessment Level, dB
Plant	[A] Ventilation fans	100% ventilation fans operating			50% ventilation fans operating			25% ventilation fans operating			
		A	38	17	-21	31	14	-17	27	12	-15
		B	38	17	-21	31	14	-17	27	12	-15
		C	38	17	-21	31	14	-17	27	12	-15
		D	38	18	-20	31	15	-16	27	12	-15
		E	38	20	-18	31	17	-14	27	15	-12
		F	38	22	-16	31	19	-12	27	17	-10
Transport	[B] HGV loading/ unloading	A	38	28	-10	31	N/A		27	30	3
		B	38	28	-10	31	N/A		27	30	3
		C	38	29	-9	31	N/A		27	31	4
		D	38	29	-9	31	N/A		27	31	4
		E	38	31	-7	31	N/A		27	33	6
		F	38	18	-20	31	N/A		27	20	-7
	[C] HGV on access road	A	38	8	-30	31	N/A		27	11	-16
		B	38	8	-30	31	N/A		27	11	-16
		C	38	9	-29	31	N/A		27	12	-15
		D	38	9	-29	31	N/A		27	12	-15
		E	38	11	-27	31	N/A		27	14	-13
		F	38	-4	-42	31	N/A		27	-1	-28
Aggregate	[A] + [B] + [C] Plant + Transport	A	38	29	-9	31	14	-17	27	30	3
		B	38	29	-9	31	14	-17	27	30	3
		C	38	29	-9	31	14	-17	27	31	4
		D	38	29	-9	31	15	-16	27	31	4
		E	38	31	-7	31	17	-14	27	33	6
		F	38	24	-14	31	19	-12	27	22	-5

5.8 Noise Impact at Receptors A - F

At the nearest noise sensitive receptors (Receptors A and B, Figure 1) the highest individual and aggregate Assessment Levels during the day and evening are:

- *Ventilation fans*: -12dB; indicates a negligible noise impact
- *Transport activities*: -7dB; indicates a very low noise impact
- *Aggregate (ventilation fans + transport activities)*: -7dB; indicates a very low noise impact

During the night period (23:00 – 07:00hrs) we consider the context that occupiers of the nearest dwellings are expected to be within their houses is relevant, and consequently it will be noise ingress that will inform on the noise impact. Based on a room with an open window providing 13dB sound reduction from outside to inside, the highest aggregate (ventilation fans and transport activities) noise ingress would be LAeq,15min 20dB and LAmax,F 29dB

The resultant ambient noise level is extremely low, being significantly below the existing background noise levels and our suggested noise ingress limit (5dB below the noise ingress limits given in BS8233). The maximum noise ingress level, which will be generated by transport activities, also does not exceed PROPG's LAmax,F 45dB threshold (value that should not be

exceeded more than 10 times during the night) with regard to sleep disturbance. We therefore conclude that during the night both the extract fan and transport activities will result in a negligible noise impact.

5.9 Assessment uncertainty

With all calculations there is a level of uncertainty, which in this case we do not expect to be greater than +/-3dB (3dB is a just perceptible change in noise level). This small level of uncertainty is not considered to have any significance to the outcome of the assessment i.e., it would not result in an adverse noise impact being identified.

The difference between halving or doubling the number of fans operating (e.g. 50% to 100%) is 3dB. With smaller changes in the number of fans operating, for example, 50% to 70%, the change in aggregate noise emissions will be less than 2dB; this represents an imperceptible change in noise.

We therefore consider the used percentage of fans as suitably robust for the purpose of the assessment.

We have measured transport activity noise levels at various poultry and other commercial developments. These have returned results comparable to the source data used in this assessment. We therefore conclude that the source noise data is suitably robust and representative for the purpose of the assessment.

6. Conclusion

A noise impact assessment has been undertaken for the proposed poultry unit at land at Delgate Bank, Spalding, Lincolnshire; (Figures 1 and 2), comprising:

- A noise survey to establish representative background noise levels at the nearest dwellings; Appendix A and Figure 1
- Calculations of the noise emissions and corresponding BS4142 Rating Levels generated by the ventilation fans and transport activities; Table 1 and Tables B1 – B8, Appendix B

The findings of the assessment established that the extract fans and transport activities will result in:

- *Day and Evening (07:00 – 23:00hrs):* very low noise impact
- *Night (23:00 – 07:00hrs):* ambient noise ingress levels via an open window significantly below the existing background noise levels and our suggested noise ingress limit (5dB below the noise ingress limits given in BS8233). The maximum noise ingress level (generated by transport activities) < PROPG's $L_{Amax,F}$ 45dB threshold (value that should not be exceeded more than 10 times during the night) with regard to sleep disturbance. We therefore conclude that during the night, when occupiers are expected to be indoors, the noise impact will be negligible.

On the basis that the proposed poultry unit will not result in an adverse noise impact at the nearest dwellings, we conclude that on noise grounds it is acceptable.

