

**SCAIL Assessment**  
**Lower House Farm, Preston**

**Client: K H & B Knowles**

**Reference: 5343r1**

**Date: 3<sup>rd</sup> March 2022**



## Report Issue

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## **1.0 INTRODUCTION**

### **1.1 Background**

1.1.1 Redmore Environmental Ltd was commissioned by K H & B Knowles to undertake a Simple Calculation of Atmospheric Impact Limits (SCAIL) Assessment in support of a planning application for a proposed covered slurry lagoon on land at Lower House Farm, Preston.

### **1.2 Site Location and Context**

1.2.1 The site is located on land at Lower House Farm, Preston, at approximate National Grid Reference (NGR): 347618, 437477.

1.2.2 The proposals comprise the construction of a covered earth banked lagoon which has a capacity to store 3,650 tonnes of slurry.

1.2.3 Atmospheric emissions from the lagoon have the potential to impact on ecological designations in the vicinity of the site. A SCAIL Assessment was therefore undertaken to quantify ammonia (NH<sub>3</sub>) concentrations and nitrogen and acid deposition rates at sensitive locations and identify any requirement for further analysis. The associated model inputs, assessment criteria and results are provided in the following report.

## **2.0 AMMONIA BACKGROUND**

### **2.1 Atmospheric Ammonia and Nitrogen Deposition**

2.1.1 The breakdown of urea or uric acid in animal manures produces NH<sub>3</sub>. Exposure to high concentrations of NH<sub>3</sub> can lead to direct damage to vegetation, as well as acute toxicity in some sensitive plants. Certain species are more sensitive than others. For example, lichens and mosses have a much lower tolerance to atmospheric NH<sub>3</sub> than higher plants species such as grasses and trees.

2.1.2 Atmospheric emissions of NH<sub>3</sub> can also lead to indirect effects on vegetation. Deposition of the nitrogen component of NH<sub>3</sub> on to land can cause a fertilising effect which leads to an increase in plants which thrive in a nitrogen rich environment. This may lead to competition between species and imbalances in the natural diversity of flora within the receiving habitat.

2.1.3 The combination of these effects can lead to changes in ecosystem structure and function. Some of the most significant problems resulting from NH<sub>3</sub> and nitrogen deposition are found at nature conservation sites located in intensive agricultural areas.

### **2.2 Critical Loads and Levels**

2.2.1 A critical load is defined by the UK Air Pollution Information System (APIS)<sup>1</sup> as:

"A quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. The exceedance of a critical load is defined as the atmospheric deposition of the pollutant above the critical load."

2.2.2 A critical level is defined as:

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<sup>1</sup> UK Air Pollution Information System, [www.apis.ac.uk](http://www.apis.ac.uk).

"Threshold for direct effects of pollutant concentrations according to current knowledge. Exceedance of a critical level is defined as the atmospheric concentration of the pollutant above the critical level."

- 2.2.3 A critical load refers to deposition of a pollutant, while a critical level refers to pollutant concentrations in the atmosphere (which usually have direct effects on vegetation or human health).
- 2.2.4 When pollutant loads (or concentrations) exceed the critical load or level it is considered that there is a potential risk of harmful effects. The excess over the critical load or level is termed the exceedance. A larger exceedance is often considered to represent a greater risk of harm.
- 2.2.5 Maps of critical loads and levels and their exceedances have been used to show the potential extent of pollution damage and aid in developing strategies for reducing pollution. Decreasing deposition below the critical load is seen as means for preventing the risk of damage. However, even a decrease in the exceedance may infer that less harm will occur.
- 2.2.6 Table 1 presents the critical levels for the protection of vegetation for pollutants considered within this assessment.

**Table 1 Critical Levels for the Protection of Vegetation**

Pollutant	Critical Level	
	Concentration ( $\mu\text{g}/\text{m}^3$ )	Averaging Period
NH <sub>3</sub>	1	Where lichens and bryophytes are present (where they form a key part of the ecosystem integrity)
	3	Other vegetation

- 2.2.7 Critical loads have been designated within the UK based on the sensitivity of the receiving habitat and have been identified for the relevant designations considered within the assessment in Section 3.3.

