

**From:** [stevesmith@asmodata.co.uk](mailto:stevesmith@asmodata.co.uk)  
**To:** [Cummins, Kate](#)  
**Cc:** ["steve raasch"](#)  
**Subject:** RE: EPR/KP3902LP/A001 Redenham Park Farm - not duly made request for further information  
**Date:** 21 July 2021 18:11:34  
**Attachments:** [image001.jpg](#)

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Good Afternoon Kate/Steve,

Firstly, I want to assure you that this is the best/most realistic modelling assessment of scrubber performance/impacts you are going to get. Some of the tentative suggestions (at 3d) would be bad (allowing 85% -95% abatements, which are not achievable).

Answers to your questions.

2. Acid scrubber system. There are bound to be differences between broiler rearing and egg laying chicken houses; however, we would expect acid scrubbers to work more efficiently with the steadier and generally higher ammonia concentrations encountered in egg laying chicken housing, than the would in a broiler rearing house.

3 a) The 7.34% figure is taken directly from the paper cited "I. C. Pettersson et al (2018). Internal roosting location is associated with differential use of the outdoor range by free-range laying hens.", which is attached. I would note that this figure is for usage when ranging is available. The other papers cited also support a figure of well below 20% overall range usage.

The "agreed" figure of 20% is quite simply nonsense. This figure is base upon otherwise unreported personal correspondence (Elson, ADAS), previously mentioned in UK Ammonia Emission Inventory reports; note that it is not mentioned in current versions. The figure is not backed up by any peer reviewed reports, or papers from Elson or anyone else. I would note that the only figure given by Elson in any papers baring his or hers name is actually 9%. I actually suspect that this 20% figure comes from a fundamental misunderstanding of the question/answer, that a few folks have been desperately trying to justify ever since it was first published.

The lead author of the UK Ammonia Emission Inventory reports has the following to say on this matter: "I say I am unaware of literature data relating to this precisely because we have not had the time/resource to review this area" and "Thanks for this additional information and it seems this value is indeed ripe for a review. All I can do at this stage is flag this for improvement with the inventory steering committee. We know it is highly uncertain, as is the emission factor for droppings excreted outdoors as we have no measurements for that either. I am happy for you to call into question the values currently used in the inventory and their uncertain nature as this will strengthen our case for a review.". I would note that this of course puts a somewhat different slant on out of context quotes on the matter which other regulators have presented.

Here is a little though exercise, free range birds have access to ranges at most 33% of the time and in fact it is usually a lot lower than this once inclement weather, disease control measures etc are taken into account. But let's go with 33% of the time, this means that to achieve 20% range usage, then 60% of birds would have to be using the range at every available moment it was available. This clearly and obviously does not happen.

We would be happy to use a 20% figure, if provided with evidence (rather than completely undocumented regurgitated 20 year old dogma) that the overall range usage is 20%.

3 b). The calculation is described in Section 3.5.2 (unfortunately mis-titled) of the report. “ To estimate the ammonia emissions from the ranges for each scenario, it is assumed that laying hens produce 0.75 kg-N/y in their droppings (NAEI) of which 70% is ammoniacal nitrogen, that is nitrogen in a form that may readily be converted to ammonia (NAEI), and that 35% of ammoniacal nitrogen is emitted as ammonia (NAEI). Range usage is assumed to be 7.34%, this figure obtained from recent peer reviewed scientific investigations of very similar housing/ranging systems (primarily Pettersson *et al*). This equates to an emission factor of 0.016 kg-NH<sub>3</sub>/bird-place/y.

$0.75 \text{ kg-N/bird/y} \times 0.7 = 0.525 \text{ kg-ammoniacal\_N//bird/y}$

Of which 35% is assumed to be emitted as NH<sub>3</sub>, so...  $0.525 \times .35 \times (17/14) = 0.22312 \text{ kg-NH}_3\text{-bird/y}$

So that's an emission factor of 0.22312 kg-NH<sub>3</sub>-bird/y for hens ranging 100% of the time. All these figures are from NAEI.

