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# Ammonia Report

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## Erection of an intensive poultry unit and all associated works

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On behalf of Ystym Colwyn Farms

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## Introduction

It is proposed to erect an intensive poultry unit at Ystym Colwyn to accommodate a maximum of 100,000 birds.

The purpose of this report is to explain and examine if the proposed development will have any impact on the ecological interest of the area. Particular note is given to the levels of ammonia which shall arise from the proposed poultry unit.

## Location

The proposed development is located on the outskirts of the village of Meifod. The development is approximately 200 metres away from Ystym Colwyn Farmhouse.

It is noted that there is an existing range of modern farm buildings positioned between the Farmhouse and the proposed development. The existence of modern buildings adjoining the proposed development is beneficial as it provides an ideal screen for the development from the Farmhouse.

## Environmental Sites

Within a 5km radius of the application site, there are 4 environmental sites, ranging from 2km to 4km away from the proposed site:

	Region	Site Name	Site Code	Designation Status	Distance from Installation (m)	Sensitive Habitats
1.	Wales	Tanat and Vyrnwy Bat Sites / Safleoedd Ystlymod Tanat ac Efyrrwy	UK0014783	SAC	2152	Non-sensitive Habitat
2.	Wales	Bryngwyn Hall Stables and Coach House	4397	SSSI	2152	Non-sensitive Habitat
3.	Wales	Allt y Main Mine	5909	SSSI	2267	Non-sensitive Habitat
4.	Wales	Gwern-y-Brain Dingle	6391	SSSI	4486	Non-sensitive Habitat
5.	Wales	Gweunydd Ty-Brith (Ty-Brith Meadows)	5718	SSSI	5253	Sensitive Habitat

## SCAIL Modelling – Assessment of Ammonia

The SCAIL calculation stands for a Simply Calculation of Atmospheric Impact Limits. It is a screening tool for assessing the impact from agricultural sources on semi-natural areas such as SSSI's. The SCAIL model was developed from the Integrated Pollution Prevention and Control (IPPC) Directive which requires permits for pig and poultry systems with more than a certain number of livestock. It is noted that for poultry units the IPPC directive only applies to poultry units with more than 40,000 places. The SCAIL model provides a worse case scenario to the impact of such developments.

The Environment Agency provide detailed guidance regarding Ammonia, Nitrogen and Background levels together with sources, critical loads and levels from farming operations within their document

“H1 Environmental Risk Assessment for Permits, Annex B – Intensive Farming” December 2011 (ERA H1).

ERA H1 Section 7.4.3 states that

*“An emission is insignificant where PC process contribution is <4% of Critical Levels for SACs, SPAs and Ramsars, <20% for SSSIs and <50% for local and national nature reserves, ancient woodland and local wildlife sites”.*

As well as housing the birds, the application of manure to the land can have an impact on designated sites. The application proposed will see manure taken from the building every 10 days and spread on the available farm land in accordance with the Codes of Good Agricultural and Environmental Condition and Cross Compliance Regulations.

Manure will be:

- Spread in suitable weather conditions
- At least 10 metres away from any water course
- Incorporated into the ground within a maximum of 24 hours after application

Tanat and Vyrnwy Bat Sites / Safleoedd Ystlumod Tanat ac Efyrrwy SAC 2.1km (Grid Ref: 317798, 318140)

