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Address	**Borras Head Farm**
	Wrexham
Post code	**LL13 9TH**
Date of report	**10th November 2024**
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Ammonia screening assessment for Borras Head farm using the SCAIL model

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Introduction



Figure 1 Aerial View of Borras Head Farm

Borras Head Farm is a dairy unit located on the northeast of Wrexham. The holding covers an area of around 650 acres of which 400 acres of owned land with an additional 250 acres of rented land. The majority of the land is suitable for slurry disposal if land and weather conditions are suitable.

The farm business runs a dairy herd of 220 milking cows, all of which are housed on cubicles and fed under cover. The dairy herd produce an average approximately 7000 litres annual milk yield per head. All remaining livestock are loose housed and bedded on straw.

At Borras Head Farm 415 mm of rain will fall over the 5-month winter period as stated on the Welsh Government data map https://datamap.gov.wales/maps/974.

This equates to a monthly average rainfall of 83 mm per winter month.

Current practice is to spread any slurry produced to the land on a daily basis. The cubicles use a high level of straw as bedding resulting in a relatively dry material. The passages and open link yard areas are all scraped to a central ramped elevated push in point. The slurry produced is pushed directly into the farms spreader where it is applied to land on a daily basis.

The FYM produced by the straw bedded loose housed stock is spread directly to the land if conditions are suitable, or stored in temporary field heaps until optimum weather and growing conditions prevail.

The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 (CoAPR 21) bring in an obligation for the farm holding to have 150 days slurry storage capacity by 1st of August 2024.

Mr Jones has had independent advice from Farming Connect in May 2024. The advice identified several measures to improve the efficiency for the farm business and ensure regulatory compliance for the new regulations.

The outcome of these recommendations will reduce the volume of slurry that has to be collected and contained from 1915 m^3 to 1628 m^3 over a 5 month winter period.

Mr Jones has applied to the Nutrient Management Investment Scheme for financial support for a new slurry separator and above ground cylindrical slurry store

The provision of above ground cylindrical slurry store will also ensure the farm has enough storage capacity to comply with the 150 day slurry storage requirement and to comply with the **closed** period from 15th-October to 15th-January, both of which are a requirement of CoAPR21.

Table to show the "closed period" of slurry application to land of CoAPR 21

Soil Type	**Grassland**	**Tillage land**
Sandy or shallow soil	1st September to 31st December	1st August to 31 December
All other soils	15th October to 15th January	1st October to 31st January

Figure 2 Closed period for application of organic manures with high readily available nitrogen to land

The increase in slurry storage capacity will enable the farm business to comply with this new regulatory requirement as slurry can be stored over the 5 month winter period until it can be applied to land outside the "closed period" of the new regulations.

The proposed above ground cylindrical slurry store will improve nutrient value of the material produced by the stock and allowing greater control of application to maximise the effect on the land of the stored nutrients. This will significantly reduce the pollution risk of runoff during wet weather periods, reduce the frequency of slurry mixing/spreading and associated ammonia emissions, thereby improving the viability of the farm as a business.

Importantly, there will be a significant reduction in stirring/agitating of the slurry reducing current ammonia emission caused by the constant need to empty the existing storage facility. The slurry will form a crust when not agitated over the winter period, reducing ammonia emissions. Currently the slurry must be mixed and spread on a daily basis, throughout the winter period, each time releasing ammonia emissions into the atmosphere. The cylindrical

slurry store will only be emptied at the end of the winter closed period, at a time of optimum growth and nutrient uptake.

Purpose of this report

The purpose of this report is to undertake a screening exercise for the impact of the farm infrastructure improvements upon ammonia emissions for protected sites within 5 km of Borras Head Farm.

The proposed development for a new above ground cylindrical slurry store at Easting 336713 Northing 353328 marked on Fig 3

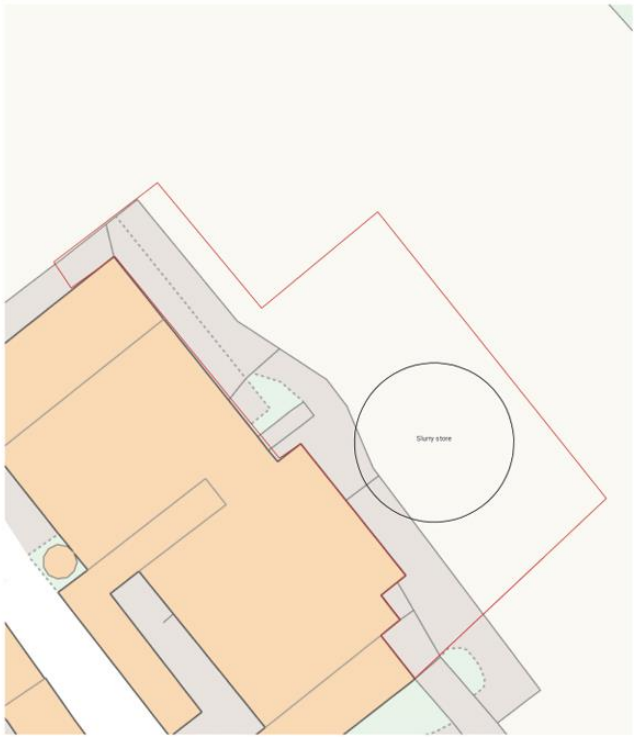


Figure 3 Proposed site of cylindrical slurry store at Borras Head farm

Existing farm system

At Borras Head farm 220 milking cows are housed on cubicles with all remaining livestock loosed housed and bedded on straw. The estimated volume of slurry produced at Borras Head farm is 383 m^3 per month or 1915 m^3 over the 5 month winter period (see fig 4).

Slurry Production per month	Volume of slurry per month (m^3)
220 dairy cows producing 53 litres of slurry/cow/day for 30 days.	**350 m^3**
Parlour washings intercepted and diverted to separation tank.	**0 m^3**
Remaining youngstock loose housed on straw and producing FYM only.	**0 m^3**
Open yard linking cubicle/feed buildings to parlour @ 240m^2 collecting 83 mm surface rainfall each month.	**20 m^3**
Open scrape yards linked to ramped push in point @ 152m^2 collecting 83 mm surface rainfall each month.	**13 m^3**
Pre 91 silage clamps linked to separation tank and stored in isolation as lightly fouled contaminated runoff.	**0 m^3**
Post 91 silage clamp to be connected to separation tank and stored in isolation as lightly fouled contaminated runoff.	**0 m^3**
Total current monthly production of slurry/dirty water currently entering the slurry store.	**383 m^3**

Figure 4 Estimated volume of slurry produced at Borras Head farm

At present slurry is applied to land on a daily basis. FYM is stored as temporary field heaps and applied to arable land around 3 times per year.

The farm proposes to install a slurry separator to help remove the straw from the slurry prior to entering the new slurry tank. This will reduce overall slurry production volumes by **approximately 15%.** The provision of a new slurry store will offer 5 months storage capacity thereby enabling the farm business to store slurry throughout the winter and apply to land outside the closed period at a time of maximum crop uptake.

Proposal

The aims for the infrastructure improvements at Borras Head Farm are:

- To reduce the volume of slurry that the farm business has to collect and contain by using slurry separator
- To provide slurry storage capacity with sufficient available slurry storage capacity to comply with The Control of Agricultural Pollution Regulations by 1st August 2024.

- Improve resource efficiency by storing slurry/organic manures until it can be applied to land during maximum plant uptake and optimum crop/grass growing conditions.

Method

The Simple Calculation of Atmospheric Impact Limits (SCAIL) from Agriculture Sources screening tool has been used to assess the ammonia emissions from the existing farm system and the proposed development at Borras Head farm.

Two SCAIL assessments have been completed for the current & proposed farm infrastructure improvements.

- Information about the **existing** farm practice, based on 220 milking cows housed on cubicles with followers loose housed and bedded on straw, application rate and method of organic manures to land and grazing platform, was uploaded into the SCAIL model
- Information about the **proposed** farm practice, based on 220 milking herd with followers loose housed and bedded on straw application rate and method of organic manures to land and grazing platform, with the inclusion of a new slurry store and slurry separator was uploaded into the SCAIL model

The SCAIL model is designed to assess the ammonia emissions for existing sources and new or additional sources of ammonia as referenced in the SCAIL model as “new” sources. However, the SCAIL model does not assess the ammonia emissions where existing sources of ammonia are **replaced** or where land spreading activities are changed as a result of the farm improvements. For this reason, the SCAIL model was run twice which allows a comparison between the existing farming system and the new proposed improvements on the farm.

In accordance with NRW Ammonia sensitivity mapping the farm building are located outside a SSSI sensitive area. See fig 5

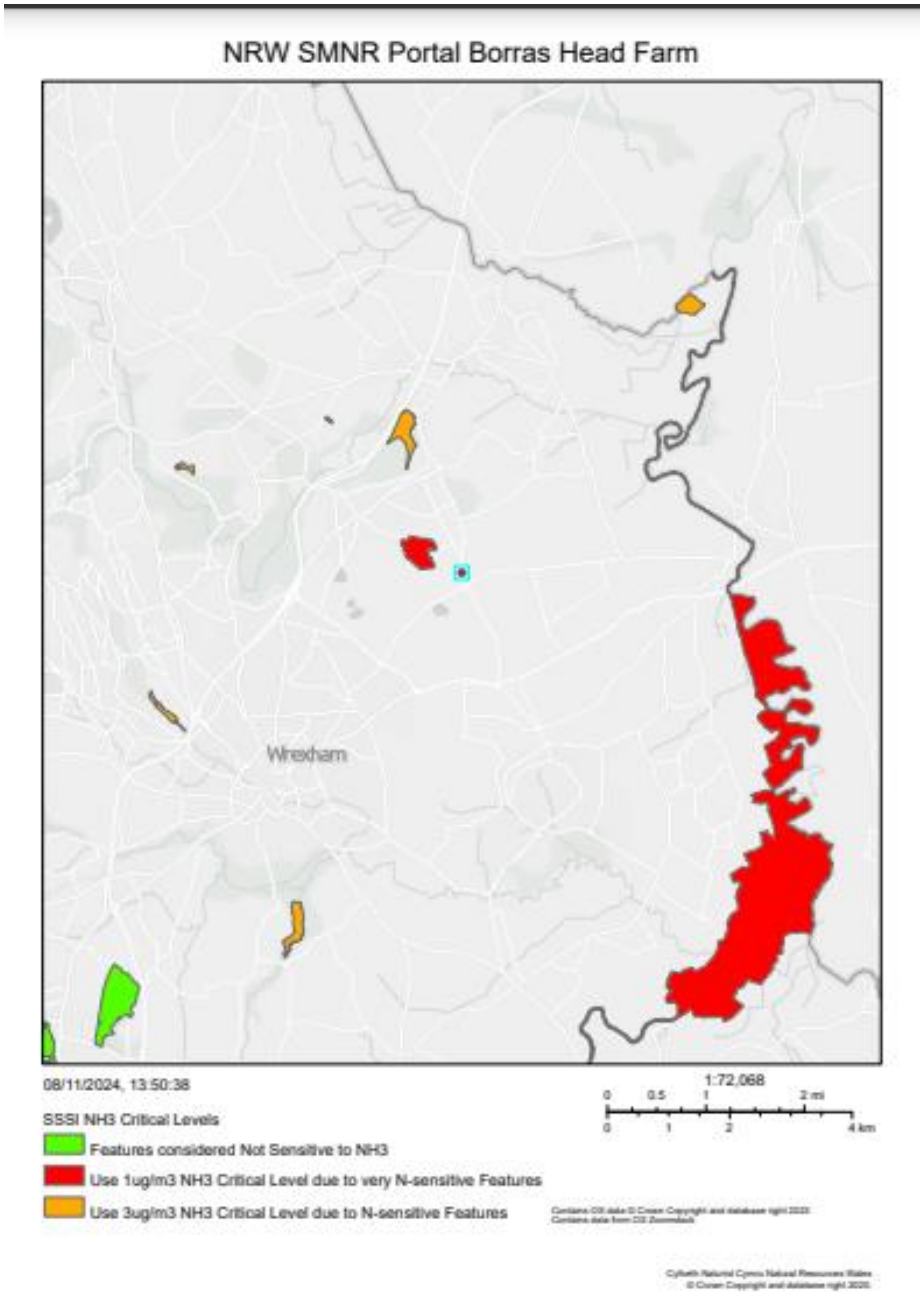


Figure 5 NRW Ammonia sensitivity map

The 5 km search was selected as the number of dairy cows is less that 400 animals

There are 10 protected sites with 5 km of Borras Head Farm (see fig 6)

Designated Site details:

Search Radius 5 km RUN RECEPTOR SEARCH

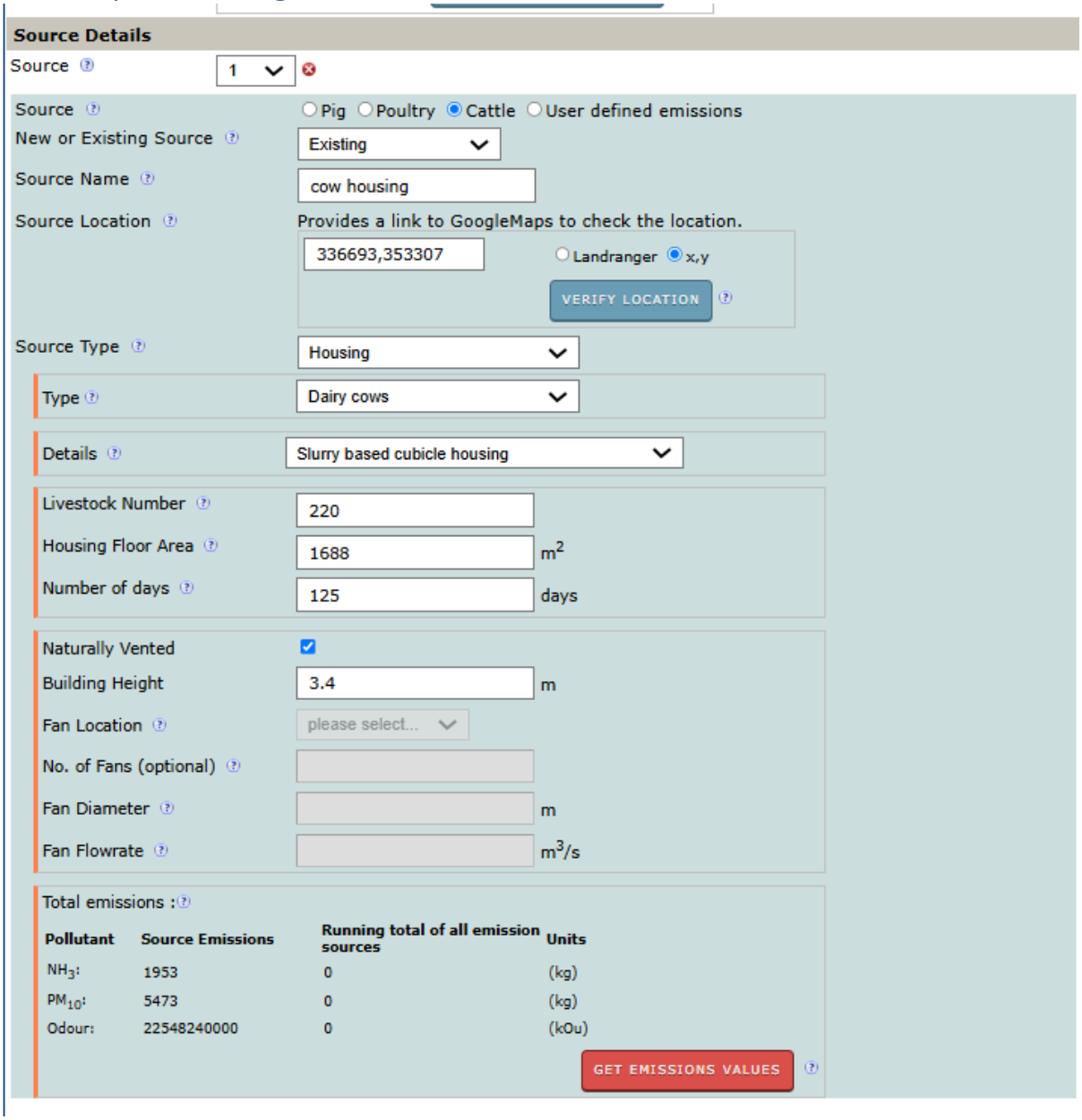
No. of Designated Sites 10 found VERIFY RECEPTOR LOCATIONS

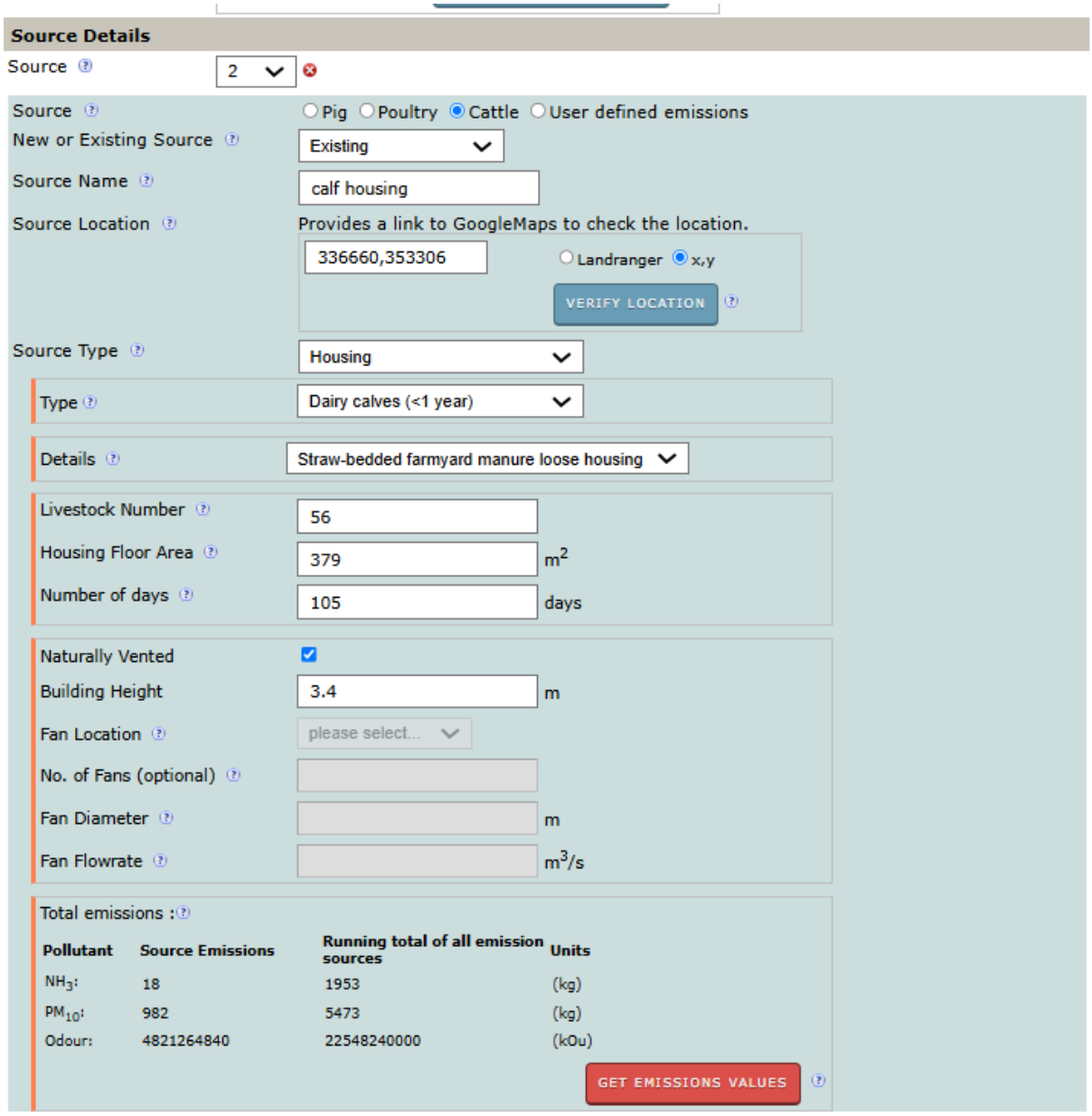
Site No.	Name	Distance(km)	Designation	Country	Easting	Northing
1	Vicarage Moss	0.665	SSSI	WALES	336225	353779
2	Marford Quarry	2.272	SSSI	WALES	335765	355380
3	Chwarel Singret	3.551	SSSI	WALES	334545	356135
4	Afon Dyfrdwy (River Dee)	3.584	SSSI	WALES	339710	355241
5	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	3.584	SAC	WALES	339710	355241
6	River Dee (England)	3.61	SSSI	ENGLAND	339734	355252
7	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England)	3.61	SAC	WALES	339734	355252
8	River Dee and Bala Lake	3.61	SAC	ENGLAND	339734	355252
9	Dee Cliffs, Farndon	4.447	SSSI	ENGLAND	340961	354555
10	Llay Bog	4.843	SSSI	WALES	332285	355312

