



Ammonia Screening Results



DEVELOPMENT: Erection of a free range egg production unit including silos and associated works

LOCATION: Castle Farm
Bishton
Newport
NP18 2DZ

CLIENT: M A Webber

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Introduction

It is proposed to erect a free range egg production unit with silos and associated works at Castle 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 Bishton. The development is approximately 153 metres away from Castle 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 22 environmental sites, ranging from 0.9km to 9.5km away from the proposed site and the closest Ancient Woodlands have also been assessed:

	Region	Site Name	Site Code	Designation Status	Distance from Installation (m)	Sensitive Habitats
1.	Wales	15768 Ancient Semi Natural Woodland	15768	N/A	637	Sensitive Habitat
2.	Wales	15769 Ancient Semi Natural Woodland	15769	N/A	558	Sensitive Habitat
3.	Wales	8425 Ancient Semi Natural Woodland	8425	N/A	646	Sensitive Habitat
4.	Wales	8427 Ancient Semi Natural Woodland	8427	N/A	462	Sensitive Habitat
5.	Wales	16170 Ancient Semi Natural Woodland	16170	N/A	500	Sensitive Habitat
6.	Wales	16078 Ancient Semi Natural Woodland	16078	N/A	495	Sensitive Habitat
7.	Wales	Gwent Levels – Redwick and Llandevenny	5836	SSSI	958	Non-sensitive Habitat



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8.	Wales	Langstone-Llanmartin Meadows	6156	SSSI	1323	Non-sensitive Habitat
9.	Wales	Gwent Levels - Whitson	4819	SSSI	2262	Non-sensitive Habitat
10.	Wales	Penhow Woodlands	5944	SSSI	2662	Sensitive Habitat
11.	Wales	Magor Marsh	5883	SSSI	3373	Sensitive Habitat
12.	Wales	Gwent Levels – Nash and Glodcliff	5986	SSSI	3475	Non-sensitive Habitat
13.	Wales	Gwent Levels – Magor and Undy	5388	SSSI	3568	Non-sensitive Habitat
14.	Wales	Parc Seymour Woods	4333	SSSI	3799	Sensitive Habitat
15.	Wales	River Usk (Lower Usk) / Afon Wysg (Wysg Isaf)	4741	SSSI	4218	Sensitive Habitat
16.	Wales	River Usk / Afon Wysg	UK0013007	SAC	4220	Non-sensitive Habitat
17.	Wales	Severn Estuary	5658	SSSI	5351	Sensitive Habitat
18.	Wales	Severn Estuary	UK0013030	SAC	5351	Sensitive Habitat
19.	Wales	Severn Estuary	UK9015022	SPA	5355	Sensitive Habitat
20.	Wales	Rectory Meadow - Rogiet	5866	SSSI	6509	Non-sensitive Habitat
21.	Wales	Brockwells Meadows	6136	SSSI	7631	Sensitive Habitat
22.	Wales	Dinham Meadows	6023	SSSI	7785	Sensitive Habitat
23.	Wales	Coombe Valley Woods	5113	SSSI	7810	Sensitive Habitat
24.	Wales	Brook Cottage I Llangybi	5392	SSSI	8271	Non-sensitive Habitat



25.	Wales	Nedern Brook Wetlands I Caldicot	5669	SSSI	8485	Non-sensitive Habitat
26.	Wales	Gwent Levels – St. Brides	5451	SSSI	9171	Non-sensitive Habitat
27.	Wales	Severn Estuary	2352	SSSI	9334	Sensitive Habitat
28.	Wales	Golden Hill Quarry	6279	SSSI	9526	Non-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



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

We have made a number of improvements to the SCAIL for agriculture tool. We have added cattle as a livestock option to cover their emissions. These are set out for housing, landspreading, manure/slurry storage, grazing and outdoor yards. Users can also add their own emissions. The layout should be simpler to use with larger font and input boxes. If you experience any issues then please [Contact Us](#)

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.**

[LOAD INPUT DATA](#)