Table A1. Noise monitor data (free-field)											
Start Time	L _{Amax,F} dB	L _{Aeq} dB	L _{A90} dB	Start Time	L _{Amax,F} dB	L _{Aeq} dB	L _{A90} dB	Start Time	L _{Amax,F} dB	L _{Aeq} dB	L _{A90} dB
13:15	75.4	52.9	35.6	22:15	47.9	31.2	22.5	07:15	66.1	45.9	40.5
13:30	60.8	48.7	36.8	22:30	42.7	31.3	24.5	07:30	68.5	43.0	39.5
13:45	70.5	49.3	38.2	22:45	47.7	32.6	24.0	07:45	57.1	43.1	40.0
14:00	69.4	49.2	39.4	23:00	37.9	28.4	23.0	08:00	66.7	44.2	40.5
14:15	69.1	50.4	40.0	23:15	41.2	31.8	27.0	08:15	57.4	44.1	42.5
14:30	64.2	45.9	39.2	23:30	37.5	30.4	27.0	08:30	61.4	42.4	38.5
14:45	72.7	49.4	38.8	23:45	41.8	32.2	28.5	08:45	50.8	40.5	38.0
15:00	72.3	50.6	37.2	00:00	39.0	30.4	27.0	09:00	50.3	37.7	34.5
15:15	68.4	46.3	37.6	00:15	36.8	28.6	24.5	09:15	49.0	34.8	31.5
15:30	67.7	44.3	39.6	00:30	40.3	28.9	24.0	09:30	65.1	39.0	30.5
15:45	70.4	45.5	39.8	00:45	38.2	30.3	26.5	09:45	67.4	40.6	34.5
16:00	60.4	45.0	39.8	01:00	35.6	28.3	25.0	10:00	63.6	41.4	33.5
16:15	67.8	48.2	38.8	01:15	37.0	28.7	25.5	10:15	71.7	50.7	35.5
16:30	60.6	45.6	38.2	01:30	37.3	29.2	25.0	10:30	55.1	44.1	35.0
16:45	59.0	46.0	39.6	01:45	38.4	30.1	27.0	10:45	58.1	40.2	36.4
17:00	79.0	51.4	39.2	02:00	38.0	30.0	26.0	11:00	61.4	40.7	36.8
17:15	60.9	42.2	39.2	02:15	36.8	29.4	27.0	11:15	72.7	45.8	37.2
17:30	77.9	49.4	38.8	02:30	36.3	30.1	28.0	11:30	78.8	52.9	36.4
17:45	76.5	47.3	37.8	02:45	38.3	31.4	29.0	11:45	62.4	40.7	35.2
18:00	62.3	40.6	30.5	03:00	42.8	33.5	29.5	12:00	61.5	40.9	35.6
18:15	56.9	46.0	39.0	03:15	43.5	32.6	29.0	12:15	74.6	52.3	35.2
18:30	68.5	43.8	38.5	03:30	63.2	38.3	29.5	12:30	76.3	49.9	37.8
18:45	62.7	39.0	32.0	03:45	40.2	32.9	30.0	12:45	71.0	49.1	37.0
19:00	66.0	39.4	29.5	04:00	45.2	34.1	31.0	13:00	60.6	47.6	36.2
19:15	65.5	35.4	28.0	04:15	46.1	33.7	31.0	13:15	82.6	55.2	37.4
19:30	62.0	41.1	28.5	04:30	54.2	34.3	32.0	13:30	61.9	49.0	35.8
19:45	67.5	49.1	28.5	04:45	55.0	36.2	32.5	13:45	64.8	47.6	36.4
20:00	76.5	54.5	35.5	05:00	53.2	36.4	33.5	14:00	59.2	47.1	37.2
20:15	72.9	49.4	33.5	05:15	74.2	43.4	34.5	14:15	68.4	47.0	36.4
20:30	73.4	53.4	33.5	05:30	75.4	52.7	36.0	14:30	77.9	52.3	36.8
20:45	57.3	37.1	28.5	05:45	72.8	49.4	37.0	14:45	67.2	46.0	38.0
21:00	59.0	34.5	28.0	06:00	59.5	42.1	37.5	15:00	64.9	46.9	38.6
21:15	66.8	45.3	32.5	06:15	71.5	44.4	38.5	15:15	63.5	47.7	38.8
21:30	59.6	39.9	30.5	06:30	67.5	45.1	38.5	15:30	65.4	48.9	38.2
21:45	68.2	53.2	29.5	06:45	83.7	62.4	39.5	15:45	64.7	49.0	39.6
22:00	60.1	41.8	26.0	07:00	69.1	50.4	39.5				

