THE ODOUR UNIT

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Phillip Fong
General Manager
Hopegate Pty Ltd T/A Nerang Park Poultry
30 – 60 Gilston Road
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6 September 2023

by email: phillipf@nerangparkpoultry.com.au

ENVIRONMENTAL EVALUATION NOTICE (EPPR00238913) RESPONSE LETTER

Dear Phillip,

As requested by the Department of Environment and Science (**DES**), the following letter provides a consolidated response to the request for information dated 15 June 2023 in relation to the Hopegate Pty Ltd, trading as Nerang Park Poultry, poultry processing facility at 30-60 Gilston Road, Nerang, Queensland (the **NPP Facility**). Specifically, the response relates to *Section C - Odour* of letter reference EPPR00238913. To that end, this response letter should be read in conjunction with the formal report prepared by The Odour Unit (**TOU**) titled *Nerang Park Poultry Environmental Evaluation (E-100318616) – Odour Investigation Report Version 1* dated 26 May 2023 (the **Odour Report**).

Response to the Request for Information

With due reference to the Odour Report, TOU's response to the relevant enquiries documented in EPPR00238913 is as follows:

1. (a) Refer to *Table 2.2* for details.

   (b) Refer to *Section 2.5* in conjunction with *Table 2.2, Section 2.6.1,* and *Section 2.6.2.*

   (c) Values in *Table 2.1* are correct.

   (d) The point source method was adopted for the gas sample collection using a fit-for-purpose sampling hood that is conventionally used to collect outlet gas samples from the surface of the biofilter. The adoption of Australian Standard/New Zealand Standard 4323.4 is not appropriate for the sampling of a biofilter surface as it does not qualify as an area source type.

2. Refer to *Section 3.2* and *Section 3.5.6*.

3. (a) The objective is to create a spray misting area/curtain and ensure that the displaced building airflow comes into contact and undergoes effective mixing with the odour masking/neutralising agent. This may facilitate a reduction in emissions and potential impact range. This short-term measure will need to be gradually complemented or replaced by the recommended long-term mitigation solution (refer to *Section 5.3*). No source testing has been completed of the existing spray misting system (plethosands) to assess its efficacy, given its current method of application and the inherent difficulty in accurately collecting a representative sample. Once implemented, the long-term solution will be validated using source testing and field ambient odour assessment surveys. These will be benchmarked against baseline performance results.

(b) The current challenges are articulated in *Section 4.1*, *Section 4.4*. The long-term solution is outlined in *Section 5.3*.

(c) Refer to *Section 4.7*, *Table 2.1*, and *Table 2.2*. Biofilter 1 collects odorous emissions from the sludge Spirotainer and dissolved air flotation (**DAF**) wastewater treatment room.

(d) Refer to Point 3 (c). The condition and performance of all biofilter systems at the NPP Facility will be independently assessed by TOU on a bi-annually frequency. The assessment will include a physical evaluation of the airflow capture effectiveness at the point of extraction, condition of the ducting and biofilter system, and odour removal performance. The NPP Facility has advised TOU that it will be committing to the undertaking of scheduled biofilter assessments as part of routine independent monitoring.

4. As outlined in *Table 3.2*, biofiltration can be space-invasive depending on airflow requirements. For the NPP Facility, the large airflows (173.6 m^3/s) that are required to achieve the desired outcome in the documented mitigation options (refer to *Section 5.4.5* and *Section 5.5* for details) will result in a biofilter footprint area of approximately 2,500 m^2 to 2,800 m^2. Suppose the existing airflow (86.8 m^3/s) was to be treated only; the biofilter footprint area will be approximately 1,250 m^2 to 1,400 m^2. Whilst biofiltration technology would reflect an effective odour control technology for the live bird area, based on the required footprint area and associated infrastructure that would be necessary to support its effective operation, it does not represent an option that is reasonably practical and economically achievable at the NPP Facility.

5. Refer to *Section 2.6.2*.

6. Refer to *Section 5.4.1*.

7. Refer to *Section 6.1.1*. The NPP Facility has a standard operating protocol for the management of the live bird area to meet quarantine and animal welfare requirements. TOU understands that this can be directly supplied by the NPP Facility upon request by DES.

8. (a) Refer to *Table 5.3*.

   (b) (i) Similar to the existing fan design.

   (b) (ii) Its implementation is subject to an inspection assessment by a suitably qualified structural engineer to confirm that the building can support the retrofit of four additional fans. All things being equal, TOU estimates it will require 3-6 months to procure and install once the structural support assessment is completed. This timeline may be extended if additional structural support is determined to be necessary.

   (c) (i) There are many masking/neutralising agents on the market. A masking agent does not interact or oxidise (transform) the odour type but masks it with a more pleasant odour. A neutralising agent is intended to interact and oxidise the odour type (for example, ammoniacal, pungent) to a neutral odour (for example, musty, stagnant). TOU is not aware of the specific formulation of the plethosands product currently used at the NPP Facility (this is typically considered to be commercially sensitive information by a product supplier).

   (c) (ii) It reflects an expansion of its application in the short term. In the context of the long-term solution, this can be adopted as a contingency measure for atypical/upset scenarios if required.

(c) (iii) Refer to Point 3 (a).