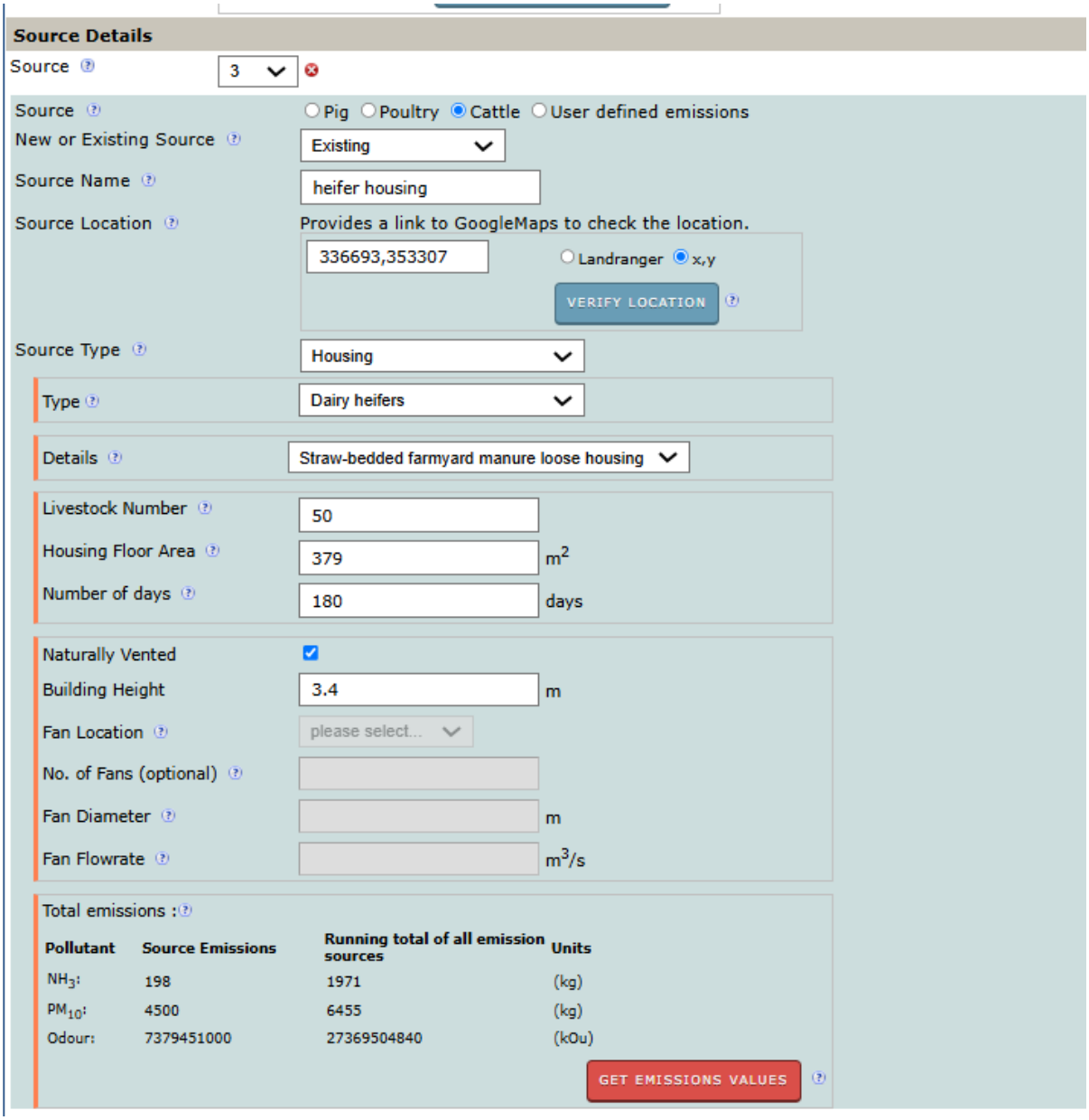
Figure 6 there are 10 protected sites within 5 km search of Borras Head farm buildings

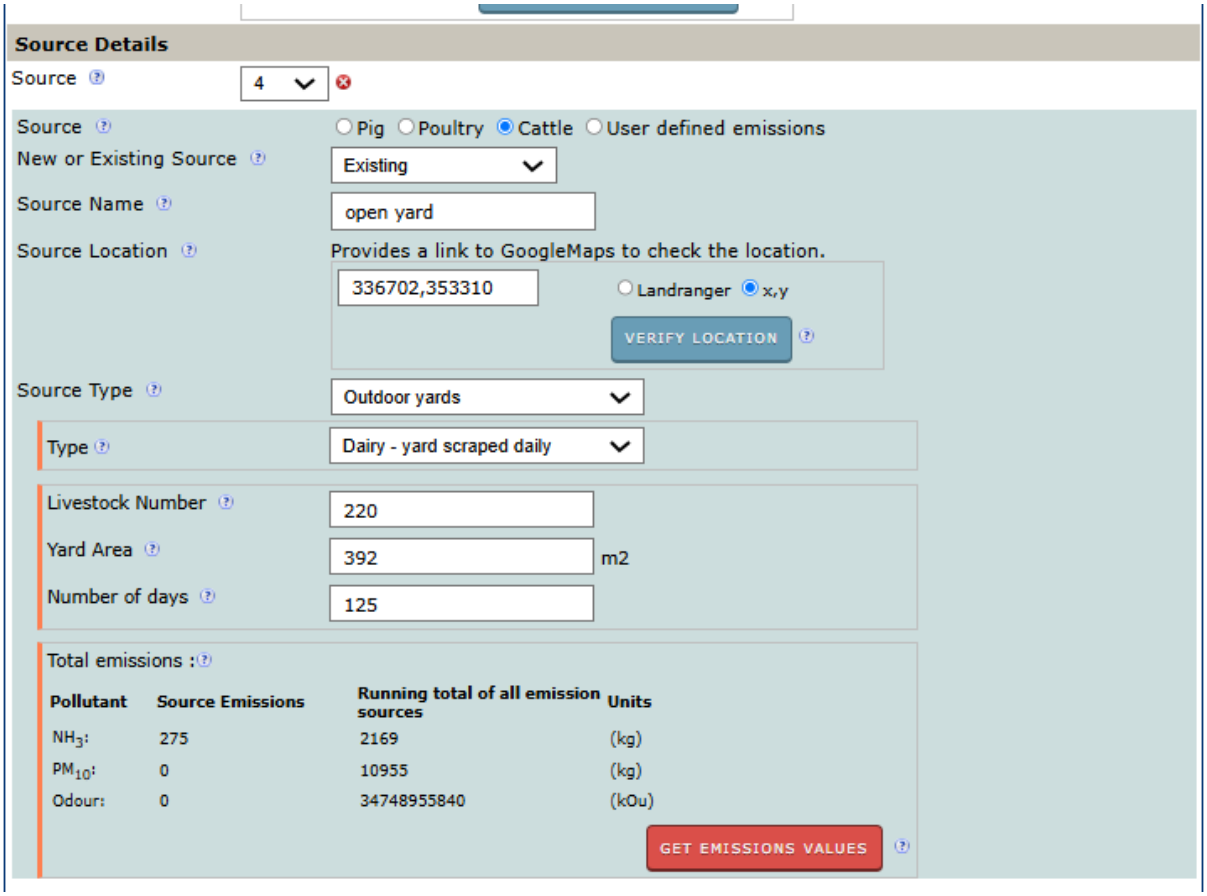
As requested by NRW in previous SCAIL assessments, included in this report are the are the screenshots for every data input and the impact of that data input on each of the protected sites.

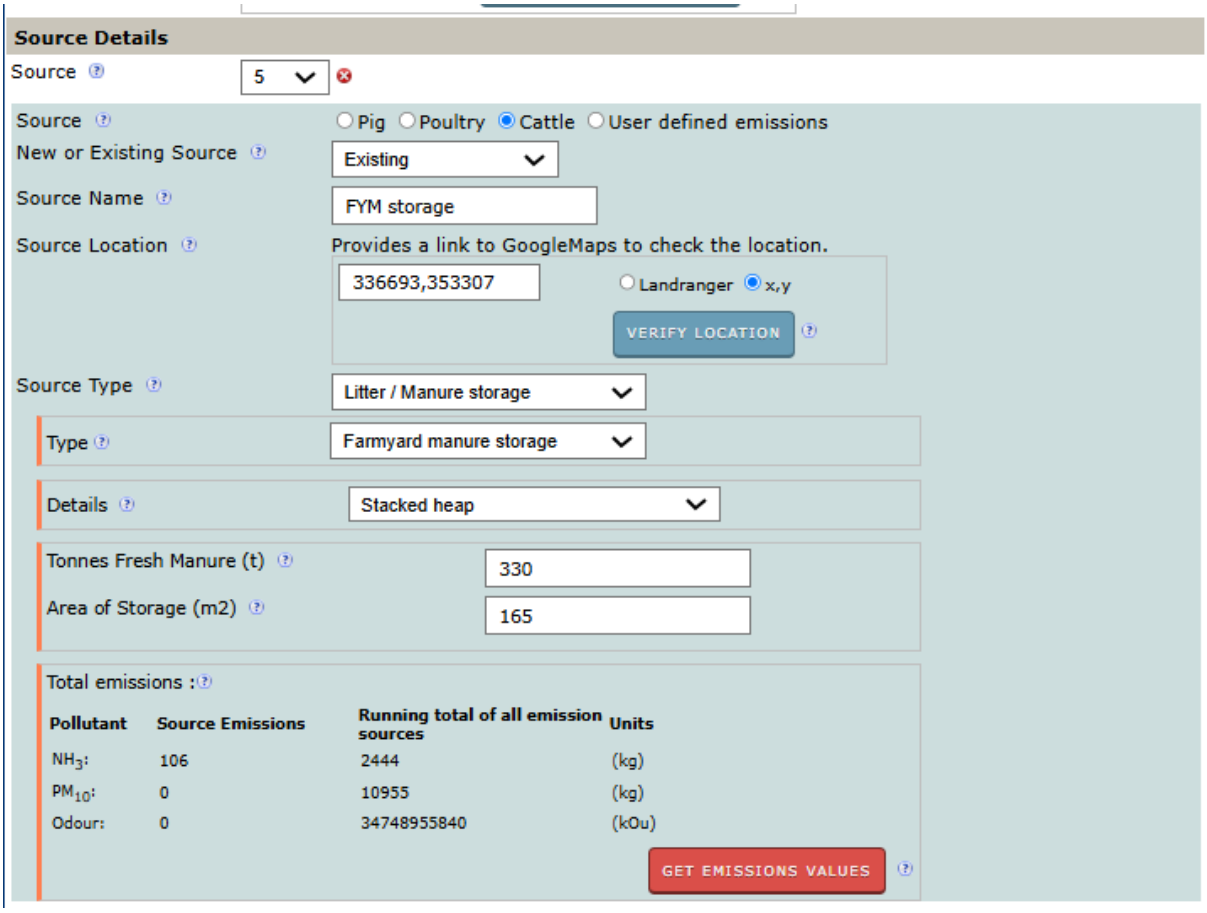
Data input existing farm infrastructure

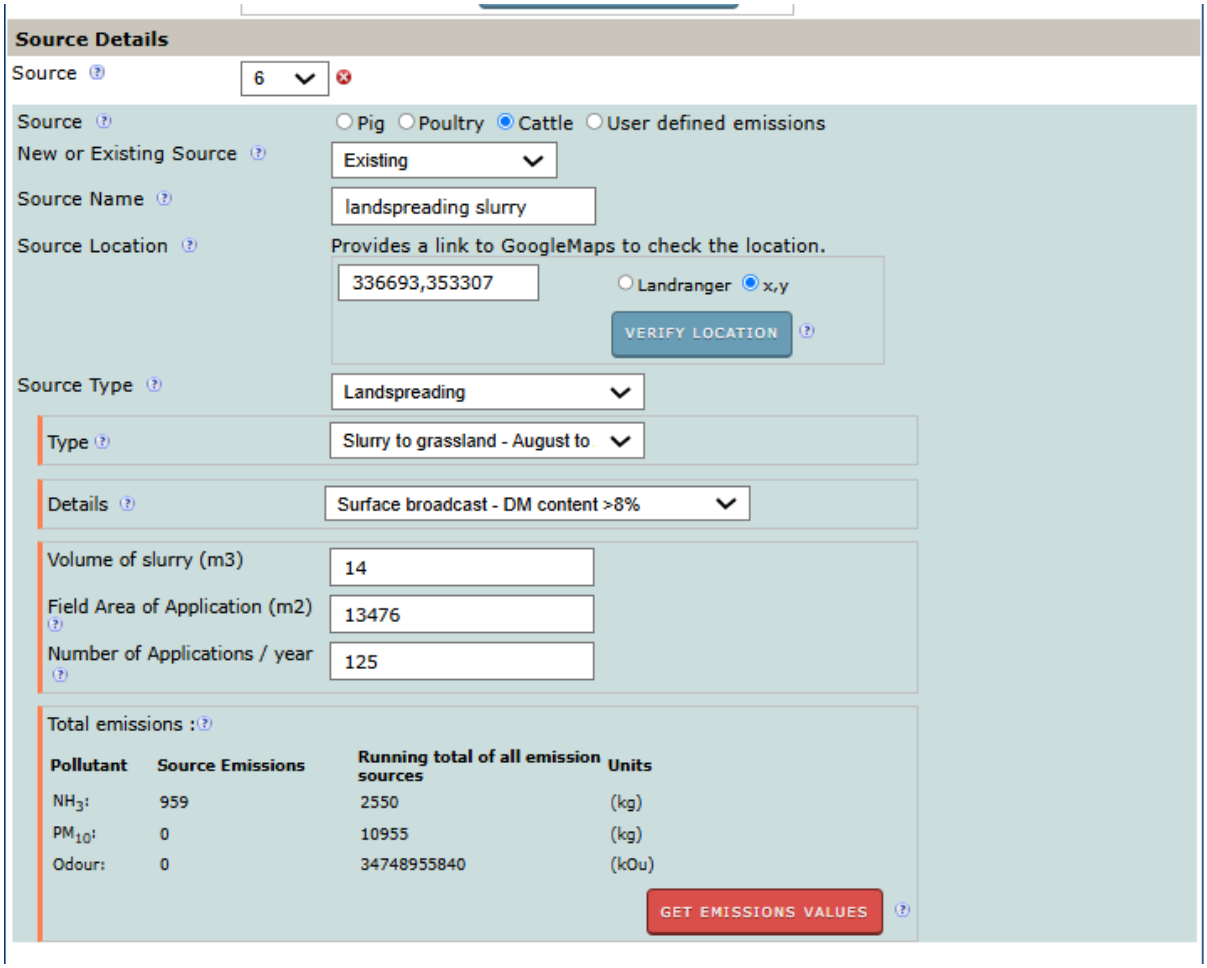


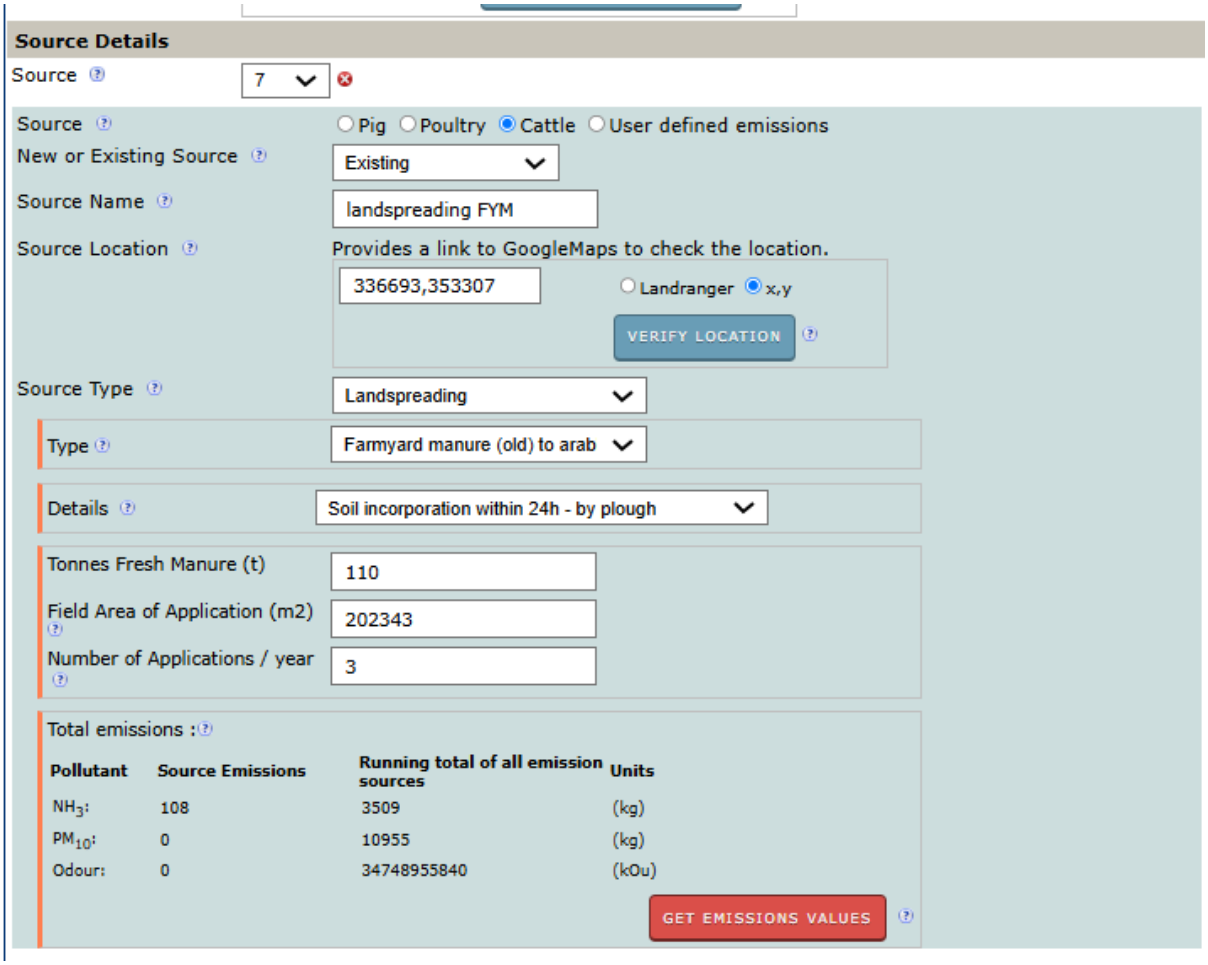

Source Details
Source 2
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name calf housing
Source Location Provides a link to GoogleMaps to check the location.
336660,353306 Landranger x,y
VERIFY LOCATION
Source Type Housing
Type Dairy calves (<1 year)
Details Straw-bedded farmyard manure loose housing
Livestock Number 56
Housing Floor Area 379 m2
Number of days 105 days
Naturally Vented
Building Height 3.4 m
Fan Location please select...
No. of Fans (optional)
Fan Diameter m
Fan Flowrate m3/s
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 18 1953 (kg)
PM10: 982 5473 (kg)
Odour: 4821264840 22548240000 (kOu)
GET EMISSIONS VALUES