Start Time	Temp, °C	Wind Speed, m/s	Wind Direction	Start Time	Temp, °C	Wind Speed, m/s	Wind Direction	Start Time	Temp, °C	Wind Speed, m/s	Wind Direction
13:20	15.6	1.6	WSW	22:10	5.2	0	SW	07:00	5.7	1.5	SSW
13:30	15.0	1.2	WSW	22:20	4.8	0.5	SW	07:10	6.6	1.5	S
13:40	13.9	1	SW	22:30	4.6	0.6	SW	07:20	7.1	1.6	SSW
13:50	15.6	2.3	SW	22:40	4.8	0.6	SW	07:30	7.7	1.3	SSW
14:00	15.3	0.8	SW	22:50	4.5	0.6	SW	07:40	7.8	1.3	SSW
14:10	14.2	0.9	SW	23:00	4.5	0.5	SW	07:50	8.2	1.4	SSW
14:20	14.3	1.3	SW	23:10	4.4	0.5	SW	08:00	8.8	1.6	SSW
14:30	14.2	0.6	SW	23:20	4.4	0.6	SW	08:10	9.2	1.6	SSW
14:40	15.9	1.5	SSW	23:30	4.4	0	SW	08:20	9.9	1.9	SSW
14:50	15.0	2	SW	23:40	4.3	0	SW	08:30	10.4	1.5	SSW
15:00	15.7	0.8	WSW	23:50	4.5	0.9	SW	08:40	10.8	2	SSW
15:10	14.7	0.8	WSW	00:00	4.2	0.4	SW	08:50	11.2	2	SSW
15:20	14.6	0.9	SSW	00:10	4.1	0.3	SW	09:00	11.7	2.1	SSW
15:30	14.2	0.5	SW	00:20	3.1	0.3	SW	09:10	12.2	2.3	S
15:40	13.8	1.1	SW	00:30	2.8	0.3	SW	09:20	13.3	2.5	SSW
15:50	13.8	0.8	SW	00:40	2.5	0.3	SW	09:30	13.2	2.5	S
16:00	14.2	1.3	SSW	00:50	2.4	0.3	SW	09:40	13.9	2.9	S
16:10	14.3	1.1	SSW	01:00	2.4	0.3	SW	09:50	14.6	3.3	S
16:20	14.5	1.7	SW	01:10	3.2	0	SW	10:00	14.3	3	SSE
16:30	13.8	1.6	SW	01:20	2.7	0	SW	10:10	15.3	2.5	S
16:40	13.9	1.2	SW	01:30	2.1	0	SW	10:20	14.8	2.2	SSE
16:50	14.0	1.4	SSW	01:40	2.2	0.3	SW	10:30	14.3	2.9	SSW
17:00	13.9	2	SSW	01:50	2.0	0	SW	10:40	14.7	3.3	S
17:10	14.9	1.7	S	02:00	2.4	0	SW	10:50	14.7	2.7	S
17:20	13.2	2.4	S	02:10	2.3	0	SW	11:00	15.7	2.7	S
17:30	12.8	2.2	S	02:20	2.1	0	SW	11:10	15.2	2.1	S
17:40	13.1	3.2	SSW	02:30	2.4	0	SW	11:20	15.1	2.6	S
17:50	12.8	2.5	SSW	02:40	2.0	0	SW	11:30	15.4	2.2	S
18:00	12.4	2.1	SSW	02:50	1.9	0	SW	11:40	15.7	2	SSW
18:10	12.0	2.3	SW	03:00	1.3	0	SW	11:50	16.1	3.2	S
18:20	11.6	1.6	SW	03:10	1.0	0.3	SW	12:00	15.8	3.9	S
18:30	11.3	1.4	SW	03:20	1.7	0	SW	12:10	15.6	3	S
18:40	10.8	1	SW	03:30	1.1	0.6	SW	12:20	16.2	2.7	SSE
18:50	9.7	0.7	SW	03:40	1.1	0.7	SW	12:30	18.2	3.7	S
19:00	9.2	0.7	SW	03:50	0.8	0.5	SW	12:40	17.1	4	SSE
19:10	8.7	0.8	SW	04:00	1.4	0	SW	12:50	17.7	3.5	S
19:20	8.3	0.6	SW	04:10	1.2	0	SW	13:00	16.7	3.8	S
19:30	8.4	0.4	SW	04:20	1.3	0	SW	13:10	17.1	2.3	SSE
19:40	8.2	0.5	SW	04:30	1.4	0	SW	13:20	17.3	3.2	SSE
19:50	7.8	0.5	SW	04:40	1.8	0	SW	13:30	17.2	3.3	S
20:00	7.3	0.4	SW	04:50	1.3	0	SW	13:40	17.6	3	S
20:10	6.7	0.6	SW	05:00	1.3	0.3	SW	13:50	17.2	4	S
20:20	7.4	0.9	SW	05:10	0.8	0	SW	14:00	17.3	3.1	S
20:30	7.4	0.9	SW	05:20	1.0	0	SW	14:10	16.7	3.4	SSE
20:40	7.6	0.8	SW	05:30	1.1	0	SW	14:20	16.8	3.4	S
20:50	7.3	0.6	SW	05:40	1.3	0	SW	14:30	17.3	3.8	S
21:00	6.8	0.4	SW	05:50	1.2	0	SW	14:40	17.3	2.8	SSE
21:10	6.4	0.5	SW	06:00	1.8	0	SW	14:50	18.0	0	NNW
21:20	6.1	0.4	SW	06:10	3.4	1.4	SW	15:00	19.3	0	NNE
21:30	5.9	0.7	SW	06:20	4.1	1.1	SW	15:10	20.2	0	W
21:40	5.6	0.5	SW	06:30	4.6	1.2	SW	15:20	20.9	0.4	WNW
21:50	5.7	0.5	SW	06:40	5.0	1.3	S	15:30	21.4	0.4	WNW
22:00	5.7	0.5	SW	06:50	5.2	1.5	SSW	15:40	21.8	0	WNW

