Our reference: : DOC18/722244; SF16/24271
Contact: : Duncan McGregor – 02 6773 7000 – armidale@epa.nsw.gov.au
Date : 5 October 2018

Planning Services
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Director – Industry Assessments

ELECTRONIC SUBMISSION

Dear Mr Ritchie,

RE: NOTIFICATION OF EXHIBITION – RUSHES CREEK POULTRY PRODUCTION FARM – SSD 7704

I refer to an email from Luisa Maguire of the Department of Planning and Environment (DPE) to the Environment Protection Authority (EPA) on 5 September 2018 inviting comment on the State Significant Development Application for the proposed Rushes Creek Poultry Production Farm. Thank you for providing an extension to provide these comments.

The project proposes a capacity of approximately 3 million birds, which is above the threshold for *livestock intensive activities* in Schedule 1 of the *Protection of the Environment Operations Act 1997*. If approved, the applicant will need to apply to the EPA for an Environment Protection Licence (EPL) to construct and operate the facility.

The EPA has reviewed the Application, which included an Environmental Impact Statement (EIS), as published on DPE's website. Detailed comments are provided in Attachment 1. Additional information is needed regarding:

1. Air quality – the EPA has identified several issues with the air quality assessment presented in the EIS. Additional information is needed to demonstrate that further feasible odour mitigation measures are available if needed. The applicant needs to revise the air quality assessment to comply with the EPA's approved methods for odour and particulate matter, as well as better validate their odour modelling, assess and manage risks associated with the uncertainties in modelling.
2. Water quality – the applicant should demonstrate that water quality impacts will be avoided through effective nutrient uptake and lining of drainage structures
3. Chemical and fuel storage – the applicant should demonstrate that appropriate bunding will be provided for all chemical and fuel storage, loading and unloading areas, in accordance with the relevant Australian Standards

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4. Contaminated land management – the applicant should provide a detailed assessment of the proposed site in accordance with the guidelines under the *Contaminated Land Management Act 1997*.

If the applicant becomes aware at any stage that contamination poses a significant risk to human health or the environment, they must notify the EPA in accordance with the *Contaminated Land Management Act 1997*. Guidance on the duty to report is in the *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA 2015).

The noise impact assessment indicates that the project can comply with the *NSW Industrial Noise Policy* (EPA 2000). The EIS has addressed the Secretary's Environmental Assessment Requirements for waste. Standard conditions will be included in the EPL for noise and waste issues.

The applicant should address the comments in **Attachment 1** as soon as possible to enable the EPA to complete its assessment and recommend approval conditions, if appropriate.

If the applicant wishes to meet with the EPA to discuss the additional information requested, please call Duncan McGregor on 6773 7000 or email armidale@epa.nsw.gov.au.

Yours sincerely

ROBERT O'HERN
Head Regional Operations Unit – Armidale
Environment Protection Authority

ATTACHMENT 1 – EPA comments on environmental issues

1. Air quality

Odour criterion

There is a risk that the odour criterion for the project could change due to uncertainty in the modelling approach. The applicant should consider potential changes to the criterion as part of the odour risk, including further feasible odour mitigation measures that would achieve compliance with a possible criterion of 3 OU.

The *Proten Rushes Creek Poultry Production Complex – Air Quality Assessment* (Pacific Environment 2018) adopted an odour criterion of 5 OU considering the total population affected by odour from the project. This was identified by calculating that there would be 20 affected residents within the 2.0 OU contour.

The EPA notes that the highest odour prediction for the Lake Keepit Sport and Recreation Centre (237 guests) was 1.9OU. It is standard practice to round that to 2 OU. This means a small change to model parameters could result in the centre being included in the number of affected people for the purpose of the odour criterion and potentially 257 people would then be affected by odour from the proposal.

Based on the modelling presented in the air quality assessment, the EPA considers a criterion of 3 OU may be more appropriate than the proposed 5 OU. If this was the case proposal would exceed the criterion at three additional sensitive receptors.

The EPA recommends that the applicant consider future feasible odour mitigation measures that could achieve compliance with an odour performance criterion of 3 OU.

Model Data to Assess Dispersion of Air Pollutants (Particulates and Odour)

The cumulative particulate assessment presented in the EA has not been carried out in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2017) (Approved Methods). The applicant should revise the cumulative particulate assessment to conform to the Approved Methods.

Chapter 5 of the Approved Methods outlines how to use background concentrations of pollutants to assess the total impact of a proposal. Ambient monitoring data must be coincident in time with weather data used in dispersion modelling.

The air quality assessment included a Level 2 assessment where at each receptor, each individual model prediction was added to the corresponding measured background concentration to obtain an hourly prediction of cumulative particulate concentration.