Project Details	
Project Notes	Castle Farm
Project Run Mode	<input checked="" type="radio"/> Conservative Met <input type="radio"/> Realistic Met
Location Details	
Select Country	Wales
Installation Details	
Installation	1
Installation Name	Castle Farm
Installation Location	339278,188322 <input type="text"/> Landranger <input type="text"/> x,y <input type="button" value="CHOOSE/VERIFY LOCATION"/>
Source Details	
Source	1 <input type="button" value="+"/> <input type="button" value="x"/>
Source	<input checked="" type="radio"/> Pig <input checked="" type="radio"/> Poultry <input type="radio"/> Cattle <input type="radio"/> User defined emissions
New or Existing Source	New
Source Name	Castle Farm
Source Location	Provides a link to GoogleMaps to check the location. 339278,188322 <input type="text"/> Landranger <input type="text"/> x,y <input type="button" value="VERIFY LOCATION"/>
Source Type	Housing
Type	Barn and free range
Details	Aviary system
Livestock Number	32000
Housing Floor Area	3001 m ²
Naturally Vented	<input type="checkbox"/>
Building Height	5.88 m
Fan Location	Roof
No. of Fans (optional)	8

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

1/3



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Fan Diameter m

Fan Flowrate m³/s

Total emissions

Pollutant	Source Emissions	Running total of all emission sources	Units
NH ₃	2560	2560	(kg)
PM ₁₀	1056	1056	(kg)
Odour	1412812800	1412812800	(No)

Designated Site details:

Search Radius km

No. of Designated Sites

Site No.	Name	Distance(km)	Designation	Easting	Northing
1	Gwent Levels - Redwick and Llandevenny	0.958	SSSI	340072	187786
2	Langstone-Llanmartin Meadows	1.323	SSSI	338589	189451
3	Gwent Levels - Whitson	2.262	SSSI	339072	186060
4	Penhow Woodlands	2.662	SSSI	341575	189665
5	Major Marsh	3.373	SSSI	342316	186857
6	Gwent Levels - Nash and Goldcliff	3.475	SSSI	336866	185820
7	Gwent Levels - Major and Undy	3.568	SSSI	342266	186373
8	Parc Seymour Woods	3.799	SSSI	341041	191687
9	River Usk (Lower Usk)/Afon Wysg (Wysg Isaf)	4.218	SSSI	337305	192050
10	River Usk / Afon Wysg	4.22	SAC	337305	192052
11	Severn Estuary	5.351	SSSI	339869	183003
12	Severn Estuary / Mor Hafren	5.351	SAC	339869	183003
13	Severn Estuary	5.355	SPA	339877	183000
14	Rectory Meadow - Rogiet	6.509	SSSI	345786	188333
15	Brockwells Meadows	7.631	SSSI	346786	189694
16	Dinham Meadows	7.785	SSSI	346074	192118
17	Coombe Valley Woods	7.81	SSSI	345879	192496
18	Brook Cottage, Langybi	8.271	SSSI	335531	195695
19	Nedern Brook Wetlands, Caldicot	8.485	SSSI	347619	189875
20	Gwent Levels - St. Brides	9.171	SSSI	330903	184581
21	Severn Estuary	9.334	SSSI	343829	180173
22	Golden Hill Quarry, Devauden	9.526	SSSI	343058	197066

User specified site

Site Name

Site Location

Habitat within site

Human Health Receptor Details

Receptor

PM₁₀ percentile

Receptor Name



15768 Ancient Semi Natural Woodland 0.6km (Grid Ref: 339737, 187881)

Site Code: N/A
 Designation Status: User defined
 Distance from Installation (m): 637
 Receptor Type: Broadleaved, Mixed and Yew Woodland

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.45	2.34	0.158	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge Background concentration at receptor edge	0.45 1.66 2.11	3.50 25.48 28.98	0.240 2.09 (N:1.82 S:0.27) 2.33	- - -	- - -
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Broadleaved, Mixed and Yew Woodland	maxN: 11.31 maxS: 10.95 minN: 0.36 Broadleaved, Mixed and Yew Woodland	-	-
% of relevant standard PC	Lower: 45% Upper: 15%	35%	2%	-	-
% of relevant standard PEC	Lower: 211% Upper: 70%	290%	21%	-	-
EXCEEDANCE	Lower: 1.11 Upper: No exceedance	18.98	-8.98	-	-