### 3.0 **SCAIL ASSESSMENT**

#### 3.1 **SCAIL Model Inputs**

3.1.1 A summary of the SCAIL model inputs is provided in Table 2.

**Table 2 SCAIL Model Inputs - Proposed Covered Slurry Lagoon**

Input	Unit	Value
Location	NGR	347618, 437477
Source Type	-	Slurry Lagoon
Slurry Type	-	Cattle
Source Area	m <sup>2</sup>	3,400
Storage Capacity	Tonnes	3,650
Storage Period	Days	365

3.1.2 It should be noted that the model was run in conservative mode as required for regulatory purposes in accordance with SCAIL guidance<sup>2</sup>. Additionally, it was assumed that the covered slurry lagoon operates at full capacity at all times and emissions occur constantly, 24-hours per day, 365-days per year. This ensured a worst-case assessment of potential impacts.

#### 3.2 **Ecological Designations**

3.2.1 Impacts were predicted at the following ecological designations:

- Rough Hey Wood Site of Significant Scientific Interest (SSSI);
- Newton Marsh SSSI ;
- Wyre Estuary SSSI;
- Morecambe Bay Special Protection Area (SPA);
- Ribble Estuary SSSI; and,
- Ribble and Alt Estuaries SPA.

<sup>2</sup> SCAIL-Agriculture: User Guide, Sniffer ER26, 2014.

### 3.3 Site Specific Critical Loads and Levels

3.3.1 The SCAIL tool was utilised to identify the habitats that are sensitive to increases in NH<sub>3</sub> concentrations and nitrogen and acid deposition rates within the ecological designations, as well as the associated critical levels and loads.

3.3.2 The lowest critical level of 1 µg/m<sup>3</sup> was assigned to all ecological designations in order to provide a worst-case assessment.

3.3.3 The relevant critical loads for nitrogen deposition are presented in Table 3.

**Table 3 Critical Loads for Nitrogen Deposition**

Designation	Habitat	Critical Load (kgN/ha/yr)
Rough Hey Wood SSSI	Broad-leaved	5
Newton Marsh SSSI	Neutral grassland lowland	20
Wyre Estuary SSSI	No sensitive habitat or species at this site	-
Morecambe Bay SPA	Charadrius hiaticula (Europe/Northern Africa - wintering)	8
Ribble Estuary SSSI	Neutral grassland lowland	20
Ribble and Alt Estuaries SPA	Melanitta nigra (Western Siberia/Western & Northern Europe/North-western Africa)	5

3.3.4 The relevant acid deposition critical loads are presented in Table 4.

**Table 4 Critical Loads for Acid Deposition**

Designation	Habitat	Acid Critical Load (keq/ha/yr)
Rough Hey Wood SSSI	Mixed and yew woodland	1.80
Newton Marsh SSSI	Neutral grassland lowland	5.07
Wyre Estuary SSSI	No sensitive habitat or species at this site	-



Designation	Habitat	Acid Critical Load (keq/ha/yr)
Morecambe Bay SPA	Charadrius hiaticula (Europe/Northern Africa - wintering)	0.64
Ribble Estuary SSSI	Neutral grassland lowland	4.86
Ribble and Alt Estuaries SPA	Larus ridibundus (North-western Europe - breeding)	0.48

### 3.4 **Assessment Criteria**

3.4.1 Natural England (NE) are a statutory consultee for planning applications in England. Review of consultation reports prepared by NE in relation to agricultural developments which are exempt from regulation by the Environment Agency (EA) under the Environmental Permitting (England and Wales) Regulations (2016) and subsequent amendments, such as the proposed development, indicated that the following advisory screening threshold are applicable to predicted process contributions (PCs) to atmospheric NH<sub>3</sub> concentrations and nitrogen and acid deposition rates at statutory ecological designations:

- 1% of the relevant critical level or load at Special Areas of Conservation, SPAs and Ramsar sites; and,
- 4% of the relevant critical level or load at SSSIs.