The cumulative particulate assessment was not conducted in accordance with the Approved Methods, as the meteorological data (from 2005) used in dispersion modelling was not coincident in time with the ambient monitoring data from 2016.

The applicant should also evaluate CALMET using data from the same year and location as used from the weather station at ‘‘Moana’’:

The air quality assessment compared the output of the CALMET model (year 2005) with year 2016 weather data from the nearby ‘Moana’ chicken farm. The assessment noted that variation between the two datasets was expected as one was measured and one modelled, and the datasets were for locations 1.5km apart.

Another, possibly significant, factor contributing to differences between the modelled and measured dataset

is that they were obtained for different years (2005 vs 2016). Some of the differences may have been reduced by using data from the same year, and including the 'Moana' weather station in the model domain.

The EPA requested in its SEAR dated 29 June 2016 that a weather station be installed on the proposed Rushes Creek site to obtain accurate meteorological data for modelling air emission. If this was done there would have been over 12 months of site data to input into the modelling to provide more accurate predictions.

In absence of site data, the model used meteorological data from Moana poultry farm. It must be noted however, that the terrain around the Rushes Creek site is significantly different to the Moana site. This reduces the EPA's confidence in the accuracy of the weather data inputs in the modelling.

The applicant should provide further information on their CALPUFF set up and do a sensitivity analysis to demonstrate the impact of assumed values, particularly sigma y and sigma z, on predicted concentrations.

Odour Emissions from Shed

The applicant should do either a further ventilation rate validation study which covers the range of environmental conditions at the site over the full growth cycle, or a sensitivity analysis using Dunlop and Duperouzel (2014) equations to demonstrate the range in potential odour impacts, as part of assessing the odour risk of the project.

The air quality assessment used the odour emissions model from *Description of the PAE Meat Chicken Farm Odour Emissions Model* (Ormerod and Holmes 2005) to estimate hourly odour emission rates. Ventilation rate data from the University of Georgia was used as in Ormerod and Holmes (2005).

The University of Georgia shed ventilation rate table is known to underestimate ventilation rate and therefore odour emission rates under certain conditions[1]. This means the project may not be able to comply with Section 129 of the *Protection of the Environment Operations Act 1997* which prohibits offensive odour.

The assessment concluded that the Dunlop and Duperouzel method was unrealistic whereas the University of Georgia ventilation rates and real-world data from the Murrami Farm are similar in prediction. This conclusion is unsubstantiated and not based on a robust validation study:

- The Dunlop and Duperouzel (2014) empirical equation (Model 2) should have also been included in the assessment as it performed slightly better than Model 1.
- The validation study is extremely limited. It should have covered a wide range of environmental conditions (spring, summer, autumn and winter), and covered the whole growth cycle, not just four days.
- The validation study design is not ideal as it appears to have used different years of data (2005 vs 2018).

The applicant should demonstrate that worst case odour emissions have been modelled, including that the operational placement schedule was used in the air quality assessment:

- The placement schedule in the air quality assessment assumed that birds would be placed in sheds over eight days, for a maximum of two days in a row and not on the weekend.
- The environmental impact statement states that the maximum number of birds that could be placed on any given day is 636,000 (12 sheds). The shortest time for all sheds at the proposal to be placed with birds is therefore five days.
- If sheds may be placed with birds over a shorter period (such as five consecutive days; or on the weekend) the modelling must be revised with the shorter placement schedule.

[1] Dunlop, M., E. Gallagher et al. (2010) *Odour emissions from tunnel-ventilated broiler sheds: case study of nine Queensland farms.* Animal Production Science 50(6): 546-551

The applicant should provide detailed information required by the approved methods which is missing from the air quality assessment: tables of predicted odour concentrations for each batch scenarios at all sensitive receptors, and all CALPUFF input and output files, and meteorological files, used in modelling.

Model results and control options for particulate matter

Pollution controls should be included in particle dispersion modelling, as necessary, to demonstrate that the project can meet the impact assessment criterion for 24-hour average PM_{10}.

Section 7.7 of the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA 2017) requires dispersion modelling to be revised to include various pollution control strategies until compliance is achieved with all of the EPA's impact assessment criteria. It is not adequate to simply claim an assessment is conservative in order to disregard any predicted exceedances of a criterion.

The air quality assessment predicted one exceedance of the EPA's 24 hour average PM_{10} impact assessment criteria at receptor R25:

- A total 24-hour average PM_{10} concentration of 55 µg/m^3 was predicted at R25, above the EPA's impact assessment criterion of 50 µg/m^3.
- The maximum predicted 24-hour average PM_{10} concentration at R25 from the development alone is 41.6 µg/m^3, which is a substantial proportion of the 50 µg/m^3 impact assessment criterion.
- The exceedance was discussed in the assessment, which concluded that the prediction was unrealistically conservative, and didn't account for mitigation measures (vegetative buffers).