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15769 Ancient Semi Natural Woodland 0.5km (Grid Ref: 339790, 188100)

Site Code: N/A
 Designation Status: User defined
 Distance from Installation (m): 558
 Receptor Type: Broadleaved, Mixed and Yew Woodland

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.56	2.88	0.195	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.56	4.40	0.300	-	-
Background concentration at receptor edge	1.66	25.48	2.09 (N:1.82 S:0.27)	-	-
	2.22	29.88	2.39	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Broadleaved, Mixed and Yew Woodland	maxN: 3.01 maxS: 2.65 minN: 0.36 Broadleaved, Mixed and Yew Woodland	-	-
% of relevant standard PC	Lower: 56% Upper: 19%	44%	10%	-	-
% of relevant standard PEC	Lower: 222% Upper: 74%	299%	79%	-	-
EXCEEDANCE	Lower: 1.22 Upper: No exceedance	19.88	-0.62	-	-



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8425 Ancient Semi Natural Woodland 0.6km (Grid Ref: 339885, 188100)

Site Code: N/A
 Designation Status: User defined
 Distance from Installation (m): 646
 Receptor Type: Broadleaved, Mixed and Yew Woodland

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.44	2.28	0.154	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.44	3.40	0.230	-	-
Background concentration at receptor edge	1.66	25.48	2.09 (N:1.82 S:0.27)	-	-
	2.1	28.88	2.32	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Broadleaved, Mixed and Yew Woodland	maxN: 3.01 maxS: 2.65 minN: 0.36 Broadleaved, Mixed and Yew Woodland	-	-
% of relevant standard PC	Lower: 44% Upper: 15%	34%	8%	-	-
% of relevant standard PEC	Lower: 210% Upper: 70%	289%	77%	-	-
EXCEEDANCE	Lower: 1.10 Upper: No exceedance	18.88	-0.69	-	-



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8427 Ancient Semi Natural Woodland 0.4km (Grid Ref: 339574, 188677)

Site Code: N/A
 Designation Status: User defined
 Distance from Installation (m): 462
 Receptor Type: Broadleaved, Mixed and Yew Woodland

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.73	3.79	0.256	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.73	5.70	0.380	-	-
Background concentration at receptor edge	1.66	25.48	2.09 (N:1.82 S:0.27)	-	-
	2.39	31.18	2.47	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Broadleaved, Mixed and Yew Woodland	maxN: 3.01 maxS: 2.65 minN: 0.36 Broadleaved, Mixed and Yew Woodland	-	-
% of relevant standard PC	Lower: 73% Upper: 24%	57%	13%	-	-
% of relevant standard PEC	Lower: 239% Upper: 80%	312%	82%	-	-
EXCEEDANCE	Lower: 1.39 Upper: No exceedance	21.18	-0.54	-	-



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16170 Ancient Semi Natural Woodland 0.5km (Grid Ref: 339291, 188822)

Site Code: N/A
 Designation Status: User defined
 Distance from Installation (m): 500
 Receptor Type: Broadleaved, Mixed and Yew Woodland

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.65	3.36	0.226	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge Background concentration at receptor edge	0.65 1.66 2.31	5.10 25.48 30.58	0.340 2.09 (N:1.82 S:0.27) 2.43	- - -	- - -
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Broadleaved, Mixed and Yew Woodland	maxN: 3.01 maxS: 2.65 minN: 0.36 Broadleaved, Mixed and Yew Woodland	-	-
% of relevant standard PC	Lower: 65% Upper: 22%	51%	11%	-	-
% of relevant standard PEC	Lower: 231% Upper: 77%	306%	81%	-	-
EXCEEDANCE	Lower: 1.31 Upper: No exceedance	20.58	-0.58	-	-