3.4.2 Should predicted PCs exceed the thresholds at the relevant ecological designations, there is usually a requirement to consider whether there is the potential for in-combination effects as a result of emissions from other agricultural installations in the vicinity of the site.

3.4.3 It should be noted that the stated NE screening thresholds are advisory and have not been published as part of any formal guidance. However, interpretation of the SCAL results has been undertaken with reference to the criteria in order to determine an indicative requirement for further assessment as a result of emissions from the proposed development.

## 4.0 SCAIL RESULTS

### 4.1 Introduction

4.1.1 The SCAIL model inputs outlined in Section 3.2 were utilised to predict NH<sub>3</sub> concentrations and nitrogen and acid deposition rates at the relevant ecological designations. The results are summarised in the following Sections.

4.1.2 Reference should be made to Appendix 1 for the SCAIL model outputs.

### 4.2 Ammonia

4.2.1 Predicted annual mean NH<sub>3</sub> PCs at the ecological designations are summarised in Table 5.

**Table 5 Predicted Annual Mean NH<sub>3</sub> PC Concentrations**

Ecological Designation	Predicted Annual Mean NH <sub>3</sub> PC Concentration (µg/m <sup>3</sup> )	PC Proportion of Relevant Critical Level (%)
Rough Hey Wood SSSI	0.0062	0.62
Newton Marsh SSSI	0.0045	0.45
Wyre Estuary SSSI	0.0041	0.41
Morecambe Bay SPA	0.0041	0.41
Ribble Estuary SSSI	0.0037	0.37
Ribble and Alt Estuaries SPA	0.0037	0.37

4.2.2 As shown in Table 5, the predicted PC proportion of the critical level was less than 1% at all designations. As such, further assessment of potential effects at the designations as a result of NH<sub>3</sub> emissions is not required.

### 4.3 Nitrogen Deposition

4.3.1 Predicted annual nitrogen PC deposition rates at the ecological designations are summarised in Table 6.

**Table 6 Predicted Annual PC Nitrogen Deposition Rates**

Ecological Designation	Predicted Annual PC Nitrogen Deposition Rate (kgN/ha/yr)	PC Proportion of Relevant Critical Load (%)
Rough Hey Wood SSSI	0.05	1.00
Newton Marsh SSSI	0.02	0.10
Wyre Estuary SSSI	0.02	-
Morecambe Bay SPA	0.02	0.25
Ribble Estuary SSSI	0.02	0.10
Ribble and Alt Estuaries SPA	0.02	0.40

4.3.2 As shown in Table 6, the predicted PC proportion of the critical load was less than 1% at all relevant designations. As such, further assessment of potential effects at the designations as a result of nitrogen deposition is not required.

#### 4.4 Acid Deposition

4.4.1 Predicted annual acid PC deposition rates at the ecological designations are summarised in Table 7.

**Table 7 Predicted Annual PC Acid Deposition Rates**

Ecological Designation	Predicted Annual PC Acid Deposition Rate (keq/ha/yr)	PC Proportion of Relevant Critical Load (%)
Rough Hey Wood SSSI	0.003	0.17
Newton Marsh SSSI	0.002	0.04
Wyre Estuary SSSI	0.002	-
Morecambe Bay SPA	0.001	0.16
Ribble Estuary SSSI	0.001	0.02
Ribble and Alt Estuaries SPA	0.001	0.21

4.4.2 As shown in Table 7, the predicted PC proportion of the critical load was less than 1% at all relevant designations. As such, further assessment of potential effects at the designations as a result of acid deposition is not required.

#### **4.5 Summary**

4.5.1 The results of the assessment indicated that impacts as a result of residual emissions from the proposed covered slurry lagoon were below the relevant criteria at all ecological designations. As such, further assessment of potential effects is not required.