Source Details
Source 3
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name heifer housing
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Housing
Type Dairy heifers
Details Straw-bedded farmyard manure loose housing
Livestock Number 50
Housing Floor Area 379 m2
Number of days 180 days
Naturally Vented
Building Height 3.4 m
Fan Location please select...
No. of Fans (optional)
Fan Diameter m
Fan Flowrate m3/s
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 198 1971 (kg)
PM10: 4500 6455 (kg)
Odour: 7379451000 27369504840 (kOu)
GET EMISSIONS VALUES


Source Details
Source 4
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name open yard
Source Location Provides a link to GoogleMaps to check the location.
336702,353310 Landranger x,y
VERIFY LOCATION
Source Type Outdoor yards
Type Dairy - yard scraped daily
Livestock Number 220
Yard Area 392 m2
Number of days 125
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 275 2169 (kg)
PM10: 0 10955 (kg)
Odour: 0 34748955840 (kOu)
GET EMISSIONS VALUES


Source Details
Source
5
Source
Pig
Poultry
Cattle
User defined emissions
New or Existing Source
Existing
Source Name
FYM storage
Source Location
Provides a link to GoogleMaps to check the location.
336693,353307
Landranger
x,y
VERIFY LOCATION
Source Type
Litter / Manure storage
Type
Farmyard manure storage
Details
Stacked heap
Tonnes Fresh Manure (t)
330
Area of Storage (m2)
165
Total emissions :
Pollutant
Source Emissions
Running total of all emission sources
Units
NH3:
106
2444
(kg)
PM10:
0
10955
(kg)
Odour:
0
34748955840
(kOu)
GET EMISSIONS VALUES


Source Details
Source 6
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name landspreading slurry
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Landspreading
Type Slurry to grassland - August to
Details Surface broadcast - DM content >8%
Volume of slurry (m3) 14
Field Area of Application (m2) 13476
Number of Applications / year 125
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 959 2550 (kg)
PM10: 0 10955 (kg)
Odour: 0 34748955840 (kOu)
GET EMISSIONS VALUES



Source Details

Source: 7

Source: ○ Pig ○ Poultry ● Cattle ○ User defined emissions

New or Existing Source: Existing

Source Name: landspreading FYM

Source Location: Provides a link to GoogleMaps to check the location.

336693,353307 ○ Landranger ● x,y

VERIFY LOCATION

Source Type: Landspreading

Type: Farmyard manure (old) to arab

Details: Soil incorporation within 24h - by plough

Tonnes Fresh Manure (t): 110

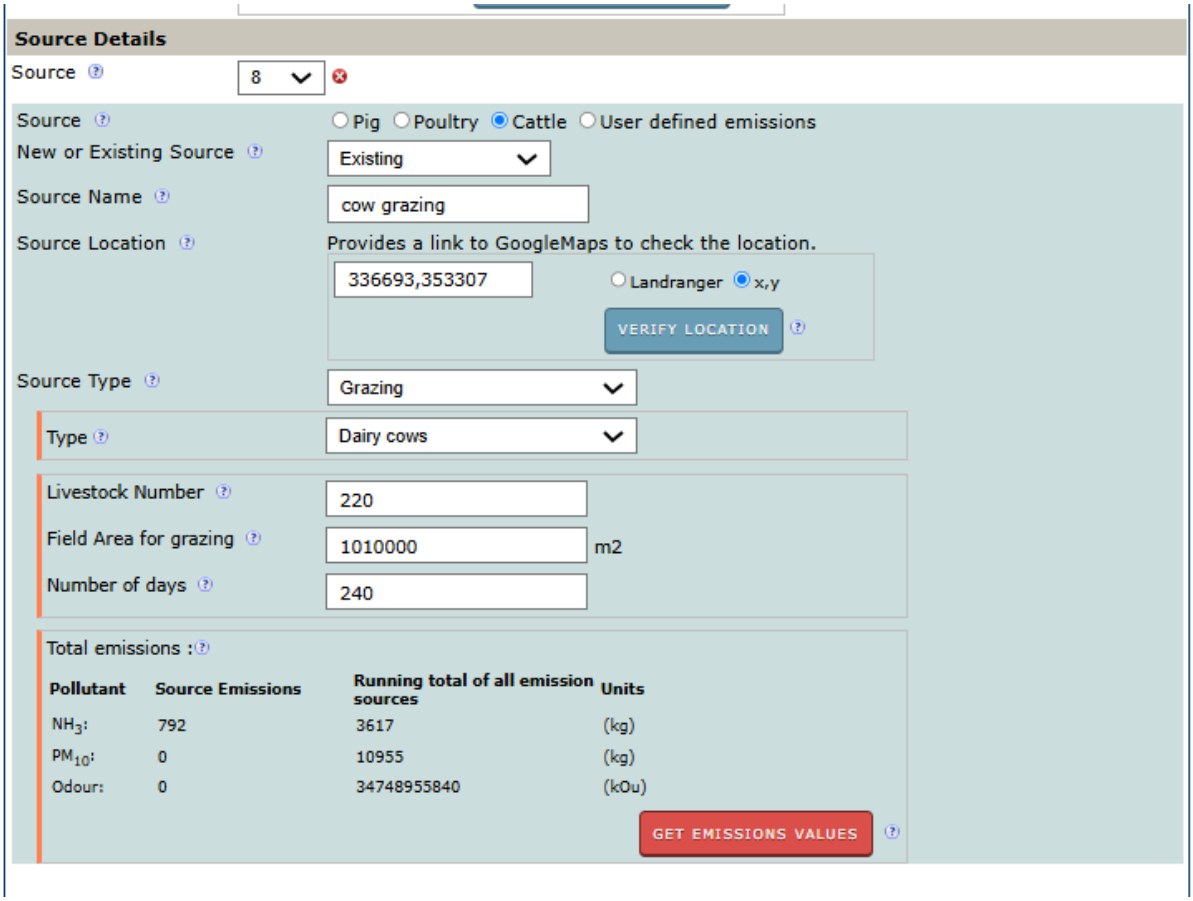
Field Area of Application (m2): 202343

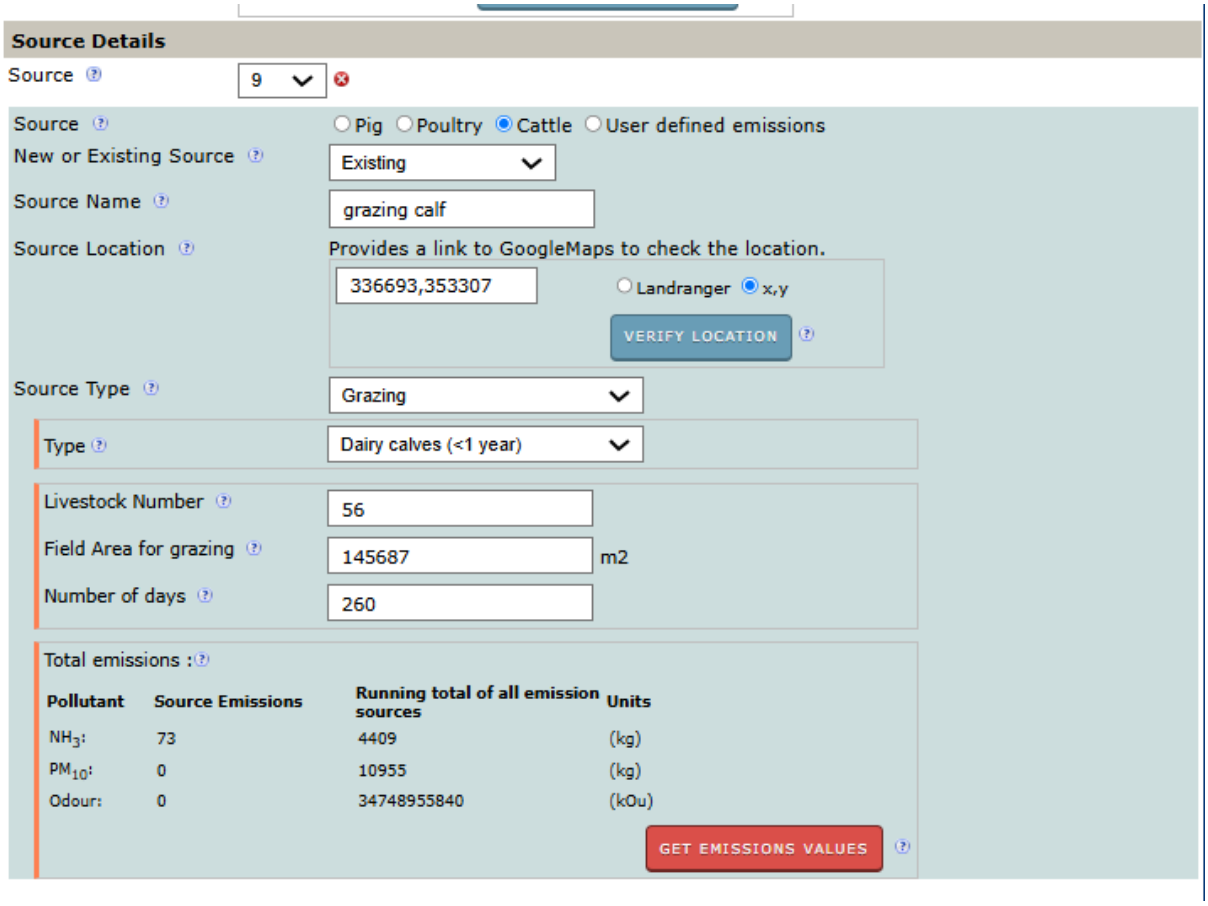
Number of Applications / year: 3

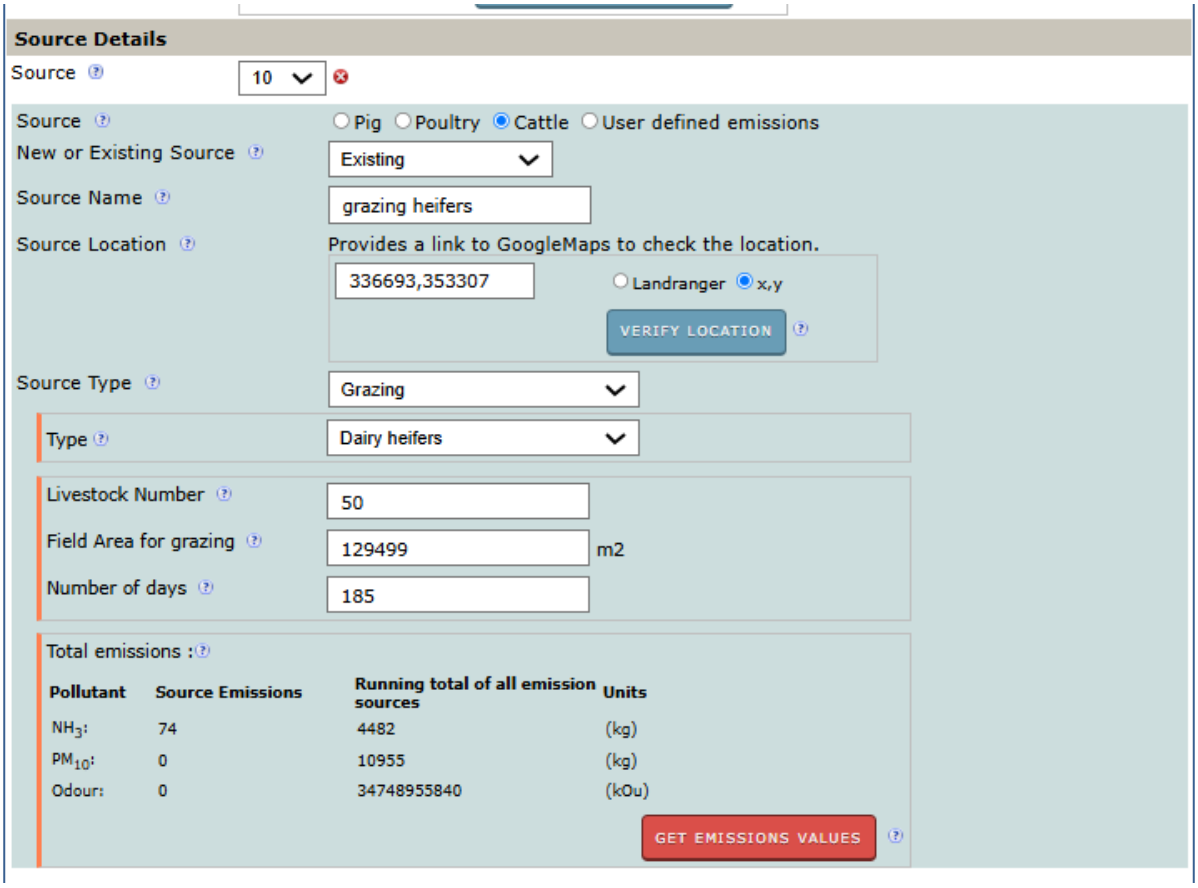
Total emissions :

Pollutant	Source Emissions	Running total of all emission sources	Units
NH_3:	108	3509	(kg)
PM_{10}:	0	10955	(kg)
Odour:	0	34748955840	(kOu)

GET EMISSIONS VALUES


Source Details
Source 8
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name cow grazing
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Grazing
Type Dairy cows
Livestock Number 220
Field Area for grazing 1010000 m2
Number of days 240
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 792 3617 (kg)
PM10: 0 10955 (kg)
Odour: 0 34748955840 (kOu)
GET EMISSIONS VALUES


Source Details
Source
9
Source
Pig
Poultry
Cattle
User defined emissions
New or Existing Source
Existing
Source Name
grazing calf
Source Location
Provides a link to GoogleMaps to check the location.
336693,353307
Landranger
x,y
VERIFY LOCATION
Source Type
Grazing
Type
Dairy calves (<1 year)
Livestock Number
56
Field Area for grazing
145687
m2
Number of days
260
Total emissions :
Pollutant
Source Emissions
Running total of all emission sources
Units
NH3:
73
4409
(kg)
PM10:
0
10955
(kg)
Odour:
0
34748955840
(kOu)
GET EMISSIONS VALUES


Source Details
Source
10
Source
Pig
Poultry
Cattle
User defined emissions
New or Existing Source
Existing
Source Name
grazing heifers
Source Location
Provides a link to GoogleMaps to check the location.
336693,353307
Landranger
x,y
VERIFY LOCATION
Source Type
Grazing
Type
Dairy heifers
Livestock Number
50
Field Area for grazing
129499
m2
Number of days
185
Total emissions :
Pollutant
Source Emissions
Running total of all emission sources
Units
NH3:
74
4482
(kg)
PM10:
0
10955
(kg)
Odour:
0
34748955840
(kOu)
GET EMISSIONS VALUES

SCAIL Assessment for protected sites existing farm practice

Site Information Vicarage Moss (SSSI)

Country:	WALES
Site Name:	Vicarage Moss
Site Code:	31WJW
Designation Status:	SSSI
Distance from Installation (m):	665
Receptor Type:	Habitat
Grid Reference:	336225,353779
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

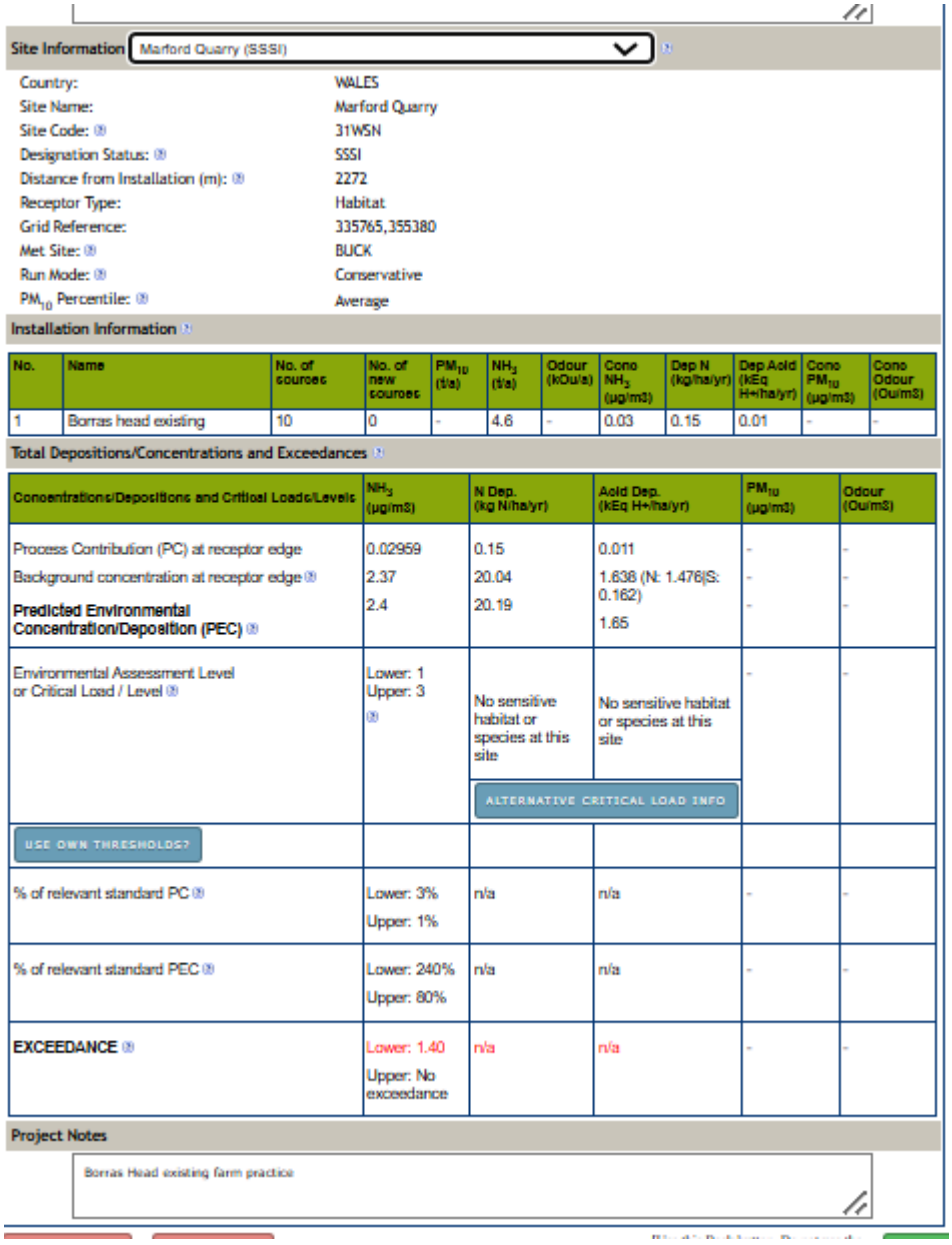
No.	Name	No. of sources	No. of new sources	PM_{10} (ba)	NH_3 (ba)	Odour (kOu/a)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.27	1.38	0.093	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.26626	1.40	0.100	-	-
Background concentration at receptor edge	2.28	19.95	1.637 (N: 1.470|S: 0.167)	-	-
Predicted Environmental Concentration/Deposition (PEC)	2.55	21.35	1.74	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Fen -topogenous mires in valleys, basins and flood plains-	maxN: 0.519 maxS: 0.198 minN: 0.321 Fen -topogenous mires in valleys, basins and flood plains-	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 27% Upper: 9%	28%	0%	-	-
% of relevant standard PEC	Lower: 255% Upper: 85%	427%	316%	-	-
EXCEEDANCE	Lower: 1.55 Upper: No exceedance	16.35	1.22	-	-