Table B1. Calculation of proposed poultry unit's ventilation fans Rating Levels at Receptor A															
						Octave Band Centre Frequency, Hz								dB(A)	
						63	125	250	500	1k	2k	4k			
Source Levels	Roof Extract Fans (Big Dutchman FF091-6ET)	[A] L _p at 7m, 45° lateral:				52	48	48	45	45	42	37	49		
		[B] Reflection off poultry shed roof:				3	3	3	3	3	3	3			
		[C] directivity correction, 45° to 90°:				0	1.5	3	4.5	9	11	18			
		[A] + [B] - [C] L _p at 7m, 90° lateral:				55	50	48	44	39	34	22	45		
	Gable End Extract Fans (Big Dutchman EM50)	[D] L _p at 2m, 45° lateral:				67	73	79	72	69	67	61	76		
		[E] Reflection off poultry shed facade:				3	3	3	3	3	3	3			
		[F] directivity correction, 45° to 90°:				1.5	2.5	4.5	9	23	23	23			
		[D] + [E] - [F] L _p at 2m, 90° lateral:				69	74	78	66	49	47	41	70		
Fan		Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans	
		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level
1	Direct distance, m	779.5	780.0	880.1	879.6	Distance correction, dB	40.9	40.9	52.9	52.9	Shielding attenuation, dB	0	0	10	10
2		789.4	789.9	880.0	879.5		41.0	41.0	52.9	52.9		0	0	10	10
3		799.4	799.8	879.9	879.3		41.2	41.2	52.9	52.9		0	0	10	10
4		809.3	809.8	879.7	879.2		41.3	41.3	52.9	52.9		0	0	10	10
5		819.2	819.7	879.6	879.1		41.4	41.4	52.9	52.9		0	0	10	10
6		829.2	829.6	879.1			41.5	41.5	52.9			0	0	10	
7		839.1	839.6	879.0			41.6	41.6	52.9			0	0	10	
8		849.1	849.5	878.9			41.7	41.7	52.9			0	0	10	
9		859.0	859.4	878.7			41.8	41.8	52.9			0	0	10	
10		868.9	869.4	878.6			41.9	41.9	52.9			0	0	10	
1	Ground absorption, dB	4.6	4.6	0.0	0.0	Atmospheric attenuation, dB	1.5	1.5	1.7	1.7	Sound pressure level at dwelling, dB	-1.7	-1.7	5.7	-19.2
2		4.6	4.6	0.0	0.0		1.5	1.5	1.7	1.7		-1.8	-1.8	5.7	-19.2
3		4.6	4.6	0.0	0.0		1.5	1.5	1.7	1.7		-1.9	-1.9	5.7	-19.2
4		4.6	4.6	0.0	0.0		1.5	1.5	1.7	1.7		-2.1	-2.1	5.7	-19.2
5		4.6	4.6	0.0	0.0		1.6	1.6	1.7	1.7		-2.2	-2.2	5.7	-19.2
6		4.6	4.6	0.0			1.6	1.6	1.7			-2.3	-2.3	5.7	
7		4.6	4.6	0.0			1.6	1.6	1.7			-2.5	-2.5	5.7	
8		4.6	4.6	0.0			1.6	1.6	1.7			-2.6	-2.6	5.7	
9		4.6	4.6	0.0			1.6	1.6	1.7			-2.7	-2.7	5.7	
10		4.6	4.6	0.0			1.7	1.7	1.7			-2.8	-2.8	5.7	
BS4142 character correction											0				
Day (07:00 - 20:00hrs): 100% ventilation fans operating							Specific Level, dB				17				
							Rating Level, dB				17				
Evening (20:00 - 23:00hrs): 50% ventilation fans operating (assumed odd no. fans running)							Specific Level, dB				14				
							Rating Level, dB				14				
Night (23:00 - 07:00hrs): 25% ventilation fans operating (assumed no. 2, 5 & 9 fans running)							Specific Level, dB				12				
							Rating Level, dB				12				

Table B2. Calculation of proposed poultry unit's ventilation fans Rating Levels at Receptor B

						Octave Band Centre Frequency, Hz									dB(A)
						63	125	250	500	1k	2k	4k			
Source Levels	Roof Extract Fans (Big Dutchman FF091-6ET)	[A] L _p at 7m, 45° lateral:				52	48	48	45	45	42	37	49		
		[B] Reflection off poultry shed roof:				3	3	3	3	3	3	3			
		[C] directivity correction, 45° to 90°:				0	1.5	3	4.5	9	11	18			
		[A] + [B] - [C] L _p at 7m, 90° lateral:				55	50	48	44	39	34	22	45		
	Gable End Extract Fans (Big Dutchman EM50)	[D] L _p at 2m, 45° lateral:				67	73	79	72	69	67	61	76		
		[E] Reflection off poultry shed facade:				3	3	3	3	3	3	3			
		[F] directivity correction, 45° to 90°:				1.5	2.5	4.5	9	23	23	23			
		[D] + [E] - [F] L _p at 2m, 90° lateral:				69	74	78	66	49	47	41	70		
Fan		Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans	
		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level
1	Direct distance, m	782.3	783.3	882.1	881.1	Distance correction, dB	41.0	41.0	52.9	52.9	Shielding attenuation, dB	0	0	10	10
2		792.1	793.0	881.8	880.8		41.1	41.1	52.9	52.9		0	0	10	10
3		801.8	802.7	881.6	880.5		41.2	41.2	52.9	52.9		0	0	10	10
4		811.5	812.4	881.3	880.3		41.3	41.3	52.9	52.9		0	0	10	10
5		821.3	822.2	881.0	880.0		41.4	41.4	52.9	52.9		0	0	10	10
6		831.0	831.9	880.1			41.5	41.5	52.9			0	0	10	
7		840.8	841.7	879.8			41.6	41.6	52.9			0	0	10	
8		850.6	851.4	879.6			41.7	41.7	52.9			0	0	10	
9		860.3	861.2	879.3			41.8	41.8	52.9			0	0	10	
10		870.1	871.0	879.1			41.9	41.9	52.9			0	0	10	
1	Ground absorption, dB	4.6	4.6	0.0	0.0	Atmospheric attenuation, dB	1.5	1.5	1.7	1.7	Sound pressure level at dwelling, dB	-1.7	-1.7	5.6	-19.3
2		4.6	4.6	0.0	0.0		1.5	1.5	1.7	1.7		-1.8	-1.9	5.6	-19.3
3		4.6	4.6	0.0	0.0		1.5	1.5	1.7	1.7		-2.0	-2.0	5.6	-19.2
4		4.6	4.6	0.0	0.0		1.5	1.5	1.7	1.7		-2.1	-2.1	5.6	-19.2
5		4.6	4.6	0.0	0.0		1.6	1.6	1.7	1.7		-2.2	-2.2	5.6	-19.2
6		4.6	4.6	0.0			1.6	1.6	1.7			-2.3	-2.4	5.7	
7		4.6	4.6	0.0			1.6	1.6	1.7			-2.5	-2.5	5.7	
8		4.6	4.6	0.0			1.6	1.6	1.7			-2.6	-2.6	5.7	
9		4.6	4.6	0.0			1.6	1.6	1.7			-2.7	-2.7	5.7	
10		4.6	4.6	0.0			1.7	1.7	1.7			-2.8	-2.8	5.7	
BS4142 character correction											0				
Day (07:00 - 20:00hrs): 100% ventilation fans operating							Specific Level, dB				17				
							Rating Level, dB				17				
Evening (20:00 - 23:00hrs): 50% ventilation fans operating (assumed odd no. fans running)							Specific Level, dB				14				
							Rating Level, dB				14				
Night (23:00 - 07:00hrs): 25% ventilation fans operating (assumed no. 2, 5 & 9 fans running)							Specific Level, dB				12				
							Rating Level, dB				12				