## **Appendix 1 - SCAIL Model Outputs**

# SCAIL

Simple Calculation of Atmospheric Impact Limits



## Results

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### Content Specific Help Text

Site Information Rough Hey Wood (SSSI) [?](#)

Region: England  
 Site Name: Rough Hey Wood  
 Site Code: [?](#) 3468  
 Designation Status: [?](#) SSSI  
 Distance from Installation (m): [?](#) 6844  
 Receptor Type: Habitat  
 Grid Reference: 352051.9,442690.5  
 Met Site: [?](#) CROS  
 Run Mode: [?](#) Conservative  
 PM<sub>10</sub> Percentile: [?](#) Average

### 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)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H <sup>+</sup> /ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Lower House Farm	1	1	-	2.1	-	0.01	0.05	0.003	-	-

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

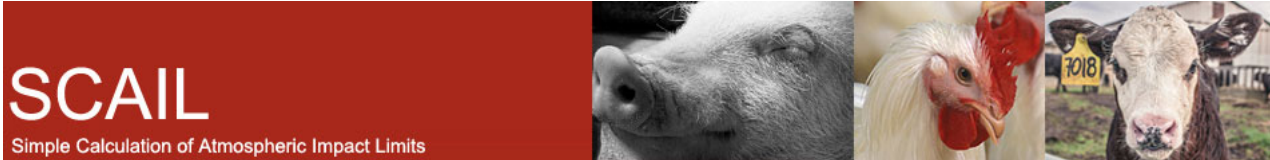
Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.00624	0.05	0.003	-	-
Background concentration at receptor edge <a href="#">?</a>	3.81	50.96	3.89 (N:3.64 S:0.25)	-	-
<b>Predicted Environmental Concentration/Deposition (PEC) <a href="#">?</a></b>	3.82	51.01	3.89	-	-
Environmental Assessment Level or Critical Load / Level <a href="#">?</a>	Lower: 1 Upper: 3 <a href="#">?</a>	5.0  Broad-leaved, mixed and yew woodland	maxN: 1.80 maxS: 1.44 minN: 0.36 Broad-leaved, mixed and yew woodland	-	-
<small>ALTERNATIVE CRITICAL LOAD INFO</small>					
<input style="border: 1px solid #ccc;" type="button" value="USE OWN THRESHOLDS?"/>					
% of relevant standard PC <a href="#">?</a>	Lower: 1% Upper: 0%	1%	0%	-	-
% of relevant standard PEC <a href="#">?</a>	Lower: 382% Upper: 127%	1020%	216%	-	-
<b>EXCEEDANCE <a href="#">?</a></b>	Lower: 2.82 Upper: 0.82	46.01	2.09	-	-

### Project Notes

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**Content Specific Help Text**

**Site Information** Newton Marsh (SSSI) [?](#)

Region: England  
 Site Name: Newton Marsh  
 Site Code: [?](#) 3461  
 Designation Status: [?](#) SSSI  
 Distance from Installation (m): [?](#) 8320  
 Receptor Type: Habitat  
 Grid Reference: 345541.1,429420.9  
 Met Site: [?](#) CROS  
 Run Mode: [?](#) Conservative  
 PM<sub>10</sub> Percentile: [?](#) Average

**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)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H <sup>+</sup> /ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Lower House Farm	1	1	-	2.1	-	0	0.02	0.002	-	-

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

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.00452	0.02	0.002	-	-
Background concentration at receptor edge <a href="#">?</a>	4.53	31.50	2.44 (N:2.25 S:0.19)	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b> <a href="#">?</a>	4.53	31.52	2.44	-	-
Environmental Assessment Level or Critical Load / Level <a href="#">?</a>	Lower: 1 Upper: 3 <a href="#">?</a>	20.0  Neutral grassland lowland	maxN: 5.07 maxS: 4.00 minN: 1.07 Neutral grassland lowland	-	-
<b>ALTERNATIVE CRITICAL LOAD INFO</b>					
<input style="border: none; background-color: #f0f0f0; padding: 2px 5px;" type="button" value="USE OWN THRESHOLDS?"/>					
% of relevant standard PC <a href="#">?</a>	Lower: 0% Upper: 0%	0%	0%	-	-
% of relevant standard PEC <a href="#">?</a>	Lower: 453% Upper: 151%	158%	48%	-	-
<b>EXCEEDANCE</b> <a href="#">?</a>	Lower: 3.53 Upper: 1.53	11.52	-2.63	-	-

