REVERB ACOUSTICS

Noise and Vibration Consultants

Our Ref: 20-2563-L6 25 May 2022

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REQUEST FOR ADDITIONAL INFORMATION (ACOUSTICS)
GRENFELL POULTRY BREEDER/REARING FARMS

This letter has been prepared in response to a request for additional information by Department of Planning & Environment (DPE), contained in their letter dated 2 May 2022, in regard to proposed poultry breeder/rearing farms at 1130 Gooloogong Road, Grenfell. This letter is to be read in conjunction with Reverb Acoustics Report 20-2563-R2, dated November 2021 (referred to as RA-R2 in this letter) and letter 20-2563-L4, dated 25 April 2022, and 20-2563-L5, dated 9 May 2022. Further information is presented below:

Requested Information

- *Noise and amenity are raised as key issues by the public residing nearest to the site. A residual noise impact may only be accepted where the best-achievable noise level from a development, when assessed at a sensitive receiver location, remains above the project noise trigger levels. Residual noise impacts must only be identified after all source and pathway feasible and reasonable noise mitigation measures have been considered as per the Noise Policy for Industry. The Department require mitigation measures to be identified and predictions provided to demonstrate compliance with project noise trigger levels can be achieved.*
- *It remains unclear how measured sound pressure level (SPL) has been converted to sound power level (SWL) for noise modelling purposes. Additional information is required to clarify how directivity of the fans and intervening ground condition between source and measurement point have been taken into account. Please provide details of the conversion. The Department considers* the standard modelling approach of using manufacturer's data for fans to be more appropriate in this particular circumstance given the uncertainties in converting SPL to SWL.

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Following discussions with our client and finalisation of details at each Farm. The following design changes have occurred that will affect the predictions from each farm:

Previously Modelled Situation	*Finalised Situation*
1. Assumed noise emission date measured by Reverb Acoustics	1. Sourced manufacturer's noise emission data (see attached)
2. Acoustic centre of fans 1200mm above FGL, assumed 2 fans piggy-backed one on top of the other.	2. Acoustic centre of all fans 800mm above FGL. See attached diagram
3. No acoustic mound between Farm 2 sheds & Residence R1	3. Acoustic mound 1500mm above FGL west and north side Farm 2 sheds (see attached)
4. Egg truck loading area in exposed location	4. Egg loading area at east side of Farms in shielded location away from west residences
5. Refrigeration plant in exposed location	5. Refrigeration plant in partial enclosure adjacent to Packing Store Room (see attached)
6. Fork lift loading truck in exposed location	6. Fork lift in shielded location between Complex Storage Building & Sheds (see attached)

NOTES:
1. No directivity has been applied to calculated Sound Power Levels for fans. Discussions with manufacturer reveal that all measurements were taken directly in front of fan discharge. Directivity losses of 4-6dB would usually apply at 90° from discharge direction, although to apply a measure of conservatism this correction was not applied in previous and revised acoustic model. See Figure 1). Also note that only 4 fans are at end of sheds and remainder along sides with partial view of receiver R1, providing a considerable measure of conservatism (see Figure 2).
2. Actual fan locations shown in Figures 2 and 3 with acoustic centre 800mm above FGL.
3. Our client has committed to installing acoustic mound or fence 1500mm above FGL, between Farm 2 and west residences. See Figure 5.
4/5/6. See Figure 4 for final locations of Egg Truck Loading Area, Refrigeration Plant and Fork Lift operating area.

The following Table shows predicted received noise levels at nearby residential receivers under neutral and noise enhancing atmospheric conditions for the revised situation shown above. Allowances have been made in our acoustic model for intervening structures, atmospheric absorption, weather variations, and topographical features.

Table 9: Received Noise Levels for Proposed Operation dB(A)Leq (15 minute)

Receiver	Received Noise Levels, dB(A),Leq			
	Neutral Conditions (DAY)	3m/sec Wind Source to Rec (DAY)	Neutral Conditions (NIGHT)	3°C/100m Inversion (NIGHT)
R1 – Res. (W)	31	33	32	34
R2 – Res. (SW)	26	27	26	28
R3 – Res. (SW)	23	24	23	26
R4 – Res. (S)	18	19	19	23
R5 – Res. (S)	16	18	18	23
R6 – Res. (S)	14	16	15	20

Criteria: Day=40dB(A),Leq, Evening=35dB(A),Leq, Night=35dB(A),Leq.

The above Table shows that noise emissions are predicted to be compliant with the criteria at all assessed residential receivers, based on inclusion of an acoustic mound between Farm 3 and Residence R1. Note that our theoretical calculations have also relied on information supplied by our client in relation to final equipment selections and locations, and proposed operating procedures.

We assume this concludes our involvement in the project thus far. However, should you require further assistance, please contact the undersigned.

REVERB ACOUSTICS

Steve Brady M.A.S.A. A.A.A.S.
Principal Consultant

Figure 1: Fan Manufacturer's Noise Emission Data

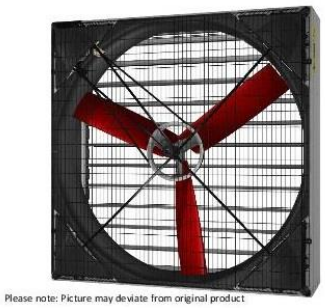
Article number: V4D13A0M11236

Galvanised box fans - High efficient

Multifan

Technical data

Voltage	U	230/400	V
Phase		3	~
Frequency		50	Hz
Speed		585	RPM
Power consumption	P_e	1600	W
Nominal current	I	5.1/3	A
Maximum current	I	5.4/3.1	A
Capacitor		-	µF
Ambient temperature	$T_{amb\ min/max}$	-25...40	°C
Insulation Class		CL.F	
IP Class Fan		IP55	
Sound pressure level at 2 m	L_p	68	dB(A)
Weight		76.5	kg