Table B3. Calculation of proposed poultry unit's ventilation fans Rating Levels at Receptor C															
							Octave Band Centre Frequency, Hz								dB(A)
							63	125	250	500	1k	2k	4k		
Source Levels	Roof Extract Fans (Big Dutchman FF091-6ET)	[A] L _p at 7m, 45° lateral:					52	48	48	45	45	42	37	49	
		[B] Reflection off poultry shed roof:					3	3	3	3	3	3	3		
		[C] directivity correction, 45° to 90°:					0	1.5	3	4.5	9	11	18		
		[A] + [B] - [C] L _p at 7m, 90° lateral:					55	50	48	44	39	34	22	45	
	Gable End Extract Fans (Big Dutchman EM50)	[D] L _p at 2m, 45° lateral:					67	73	79	72	69	67	61	76	
		[E] Reflection off poultry shed facade:					3	3	3	3	3	3	3		
		[F] directivity correction, 45° to 90°:					1.5	2.5	4.5	9	23	23	23		
		[D] + [E] - [F] L _p at 2m, 90° lateral:					69	74	78	66	49	47	41	70	
Fan		Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans	
		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level
1	Direct distance, m	749.6	751.1	846.1	844.5	Distance correction, dB	40.6	40.6	52.5	52.5	Shielding attenuation, dB	0	0	10	10
2		758.8	760.4	845.7	844.0		40.7	40.7	52.5	52.5		0	0	10	10
3		768.1	769.6	845.3	843.6		40.8	40.8	52.5	52.5		0	0	10	10
4		777.3	778.8	844.9	843.2		40.9	40.9	52.5	52.5		0	0	10	10
5		786.6	788.1	844.4	842.8		41.0	41.0	52.5	52.5		0	0	10	10
6		795.9	797.4	842.8			41.1	41.1	52.5			0	0	10	
7		805.3	806.7	842.4			41.2	41.2	52.5			0	0	10	
8		814.6	816.0	842.0			41.3	41.3	52.5			0	0	10	
9		823.9	825.4	841.6			41.4	41.4	52.5			0	0	10	
10		833.3	834.7	841.2			41.5	41.5	52.5			0	0	10	
1	Ground absorption, dB	4.6	4.6	0.0	0.0	Atmospheric attenuation, dB	1.4	1.4	1.6	1.6	Sound pressure level at dwelling, dB	-1.3	-1.3	6.1	-18.8
2		4.6	4.6	0.0	0.0		1.4	1.4	1.6	1.6		-1.4	-1.4	6.1	-18.8
3		4.6	4.6	0.0	0.0		1.5	1.5	1.6	1.6		-1.5	-1.5	6.1	-18.8
4		4.6	4.6	0.0	0.0		1.5	1.5	1.6	1.6		-1.7	-1.7	6.1	-18.8
5		4.6	4.6	0.0	0.0		1.5	1.5	1.6	1.6		-1.8	-1.8	6.1	-18.8
6		4.6	4.6	0.0			1.5	1.5	1.6			-1.9	-1.9	6.1	
7		4.6	4.6	0.0			1.5	1.5	1.6			-2.0	-2.0	6.1	
8		4.6	4.6	0.0			1.5	1.6	1.6			-2.1	-2.2	6.1	
9		4.6	4.6	0.0			1.6	1.6	1.6			-2.3	-2.3	6.1	
10		4.6	4.6	0.0			1.6	1.6	1.6			-2.4	-2.4	6.1	
BS4142 character correction												0			
Day (07:00 - 20:00hrs): 100% ventilation fans operating							Specific Level, dB					17			
							Rating Level, dB					17			
Evening (20:00 - 23:00hrs): 50% ventilation fans operating (assumed odd no. fans running)							Specific Level, dB					14			
							Rating Level, dB					14			
Night (23:00 - 07:00hrs): 25% ventilation fans operating (assumed no. 2, 5 & 9 fans running)							Specific Level, dB					12			
							Rating Level, dB					12			