Project Notes

Borras Head existing farm practice



Site Information Marford Quarry (SSSI)

Country:	WALES
Site Name:	Marford Quarry
Site Code:	31WSN
Designation Status:	SSSI
Distance from Installation (m):	2272
Receptor Type:	Habitat
Grid Reference:	335765,355380
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

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/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.03	0.15	0.01	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.02959	0.15	0.011	-	-
Background concentration at receptor edge	2.37	20.04	1.638 (N: 1.476|S: 0.162)	-	-
Predicted Environmental Concentration/Deposition (PEC)	2.4	20.19	1.65	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	No sensitive habitat or species at this site ALTERNATIVE CRITICAL LOAD INFO	No sensitive habitat or species at this site	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 3% Upper: 1%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 240% Upper: 80%	n/a	n/a	-	-
EXCEEDANCE	Lower: 1.40 Upper: No exceedance	n/a	n/a	-	-

Project Notes

Borras Head existing farm practice

Site Information Chwarel Singret (SSSI)

Country:	WALES
Site Name:	Chwarel Singret
Site Code:	31WSW
Designation Status:	SSSI
Distance from Installation (m):	3551
Receptor Type:	Habitat
Grid Reference:	334545,356135
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

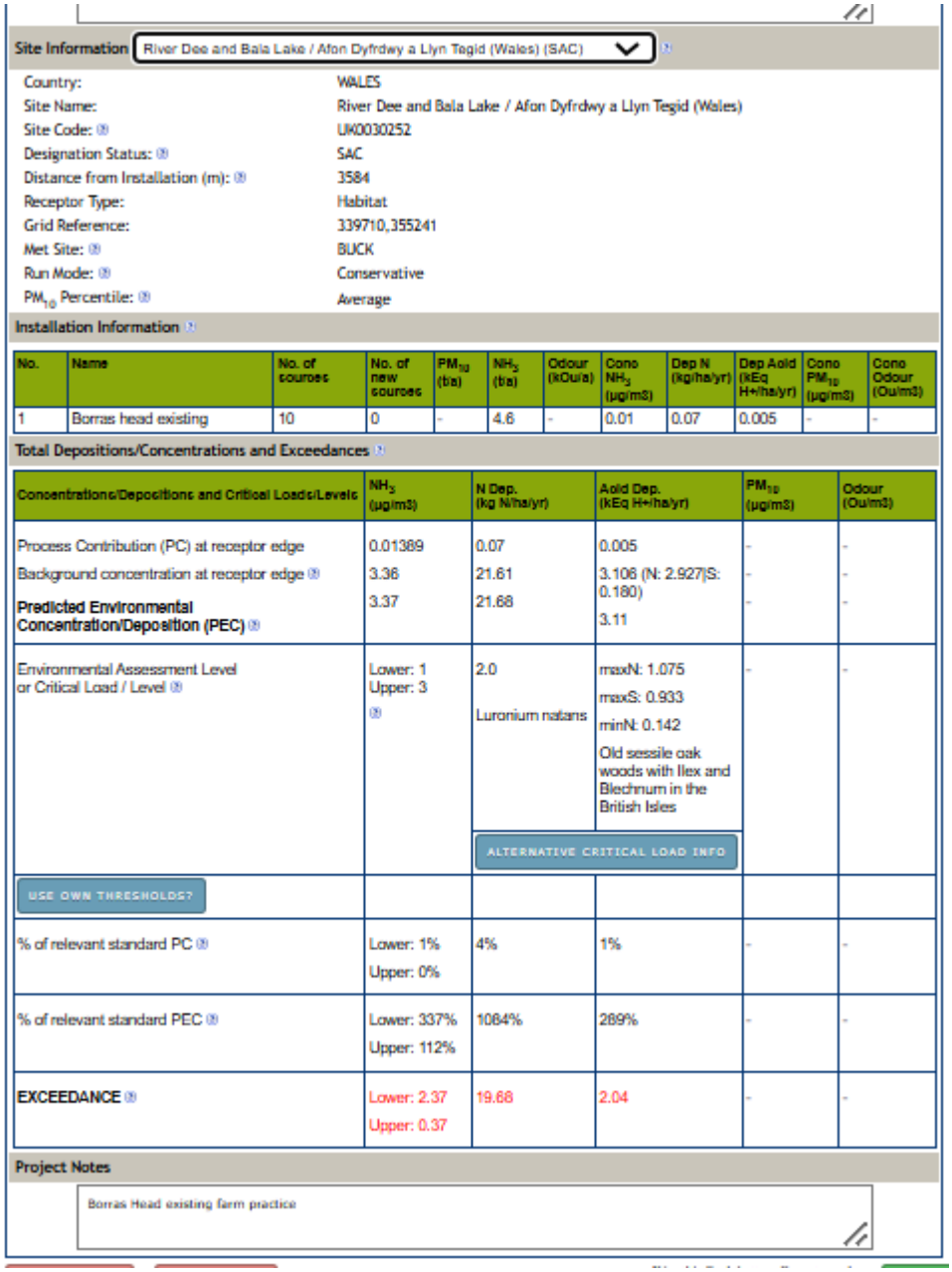
No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/a)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.07	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01410	0.07	0.005	-	-
Background concentration at receptor edge	2.47	19.88	1.630 (N: 1.464|S: 0.167)	-	-
Predicted Environmental Concentration/Deposition (PEC)	2.48	19.95	1.63	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	No sensitive habitat or species at this site ALTERNATIVE CRITICAL LOAD INFO	No sensitive habitat or species at this site	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 248% Upper: 83%	n/a	n/a	-	-
EXCEEDANCE	Lower: 1.48 Upper: No exceedance	n/a	n/a	-	-

Project Notes

Borras Head existing farm practice



Site Information River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) (SAC)

Country:	WALES
Site Name:	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)
Site Code:	UK0030252
Designation Status:	SAC
Distance from Installation (m):	3584
Receptor Type:	Habitat
Grid Reference:	339710,355241
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

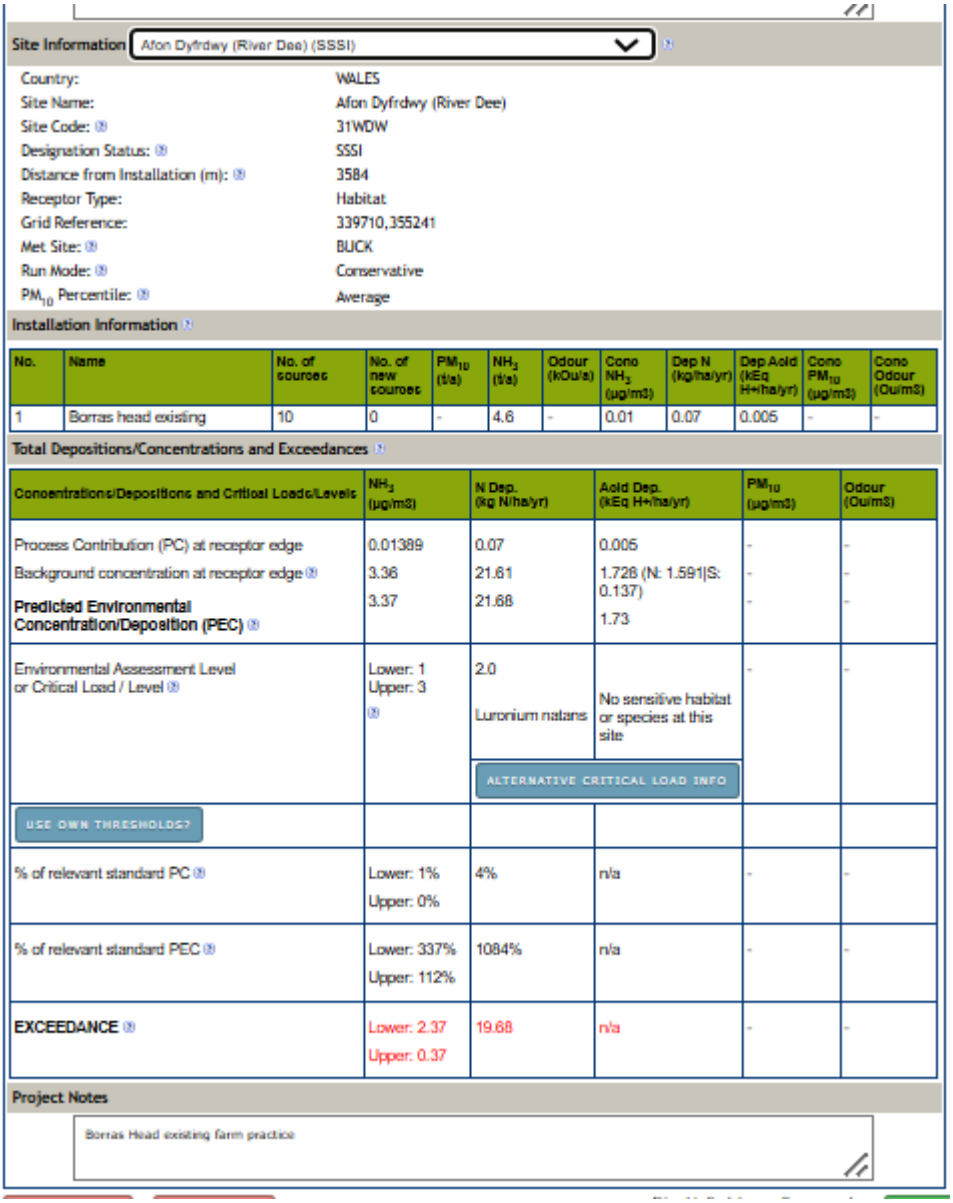
No.	Name	No. of sources	No. of new sources	PM_{10} (tn)	NH_3 (tn)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.07	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01389	0.07	0.005	-	-
Background concentration at receptor edge	3.36	21.61	3.106 (N: 2.927|S: 0.180)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.68	3.11	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans ALTERNATIVE CRITICAL LOAD INFO	maxN: 1.075 maxS: 0.933 minN: 0.142 Old sessile oak woods with Ilex and Blechnum in the British Isles	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	4%	1%	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	289%	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.68	2.04	-	-

Project Notes

Borras Head existing farm practice



Site Information Afon Dyfrdwy (River Dee) (SSSI)

Country:	WALES
Site Name:	Afon Dyfrdwy (River Dee)
Site Code:	31WDW
Designation Status:	SSSI
Distance from Installation (m):	3584
Receptor Type:	Habitat
Grid Reference:	339710,355241
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

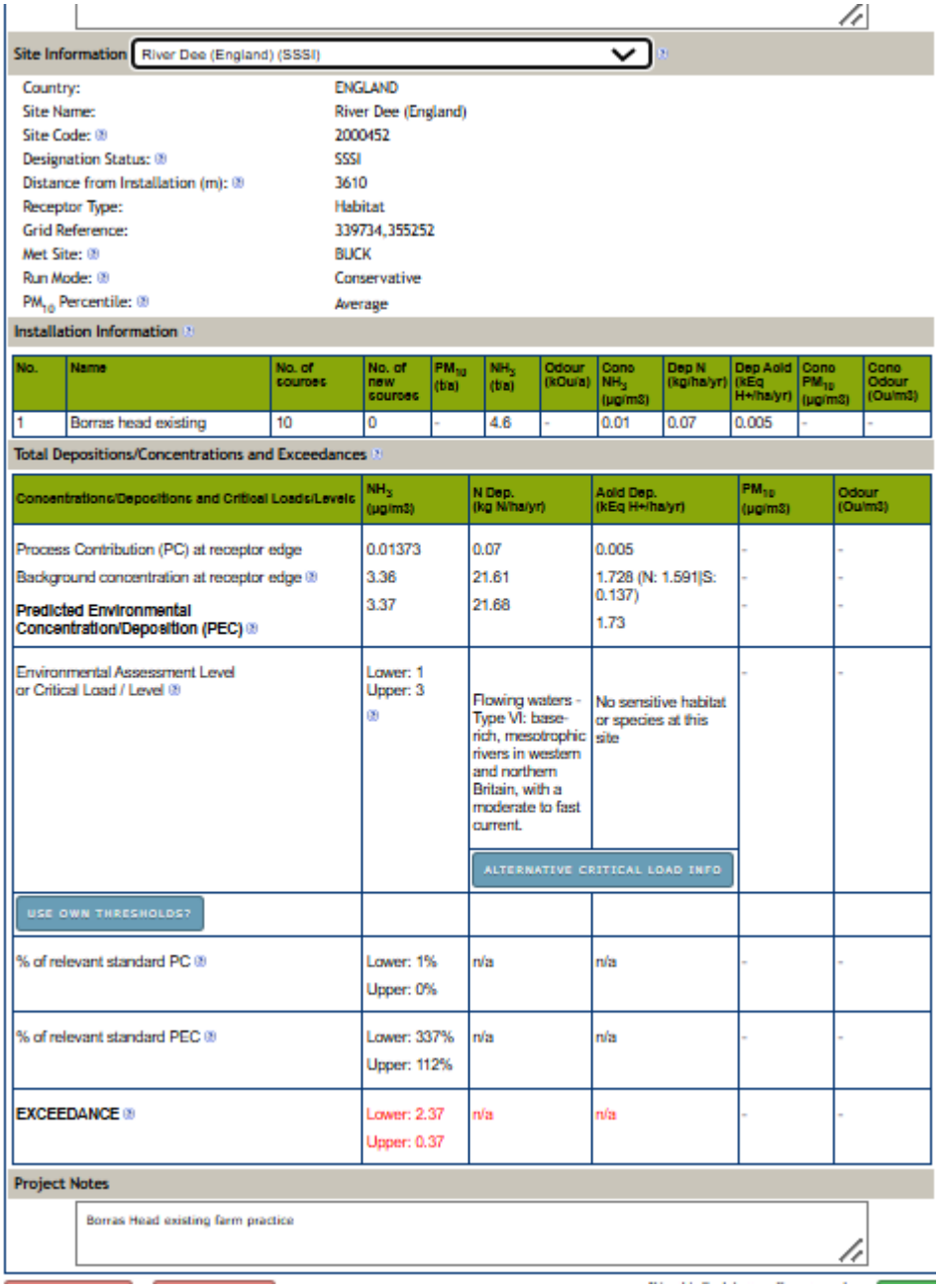
No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.07	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01389	0.07	0.005	-	-
Background concentration at receptor edge	3.36	21.61	1.726 (N: 1.591|S: 0.137)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.68	1.73	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans	No sensitive habitat or species at this site	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	4%	n/a	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	n/a	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.68	n/a	-	-

Project Notes

Borras Head existing farm practice



Site Information River Dee (England) (SSSI)

Country:	ENGLAND
Site Name:	River Dee (England)
Site Code:	2000452
Designation Status:	SSSI
Distance from Installation (m):	3610
Receptor Type:	Habitat
Grid Reference:	339734,355252
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (ba)	NH_3 (ba)	Odour (kOu/a)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.07	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01373	0.07	0.005	-	-
Background concentration at receptor edge	3.36	21.61	1.728 (N: 1.591|S: 0.137)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.68	1.73	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	Flowing waters - Type VI: base-rich, mesotrophic rivers in western and northern Britain, with a moderate to fast current.	No sensitive habitat or species at this site	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	n/a	n/a	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	n/a	n/a	-	-

Project Notes

Borras Head existing farm practice

Site Information River Dee and Bala Lake (SAC)

Country:	ENGLAND
Site Name:	River Dee and Bala Lake
Site Code:	UK0030252
Designation Status:	SAC
Distance from Installation (m):	3610
Receptor Type:	Habitat
Grid Reference:	339734,355252
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

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/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.07	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01373	0.07	0.005	-	-
Background concentration at receptor edge	3.36	21.61	3.106 (N: 2.927|S: 0.180)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.68	3.11	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans ALTERNATIVE CRITICAL LOAD INFO	maxN: 1.075 maxS: 0.933 minN: 0.142 Old sessile oak woods with Ilex and Blechnum in the British Isles	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	4%	1%	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	289%	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.68	2.04	-	-

Project Notes

Borras Head existing farm practice

Site Information River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England) (SAC)

Country:	WALES
Site Name:	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England)
Site Code:	UK0030252
Designation Status:	SAC
Distance from Installation (m):	3610
Receptor Type:	Habitat
Grid Reference:	339734,355252
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (ba)	NH_3 (ba)	Odour (kOua)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.07	0.005	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01373	0.07	0.005	-	-
Background concentration at receptor edge	3.36	21.61	3.106 (N: 2.927|S: 0.180)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.68	3.11	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans ALTERNATIVE CRITICAL LOAD INFO	maxN: 1.075 maxS: 0.933 minN: 0.142 Old sessile oak woods with Ilex and Blechnum in the British Isles	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	4%	1%	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	289%	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.68	2.04	-	-

Project Notes

Borras Head existing farm practice

Site Information Dee Cliffs| Farndon (SSSI)

Country:	ENGLAND
Site Name:	Dee Cliffs| Farndon
Site Code:	1002499
Designation Status:	SSSI
Distance from Installation (m):	4447
Receptor Type:	Habitat
Grid Reference:	340961,354555
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