Assuming overall 7.34% ranging (Pettersson) we have  $0.22312 \times 0.0734 = 0.016377 \text{ kg-NH}_3\text{/bird/y}$  (per bird as stocked).

Note that even this 7.34% is when ranging is available, a time weighted figure would be 1/3 of this, so it could be argued that 7.34% is precautionary.

3 c). As stated in the report the 2ppm figure is precautionary, typically, an agricultural wet chemical scrubber can achieve 1 to 1.5 ppm. However this is something the scrubber manufacture will have to confirm/guarantee.

The 8.5 ppm figure is, as stated in the report, chosen because it approximates the regulatory emission factor (when used with our ventilation model). We have to do this because we cannot mix and match the scrubber modelling methodology with regulatory modelling (continuous fixed emission rates). Note that in this case, the capacity of the scrubbers is relatively large and that bypass ventilation would rarely be used, so any change in bypass emission rates would have very little effect of results anyhow. Really the bypass ventilation calculation is intended for much smaller scrubbers where bypass emissions would be significant, we retain it as it is available in the model and we may as well use it.

3 d) Manufactures % reduction claims are those obtained under the optimum conditions, it is simply not appropriate to apply these reductions directly to a regulatory emission factor. Note that we can calculate the overall % reduction achieved by the system as modelled and that this will absolutely certainly be lower than manufacturers claimed % reductions nonoptimal conditions. I usually do this, I'm not sure what it didn't go into this report.

3 c) (again). All files are available for inspection upon request.

Regards,

Steve Smith.



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**From:** steve raasch <[stephenraasch@gmail.com](mailto:stephenraasch@gmail.com)>

**Sent:** 21 July 2021 16:52

**To:** <[stevesmith@asmodata.co.uk](mailto:stevesmith@asmodata.co.uk)> <[stevesmith@asmodata.co.uk](mailto:stevesmith@asmodata.co.uk)>

**Subject:** Fwd: EPR/KP3902LP/A001 Redenham Park Farm - not duly made request for further information

----- Forwarded message -----

From: **Cummins, Kate** <[kate.cummins@environment-agency.gov.uk](mailto:kate.cummins@environment-agency.gov.uk)>

Date: Mon, 12 Jul 2021 at 18:02

Subject: EPR/KP3902LP/A001 Redenham Park Farm - not duly made request for further information

To: steve raasch <[stephenraasch@gmail.com](mailto:stephenraasch@gmail.com)>

Hi Steve,

I have now taken a high level look through the application and supporting documentation, and need some further information before I can duly make it:

1. **Site address** – application form B3.5 section 2b states the installation address as Andover Road, Fyfield, Test Valley, Hants SP11 9AQ. I have checked our mapping system postcode areas and the bulk of the installation lies in postcode area SP11 9TY, however on a Royal Mail search that postcode isn't currently recognised as there are no properties within in it. I will leave the postcode as SP11 9AQ as the access road to the farm from Andover Road is very close to the area covered by that postcode, but I also can't verify the Fyfield, Test Valley parts so I'll put the installation address as Andover Road, Andover, Hampshire SP11 9AQ. Can you confirm you are happy with this amendment please, or let me know if you want the correct postcode of SP11 9TY.

2. **Acid scrubber system** – you have submitted DLG Test Report 6260 as validation data for the wet acid scrubber system reduction of emissions proposed. However, this data is from use of the system with barn reared broiler chickens. Please provide a test report with validation data for the system used on housing with free range laying hens, to confirm the % reduction in emissions

that can be achieved.