Table B4. Calculation of proposed poultry unit's ventilation fans Rating Levels at Receptor D															
						Octave Band Centre Frequency, Hz								dB(A)	
						63	125	250	500	1k	2k	4k			
Source Levels	Roof Extract Fans (Big Dutchman FF091-6ET)	[A] L _p at 7m, 45° lateral:					52	48	48	45	45	42	37	49	
		[B] Reflection off poultry shed roof:					3	3	3	3	3	3	3		
		[C] directivity correction, 45° to 90°:					0	1.5	3	4.5	9	11	18		
		[A] + [B] - [C] L _p at 7m, 90° lateral:					55	50	48	44	39	34	22	45	
	Gable End Extract Fans (Big Dutchman EM50)	[D] L _p at 2m, 45° lateral:					67	73	79	72	69	67	61	76	
		[E] Reflection off poultry shed facade:					3	3	3	3	3	3	3		
		[F] directivity correction, 45° to 90°:					1.5	2.5	4.5	9	23	23	23		
		[D] + [E] - [F] L _p at 2m, 90° lateral:					69	74	78	66	49	47	41	70	
Fan		Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans	
		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level
1	Direct distance, m	746.1	748.6	832.6	829.9	Distance correction, dB	40.6	40.6	52.4	52.4	Shielding attenuation, dB	0	0	10	10
2		754.0	756.4	831.9	829.3		40.6	40.7	52.4	52.4		0	0	10	10
3		762.0	764.4	831.2	828.6		40.7	40.8	52.4	52.3		0	0	10	10
4		770.0	772.4	830.6	827.9		40.8	40.9	52.4	52.3		0	0	10	10
5		778.0	780.4	829.9	827.3		40.9	40.9	52.4	52.3		0	0	10	10
6		786.1	788.5	827.3			41.0	41.0	52.3			0	0	10	
7		794.3	796.6	826.6			41.1	41.1	52.3			0	0	10	
8		802.5	804.8	826.0			41.2	41.2	52.3			0	0	10	
9		810.7	813.0	825.3			41.3	41.3	52.3			0	0	10	
10		819.0	821.2	824.6			41.4	41.4	52.3			0	0	10	
1	Ground absorption, dB	4.6	4.6	0.0	0.0	Atmospheric attenuation, dB	1.4	1.4	1.6	1.6	Sound pressure level at dwelling, dB	-1.2	-1.3	6.2	-18.6
2		4.6	4.6	0.0	0.0		1.4	1.4	1.6	1.6		-1.3	-1.4	6.2	-18.6
3		4.6	4.6	0.0	0.0		1.4	1.5	1.6	1.6		-1.4	-1.5	6.2	-18.6
4		4.6	4.6	0.0	0.0		1.5	1.5	1.6	1.6		-1.6	-1.6	6.3	-18.6
5		4.6	4.6	0.0	0.0		1.5	1.5	1.6	1.6		-1.7	-1.7	6.3	-18.6
6		4.6	4.6	0.0			1.5	1.5	1.6			-1.8	-1.8	6.3	
7		4.6	4.6	0.0			1.5	1.5	1.6			-1.9	-1.9	6.3	
8		4.6	4.6	0.0			1.5	1.5	1.6			-2.0	-2.0	6.3	
9		4.6	4.6	0.0			1.5	1.5	1.6			-2.1	-2.1	6.3	
10		4.6	4.6	0.0			1.6	1.6	1.6			-2.2	-2.2	6.3	
BS4142 character correction												0			
Day (07:00 - 20:00hrs): 100% ventilation fans operating							Specific Level, dB					18			
							Rating Level, dB					18			
Evening (20:00 - 23:00hrs): 50% ventilation fans operating (assumed odd no. fans running)							Specific Level, dB					15			
							Rating Level, dB					15			
Night (23:00 - 07:00hrs): 25% ventilation fans operating (assumed no. 2, 5 & 9 fans running)							Specific Level, dB					12			
							Rating Level, dB					12			

Table B5. Calculation of proposed poultry unit's ventilation fans Rating Levels at Receptor E															
							Octave Band Centre Frequency, Hz								dB(A)
							63	125	250	500	1k	2k	4k		
Source Levels	Roof Extract Fans (Big Dutchman FF091-6ET)	[A] L _p at 7m, 45° lateral:					52	48	48	45	45	42	37	49	
		[B] Reflection off poultry shed roof:					3	3	3	3	3	3	3		
		[C] directivity correction, 45° to 90°:					0	1.5	3	4.5	9	11	18		
		[A] + [B] - [C] L _p at 7m, 90° lateral:					55	50	48	44	39	34	22	45	
	Gable End Extract Fans (Big Dutchman EM50)	[D] L _p at 2m, 45° lateral:					67	73	79	72	69	67	61	76	
		[E] Reflection off poultry shed facade:					3	3	3	3	3	3	3		
		[F] directivity correction, 45° to 90°:					1.5	2.5	4.5	9	23	23	23		
		[D] + [E] - [F] L _p at 2m, 90° lateral:					69	74	78	66	49	47	41	70	
Fan		Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans	
		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level		North Row	South Row	Low Level	High Level
1	Direct distance, m	598.0	602.0	627.8	623.3	Distance correction, dB	38.6	38.7	49.9	49.9	Shielding attenuation, dB	0	0	10	10
2		599.4	603.4	626.7	622.1		38.7	38.7	49.9	49.9		0	0	10	10
3		600.9	604.9	625.5	621.0		38.7	38.7	49.9	49.8		0	0	10	10
4		602.6	606.6	624.4	619.8		38.7	38.8	49.9	49.8		0	0	10	10
5		604.5	608.4	623.2	618.7		38.7	38.8	49.9	49.8		0	0	10	10
6		606.5	610.4	618.7			38.8	38.8	49.8			0	0	10	
7		608.7	612.6	617.5			38.8	38.8	49.8			0	0	10	
8		611.0	614.9	616.4			38.8	38.9	49.8			0	0	10	
9		613.5	617.4	615.3			38.9	38.9	49.8			0	0	10	
10		616.2	620.0	614.1			38.9	38.9	49.7			0	0	10	
1	Ground absorption, dB	4.5	4.5	0.0	0.0	Atmospheric attenuation, dB	1.1	1.1	1.2	1.2	Sound pressure level at dwelling, dB	1.0	1.0	9.1	-15.8
2		4.5	4.5	0.0	0.0		1.1	1.1	1.2	1.2		1.0	0.9	9.1	-15.7
3		4.5	4.5	0.0	0.0		1.1	1.1	1.2	1.2		1.0	0.9	9.1	-15.7
4		4.5	4.5	0.0	0.0		1.1	1.2	1.2	1.2		1.0	0.9	9.1	-15.7
5		4.5	4.5	0.0	0.0		1.1	1.2	1.2	1.2		0.9	0.9	9.1	-15.7
6		4.5	4.5	0.0			1.2	1.2	1.2			0.9	0.8	9.2	
7		4.5	4.5	0.0			1.2	1.2	1.2			0.9	0.8	9.2	
8		4.5	4.5	0.0			1.2	1.2	1.2			0.8	0.8	9.3	
9		4.5	4.5	0.0			1.2	1.2	1.2			0.8	0.7	9.3	
10		4.5	4.5	0.0			1.2	1.2	1.2			0.7	0.7	9.3	
BS4142 character correction												0			
Day (07:00 - 20:00hrs): 100% ventilation fans operating							Specific Level, dB					20			
							Rating Level, dB					20			
Evening (20:00 - 23:00hrs): 50% ventilation fans operating (assumed odd no. fans running)							Specific Level, dB					17			
							Rating Level, dB					17			
Night (23:00 - 07:00hrs): 25% ventilation fans operating (assumed no. 2, 5 & 9 fans running)							Specific Level, dB					15			
							Rating Level, dB					15			