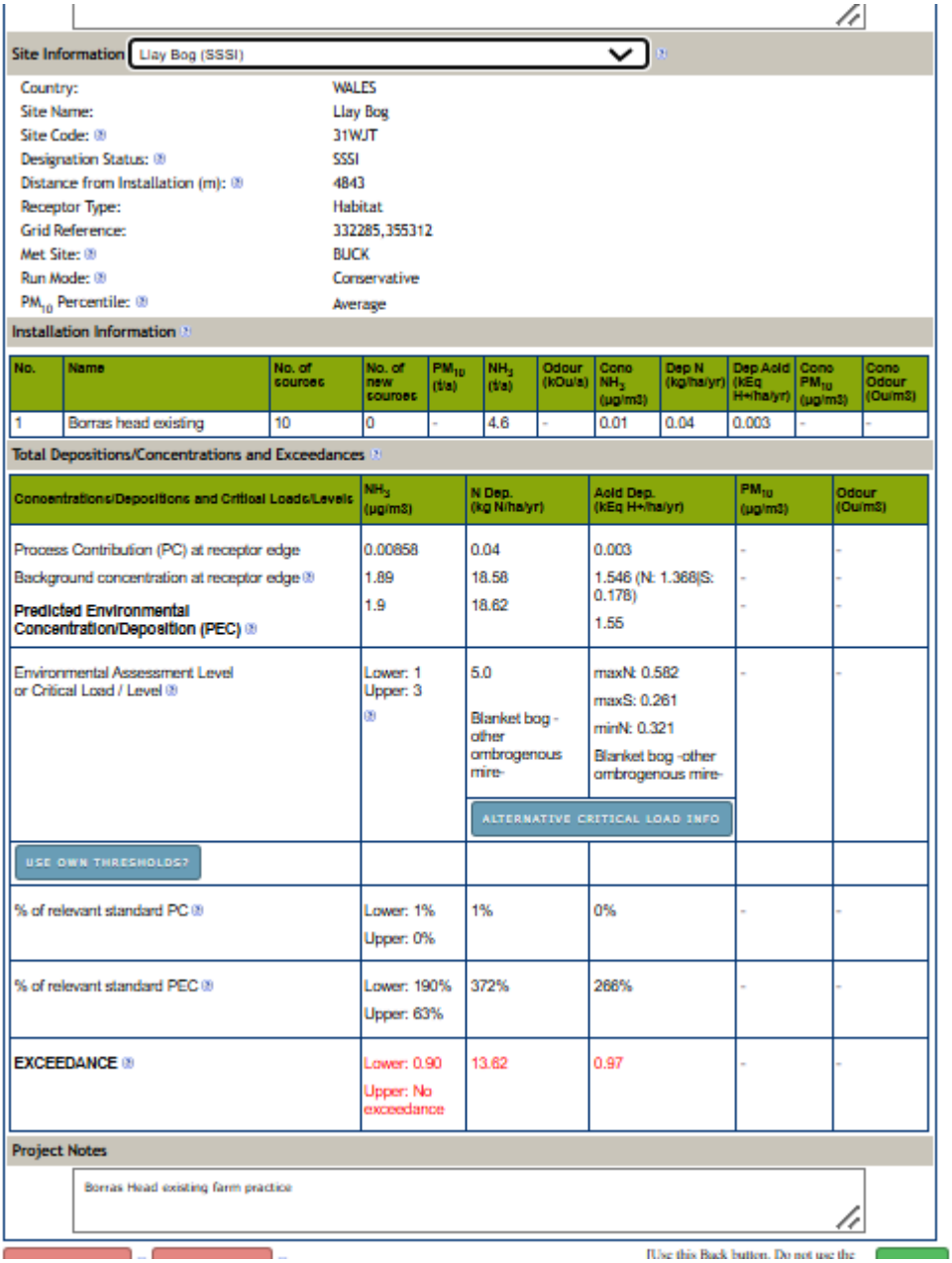
No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.05	0.003	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00982	0.05	0.004	-	-
Background concentration at receptor edge	3.27	21.62	1.724 (N: 1.592|S: 0.132)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.28	21.67	1.73	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	No sensitive habitat or species at this site	No sensitive habitat or species at this site	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 328% Upper: 109%	n/a	n/a	-	-
EXCEEDANCE	Lower: 2.28 Upper: 0.28	n/a	n/a	-	-

Project Notes

Borras Head existing farm practice



Site Information: Llay Bog (SSSI)

Country:	WALES
Site Name:	Llay Bog
Site Code:	31WJT
Designation Status:	SSSI
Distance from Installation (m):	4843
Receptor Type:	Habitat
Grid Reference:	332285,355312
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

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/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras head existing	10	0	-	4.6	-	0.01	0.04	0.003	-	-

Total Depositions/Concentrations and Exceedances

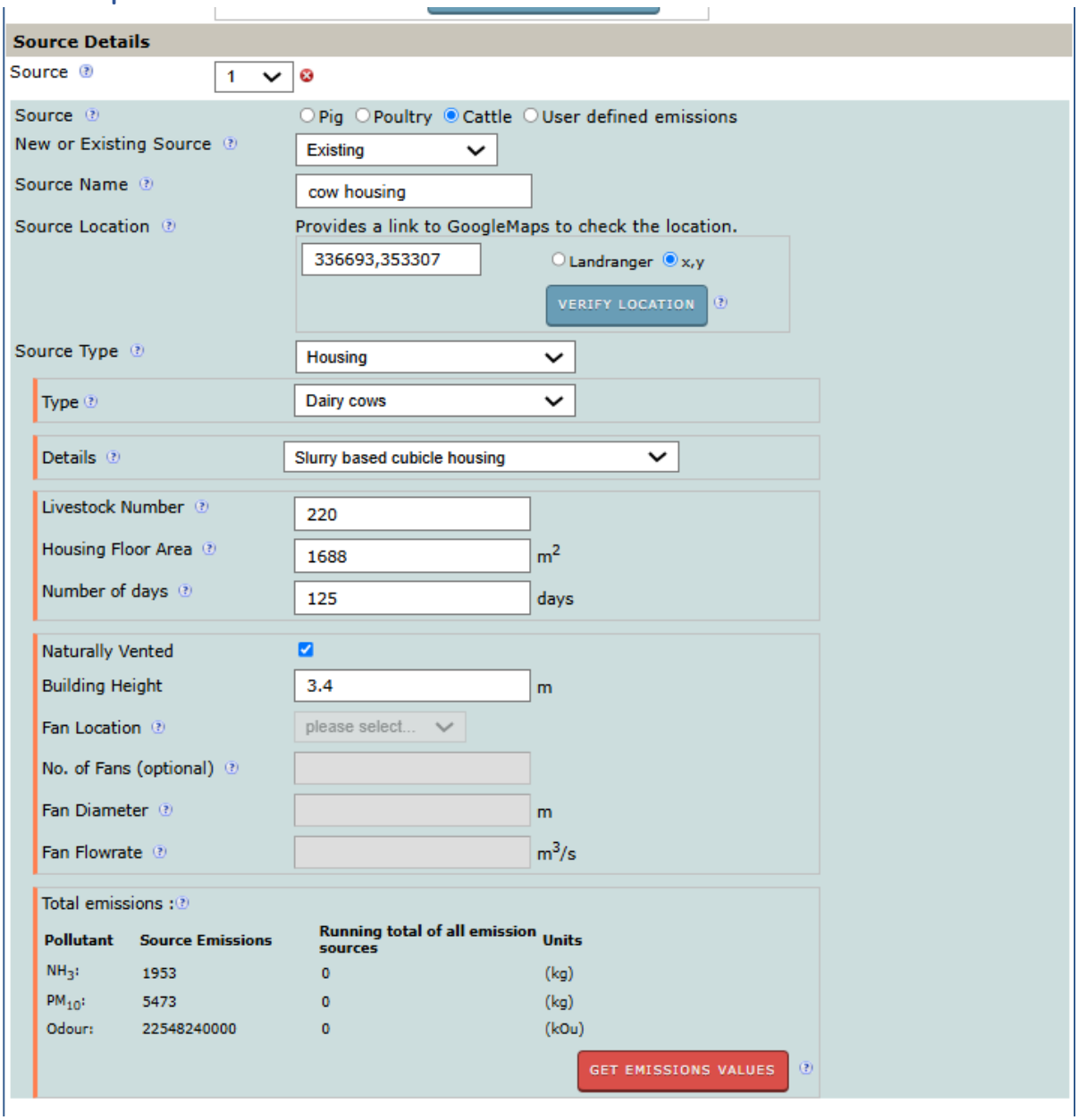
Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00858	0.04	0.003	-	-
Background concentration at receptor edge	1.89	18.58	1.546 (N: 1.368|S: 0.178)	-	-
Predicted Environmental Concentration/Deposition (PEC)	1.9	18.62	1.55	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Blanket bog - other ombrogenous mire-	maxN: 0.582 maxS: 0.261 minN: 0.321 Blanket bog -other ombrogenous mire-	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	1%	0%	-	-
% of relevant standard PEC	Lower: 190% Upper: 63%	372%	266%	-	-
EXCEEDANCE	Lower: 0.90 Upper: No exceedance	13.62	0.97	-	-

Project Notes

Borras Head existing farm practice

[Use this Back button. Do not use the

Data input future farm infrastructure



Source Details

Source: 1

Source: ○ Pig ○ Poultry ● Cattle ○ User defined emissions

New or Existing Source: Existing

Source Name: cow housing

Source Location: Provides a link to GoogleMaps to check the location.

336693,353307 ○ Landranger ● x,y

VERIFY LOCATION

Source Type: Housing

Type: Dairy cows

Details: Slurry based cubicle housing

Livestock Number: 220

Housing Floor Area: 1688 m^2

Number of days: 125 days

Naturally Vented ☑

Building Height: 3.4 m

Fan Location: please select...

No. of Fans (optional):

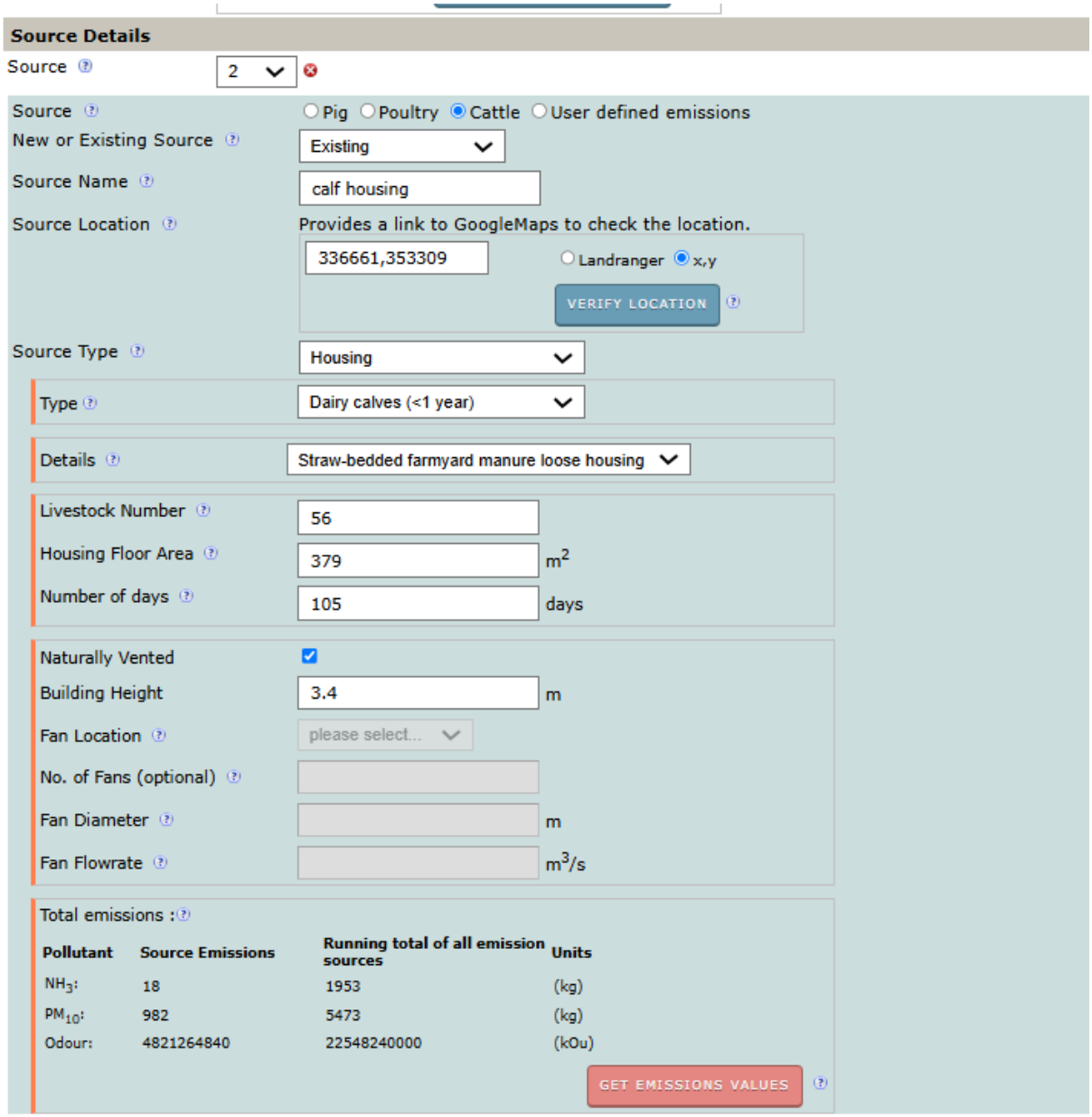
Fan Diameter: m

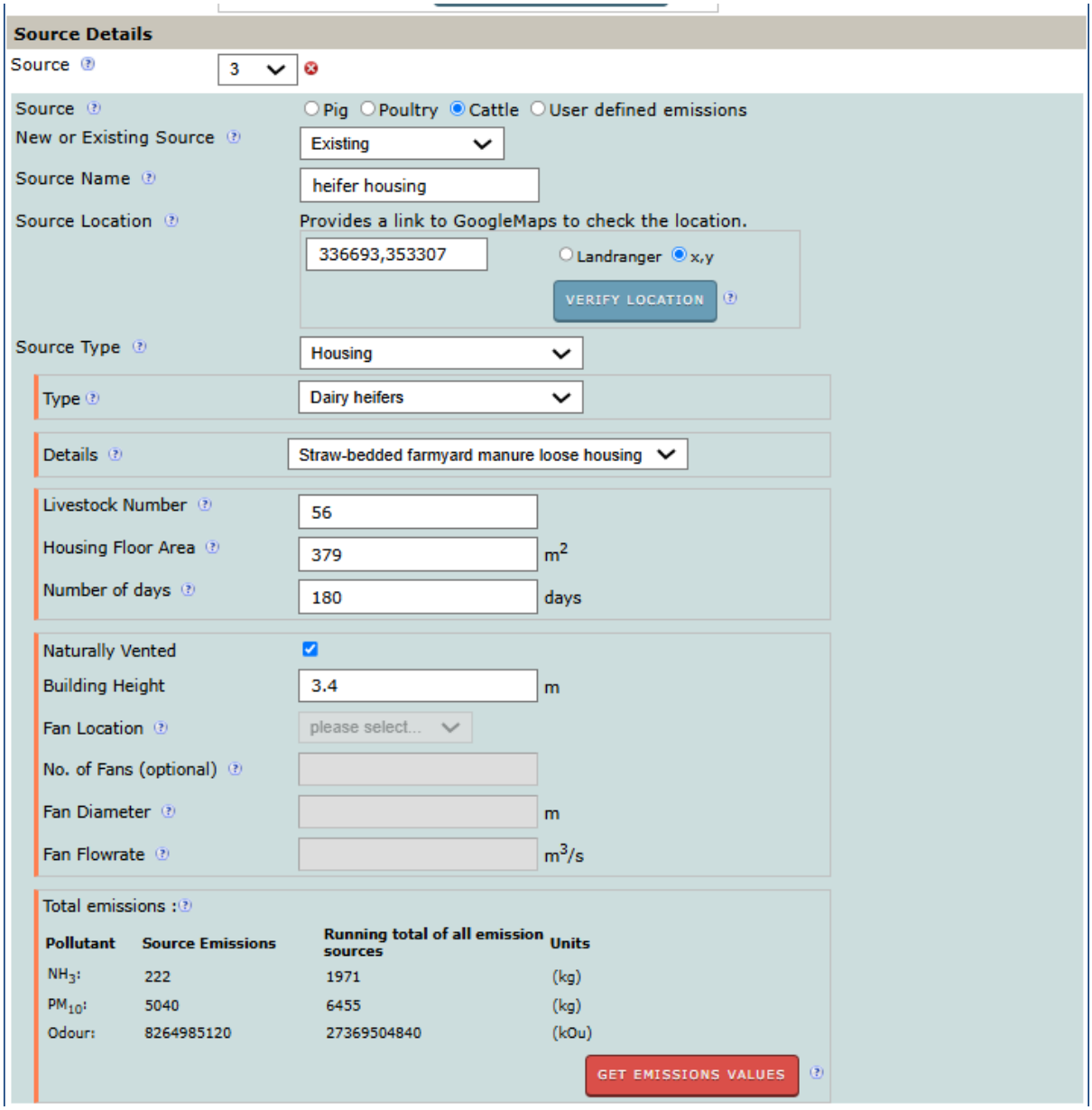
Fan Flowrate: m^3/s

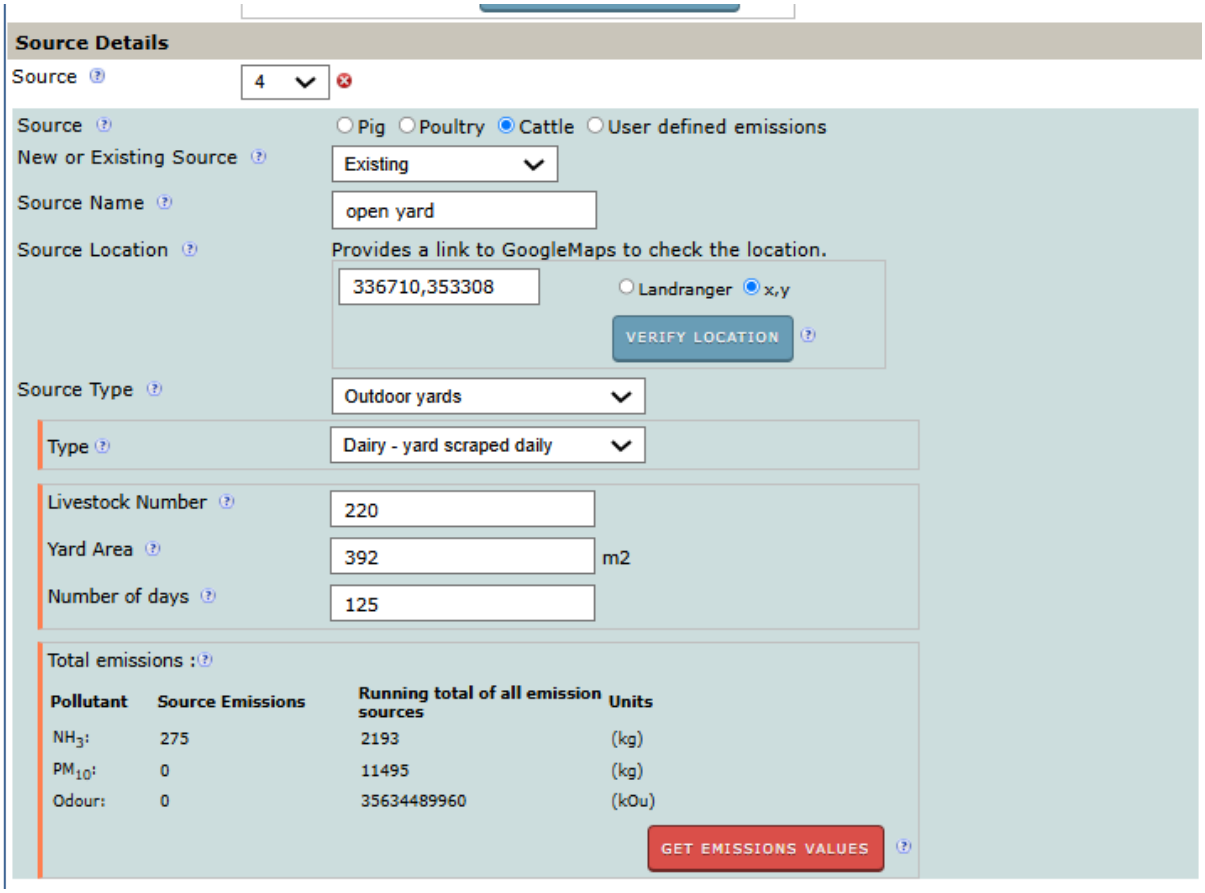
Total emissions :

