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8 December 2017

Tattersall Lander
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Attention: **Bob Lander**

Subject: **Response to Goolgowi air quality issues raised by NSW DoPE**

The purpose of this letter is to respond to the particulars raised by the NSW Department of Planning and Environment (DoPE) email dated 1 November 2017 in regard to the Air Quality Impact Assessment (AQIA) report prepared by Advitech Environmental entitled *14275 AQIA Goolgowi Poultry Facility Rev0.pdf* (18 September, 2017).

Please find below our response to the points raised by the NSW DoPE. This letter is not intended for use by any other individual or organisation and as such, Advitech will not accept liability for use of the information contained in this letter, other than that which was intended at the time of writing.

NSW DoPE Comment 1:

Please provide a justification as to why bird mortalities from normal operations have not been considered in the odour modelling.

Advitech Response 1:

The AQIA report dated 18 September 2017 assumed that bird mortalities from normal operations would be stored in an appropriate intermediary storage bin and taken off-site on a regular basis. Advitech now understands that bird mortalities will be composed on-site in designated composting sheds. Advitech has undertaken additional odour modelling to quantify the potential odour impacts from the composting operations.

The modelling has assumed composting will be undertaken in a designated shed located at each of the individual farms (i.e. one composting shed per 20 poultry sheds) (refer to Figure 3 of Advitech AQIA Report Sep 2017). Each composting shed consists of four separate composting bays (i.e. 400 m^2 bay) which will be used on a rotation basis (i.e. once a bay is at full capacity, composting will begin at the next bay). The compost is composed of alternating layers of used litter and dead poultry.

A representative odour emission rate was taken from *Heggies. (2006). Woodlawn Alternative Waste Technology Facility – Air Quality Impact Assessment*. The specific odour emission rate for fresh putrescible waste (5.65 $OUV/m^2/s$) is considered appropriate for the composting on site. The composting shed was modelled as a continuous volume source with an assumed active composting area (i.e. actively worked composting bay) of 400 m^2.

The odour modelling impacts from the composting operations has been included in **Advitech Response 3**.

NSW DoPE Comment 2:

Regarding normal operational mortalities can you advice how often:

a) mortalities would be moved from the shed into the temporary on-site storage; and

b) mortalities would be transported off-site for disposal;

Advitech Response 2:

Advitech understands the normal operation mortalities will be moved to the composting shed on a daily basis and will not be transported off-site for disposal. We have assumed that the management of bird mortalities will be managed in accordance with the *NSW DPI Best Practice Management for Meat Chicken Production*. The frequency of mortalities being moved from the shed to another location (i.e. composting shed) will not modify the odour modelling profile of the poultry shed or composting shed.

NSW DoPE Comment 3:

While it is noted the odour modelling adopts an 'all-in, all-out' operation, representing a worst-case scenario, consideration should be given to providing odour modelling based off a 'staggered' placement of broilers across the five farms to reflect practical operations. This should also consider the likely broiler delivery times within a given week. I only mention this as this approach was requested by the EPA's air quality branch during the assessment of SSD 6882.

Advitech Response 3:

Advitech has undertaken additional odour modelling to quantify the potential odour impacts from a 'staggered' placement of broilers scenario. The modelling has assumed the placement of broilers is 'staggered' by 14 days (i.e. On January 1, Farm 1 starts with new birds, Farm 2 has 15 day old birds, Farm 3 has 29 day old birds, etc.). However, broiler delivery/pick-up times will be dependent on the poultry processor and can be highly variable. The modelling of 'staggered' operations with the inclusion of a Monte Carlo simulation for cumulative impacts should reasonably reflect practical operations.

Table 1 displays the predicted odour GLCs for the 'all-in, all-out' and 'staggered' scenarios.

Table 1: Comparison of 'All-In, All-Out' and 'Staggered' Modelling Scenarios (Increment)

Receiver	'All-In, All-Out' Predicted GLC 99th Percentile One-Second Odour (OU)	'Staggered' Predicted GLC 99th Percentile One-Second Odour (OU)	Predicted Odour Concentration Difference (OU)
R1	3.71	3.63	0.08 Decrease
R2	4.02	4.08	0.06 Increase
R3	3.04	2.98	0.06 Decrease
R4	2.69	2.26	0.43 Decrease
R5	2.13	1.59	0.54 Decrease
R6	0.91	0.93	0.02 Increase
R7	2.75	1.80	0.95 Decrease
R8	4.48	4.33	0.15 Decrease

R9	1.41	1.16	0.25 Decrease
R10	1.47	1.60	0.13 Increase
R11	2.97	2.74	0.23 Decrease
R12	3.26	3.60	0.34 Increase

The odour concentration at sensitive receivers has decreased for the majority of receivers as a result of the 'staggered' odour modelling scenario. The largest increase in odour concentration at a sensitive receiver (i.e. R12) was 0.34 OU. The results indicate the 99th percentile one second average odour GLC criteria of 5 OU is not exceeded at any sensitive receivers.

A Monte Carlo simulation was undertaken to assess the potential cumulative impacts of the existing poultry facility. The simulation involves the repeated random selection of data points from the model predictions of both the proposed project site and the existing Jeanella poultry facility to determine an odour GLC frequency distribution for each sensitive receiver.

The simulation in the assessment used 250,000 iterations to determine the distribution of odour GLCs at each sensitive receiver. **Table 2** presents the results of the Monte Carlo simulation for sensitive receivers.

Table 2: Predicted Cumulative Odour GLCs at Sensitive Receivers

Receiver	'Staggered' Predicted GLC 99th Percentile One-Second Odour (OU)	'Staggered with Composting' Predicted GLC 99th Percentile One-Second Odour (OU)	Monte Carlo Simulation Cumulative GLC 99th Percentile One-Second Odour[1] (OU)
R1	3.63	3.63	3.71
R2	4.08	4.08	4.22
R3	2.98	2.98	3.29
R4	2.26	2.26	3.16
R5	1.59	1.59	3.28
R6	0.93	0.93	1.61
R7	1.80	1.80	2.64
R8	4.33	4.33	4.73
R9	1.16	1.16	1.65
R10	1.60	1.60	1.83
R11	2.74	2.74	2.89
R12	3.60	3.60	3.69

[1] The predicted Monte Carlo method outcome combines the frequency odour distribution for the proposed poultry facility (including composting operations) with the modelled Jeanella poultry facility.

The Monte Carlo Simulation results indicate the 99th percentile one second average odour GLC criteria of 5 OU is not exceeded at any sensitive receiver. It should be noted that composting operations did not increase the predicted odour GLCs at sensitive receptors.

NSW DoPE Comment 4:   *Confirm whether on-site composting of daily mortalities as mentioned in the waste assessment has been considered in the odour modelling.*
Advitech Response 4:   Refer to **Advitech Response 1**.

Yours faithfully,

Patrick McGaw

Process Engineer
Advitech Pty Limited

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