



### **Ammonia Screening Results**



<b>DEVELOPMENT:</b>	<b>Erection of a free range egg production unit including silos and associated works</b>
<b>LOCATION:</b>	<b>Top Gate Farm Llandyssil Montgomery Powys SY16 6LS</b>
<b>CLIENT:</b>	<b>Gwyn Jones &amp; Partners</b>

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**March 2017**



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## Introduction

It is proposed to erect a free range egg production unit with silos and associated works at Top Gate Farm to accommodate a maximum of 32,000 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 Llandyssil. The development is approximately 82 metres away from Top Gate Farm.

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 10km radius of the application site, there are 7 environmental sites, ranging from 3.9km to 9.2km away from the proposed site:

	Region	Site Name	Site Code	Designation Status	Distance from Installation (m)	Sensitive Habitats
1.	Wales	Montgomery Canal	UK0030213	SAC	3940	Sensitive Habitat
2.	Wales	Montgomery Canal	4304	SSSI	3941	Non-sensitive Habitat
3.	Wales	Hollybush Pastures	6469	SSSI	4766	Sensitive Habitat
4.	Wales	Rhos Fiddle	2419	SSSI	6907	Sensitive Habitat
5.	Wales	Coed Pentre (Pentre Wood)	6333	SSSI	9044	Sensitive Habitat
6.	Wales	Spy Wood & Aldress Dingle	2082	SSSI	9203	Non-sensitive Habitat
7.	Wales	Spy Wood and Aldress Dingle	5633	SSSI	9205	Non-sensitive Habitat



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## 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



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# SCAIL

Simple Calculation of Atmospheric Impact Limits



Simple Calculation of Atmospheric Impact Limits from Agricultural Sources (SCAIL-Agriculture) is a screening tool for assessing the impact from pig and poultry farms on human health and on semi-natural areas like SSSIs and SACs. The model provides an estimate of the amount of acidity and nitrogen deposited from a farm as well as predictions of air concentrations of odour and PM10. These values can then be used to assess whether impact limits for human health or habitats are exceeded or not.

Information regarding the use of SCAIL-Agriculture as a screening tool and instructions for completing the assessment form are provided in the SCAIL-Agriculture User Guide. The User Guide also contains background information on regulatory requirements for the use of SCAIL-Agriculture, including instances where further detailed modelling of emissions will be required. **The relevant regulatory authority should be consulted for guidance regarding assessment requirements for planning and permitting purposes.**

[Scail Home](#) | [User Guide](#) | [SCAIL-Agriculture Report](#) | [Regulator Contact Details](#) | [Online Tutorial](#)

[Load Input Data](#) ?

Project Details

Project Notes ?

Top Gate Farm

Project Run Mode ?

☒ Conservative Met
 ☐ Realistic Met

Location Details

Select Country ?

Wales

Installation Details

Installation ?

1

Installation Name ?

Top Gate Farm

Installation Location ?

318986,292356

☐ Landranger
 ☒ x,y

Verify Location ?

Source Details

Source ?

1

Source ?

☐ Pig
 ☒ Poultry

New or Existing Source ?

New

Source Name ?

Top Gate Farm

Source Location ?

318991,292366

☐ Landranger
 ☒ x,y

Verify Location ?

Source Type ?

Housing

Naturally Vented

☐

Building Height

5.81

m

Fan Location ?

Roof

No. of Fans (optional) ?

7

Fan Diameter ?

1.040

m

Fan Flowrate ?

5.09

m<sup>3</sup>/s

Livestock Number ?

32000

Housing Floor Area ?

2730

m<sup>2</sup>

Type ?

Barn and free range

Details ?

Aviary system

Total emissions : ?

NH<sub>3</sub>:

2560

(kg)

PM<sub>10</sub>:

960

(kg)

Odour:

1412812800

(kOu)

Click on the question mark icon ? to view guidance on each form field.

<http://www.scail.ceh.ac.uk/cgi-bin/agriculture/input.pl>

1/2



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Get Emissions Values ?

NH<sub>3</sub> emission (kg) ? 2560  
(comment)

PM<sub>10</sub> emission (kg) ? 960  
(comment)

Odour emission (kOu) ? 1412812800  
(comment)

**Designated Site details:**

Search Radius ? 10 km Run Receptor Search ?

No. of Designated Sites ? 7 found Verify Receptor Locations ?

Site No.	Name	Distance(km)	Designation	Easting	Northing
1	Montgomery Canal	3.94	SAC	315914	294823
2	Montgomery Canal	3.941	SSSI	315913	294823
3	Hollybush Pastures	4.766	SSSI	315391	295485
4	Rhos Fiddle	6.907	SSSI	320716	285668
5	Coed Pentre (Pentre Wood)	9.044	SSSI	327991	291520
6	Spy Wood & Aldress Dingle	9.203	SSSI	327557	295706
7	Spy Wood and Aldress Dingle	9.205	SSSI	327559	295706

User specified site Select ▼ Add site

Site Name

Site Location Landranger x,y  
Verify Location ?

Habitat within site please select...

Check Background Levels ?

**Human Health Receptor Details**

Receptor Select ▼ Add Receptor PM<sub>10</sub> percentile Annual Average ▼ ?

Receptor Name

Receptor Location Landranger x,y  
Verify Location ?

Check Background PM10 Levels ?