Please note: Picture may deviate from original product

Fan details

Impeller blades	3
Impeller type	10
Impeller system	N
Impeller material	PG

Approval(s)

CE

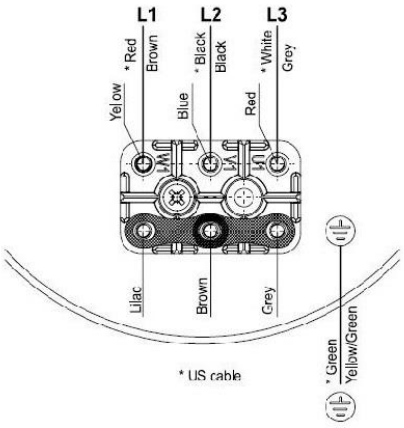
ErP 2020

Control options

Triac controller	No
Transformer	No
Frequency drive	No
Intelligent Fan Drive	No

Wiring diagram - Fan

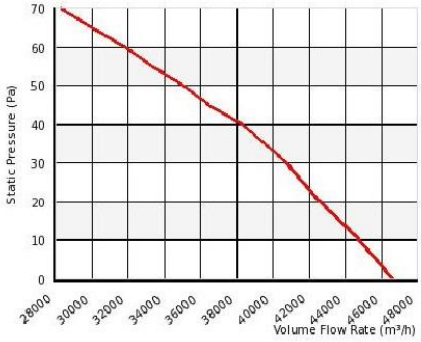
AB01 - 3 Phase - Star connected - CCW



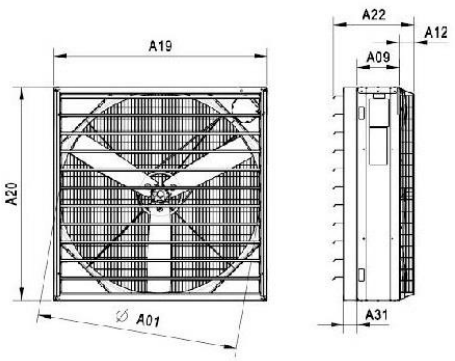
Characteristics

0 Pa 46700 m³/h

50 Pa 35000 m³/h



Dimensions



A01:	1284 mm
A09:	275 mm
A12:	96 mm
A19:	1382 mm
A20:	1382 mm
A22:	523 mm
A31:	85 mm

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Figure 2: Fan Locations (i.e. 4 at end of shed & 3 either side

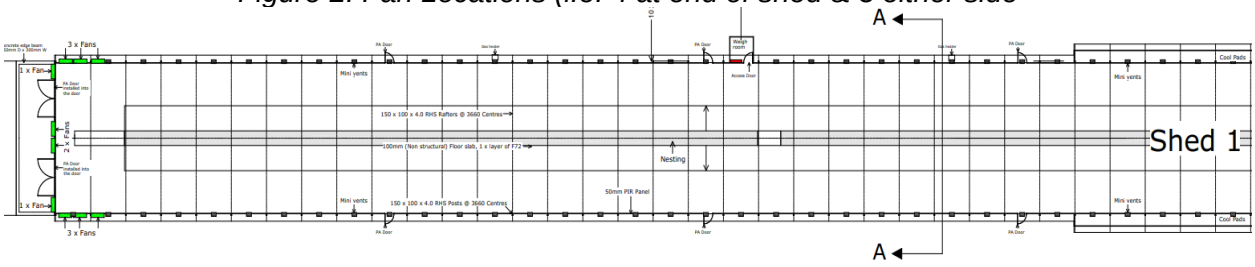

Figure 3: Fan Locations

Figure 4: Shielded Egg Truck Loading Area & Refrigeration Plant

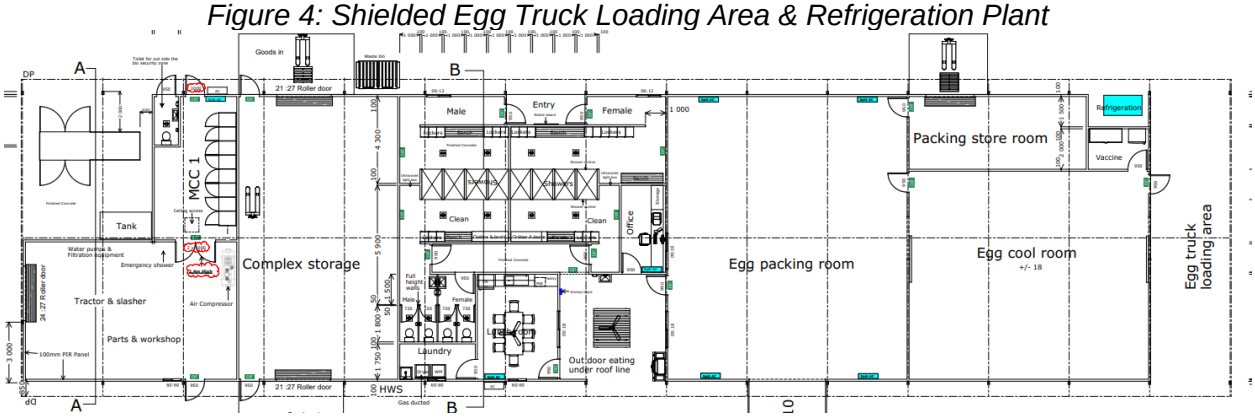

Figure 5: Acoustic Mound or Fence Location