(c) (iv) Refer to Point 3 (a). TOU can assist the NPP Facility with its method of application upon request.

9. This is a matter for the appropriately qualified person addressing noise. A high-quality fan from a reputable supplier can be incorporated with effective noise attenuation capability.

10. Refer to Point 9. TOU understands that the roof fans are not intended to be in operation when the live bird area is empty. The adoption of a 24/7 fan operation was based on modelling using a conservative approach and assessing the worst-case scenario.

11. (a) Refer to *Section 6*. All recommendations are intended to enable the NPP Facility to achieve this environmental objective.

    (b) Refer to *Section 5.5*.

    (c) This is the basis of the recommended design values.

    (d) The benefits of the long-term recommendations for the live bird area have been assessed collectively rather than individually (for example, suitable airflow capture rates lead to effective containment. Effective containment will minimise fugitive emissions by ensuring a net positive airflow into the live bird area, which is reflective of operating under a negative differential pressure condition within the live bird area building). Overall, the recommended long-term strategy reflects a reasonable and practical option to effectively manage odour emissions at the NPP Facility.

12. Refer to *Section 5.2* and *Table 5.2*. It is understood that the NPP Facility will be implementing the recommended measures in a stage-wise approach, with the capability to progressively advance the level of odour containment and control as required.

23. This is a matter for the appropriately qualified person addressing noise. A high-quality fan from a reputable supplier can be incorporated with effective noise attenuation capability. With this in mind, TOU does not foresee noise as being a potential issue if appropriate engineered controls are implemented.

Yours sincerely,

The Odour Unit

Signed by:

Michael Assal MEngSc, B. Eng (Hon)/B.Sc, AMIChemE, MIEAust, CAQP
Operations Manager

Attachment:

- Curriculum Vitae – M Assal

Michael Assal

Operations Manager

THE ODOUR UNIT PTY LTD

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Career History/Roles

2021 – Present

Chair – Odour Special Interest Group (OSIG)

Clean Air Society of Australia and New Zealand (**CASANZ**)

The objective of the CASANZ OSIG is to promote the advancement of odour science and policy including odour assessment and abatement methods and technologies amongst CASANZ members and stakeholders, from industry and regulators to consultants, researchers, and the community. The group leads discussion and keeps members up to date with a range of current odour issues.

2019 – Present

Operations Manager

The Odour Unit Pty Ltd

As Operations Manager at The Odour Unit, Michael is responsible for the workflow operations of the company. The key aspects of Michael's role include:

- Oversees day-to-day workflow operations;
- Organisational management, business development, and continuous improvement;
- Project management;
- Design, engineering & commissioning of air emission control systems (particularly in biological-based systems such as biofiltration);
- Review and engineering assessments of air emission control systems;
- Air quality and odour assessments;
- Expert witness;
- Odour audits;
- Consulting; and
- Public speaking roles.

	2015 – 2019 **Senior Engineer & Consultant** The Odour Unit Pty Ltd Promoted to Operations Manager, Senior Engineer & Consultant
	2011 – 2014 **Engineer** The Odour Unit Pty Ltd Promoted to Senior Engineer in 2015

Education and Training	Master of Engineering Science (Environmental Engineering), University of New South Wales, Sydney, Australia (2018) Bachelor of Chemical Engineering (Hons)/Bachelor of Science (Mathematics), University of New South Wales, Sydney, Australia (2012)

Capabilities and Experience	As a curious 's core philosophy in undertaking any project. The industries that Michael is involved in since joining the team at TOU include: ▪ Organic waste composting; ▪ Mushroom composting; ▪ Solid waste management; ▪ Meat processing and rendering; ▪ Liquid waste management; ▪ Coffee roasting; ▪ Vegetable oil processing; ▪ Industrial wastewater treatment; ▪ Mineral processing; ▪ Municipal wastewater treatment; ▪ Oil refining; ▪ Oilseed crushing and refining; ▪ Aquaculture processing; ▪ Breweries; ▪ Cattle feedlots; ▪ Broiler farms; ▪ Food processing; ▪ Poultry production ▪ Petroleum refining; ▪ Grease and petrochemical waste processing; ▪ Glass beneficiation processing; ▪ Brick processing; ▪ Soil remediation; ▪ Pharmaceutical processing; and ▪ Retail and commercial-based developments. Distinguishing qualifications include: ▪ Measurement, minimisation and control of environmental odours ▪ Odour emissions sampling ▪ Odour-impact assessments ▪ Assessment of levels of community annoyance to odour ▪ Advice on thermal, chemical, physical or biological odour control technologies ▪ Design of biological systems (particularly biofilters) for volatile organic compounds (VOC) and odour control ▪ Fluid mechanics

	▪ Applied mathematics ▪ Industrial process and operations across a broad range of sectors ▪ Mechanical design of air extraction and ventilation systems ▪ Expert witness

Professional Afflictions	As part of Michael's commitment to professional development and further developing his engineering skills, he is a member of Engineers Australia, a Certified Air Quality Professional accredited by CASANZ, Chair of the CASANZ OSIG, member of the Waste Management Association of Australia (**WMAA**), member of The International Water Association (**IWA**) and an associate member of Institution of Chemical Engineers (**IChemE**). Michael is also in the process of obtaining his chartered engineering accreditation from Engineers Australia.