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16078 Ancient Semi Natural Woodland 0.4km (Grid Ref: 339044, 188758)

Site Code: N/A
 Designation Status: User defined
 Distance from Installation (m): 495
 Receptor Type: Broadleaved, Mixed and Yew Woodland

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.66	3.4	0.23	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.66	5.10	0.340	-	-
Background concentration at receptor edge	1.66	25.48	2.09 (N:1.82 S:0.27)	-	-
	2.32	30.58	2.43	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Broadleaved, Mixed and Yew Woodland	maxN: 3.01 maxS: 2.65 minN: 0.36 Broadleaved, Mixed and Yew Woodland	-	-
% of relevant standard PC	Lower: 66% Upper: 22%	51%	11%	-	-
% of relevant standard PEC	Lower: 232% Upper: 77%	306%	81%	-	-
EXCEEDANCE	Lower: 1.32 Upper: No exceedance	20.58	-0.58	-	-



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Penhow Woodlands SSSI 2.6km (Grid Ref: 341575, 189665)

Site Code: 5944
 Designation Status: SSSI
 Distance from Installation (m): 2662
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.06	0.45	0.03	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.06	0.47	0.032	-	-
Background concentration at receptor edge	1.62	25.34	2.04 (N:1.81 S:0.23)	-	-
	1.68	25.81	2.07	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Broad-leaved, mixed and yew woodland	maxN: 1.75 maxS: 1.60 minN: 0.14 Broad-leaved, mixed and yew woodland	-	-
% of relevant standard PC	Lower: 6% Upper: 2%	9%	2%	-	-
% of relevant standard PEC	Lower: 168% Upper: 56%	516%	118%	-	-
EXCEEDANCE	Lower: 0.68 Upper: No exceedance	20.81	0.32	-	-



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Magor Marsh SSSI 3.3km (Grid Ref: 342316, 186857)

Site Code: 5883
 Designation Status: SSSI
 Distance from Installation (m): 3373
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.04	0.23	0.015	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.04	0.21	0.014	-	-
Background concentration at receptor edge	1.62	15.68	1.32 (N:1.12 S:0.20)	-	-
	1.66	15.89	1.33	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Fen, marsh and swamp	maxN: 2.04 maxS: 1.60 minN: 0.44 Fen, marsh and swamp	-	-
% of relevant standard PC	Lower: 4% Upper: 1%	2%	0%	-	-
% of relevant standard PEC	Lower: 166% Upper: 55%	159%	65%	-	-
EXCEEDANCE	Lower: 0.66 Upper: No exceedance	5.89	-0.71	-	-



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Parc Seymour Woods SSSI 3.7km (Grid Ref: 341041, 191687)

Site Code: 4333
 Designation Status: SSSI
 Distance from Installation (m): 3799
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.04	0.3	0.02	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.04	0.31	0.021	-	-
Background concentration at receptor edge	1.33	24.50	1.99 (N:1.75 S:0.24)	-	-
	1.37	24.81	2.01	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Broad-leaved, mixed and yew woodland	maxN: 1.30 maxS: 1.16 minN: 0.14 Broad-leaved, mixed and yew woodland	-	-
% of relevant standard PC	Lower: 4% Upper: 1%	6%	2%	-	-
% of relevant standard PEC	Lower: 137% Upper: 46%	496%	155%	-	-
EXCEEDANCE	Lower: 0.37 Upper: No exceedance	19.81	0.71	-	-



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River Usk (Lower Usk) / Afon Wysg (Wysg Isaf) SSSI 4.2km (Grid Ref: 337305, 192050)

Site Code: 4741
 Designation Status: SSSI
 Distance from Installation (m): 4218
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.03	0.26	0.018	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.03	0.23	0.016	-	-
Background concentration at receptor edge	1.53	25.90	1.41 (N:1.19 S:0.22)	-	-
	1.56	26.13	1.43	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Broad-leaved, mixed and yew woodland	maxN: 0.70 maxS: 0.48 minN: 0.22 Fen, marsh and swamp	-	-
% of relevant standard PC	Lower: 3% Upper: 1%	5%	3%	-	-
% of relevant standard PEC	Lower: 156% Upper: 52%	523%	204%	-	-
EXCEEDANCE	Lower: 0.56 Upper: No exceedance	21.13	0.73	-	-