3. **Ammonia modelling** – further clarification or information is required as follows:

- a) In section 3.5.2 of the modelling report, the figure of 7.34% for range usage is not one which we have agreed yet. Please provide further justification as to why this has been assigned as appropriate, for our consideration. *Please note that we currently have an agreed 20% figure for free range laying hen outdoor ranging estimates, therefore we will need robust, peer-reviewed data as evidence for consideration of the proposed number.*
- b) In addition it states that the emission factor for the ranging area has been calculated from the range usage of 7.34%. Please provide further calculations for how the emission factor of 0.016 kg NH<sub>3</sub>/place/yr has been derived, broken down with all steps included. *Please note, if this emission factor cannot be accepted when we consider the calculations during determination, this may affect the results and conclusion in the modelling report.*
- c) Please provide further information with regards to the calculations in section 3.5.3. Please provide actual evidence from usage of free range laying hens to show why the figure of 2 ppm post abatement has been used to calculate ammonia emission rates. In addition please provide further details as to how the assigned figure of 8.5ppm for the poultry housing has been calculated, and why the figure of 2ppm has been used to calculate ammonia emission rates if the 8.5ppm is plausible.
- d) Please use the % emission reduction expected from the houses with the acid scrubbers, as provided in response to question 2, and use it to create a revised emission factor based on the standard free range laying hen (aviary system) emission factor of 0.08 kg NH<sub>3</sub>/livestock place/year.
- c) Please provide all modelling data input files including the varying emissions file for the emission rates used in the modelling for the purpose of auditing the modelling.

Please note – Salisbury Plain SAC/SPA/SSSI is located more than 5km from the installation boundary so we will exclude the results for these from our assessment of the modelling.

4. **BAT measures and further mitigation** – currently the proposal is showing, from (not yet audited) modelling results, that the impact at the nearest designated nature conservation site is 180% of the nitrogen deposition critical load (CLo). Our guidance indicates that 100% of critical load is the acceptable impact level for consideration in the determination of permits for this type of nature conservation site. Can you provide confirmation that all relevant BAT measures have been used to minimise the ammonia impact or if there are any other measures you can take to reduce emissions further, so that the 100% of CLo impact, or as close as possible, can be achieved, such as increasing the stack height of the wet acid scrubbers and the height of the roof

fan outlets? If so, please supply details of the additional measures and submit revised modelling to show a reduction in the impact.

**5. Mobile mill and mixing of feed** – in the Non-Technical Summary, submitted with the application, it mentions feed is milled on site using a mobile mill, and we need some basic information to establish if this is to be classed as a directly associated activity, and also included in the application risk assessments and other documents:

- a) Where is the mobile mill located when on site and where is the feed mixing undertaken. Please submit an updated site layout and drainage plan to show the location(s).
- b) Please confirm the frequency and length of time the mobile mill is on site and in operation (e.g. once a week, for 4 hours).
- c) Dust and potentially contaminated drainage from the mill and mixing areas have not been considered in the Technical Standards Table of Emission Points, the Fugitive Emissions risk assessment or the Dust and Bioaerosol Management Plan (DBMP), please submit updated documents.

**6. Application fee** – you have paid £9,460 for this application. The fee due is £8,020 for a new bespoke intensive farming application, £620 for assessment of the detailed ammonia modelling and £620 for assessment of the Dust and Bioaerosol Management Plan, which is in total £9,260, therefore you are due a refund of £200. Please confirm you agree with this, or state what the overpayment is for. I will arrange a refund if you agree this is an overpayment.

I have discussed the proposal with colleagues, including our air quality modelling team, and we feel that the information requested in points 2, 3 and 4 above is required at this stage of the application process.

Once duly made, the determination of the application may result in refusal if we find the proposed impact unacceptable, and this may mean we are unable to refund the application fee as a result. **Please consider carefully if you wish to proceed with the application on this basis or would like to withdraw it and reconsider the proposal before resubmitting an application.**

Can you please respond to the above by 26/07/21, or let me know if you wish to extend this deadline. Please contact me if you need to discuss any of the above in more detail.

Kind regards,  
Kate

**Kate Cummins**

Permitting Officer, National Permitting Service, Operations – Regulation, Monitoring and Customer  
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