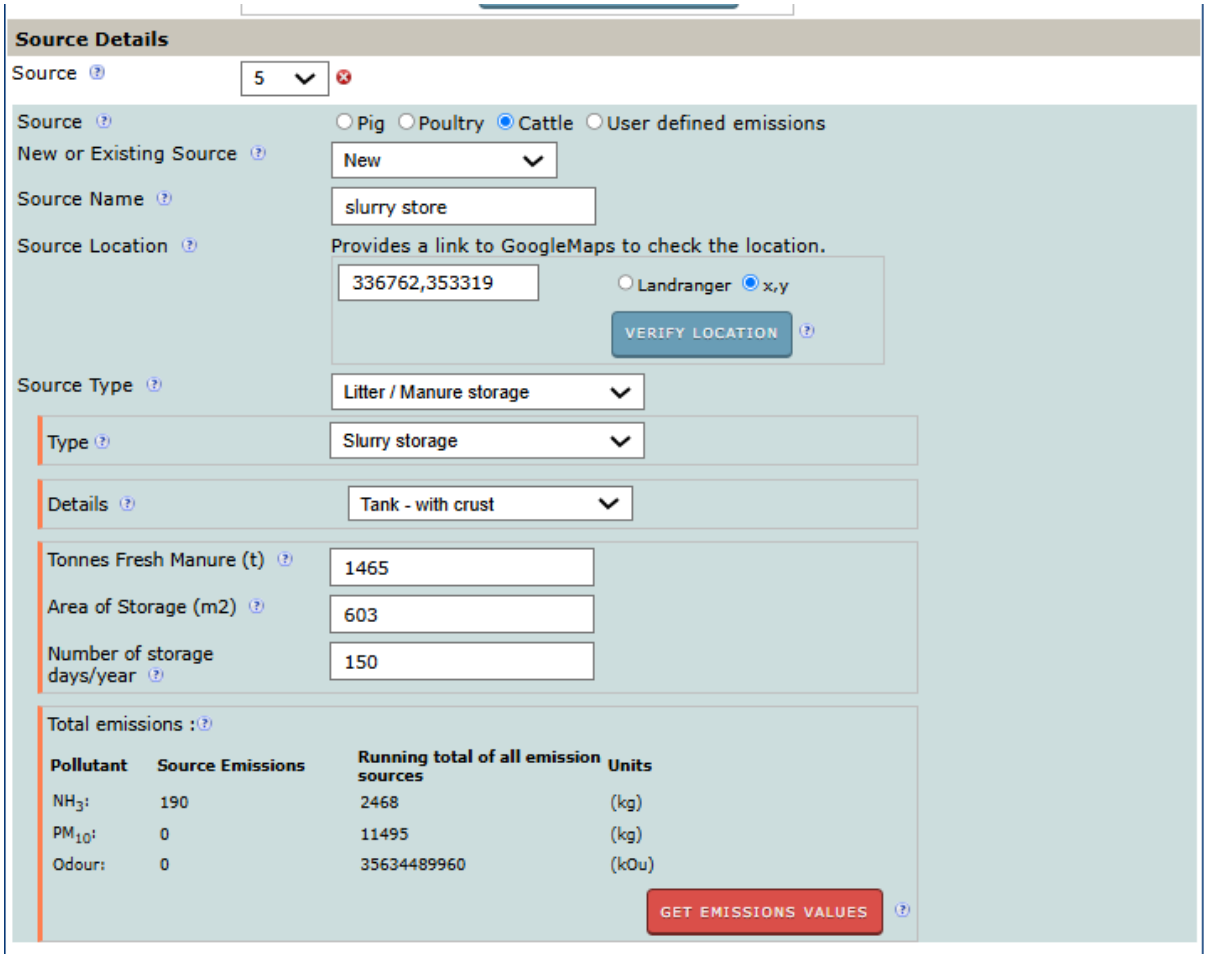
Pollutant	Source Emissions	Running total of all emission sources	Units
NH_3:	1953	0	(kg)
PM_{10}:	5473	0	(kg)
Odour:	22548240000	0	(kOu)

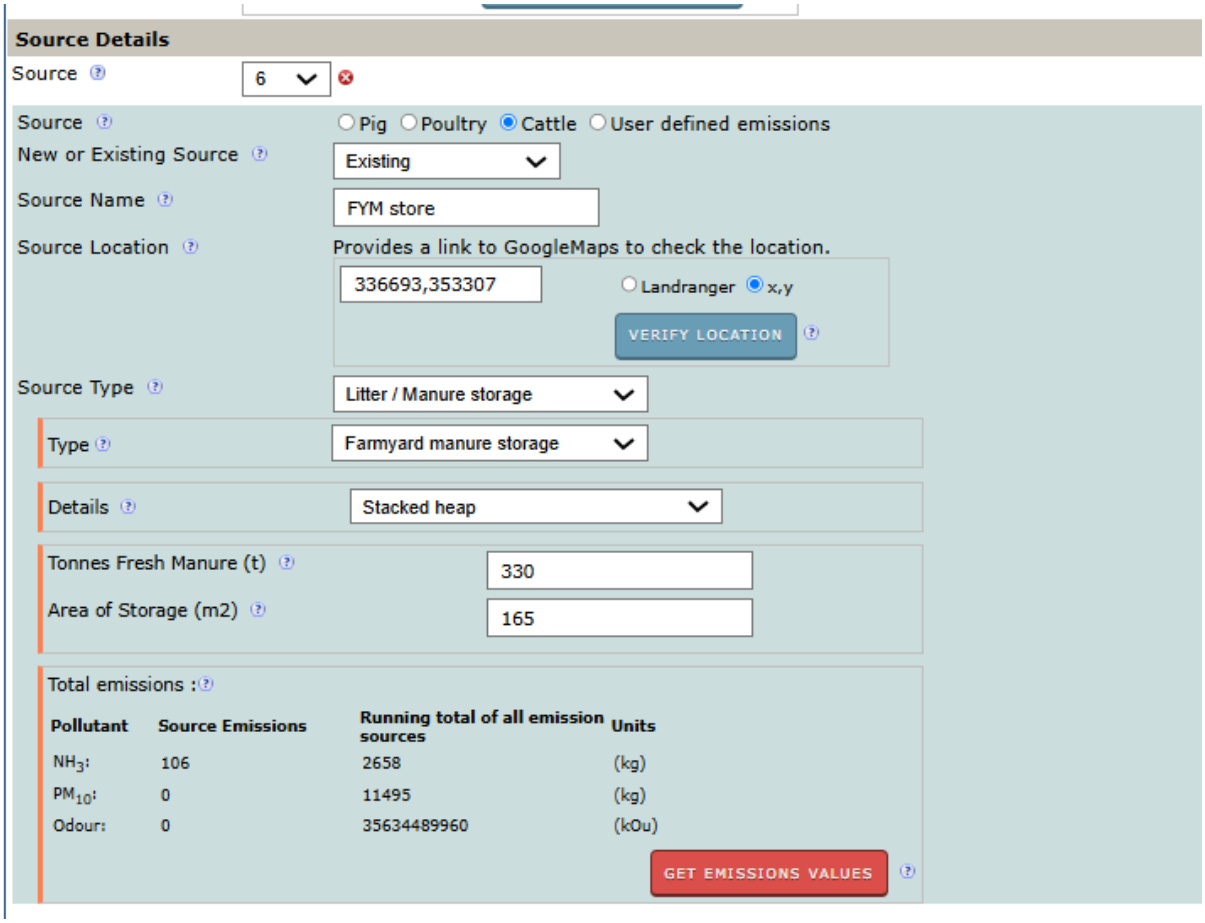
GET EMISSIONS VALUES

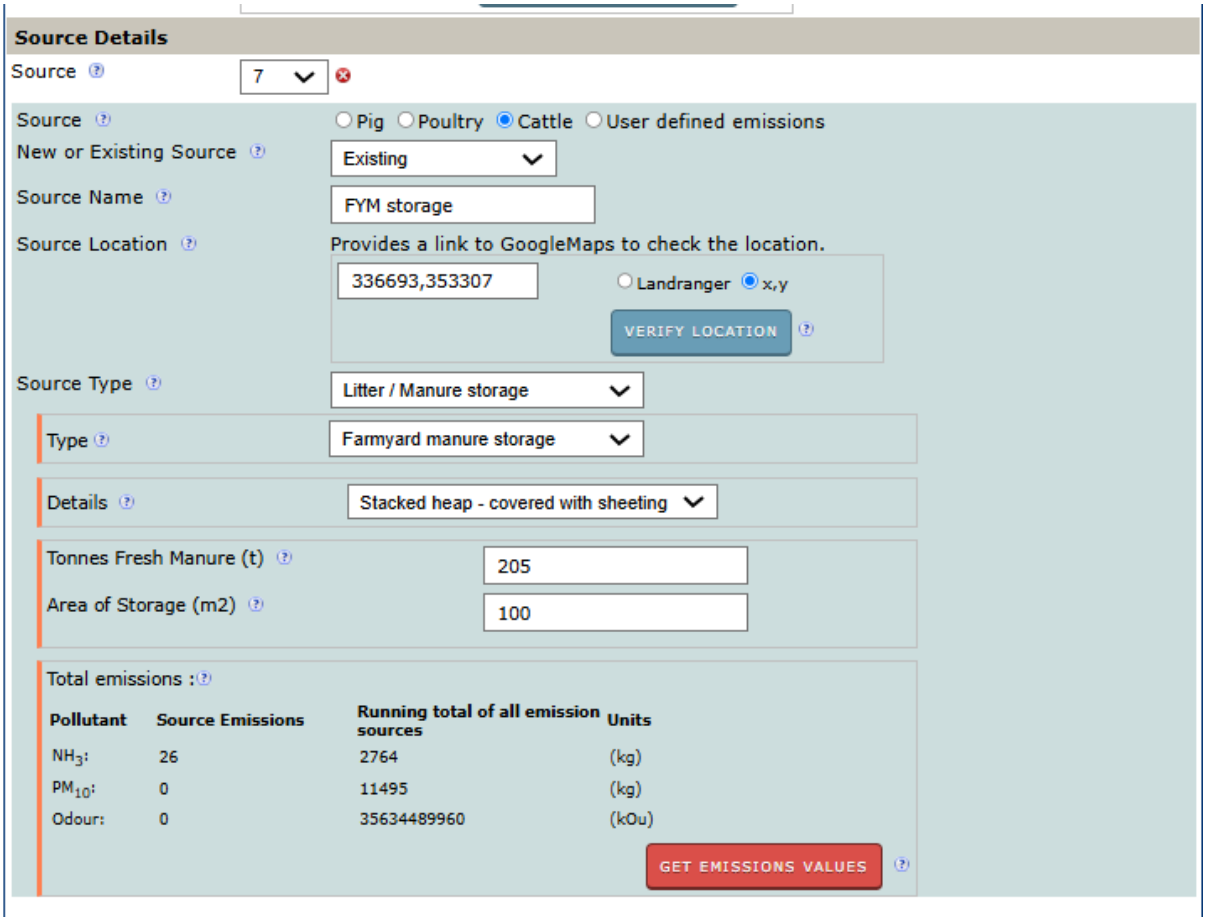

Source Details
Source 2
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name calf housing
Source Location Provides a link to GoogleMaps to check the location.
336661,353309
Landranger x,y
VERIFY LOCATION
Source Type Housing
Type Dairy calves (<1 year)
Details Straw-bedded farmyard manure loose housing
Livestock Number 56
Housing Floor Area 379 m2
Number of days 105 days
Naturally Vented
Building Height 3.4 m
Fan Location please select...
No. of Fans (optional)
Fan Diameter m
Fan Flowrate m3/s
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 18 1953 (kg)
PM10: 982 5473 (kg)
Odour: 4821264840 22548240000 (kOu)
GET EMISSIONS VALUES

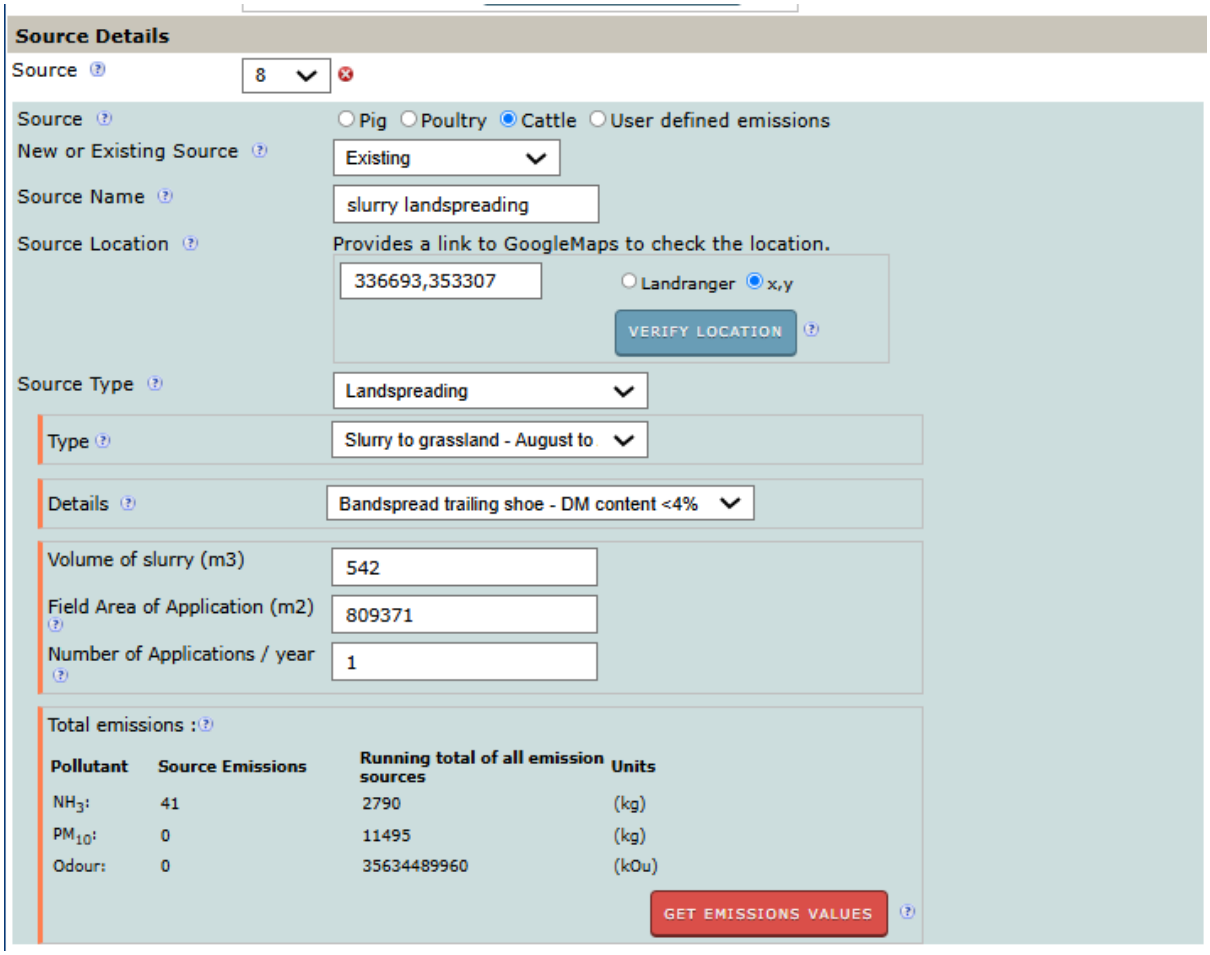

Source Details
Source 3
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name heifer housing
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Housing
Type Dairy heifers
Details Straw-bedded farmyard manure loose housing
Livestock Number 56
Housing Floor Area 379 m2
Number of days 180 days
Naturally Vented
Building Height 3.4 m
Fan Location please select...
No. of Fans (optional)
Fan Diameter m
Fan Flowrate m3/s
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 222 1971 (kg)
PM10: 5040 6455 (kg)
Odour: 8264985120 27369504840 (kOu)
GET EMISSIONS VALUES