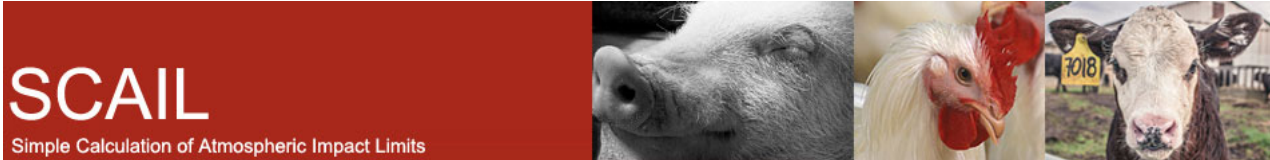
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**Content Specific Help Text**

**Site Information** Wyre Estuary (SSSI) ▾ [?](#)

Region: England  
 Site Name: Wyre Estuary  
 Site Code: [?](#) 3404  
 Designation Status: [?](#) SSSI  
 Distance from Installation (m): [?](#) 8774  
 Receptor Type: Habitat  
 Grid Reference: 339367.6,440462.8  
 Met Site: [?](#) CROS  
 Run Mode: [?](#) Conservative  
 PM<sub>10</sub> Percentile: [?](#) Average

**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)	Conc NH <sub>3</sub> (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc Odour (Ou/m3)
1	Lower House Farm	1	1	-	2.1	-	0	0.02	0.001	-	-

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

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00414	0.02	0.002	-	-
Background concentration at receptor edge <a href="#">?</a>	3.00	24.78	1.96 (N:1.77 S:0.19)	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b> <a href="#">?</a>	3	24.8	1.96	-	-
Environmental Assessment Level or Critical Load / Level <a href="#">?</a>	Lower: 1 Upper: 3 <a href="#">?</a>	No sensitive habitat or species at this site	No sensitive habitat or species at this site	-	-
<small>ALTERNATIVE CRITICAL LOAD INFO</small>					
<input style="border: 1px solid #ccc;" type="button" value="USE OWN THRESHOLDS?"/>					
% of relevant standard PC <a href="#">?</a>	Lower: 0% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC <a href="#">?</a>	Lower: 300% Upper: 100%	n/a	n/a	-	-
<b>EXCEEDANCE</b> <a href="#">?</a>	Lower: 2.00 Upper: No exceedance	n/a	n/a	-	-

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**Content Specific Help Text**

**Site Information** Morecambe Bay (SPA) ▾ ?

Region: England  
 Site Name: Morecambe Bay  
 Site Code: ? UK9005081  
 Designation Status: ? SPA  
 Distance from Installation (m): ? 8793  
 Receptor Type: Habitat  
 Grid Reference: 339300.3,440327.5  
 Met Site: ? CROS  
 Run Mode: ? Conservative  
 PM<sub>10</sub> Percentile: ? Average

**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)	Conc NH <sub>3</sub> (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc Odour (Ou/m3)
1	Lower House Farm	1	1	-	2.1	-	0	0.02	0.001	-	-

**Total Depositions/Concentrations and Exceedances ?**

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00413	0.02	0.001	-	-
Background concentration at receptor edge ?	3.00	24.78	1.96	-	-
<b>Predicted Environmental Concentration/Deposition (PEC) ?</b>	3	24.8	(N:1.77 S:0.19) 1.96	-	-
Environmental Assessment Level or Critical Load / Level ?	Lower: 1 Upper: 3 ?	8.0  Charadrius hiaticula (Europe/Northern Africa - wintering)	maxN: 0.64 maxS: 0.39 minN: 0.22 Charadrius hiaticula (Europe/Northern Africa - wintering)	-	-
<small>ALTERNATIVE CRITICAL LOAD INFO</small>					
<input type="checkbox"/> USE OWN THRESHOLDS?					
% of relevant standard PC ?	Lower: 0% Upper: 0%	0%	0%	-	-
% of relevant standard PEC ?	Lower: 300% Upper: 100%	310%	306%	-	-
<b>EXCEEDANCE ?</b>	Lower: 2.00 Upper: No exceedance	16.80	1.32	-	-

**Project Notes**

# SCAIL

Simple Calculation of Atmospheric Impact Limits



## Results

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### Content Specific Help Text

Site Information Ribble Estuary (SSSI) ?