Table B6. Calculation of proposed poultry unit's ventilation fans Rating Levels at Receptor F															
						Octave Band Centre Frequency, Hz								dB(A)	
						63	125	250	500	1k	2k	4k			
Source Levels	Roof Extract Fans (Big Dutchman FF091-6ET)	[A] L _p at 7m, 45° lateral:				52	48	48	45	45	42	37	49		
		[B] Reflection off poultry shed roof:				3	3	3	3	3	3	3			
		[C] directivity correction, 45° to 90°:				0	1.5	3	4.5	9	11	18			
		[A] + [B] - [C] L _p at 7m, 90° lateral:				55	50	48	44	39	34	22	45		
	Gable End Extract Fans (Big Dutchman EM50)	[D] L _p at 2m, 45° lateral:				67	73	79	72	69	67	61	76		
		[E] Reflection off poultry shed facade:				3	3	3	3	3	3	3			
		[F] directivity correction, 45° to 15°:				-1	-0.5	-1	-1	-1	-1	-1			
		[D] + [E] - [F] L _p at 2m, 15° lateral:				71	77	83	76	73	71	65	80		
		Fan		Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans		Gable End Extract Fans			Inlet Roof Fans	
North Row	South Row			Low Level	High Level	North Row	South Row		Low Level	High Level	North Row	South Row		Low Level	High Level
1	Direct distance, m	1280.2	1279.1	1181.4	1182.8	Distance correction, dB	45.2	45.2	55.4	55.4	Shielding attenuation, dB	0	0	10	10
2		1270.6	1269.5	1181.8	1183.2		45.2	45.2	55.4	55.4		0	0	10	10
3		1261.0	1259.9	1182.1	1183.5		45.1	45.1	55.4	55.4		0	0	10	10
4		1251.4	1250.3	1182.5	1183.9		45.0	45.0	55.4	55.4		0	0	10	10
5		1241.8	1240.7	1182.8	1184.2		45.0	45.0	55.4	55.4		0	0	10	10
6		1232.2	1231.1	1184.2			44.9	44.9	55.4			0	0	10	
7		1222.6	1221.5	1184.6			44.8	44.8	55.5			0	0	10	
8		1213.0	1211.9	1184.9			44.8	44.8	55.5			0	0	10	
9		1203.5	1202.3	1185.3			44.7	44.7	55.5			0	0	10	
10		1193.9	1192.7	1185.6			44.6	44.6	55.5			0	0	10	
1	Ground absorption, dB	4.7	4.7	0.0	0.0	Atmospheric attenuation, dB	2.4	2.4	2.2	2.2	Sound pressure level at dwelling, dB	-7.0	-7.0	11.8	-22.4
2		4.7	4.7	0.0	0.0		2.4	2.4	2.2	2.2		-7.0	-6.9	11.8	-22.4
3		4.7	4.7	0.0	0.0		2.4	2.4	2.2	2.2		-6.9	-6.9	11.8	-22.4
4		4.7	4.7	0.0	0.0		2.4	2.4	2.2	2.2		-6.8	-6.8	11.8	-22.4
5		4.7	4.7	0.0	0.0		2.4	2.4	2.2	2.3		-6.7	-6.7	11.8	-22.4
6		4.7	4.7	0.0			2.3	2.3	2.2			-6.6	-6.6	11.8	
7		4.7	4.7	0.0			2.3	2.3	2.3			-6.5	-6.5	11.8	
8		4.7	4.7	0.0			2.3	2.3	2.3			-6.4	-6.4	11.8	
9		4.6	4.6	0.0			2.3	2.3	2.3			-6.3	-6.3	11.8	
10		4.6	4.6	0.0			2.3	2.3	2.3			-6.3	-6.2	11.8	
BS4142 character correction											0				
Day (07:00 - 20:00hrs): 100% ventilation fans operating							Specific Level, dB				22				
							Rating Level, dB				22				
Evening (20:00 - 23:00hrs): 50% ventilation fans operating (assumed odd no. fans running)							Specific Level, dB				19				
							Rating Level, dB				19				
Night (23:00 - 07:00hrs): 25% ventilation fans operating (assumed no. 2, 5 & 9 fans running)							Specific Level, dB				17				
							Rating Level, dB				17				