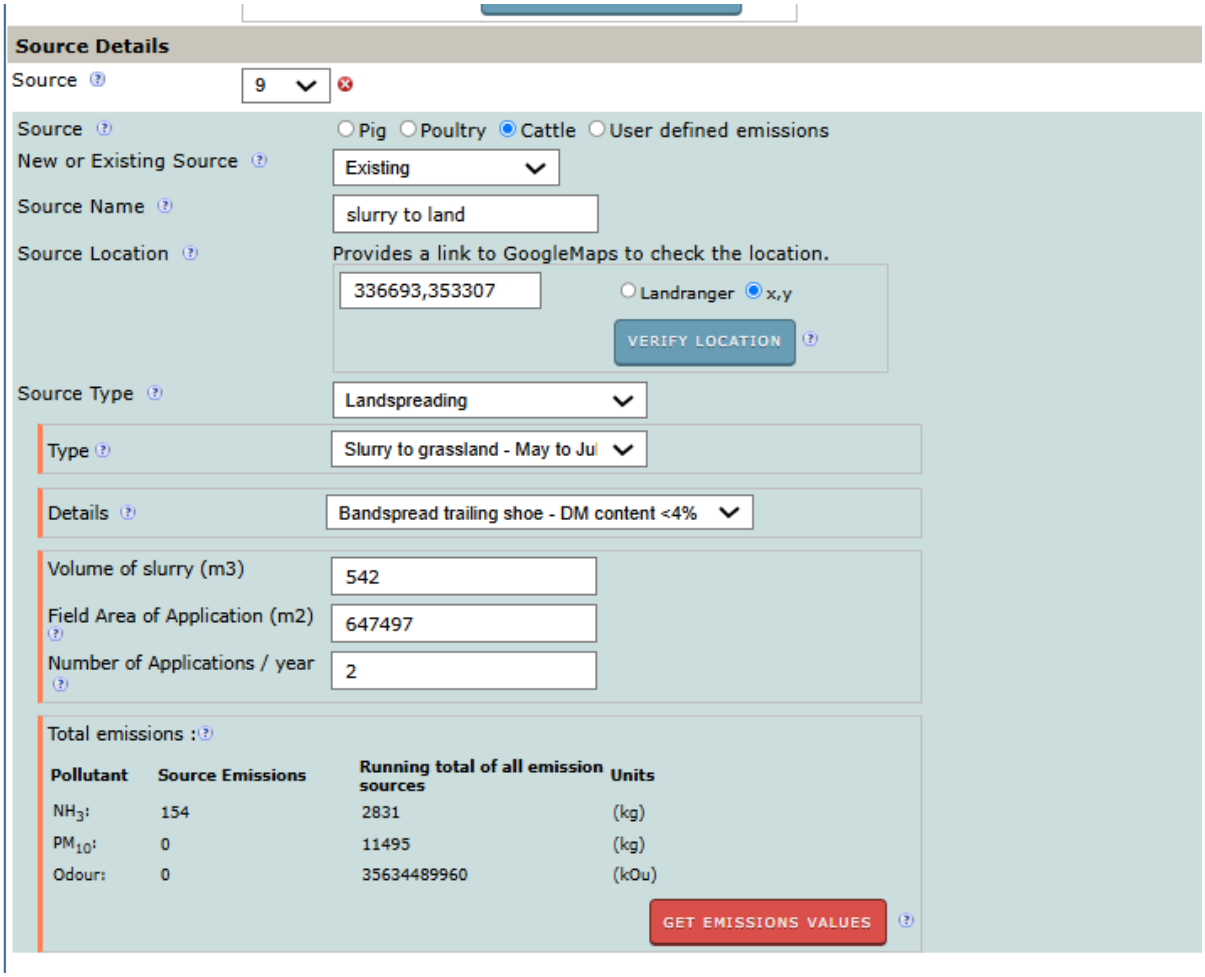

Source Details
Source 4
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name open yard
Source Location Provides a link to GoogleMaps to check the location.
336710,353308
Landranger x,y
VERIFY LOCATION
Source Type Outdoor yards
Type Dairy - yard scraped daily
Livestock Number 220
Yard Area 392 m2
Number of days 125
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 275 2193 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES

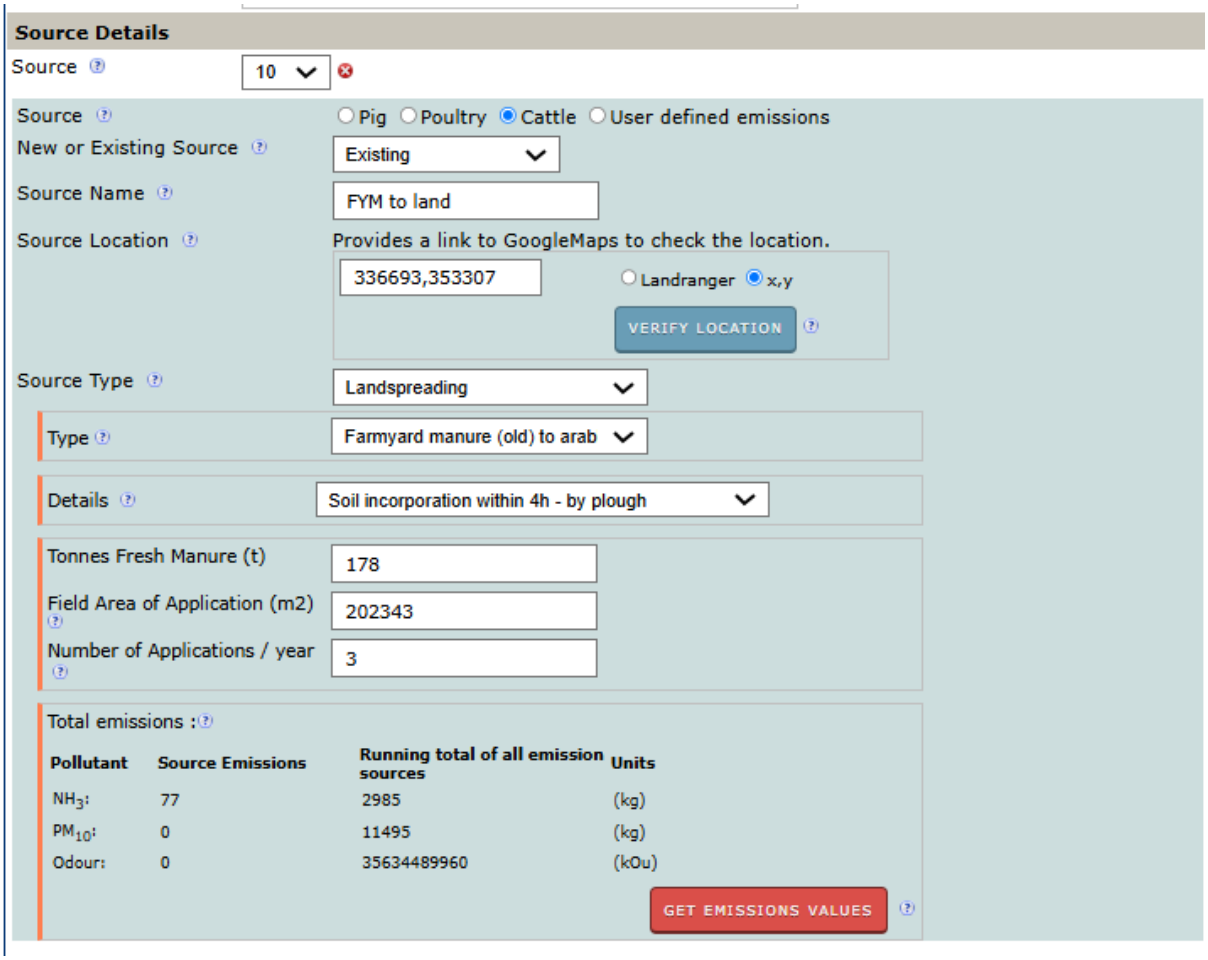

Source Details
Source 5
Source Pig Poultry Cattle User defined emissions
New or Existing Source New
Source Name slurry store
Source Location Provides a link to GoogleMaps to check the location.
336762,353319
Landranger x,y
VERIFY LOCATION
Source Type Litter / Manure storage
Type Slurry storage
Details Tank - with crust
Tonnes Fresh Manure (t) 1465
Area of Storage (m2) 603
Number of storage days/year 150
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 190 2468 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES

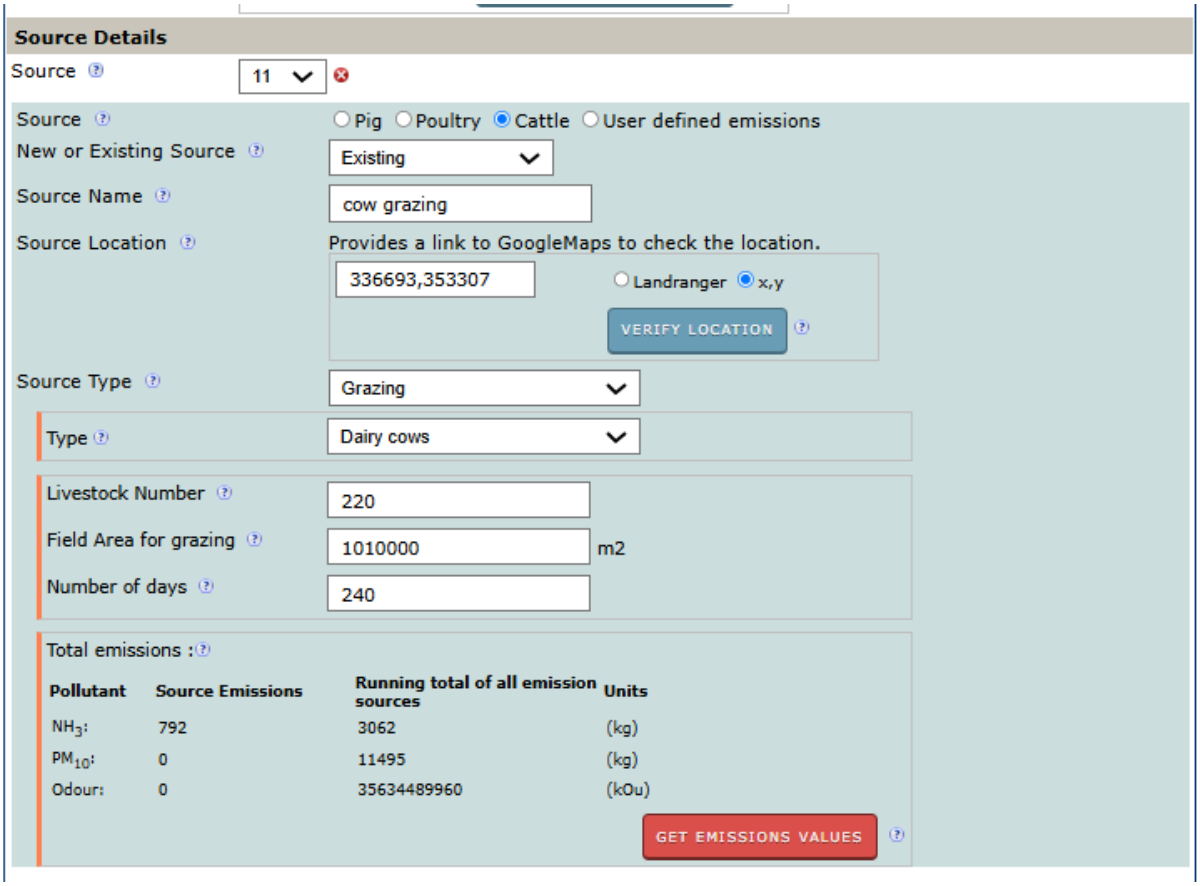

Source Details
Source 6
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name FYM store
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Litter / Manure storage
Type Farmyard manure storage
Details Stacked heap
Tonnes Fresh Manure (t) 330
Area of Storage (m2) 165
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 106 2658 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES

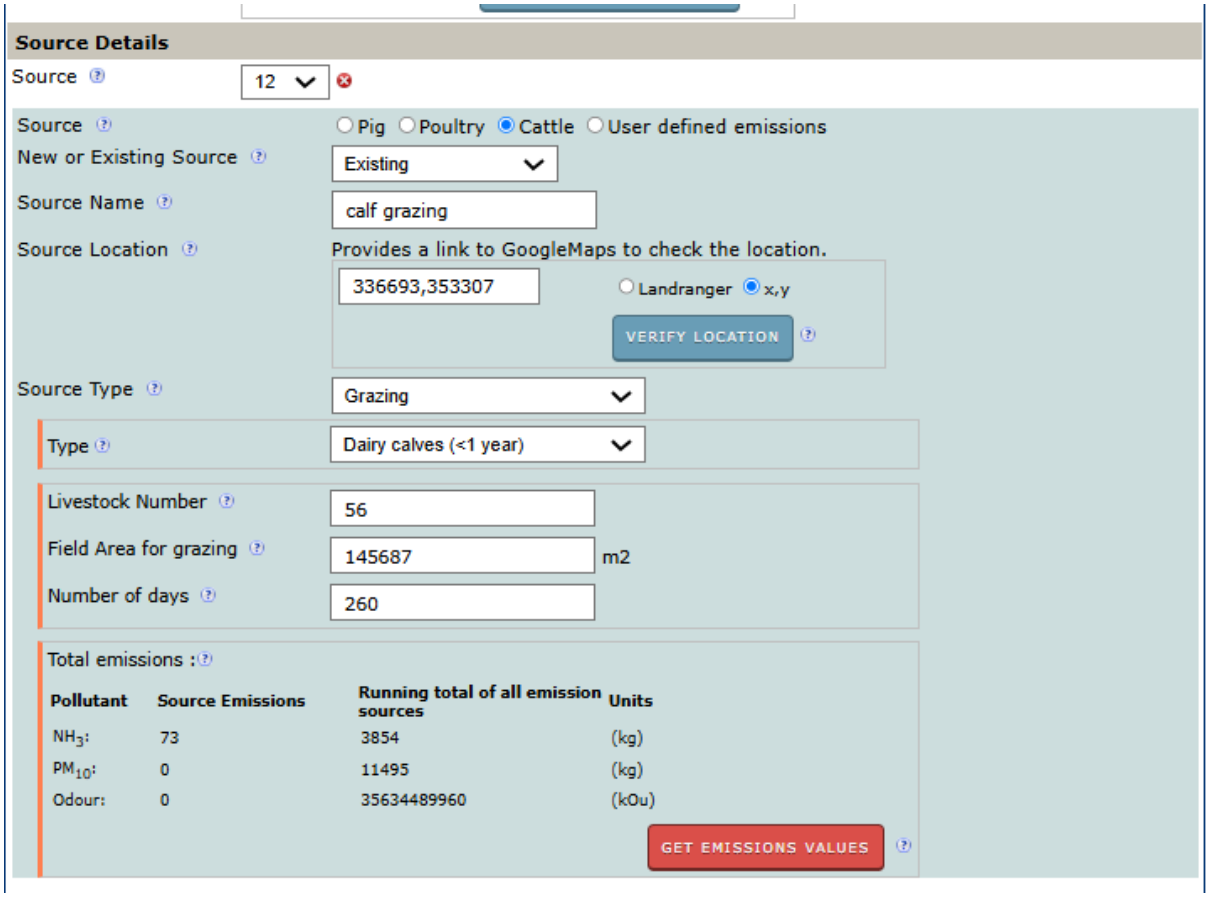

Source Details
Source 7
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name FYM storage
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Litter / Manure storage
Type Farmyard manure storage
Details Stacked heap - covered with sheeting
Tonnes Fresh Manure (t) 205
Area of Storage (m2) 100
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 26 2764 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES

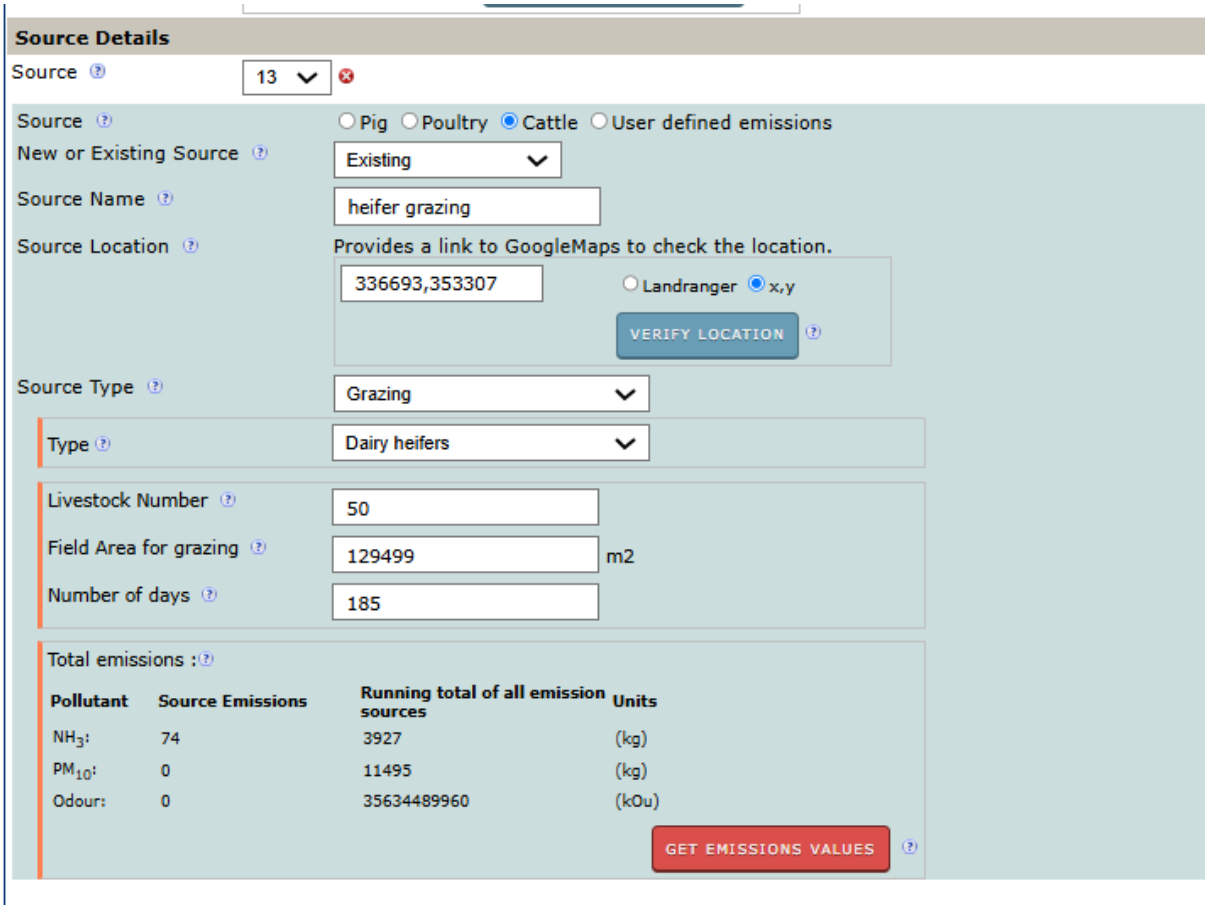

Source Details
Source 8
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name slurry landspreading
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Landspreading
Type Slurry to grassland - August to
Details Bandspread trailing shoe - DM content <4%
Volume of slurry (m3) 542
Field Area of Application (m2) 809371
Number of Applications / year 1
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 41 2790 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES


Source Details
Source 9
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name slurry to land
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Landspreading
Type Slurry to grassland - May to Ju
Details Bandspread trailing shoe - DM content <4%
Volume of slurry (m3) 542
Field Area of Application (m2) 647497
Number of Applications / year 2
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 154 2831 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES


Source Details
Source
10
Source
Pig
Poultry
Cattle
User defined emissions
New or Existing Source
Existing
Source Name
FYM to land
Source Location
Provides a link to GoogleMaps to check the location.
336693,353307
Landranger
x,y
VERIFY LOCATION
Source Type
Landspreading
Type
Farmyard manure (old) to arab
Details
Soil incorporation within 4h - by plough
Tonnes Fresh Manure (t)
178
Field Area of Application (m2)
202343
Number of Applications / year
3
Total emissions :
Pollutant
Source Emissions
Running total of all emission sources
Units
NH3:
77
2985
(kg)
PM10:
0
11495
(kg)
Odour:
0
35634489960
(kOu)
GET EMISSIONS VALUES


Source Details
Source
11
Source
Pig
Poultry
Cattle
User defined emissions
New or Existing Source
Existing
Source Name
cow grazing
Source Location
Provides a link to GoogleMaps to check the location.
336693,353307
Landranger
x,y
VERIFY LOCATION
Source Type
Grazing
Type
Dairy cows
Livestock Number
220
Field Area for grazing
1010000
m2
Number of days
240
Total emissions :
Pollutant
Source Emissions
Running total of all emission sources
Units
NH3:
792
3062
(kg)
PM10:
0
11495
(kg)
Odour:
0
35634489960
(kOu)
GET EMISSIONS VALUES