Region: England  
 Site Name: Ribble Estuary  
 Site Code: ? 3465  
 Designation Status: ? SSSI  
 Distance from Installation (m): ? 9418  
 Receptor Type: Habitat  
 Grid Reference: 346407.1,428137.4  
 Met Site: ? CROS  
 Run Mode: ? Conservative  
 PM<sub>10</sub> Percentile: ? Average

### 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)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H <sup>+</sup> /ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Lower House Farm	1	1	-	2.1	-	0	0.02	0.001	-	-

### Total Depositions/Concentrations and Exceedances ?

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.00368	0.02	0.001	-	-
Background concentration at receptor edge <span>?</span>	4.53	31.50	2.44 (N:2.25 S:0.19)	-	-
<b>Predicted Environmental Concentration/Deposition (PEC) <span>?</span></b>	4.53	31.52	2.44	-	-
Environmental Assessment Level or Critical Load / Level <span>?</span>	Lower: 1 Upper: 3 <span>?</span>	20.0  Neutral grassland lowland	maxN: 4.86 maxS: 4.00 minN: 0.86 Neutral grassland lowland	-	-
<b>ALTERNATIVE CRITICAL LOAD INFO</b>					
<input style="border: 1px solid #ccc;" type="button" value="USE OWN THRESHOLDS?"/>					
% of relevant standard PC <span>?</span>	Lower: 0% Upper: 0%	0%	0%	-	-
% of relevant standard PEC <span>?</span>	Lower: 453% Upper: 151%	158%	50%	-	-
<b>EXCEEDANCE <span>?</span></b>	Lower: 3.53 Upper: 1.53	11.52	-2.42	-	-

### Project Notes

?  ?

[Use this Back button. Do not use the browser back button - you could lose all

?



**Results**

[Scail Home](#) | [User Guide](#) | [SCAIL-Agriculture Report](#) | [SEPA/EA/NIEA/EPA Contact Details](#) | [Online Tutorial](#)

**Content Specific Help Text**

**Site Information** Ribble and Alt Estuaries (SPA) ▾ [?](#)

Region: England  
 Site Name: Ribble and Alt Estuaries  
 Site Code: [?](#) UK9005103  
 Designation Status: [?](#) SPA  
 Distance from Installation (m): [?](#) 9423  
 Receptor Type: Habitat  
 Grid Reference: 346407.2,428132.2  
 Met Site: [?](#) CROS  
 Run Mode: [?](#) Conservative  
 PM<sub>10</sub> Percentile: [?](#) Average

**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)	Conc NH <sub>3</sub> (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m3)	Conc Odour (Ou/m3)
1	Lower House Farm	1	1	-	2.1	-	0	0.02	0.001	-	-

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

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00368	0.02	0.001	-	-
Background concentration at receptor edge <a href="#">?</a>	4.53	31.50	2.44	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b> <a href="#">?</a>	4.53	31.52	(N:2.25 S:0.19) 2.44	-	-
Environmental Assessment Level or Critical Load / Level <a href="#">?</a>	Lower: 1 Upper: 3 <a href="#">?</a>	3.0  Melanitta nigra (Western Siberia/Western & Northern Europe/North-western Africa)	maxN: 0.48 maxS: 0.16 minN: 0.32 Larus ridibundus (North-western Europe - breeding)	-	-
<small>ALTERNATIVE CRITICAL LOAD INFO</small>					
<input type="checkbox"/> USE OWN THRESHOLDS?					
% of relevant standard PC <a href="#">?</a>	Lower: 0% Upper: 0%	1% <a href="#">?</a>	0%	-	-
% of relevant standard PEC <a href="#">?</a>	Lower: 453% Upper: 151%	1051%	508%	-	-
<b>EXCEEDANCE</b> <a href="#">?</a>	Lower: 3.53 Upper: 1.53	28.52	1.96	-	-

**Project Notes**