Site Information											
Region:						Wales					
Habitat Type:						Habitat					
Grid Reference:						317798.3,318140.9					
Installation Information											
No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Dep N (kg/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc NH <sub>3</sub> (µg/m3)	Conc Odour (Ou/m3)	Dep Acid (kEq H+/ha/yr)
1	Ystym Colwyn	1	1	-	3.0	-	0.55	-	0.07	-	0.037
Total Depositions/Concentrations and Exceedances											
Concentrations/Depositions and Critical Loads				PM <sub>10</sub> (µg/m3)	NH <sub>3</sub> (µg/m3)	Odour (Ou/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)			
Process Contribution (PC) at receptor edge				-	0.07	-					
Background concentration at receptor edge				-	2.05	-					
Predicted Environmental Concentration (PEC)				-	2.12	-					
Process Contribution (PC) at receptor edge							0.55	0.037			
Background deposition at receptor							33.32	2.59 (N:2.38 S:0.21)			
Predicted Environmental Deposition (PEC)							33.87	2.63			
Environmental Assessment Level or Critical Load / Level				-	1 or 3	-	Rhinolophus hipposideros 10.0	Rhinolophus hipposideros maxN: 1.34 maxS: 1.05 minN: 0.14			
% of relevant standard PC				-	7% or 2%	-	6%	3%			
% of relevant standard PEC				-	212% or 71%	-	339%	196%			
EXCEEDANCE				-	1.12 or No exceedance	-	23.87	1.29			

Bryngwyn Hall Stables and Coach House SSSI 2.1km (Grid Ref: 317798, 318141)

Site Information

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Region:

Wales

Habitat Type:

Habitat

Grid Reference:

317798,318141

Installation Information

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No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Dep N (kg/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc NH <sub>3</sub> (µg/m3)	Conc Odour (Ou/m3)	Dep Acid (kEq H+/ha/yr)
1	Ystym Colwyn	1	1	-	3.0	-	0.37	-	0.07	-	0.025

Total Depositions/Concentrations and Exceedances?

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m3)?	NH <sub>3</sub> (µg/m3)	Odour (Ou/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)
Process Contribution (PC) at receptor edge	-	0.07	-		
Background concentration at receptor edge?	-	2.05	-		
Predicted Environmental Concentration (PEC)?	-	2.12	-		
Process Contribution (PC) at receptor edge				0.36	0.024
Background deposition at receptor?				19.46	1.56 (N:1.39 S:0.17)
Predicted Environmental Deposition (PEC)?				19.82	1.58
Environmental Assessment Level or Critical Load / Level?	-	1 or 3?	-	No sensitive habitat or species at this site	No sensitive habitat or species at this site
% of relevant standard PC?	-	7% or 2%	-	n/a	n/a
% of relevant standard PEC?	-	212% or 71%	-	n/a	n/a
EXCEEDANCE?	-	1.12 or No exceedance	-	n/a	

Alt y Main Mine SSSI 2.2km (Grid Ref: 317176, 315305)

Site Information

Region:

Wales

Habitat Type:

Habitat

Grid Reference:

317176.6,315305.5

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Dep N (kg/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc NH <sub>3</sub> (µg/m3)	Conc Odour (Ou/m3)	Dep Acid (kEq H+/ha/yr)
1	Ystym Colwyn	1	1	-	3.0	-	0.35	-	0.07	-	0.023

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m3)	NH <sub>3</sub> (µg/m3)	Odour (Ou/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)
Process Contribution (PC) at receptor edge	-	0.07	-		
Background concentration at receptor edge	-	2.05	-		
Predicted Environmental Concentration (PEC)	-	2.12	-		
Process Contribution (PC) at receptor edge				0.36	0.024
Background deposition at receptor				19.46	1.56 (N:1.39 S:0.17)
Predicted Environmental Deposition (PEC)				19.82	1.58
Environmental Assessment Level or Critical Load / Level	-	1 or 3	-	No sensitive habitat or species at this site	No sensitive habitat or species at this site
% of relevant standard PC	-	7% or 2%	-	n/a	n/a
% of relevant standard PEC	-	212% or 71%	-	n/a	n/a
EXCEEDANCE	-	1.12 or No exceedance	-	n/a	

Gwern-y-Brain Dingle SSSI 4.4km (Grid Ref; 321825, 312865)