Finished adding sources? Save Input Data Calculate Clear Form

Site Code: [?](#) UK0030213  
Designation Status: [?](#) SAC  
Distance from Installation (m): [?](#) 3940  
Habitat Type: Habitat

#### 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	Top Gate Farm	1	1	-	2.6	-	0.16	-	0.03	-	0.011

#### Total Depositions/Concentrations and Exceedances [?](#)

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m3) <a href="#">?</a>	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 <a href="#">?</a>	-	2.25	-		
<b>Predicted Environmental Concentration (PEC)</b> <a href="#">?</a>	-	2.28	-		
Process Contribution (PC) at receptor edge				0.16	0.011
Background deposition at receptor <a href="#">?</a>				21.98	1.76 (N:1.57 S:0.19)
<b>Predicted Environmental Deposition (PEC)</b> <a href="#">?</a>				22.14	1.77
Environmental Assessment Level or Critical Load / Level <a href="#">?</a>	-	1 or 3 <a href="#">?</a>	-	Luronium natans 3.0	Luronium natans
% of relevant standard PC <a href="#">?</a>	-	3% or 1%	-	5%	n/a
% of relevant standard PEC <a href="#">?</a>	-	228% or 76%	-	738%	n/a
<b>EXCEEDANCE</b> <a href="#">?</a>	-	1.28 or No exceedance	-	19.14	n/a



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## Hollybush Pastures SSSI 4.7km (Grid Ref: 315391, 295485)

Site Code: 6469  
 Designation Status: SSSI  
 Distance from Installation (m): 4766  
 Habitat Type: Habitat

## 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/m <sup>3</sup> )	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )	Dep Acid (kEq H <sup>+</sup> /ha/yr)
1	Top Gate Farm	1	1	-	2.6	-	0.13	-	0.02	-	0.008

## Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m <sup>3</sup> )	NH <sub>3</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)
Process Contribution (PC) at receptor edge	-	0.02	-		
Background concentration at receptor edge	-	2.11	-		
<b>Predicted Environmental Concentration (PEC)</b>	-	2.13	-		
Process Contribution (PC) at receptor edge				0.10	0.007
Background deposition at receptor				18.62	1.48 (N:1.33 S:0.15)
<b>Predicted Environmental Deposition (PEC)</b>				18.72	1.49
Environmental Assessment Level or Critical Load / Level	-	1 or 3	-	Neutral grassland 10.0	Neutral grassland maxN: 4.86 maxS: 4.00 minN: 0.86
% of relevant standard PC	-	2% or 1%	-	1%	0%
% of relevant standard PEC	-	213% or 71%	-	187%	31%
<b>EXCEEDANCE</b>	-	1.13 or No exceedance	-	8.72	-3.37



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Site Code: 2419  
 Designation Status: SSSI  
 Distance from Installation (m): 6907  
 Habitat Type: Habitat

#### 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/m <sup>3</sup> )	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )	Dep Acid (kEq H <sup>+</sup> /ha/yr)
1	Top Gate Farm	1	1	-	2.6	-	0.08	-	0.02	-	0.006

#### Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m <sup>3</sup> )	NH <sub>3</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)
Process Contribution (PC) at receptor edge	-	0.02	-		
Background concentration at receptor edge	-	1.09	-		
<b>Predicted Environmental Concentration (PEC)</b>	-	1.11	-		
Process Contribution (PC) at receptor edge				0.10	0.007
Background deposition at receptor				18.34	1.53 (N:1.31 S:0.22)
<b>Predicted Environmental Deposition (PEC)</b>				18.44	1.54
Environmental Assessment Level or Critical Load / Level	-	1 or 3	-	Dwarf shrub heath - upland 10.0	Dwarf shrub heath - upland maxN: 1.34 maxS: 0.48 minN: 0.86
% of relevant standard PC	-	2% or 1%	-	1%	1%
% of relevant standard PEC	-	111% or 37%	-	184%	115%
<b>EXCEEDANCE</b>	-	0.11 or No exceedance	-	8.44	0.20



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Coed Pentre (Pentre Wood) SSSI 9.0km (Grid Ref: 327991, 291520)

Site Code: 6333  
 Designation Status: SSSI  
 Distance from Installation (m): 9044  
 Habitat Type: Habitat

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/m <sup>3</sup> )	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )	Dep Acid (kEq H <sup>+</sup> /ha/yr)
1	Top Gate Farm	1	1	-	2.6	-	0.09	-	0.01	-	0.006

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads	PM <sub>10</sub> (µg/m <sup>3</sup> )	NH <sub>3</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)
Process Contribution (PC) at receptor edge	-	0.01	-		
Background concentration at receptor edge	-	2.27	-		
<b>Predicted Environmental Concentration (PEC)</b>	-	2.28	-		
Process Contribution (PC) at receptor edge				0.08	0.005
Background deposition at receptor				38.08	2.95 (N:2.72 S:0.23)
<b>Predicted Environmental Deposition (PEC)</b>				38.16	2.96
Environmental Assessment Level or Critical Load / Level	-	1 or 3	-	Broad-leaved, mixed and yew woodland 5.0	Broad-leaved, mixed and yew woodland maxN: 2.74 maxS: 2.39 minN: 0.36
% of relevant standard PC	-	1% or 0%	-	2%	0%
% of relevant standard PEC	-	228% or 76%	-	763%	108%
<b>EXCEEDANCE</b>	-	1.28 or No exceedance	-	33.16	0.21



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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)						
Montgomery Canal	2.25	21.98	0.03	3	1%	0.16	3	5.3%
Hollybush Pastures	2.11	18.62	0.02	3	0.66%	0.10	10	1%
Rhos Fiddle	1.09	18.34	0.02	3	0.66%	0.10	10	1%
Coed Pentre (Pentre Wood)	2.27	38.08	0.01	3	0.33%	0.08	5	1.6%

## 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.



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