Model results, control options and risk management for odour

The applicant should investigate additional odour control options that could be implemented should odour impacts occur once operational, to conform to the *Technical Framework: Assessment and management of odour from stationary sources in NSW* (DEC 2006).

Section 6.2 of the technical framework lists the information needed in an odour impact assessment report. This includes additional feasible mitigation measures that could be implemented if the facility emits offensive odour after it is operational.

There is considerable uncertainty in the modelling presented in the air quality assessment as discussed in the above sections. The risk posed by those uncertainties needs to be managed to make sure that the project has an acceptable odour impact.

If odour impacts occur once the project is operational, the applicant will need to address those impacts and, if necessary, modify the facility based on actual operational outcomes. It is likely to be easier and cheaper to include additional measures early, rather than addressing odour impacts once the project is in operation.

Assessing odour risk involves putting impact assessment results into context by considering additional information, including:

- the robustness and appropriateness of assessment input data
- the degree of compliance with the odour impact assessment criteria. Marginal compliance with the odour assessment criterion suggests a risk that actual impacts may not be acceptable
- the level of uncertainty in dispersion model results
- the sensitivity of model results and the odour criterion to changes in source parameters and meteorological data
- proposed odour mitigation measures and their reliability, and
- the availability of additional feasible mitigation measures in case offensive odour occurs once the project is in operation.

2. Water quality

The applicant should demonstrate that water quality impacts will be avoided through effective nutrient uptake and lining of drainage structures:

The EPA understands the proposal intends to be a 'nil discharge' site meaning all sediment laden or 'dirty' water will be captured onsite and reused for dust suppression or irrigation. As such, no licensed water discharge point will be included on any EPL issued.

The surface water management system appears to have appropriately sized drains and basins to enable dirty water to be contained on site. However, drains and grassed swales appear to be designed to be permeable, which poses a risk of contaminant migration to groundwater.

Section 3.7.2 of *Best Practice Management for Meat Chicken Production in NSW* (DPI 2012) manual 1 requires "compacting of any drains or stormwater retention systems", but an engineered liner may be able to be installed in drains and swales to allow grass growing over the liner to take up nutrients in dirty water.

The applicant proposes to establish a vegetative screen irrigated using wastewater generated onsite. The applicant needs to make sure that any species planted in the vegetative screen are able to cope with and effectively use nutrient loads applied through irrigation.

3. Chemical and fuel storage

The applicant should demonstrate that appropriate bunding will be provided for all chemical and fuel storage, loading and unloading areas, in accordance with the relevant Australian Standards:

The EPA is aware of some chicken farms in the area where bunding has been installed that is not compatible with the chemicals being stored and has deteriorated rapidly.

While the application has stated that bunding will be provided, the applicant should demonstrate that appropriate materials will be used to ensure bund integrity at all times.

4. Contaminated land management

The applicant should provide a detailed assessment of potential contamination in accordance with the guidelines under the *Contaminated Land Management Act 1997:*

The environmental impact statement included a preliminary investigation under the *Managing Land Contamination Planning Guidelines SEPP 55 - Remediation of Land* (DUAP and EPA 1998).

The investigation identified a former sheep dip near one of the proposed farm manager houses in proposed farm 2. A detailed investigation of potential contamination from the sheep dip is needed as it may result in land not being fit for its proposed use.

The objectives of a detailed investigation are to define the nature, extent and degree of contamination; to assess potential risk posed by contaminants to health and the environment; and to obtain sufficient information to develop a remedial action plan (RAP), if required.

The detailed investigation must include sampling in accordance with EPA approved methods and guidelines including:

- *Contaminated Sites Sampling Design Guidelines* (EPA 1995)
- *Managing Land Contamination Planning Guidelines SEPP 55 - Remediation of Land* (DUAP and EPA 1998)

- *Contaminated Sites Guidelines for Consultants Reporting on Contaminated Sites* (OEH 2011), and where relevant
- *Contaminated Sites Guidelines for the Assessment and Management of Groundwater Contamination* (DEC 2007).

Depending on the results of the detailed investigation, it may be appropriate for any project approval to require the applicant to implement a RAP. The objective of a RAP is to set objectives and document the process to remediate the site so it is suitable for its proposed use.

Validation and monitoring would also be needed to demonstrate whether the objectives stated in the RAP and any conditions of development consent have been achieved. SEPP 55 requires a notice of completion for all remediation work. Validation is an important prerequisite of this notice.

A site audit may also be required under the *Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition)* (EPA 2017), to provide further confidence in remediation outcomes.

If the applicant becomes aware at any stage that contamination poses a significant risk to human health or the environment, they must notify the EPA in accordance with the *Contaminated Land Management Act 1997*. Guidance on the duty to report is in the *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA 2015).