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Severn Estuary SSSI 5.3km (Grid Ref: 339869, 183003)

Site Code: 5658
 Designation Status: SSSI
 Distance from Installation (m): 5351
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.03	0.13	0.009	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge Background concentration at receptor edge	0.03 1.06 1.09	0.16 11.62 11.78	0.011 1.02 (N:0.83 S:0.19) 1.03	- - -	- - -
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	20.0 Saltmarsh	Standing open water not inc oligotrophic types	-	-
% of relevant standard PC	Lower: 3% Upper: 1%	1%	n/a	-	-
% of relevant standard PEC	Lower: 109% Upper: 36%	59%	n/a	-	-
EXCEEDANCE	Lower: 0.09 Upper: No exceedance	-8.22	n/a	-	-



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Severn Estuary / Mor Hafren SAC 5.3km (Grid Ref: 339869, 183003)

Site Code: UK0013030
 Designation Status: SAC
 Distance from Installation (m): 5351
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.03	0.13	0.009	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.03	0.16	0.011	-	-
Background concentration at receptor edge	1.06	11.62	1.02 (N:0.83 S:0.19)	-	-
	1.09	11.78	1.03	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	20.0 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Alosa fallax	-	-
% of relevant standard PC	Lower: 3% Upper: 1%	1%	n/a	-	-
% of relevant standard PEC	Lower: 109% Upper: 36%	59%	n/a	-	-
EXCEEDANCE	Lower: 0.09 Upper: No exceedance	-8.22	n/a	-	-



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Severn Estuary SPA 5.3km (Grid Ref: 339877, 183000)

Site Code: UK9015022
 Designation Status: SPA
 Distance from Installation (m): 5355
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H ⁺ /ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.03	0.13	0.009	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H ⁺ /ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge Background concentration at receptor edge	0.03 1.06 1.09	0.16 11.62 11.78	0.011 1.02 (N:0.83 S:0.19) 1.03	- - -	- - -
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	20.0 Anser albifrons albifrons (North-western Siberia/North-eastern & North-western Europe)	Anas strepera (North-western Europe)	-	-
% of relevant standard PC	Lower: 3% Upper: 1%	1%	n/a	-	-
% of relevant standard PEC	Lower: 109% Upper: 36%	59%	n/a	-	-
EXCEEDANCE	Lower: 0.09 Upper: No exceedance	-8.22	n/a	-	-



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Brockwells Meadows SSSI 7.6km (Grid Ref: 346786, 189684)

Site Code: 6136
 Designation Status: SSSI
 Distance from Installation (m): 7631
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.02	0.08	0.006	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.02	0.10	0.007	-	-
Background concentration at receptor edge	1.26	13.30	1.15 (N:0.95 S:0.20)	-	-
	1.28	13.4	1.16	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Neutral grassland	maxN: 4.86 maxS: 4.00 minN: 0.86 Neutral grassland	-	-
% of relevant standard PC	Lower: 2% Upper: 1%	1%	0%	-	-
% of relevant standard PEC	Lower: 128% Upper: 43%	134%	24%	-	-
EXCEEDANCE	Lower: 0.28 Upper: No exceedance	3.40	-3.70	-	-



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Dinham Meadows SSSI 7.7km (Grid ref: 346074, 192118)

Site Code: 6023
 Designation Status: SSSI
 Distance from Installation (m): 7785
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.02	0.08	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.02	0.10	0.007	-	-
Background concentration at receptor edge	1.51	16.24	1.35 (N:1.16 S:0.19)	-	-
	1.53	16.34	1.36	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Calcareous grassland	maxN: 4.86 maxS: 4.00 minN: 0.86 Calcareous grassland	-	-
% of relevant standard PC	Lower: 2% Upper: 1%	1%	0%	-	-
% of relevant standard PEC	Lower: 153% Upper: 51%	163%	28%	-	-
EXCEEDANCE	Lower: 0.53 Upper: No exceedance	6.34	-3.50	-	-