Site Information

Region:Wales

Habitat Type:Habitat

Grid Reference:321825.6,312865.1

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Dep N (kg/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc NH <sub>3</sub> (µg/m3)	Conc Odour (Ou/m3)	Dep Acid (kEq H+/ha/yr)
1	Ystym Colwyn	1	1	-	3.0	-	0.15	-	0.03	-	0.01

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m3)	NH <sub>3</sub> (µg/m3)	Odour (Ou/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)
Process Contribution (PC) at receptor edge	-	0.03	-		
Background concentration at receptor edge	-	2.47	-		
Predicted Environmental Concentration (PEC)	-	2.5	-		
Process Contribution (PC) at receptor edge				0.16	0.011
Background deposition at receptor				21.42	1.70 (N:1.53 S:0.17)
Predicted Environmental Deposition (PEC)				21.58	1.71
Environmental Assessment Level or Critical Load / Level	-	1 or 3	-	No sensitive habitat or species at this site	No sensitive habitat or species at this site
% of relevant standard PC	-	3% or 1%	-	n/a	n/a
% of relevant standard PEC	-	250% or 83%	-	n/a	n/a
EXCEEDANCE	-	1.50 or No exceedance	-	n/a	

Gweunydd Ty-Brith (Ty-Brith Meadows) SSSI 5.2km (Grid ref; 324180, 317902)

Site Information

Region: Wales  
 Habitat Type: Habitat  
 Grid Reference: 324180.6,317902.4

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Dep N (kg/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc NH <sub>3</sub> (µg/m3)	Conc Odour (Ou/m3)	Dep Acid (kEq H+/ha/yr)
1	Ystym Cowlyn	1	1	-	3.0	-	0.13	-	0.02	-	0.009

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m3)	NH <sub>3</sub> (µg/m3)	Odour (Ou/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)
Process Contribution (PC) at receptor edge	-	0.02	-		
Background concentration at receptor edge	-	2.85	-		
<b>Predicted Environmental Concentration (PEC)</b>	-	2.87	-		
Process Contribution (PC) at receptor edge				0.10	0.007
Background deposition at receptor				23.24	1.84 (N:1.66 S:0.18)
<b>Predicted Environmental Deposition (PEC)</b>				23.34	1.85
Environmental Assessment Level or Critical Load / Level	-	1 or 3	-	Neutral grassland 10.0	Neutral grassland maxN: 5.07 maxS: 4.00 minN: 1.07
% of relevant standard PC	-	2% or 1%	-	1%	0%
% of relevant standard PEC	-	287% or 96%	-	233%	36%
<b>EXCEEDANCE</b>	-	1.87 or No exceedance	-	13.34	-3.22



SSSI Name	Background Levels		Contribution to ammonia average (NH3) concentration from this proposal	Critical level for habitat (ug)	% contribution to NH3 critical levels (CL for habitat is 3ug)*	Contribution to Nitrogen (N) deposition from this proposal	CL for habitat (kg/ha/yr)	% contribution to N critical loads (CL for habitat Low Level)
	NH3 (ug)	N (kg)						
Tanat and Vyrnwy Bat Sites / Safleoedd Ystlumod Tanat ac Efyrrwy	2.05	33.32	0.07	3	2.33%	0.55	N/A	N/A
Bryngwyn Hall Stables and Coach House	2.05	19.46	0.07	3	2.33%	0.36	N/A	N/A
Allt y Main Mine	2.05	19.46	0.07	3	2.33%	0.36	N/A	N/A
Gwern-y-Brain Dingle	2.47	21.42	0.03	3	1%	0.16	N/A	N/A
Gweunydd Ty-Brith (Ty-Brith Meadows)	2.85	23.24	0.02	3	0.66%	0.10	10	1%

## Conclusion

Based upon the results of the preliminary ammonia screening assessment, it is considered that the CCW would not require further modelling of ammonia emissions for the proposed poultry farm as ammonia emissions have been screened as insignificant following use of the SCAIL screening tool.