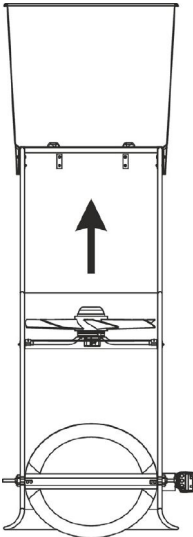
Table B7. Calculation of HGVs loading/unloading BS4142 Assessment Level at Receptors A - F								
Source noise levels	Stock delivery at 20m	L _{Aeq,1hr} 60dB						
		L _{Aeq,15min} 62dB						
		L _{Amax,F} 79dB						
Receptor		A	B	C	D	E	F	
Corrections	Distance, m	756	759	728	727	595	1181	
	Distance correction, dB	31.5	31.6	31.2	31.2	29.5	35.4	
	Shielding correction, dB	0	0	0	0	0	10	
	Ground absorption, dB	4.7	4.7	4.7	4.7	4.7	0.0	
	Atmospheric attenuation, dB	1.4	1.4	1.4	1.4	1.1	2.2	
BS4142 Specific Level		Day	22	22	23	23	25	12
		Night	24	24	25	25	27	14
BS4142 character corrections		6	6	6	6	6	6	
Rating Level		Day	28	28	29	29	31	18
		Night	30	30	31	31	33	20
Night noise ingress via open window		L _{Aeq,15minutes} dB	11	11	12	12	14	1
		L _{Amax,F} dB	28	28	29	29	31	18

Table B8. Calculation of Rating Levels of HGVs on the access road							
Receptor		A	B	C	D	E	F
	HGV pass SEL dB	87	87	87	87	87	87
	Distance to dwelling, m	704	705	672	674	569	1357
	Distance correction, dB	43.0	43.0	42.6	42.6	41.1	48.7
	Shielding attenuation, dB	0	0	0	0	0	10
	Ground absorption, dB	4.7	4.7	4.7	4.7	4.6	0.0
	Atmospheric attenuation, dB	1.3	1.3	1.3	1.3	1.1	2.6
Day (07:00 - 20:00hrs)	No. HGVs movements per hr.	2	2	2	2	2	2
	No. HGVs correction, dB	3	3	3	3	3	3
	Time correction, dB	35.6	35.6	35.6	35.6	35.6	35.6
	Specific Level, dB	5.5	5.4	5.9	5.9	7.6	-6.8
Night (23:00 - 07:00hrs)	No. HGVs movements per 15 mins.	1	1	1	1	1	1
	No. HGVs correction, dB	0	0	0	0	0	0
	Time correction, dB	29.5	29.5	29.5	29.5	29.5	29.5
	Specific Level, dB	8.5	8.5	8.9	8.9	10.6	-3.8
BS4142 character correction		3	3	3	3	3	3
Rating Level, dB	Day	8	8	9	9	11	-4
	Night	11	11	12	12	14	-1


Data sheet: Fan for exhaust air chimney

Code no	Description
60-47-7906	Fan FF091-6ET 1x230V 50Hz 4.2A f/tube
valid for the following chimney types:	
60-39-0130	Exhaust air chimney CL920-30-VC-2900 gray
60-39-0140	Exhaust air chimney CL920-30-VC-2900 brown
60-39-0150	Exhaust air chimney CL920-30-AF-2900 gray
60-39-0160	Exhaust air chimney CL920-30-AF-2900 brown

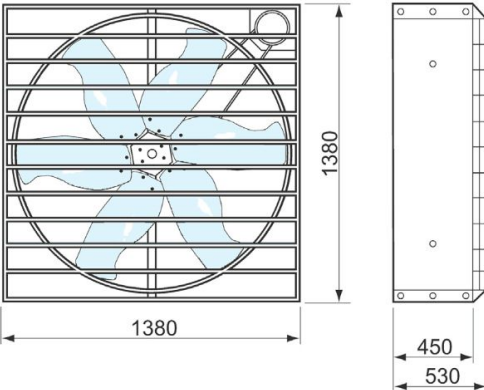
Parameter	Unit	Value	Comment
Nominal voltage	[V] / [Hz]	230/50	
Allowable voltage	[V]	207-253	
Current consumption	[A]	4,2	
Max. ambient temperature	[°C]	55	
Sound power level (L_{wA})	[dB(A)]	-	
Sound pressure level (L_{pA})	[dB(A)]	49	Distance 7m at 30 Pa
Weight	[kg]	19,5	
Speed control	[-]	T, FU, Triac	
Protection class	[-]	IP 54	
Certificate	[-]	CE, ErP2015	

Pressure	Air volume	Air speed	Specific capacity	Illustration
[Pa]	[m ³ /h]	[m/s]	[W/1000m ³]	
0	24,900	10.4	31.5	
10	23,600	9.8	34.0	
20	22,400	9.4	36.8	
30	21,200	8.9	39.9	
40	19,900	8.3	-	
50	18,300	7.6	-	
60	16,300	6.8	-	
80	12,100	5.1	-	
100	-	-	-	
120	-	-	-	
140	-	-	-	
160	-	-	-	
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Data sheet: Wall fan

Code no	Description
60-25-3035	Fan EM50 1.50HP E13 SST 41930m³ 400-3-50 assembled max. 60Pa

Parameter	Unit	Value	Comment
Nominal voltage	[V] / [Hz]	400/50	
Allowable voltage	[V]	380 - 420	
Current consumption	[A]	3.0	
Max. ambient temperature	[°C]	50	
Sound power level (L _{WA})	[dB(A)]	-	
Sound pressure level (L _{pA})	[dB(A)]	76	Distance 2 m, 45° lateral
Weight	[kg]	94	
Speed control	[-]	-	
Protection class	[-]	IP55	
Certificate	[-]	CE, ERP 2013	

Pressure	Air volume	Air speed	Specific capacity	Illustration
[Pa]	[m³/h]	[m/s]	[W/1000m³]	
0	41,930	-	-	
10	39,700	-	-	
20	37,930	-	47.4	
30	36,700	-	-	
40	34,460	-	-	
50	31,850	-	-	
60	30,030	-	-	
80	-	-	-	
100	-	-	-	
120	-	-	-	
140	-	-	-	
160	-	-	-	
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