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Coombe Valley Woods SSSI 7.8km (Grid ref: 345879, 192496)

Site Code: 5113
 Designation Status: SSSI
 Distance from Installation (m): 7810
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.02	0.12	0.008	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge	0.02	0.16	0.011	-	-
Background concentration at receptor edge	1.51	25.90	2.07 (N:1.85 S:0.22)	-	-
	1.53	26.06	2.08	-	-
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Broad-leaved, mixed and yew woodland	maxN: 1.78 maxS: 1.64 minN: 0.14 Broad-leaved, mixed and yew woodland	-	-
% of relevant standard PC	Lower: 2% Upper: 1%	3%	1%	-	-
% of relevant standard PEC	Lower: 153% Upper: 51%	521%	117%	-	-
EXCEEDANCE	Lower: 0.53 Upper: No exceedance	21.06	0.30	-	-



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Severn Estuary SSSI 9.3km (Grid ref: 343829, 180173)

Site Code: 2352
 Designation Status: SSSI
 Distance from Installation (m): 9334
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM ₁₀ (t/a)	NH ₃ (t/a)	Odour (kOu/a)	Conc NH ₃ (µg/m ³)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM ₁₀ (µg/m ³)	Conc Odour (Ou/m ³)
1	Castle Farm	1	1	-	2.6	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH ₃ (µg/m ³)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM ₁₀ (µg/m ³)	Odour (Ou/m ³)
Process Contribution (PC) at receptor edge Background concentration at receptor edge	0.01 0.85 0.86	0.05 10.36 10.41	0.004 0.91 (N:0.74 S:0.17) 0.91	- - -	- - -
Predicted Environmental Concentration/Deposition (PEC)					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	20.0 Neutral grassland lowland	maxN: 4.86 maxS: 4.00 minN: 0.86 Neutral grassland lowland	-	-
% of relevant standard PC	Lower: 1% Upper: 0%	0%	0%	-	-
% of relevant standard PEC	Lower: 86% Upper: 29%	52%	4%	-	-
EXCEEDANCE	Lower: No exceedance Upper: No exceedance	-9.59	-3.95	-	-



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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)						
15768 Ancient Semi Natural Woodland	1.66	25.48	0.45	3	15%	3.50	10	35%
15769 Ancient Semi Natural Woodland	1.66	25.48	0.56	3	33%	4.40	10	44%
8425 Ancient Semi Natural Woodland	1.66	25.48	0.44	3	14%	3.40	10	34%
8427 Ancient Semi Natural Woodland	1.66	25.48	0.73	3	24%	5.70	10	57%
16170 Ancient Semi Natural Woodland	1.66	25.48	0.65	3	21%	5.10	10	51%
16078 Ancient Semi Natural Woodland	1.66	25.48	0.66	3	22%	5.10	10	51%
Penhow Woodlands	1.62	25.34	0.06	3	2%	0.47	5	9.4%
Magor Marsh	1.62	15.68	0.04	3	1.3%	0.21	10	2.1%
Parc Seymour Woods	1.33	24.50	0.04	3	1.3%	0.31	5	6.2%
River Usk (Lower Usk) / Afon Wysg (Wysg Isaf)	1.53	25.90	0.03	3	1%	0.23	5	4.6%
Severn Estuary	1.06	11.62	0.03	3	1%	0.16	20	0.8%



Severn Estuary / Mor Hafren	1.06	11.62	0.03	3	1%	0.16	20	0.8%
Severn Estuary	1.06	11.62	0.03	3	1%	0.16	20	0.8%
Brockwells Meadows	1.26	13.30	0.02	3	0.6%	0.10	10	1%
Dinham Meadows	1.51	16.24	0.02	3	0.6%	0.10	10	1%
Coombe Valley Woods	1.51	25.90	0.02	3	0.6%	0.16	5	3.2%
Severn Estuary	0.85	10.36	0.01	3	0.3%	0.05	20	0.25%

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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