Source Details
Source 12
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name calf grazing
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Grazing
Type Dairy calves (<1 year)
Livestock Number 56
Field Area for grazing 145687 m2
Number of days 260
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 73 3854 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES


Source Details
Source 13
Source Pig Poultry Cattle User defined emissions
New or Existing Source Existing
Source Name heifer grazing
Source Location Provides a link to GoogleMaps to check the location.
336693,353307
Landranger x,y
VERIFY LOCATION
Source Type Grazing
Type Dairy heifers
Livestock Number 50
Field Area for grazing 129499 m2
Number of days 185
Total emissions :
Pollutant Source Emissions Running total of all emission sources Units
NH3: 74 3927 (kg)
PM10: 0 11495 (kg)
Odour: 0 35634489960 (kOu)
GET EMISSIONS VALUES

SCAIL Assessment for protected sites after farm infrastructure improvements are put in place

Site Information Vicarage Moss (SSSI)

Country:	WALES
Site Name:	Vicarage Moss
Site Code:	31WJW
Designation Status:	SSSI
Distance from Installation (m):	665
Receptor Type:	Habitat
Grid Reference:	336225,353779
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.24	1.23	0.083	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.23649	1.20	0.086	-	-
Background concentration at receptor edge	2.28	19.95	1.637 (N: 1.470|S: 0.167)	-	-
Predicted Environmental Concentration/Deposition (PEC)	2.52	21.15	1.72	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Fen -topogenous mires in valleys, basins and flood plains-	maxN: 0.519 maxS: 0.198 minN: 0.321 Fen -topogenous mires in valleys, basins and flood plains-	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 24% Upper: 8%	24%	0%	-	-
% of relevant standard PEC	Lower: 252% Upper: 84%	423%	316%	-	-
EXCEEDANCE	Lower: 1.52 Upper: No exceedance	16.15	1.20	-	-

Project Notes

Borras Head Future farm practice

Site Information Marford Quarry (SSSI)

Country:	WALES
Site Name:	Marford Quarry
Site Code:	31WSN
Designation Status:	SSSI
Distance from Installation (m):	2272
Receptor Type:	Habitat
Grid Reference:	335765,355380
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

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/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.03	0.13	0.009	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.02540	0.13	0.009	-	-
Background concentration at receptor edge	2.37	20.04	1.638 (N: 1.476|S: 0.162)	-	-
Predicted Environmental Concentration/Deposition (PEC)	2.4	20.17	1.65	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	No sensitive habitat or species at this site ALTERNATIVE CRITICAL LOAD INFO	No sensitive habitat or species at this site	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 3% Upper: 1%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 240% Upper: 80%	n/a	n/a	-	-
EXCEEDANCE	Lower: 1.40 Upper: No exceedance	n/a	n/a	-	-

Project Notes

Borras Head Future farm practice

Site Information Chwarel Singret (SSSI)

Country:	WALES
Site Name:	Chwarel Singret
Site Code:	31WSW
Designation Status:	SSSI
Distance from Installation (m):	3551
Receptor Type:	Habitat
Grid Reference:	334545,356135
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01198	0.06	0.004	-	-
Background concentration at receptor edge	2.47	19.88	1.630 (N: 1.464|S: 0.167)	-	-
Predicted Environmental Concentration/Deposition (PEC)	2.48	19.94	1.63	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	No sensitive habitat or species at this site	No sensitive habitat or species at this site	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 248% Upper: 83%	n/a	n/a	-	-
EXCEEDANCE	Lower: 1.48 Upper: No exceedance	n/a	n/a	-	-

Project Notes

Borras Head Future farm practice

Site Information River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) (SAC)

Country:	WALES
Site Name:	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)
Site Code:	UK0030252
Designation Status:	SAC
Distance from Installation (m):	3584
Receptor Type:	Habitat
Grid Reference:	339710,355241
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01180	0.06	0.004	-	-
Background concentration at receptor edge	3.36	21.61	3.106 (N: 2.927|S: 0.180)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.67	3.11	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans ALTERNATIVE CRITICAL LOAD INFO	maxN: 1.075 maxS: 0.933 minN: 0.142 Old sessile oak woods with Ilex and Blechnum in the British Isles	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	3%	0%	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	289%	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.67	2.04	-	-

Project Notes

Borras Head Future farm practice

Site Information Afon Dyfrdwy (River Dee) (SSSI)

Country:	WALES
Site Name:	Afon Dyfrdwy (River Dee)
Site Code:	31WDW
Designation Status:	SSSI
Distance from Installation (m):	3584
Receptor Type:	Habitat
Grid Reference:	339710,355241
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01180	0.06	0.004	-	-
Background concentration at receptor edge	3.36	21.61	1.728 (N: 1.591|S: 0.137)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.67	1.73	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans	No sensitive habitat or species at this site	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	3%	n/a	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	n/a	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.67	n/a	-	-

Project Notes

Borras Head Future farm practice

Site Information River Dee (England) (SSSI)

Country:	ENGLAND
Site Name:	River Dee (England)
Site Code:	2000452
Designation Status:	SSSI
Distance from Installation (m):	3610
Receptor Type:	Habitat
Grid Reference:	339734,355252
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

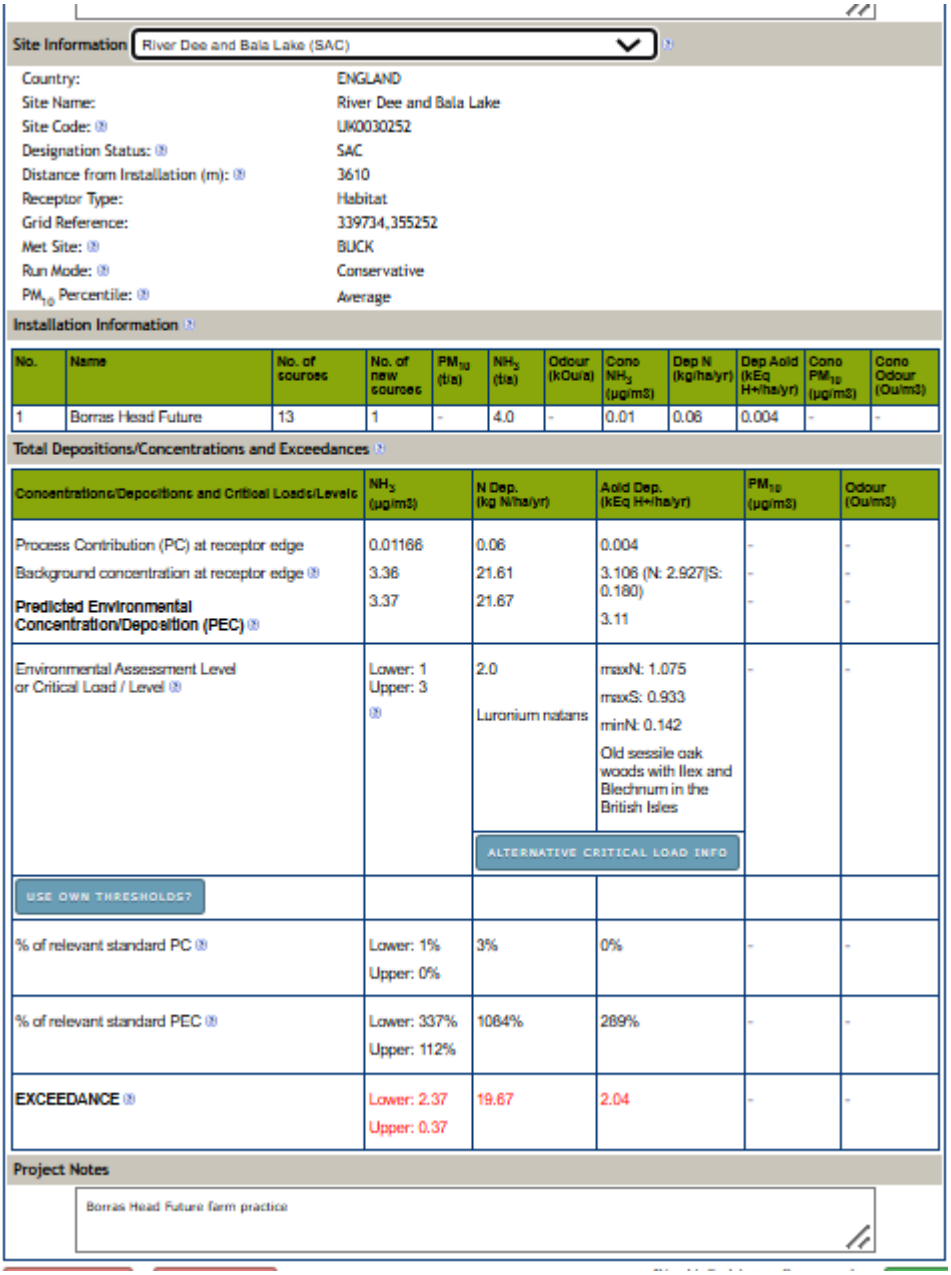
No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/a)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01166	0.06	0.004	-	-
Background concentration at receptor edge	3.36	21.61	1.728 (N: 1.591|S: 0.137)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.67	1.73	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	Flowing waters - Type VI: base-rich, mesotrophic rivers in western and northern Britain, with a moderate to fast current.	No sensitive habitat or species at this site	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	n/a	n/a	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	n/a	n/a	-	-

Project Notes

Borras Head Future farm practice



Site Information: River Dee and Bala Lake (SAC)

Country:	ENGLAND
Site Name:	River Dee and Bala Lake
Site Code:	UK0030252
Designation Status:	SAC
Distance from Installation (m):	3610
Receptor Type:	Habitat
Grid Reference:	339734,355252
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01166	0.06	0.004	-	-
Background concentration at receptor edge	3.36	21.61	3.106 (N: 2.927|S: 0.180)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.67	3.11	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans ALTERNATIVE CRITICAL LOAD INFO	maxN: 1.075 maxS: 0.933 minN: 0.142 Old sessile oak woods with Ilex and Blechnum in the British Isles	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	3%	0%	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1084%	269%	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.67	2.04	-	-

Project Notes

Borras Head Future farm practice

Site Information River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England) (SAC)

Country:	WALES
Site Name:	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England)
Site Code:	UK0030252
Designation Status:	SAC
Distance from Installation (m):	3610
Receptor Type:	Habitat
Grid Reference:	339734,355252
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

Installation Information

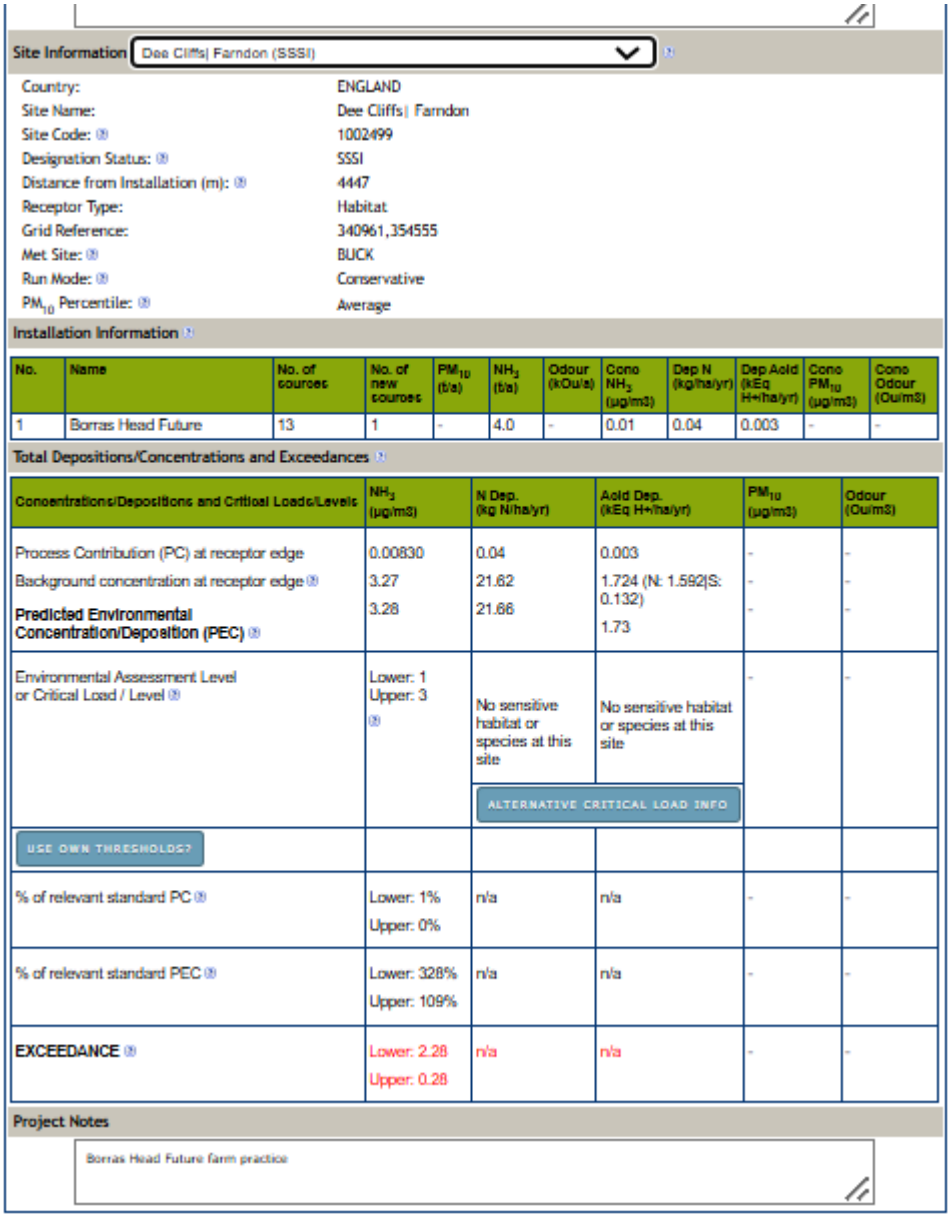
No.	Name	No. of sources	No. of new sources	PM_{10} (t/a)	NH_3 (t/a)	Odour (kOu/s)	Conc NH_3 (µg/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.01166	0.06	0.004	-	-
Background concentration at receptor edge	3.36	21.61	3.106 (N: 2.927|S: 0.180)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.37	21.67	3.11	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	2.0 Luronium natans ALTERNATIVE CRITICAL LOAD INFO	maxN: 1.075 maxS: 0.933 minN: 0.142 Old sessile oak woods with Ilex and Blechnum in the British Isles	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	3%	0%	-	-
% of relevant standard PEC	Lower: 337% Upper: 112%	1064%	269%	-	-
EXCEEDANCE	Lower: 2.37 Upper: 0.37	19.67	2.04	-	-

Project Notes

Borras Head Future farm practice



Site Information Dee Cliffs| Farndon (SSSI)

Country:	ENGLAND
Site Name:	Dee Cliffs| Farndon
Site Code:	1002499
Designation Status:	SSSI
Distance from Installation (m):	4447
Receptor Type:	Habitat
Grid Reference:	340961,354555
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

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/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.04	0.003	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00830	0.04	0.003	-	-
Background concentration at receptor edge	3.27	21.62	1.724 (N: 1.592|S: 0.132)	-	-
Predicted Environmental Concentration/Deposition (PEC)	3.28	21.66	1.73	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	No sensitive habitat or species at this site ALTERNATIVE CRITICAL LOAD INFO	No sensitive habitat or species at this site	-	-
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	n/a	n/a	-	-
% of relevant standard PEC	Lower: 328% Upper: 109%	n/a	n/a	-	-
EXCEEDANCE	Lower: 2.28 Upper: 0.28	n/a	n/a	-	-

Project Notes

Borras Head Future farm practice

Site Information Llay Bog (SSSI)

Country:	WALES
Site Name:	Llay Bog
Site Code:	31WJT
Designation Status:	SSSI
Distance from Installation (m):	4843
Receptor Type:	Habitat
Grid Reference:	332285,355312
Met Site:	BUCK
Run Mode:	Conservative
PM_{10} Percentile:	Average

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/m3)	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM_{10} (µg/m3)	Conc Odour (Ou/m3)
1	Borras Head Future	13	1	-	4.0	-	0.01	0.04	0.003	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH_3 (µg/m3)	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM_{10} (µg/m3)	Odour (Ou/m3)
Process Contribution (PC) at receptor edge	0.00725	0.04	0.003	-	-
Background concentration at receptor edge	1.89	18.58	1.546 (N: 1.368|S: 0.178)	-	-
Predicted Environmental Concentration/Deposition (PEC)	1.9	18.62	1.55	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Blanket bog - other ombrogenous mire-	maxN: 0.582 maxS: 0.261 minN: 0.321 Blanket bog -other ombrogenous mire-	-	-
		ALTERNATIVE CRITICAL LOAD INFO			
USE OWN THRESHOLDS?					
% of relevant standard PC	Lower: 1% Upper: 0%	1%	0%	-	-
% of relevant standard PEC	Lower: 190% Upper: 63%	372%	266%	-	-
EXCEEDANCE	Lower: 0.90 Upper: No exceedance	13.62	0.97	-	-

Project Notes

Borras Head Future farm practice

Table to show impact of farm infrastructure improvements on Ammonia emission on 10 protected sites with 5 km of Borras Head Farm

		Existing Farm practice						Future Farm Practice						Impact of farm improvements reduction	
RECEPTORS	NAME	PC NH3 (ug m-3)	NH3 Background (ug m-3)	NH3 PEC (ug m-3)	NH3 EAL (ug m-3)	% of NH3 PC to CLevel	% of NH3 PEC to CLevel	PC NH3 (ug m-3)	NH3 Background (ug m-3)	NH3 PEC (ug m-3)	NH3 EAL (ug m-3)	% of NH3 PC to CLevel	% of NH3 PEC to CLevel	in PC NH3 (ug m-3)	%reduction NH3 PC to CLevel
1	Vicarage Moss	0.26626	2.28	2.54626	1-3	8.875333	84.87533	0.23649	2.28	2.51649	1-3	7.883	83.883	0.02977	0.9923333
2	Marford Quarry	0.02959	2.37	2.39959	1-3	0.986333	79.98633	0.0254	2.37	2.3954	1-3	0.846667	79.84667	0.00419	0.1396667
3	Chwarel Singret	0.0141	2.47	2.4841	1-3	0.47	82.80333	0.01198	2.47	2.48198	1-3	0.399333	82.73267	0.00212	0.0706667
4	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales)	0.01389	3.36	3.37389	1-3	0.463	112.463	0.0118	3.36	3.3718	1-3	0.393333	112.3933	0.00209	0.0696667
5	Afon Dyfrdwy (River Dee)	0.01389	3.36	3.37389	1-3	0.463	112.463	0.0118	3.36	3.3718	1-3	0.393333	112.3933	0.00209	0.0696667
6	River Dee (England)	0.01373	3.36	3.37373	1-3	0.457667	112.4577	0.01166	3.36	3.37166	1-3	0.388667	112.3887	0.00207	0.069
7	River Dee and Bala Lake	0.01373	3.36	3.37373	1-3	0.457667	112.4577	0.01166	3.36	3.37166	1-3	0.388667	112.3887	0.00207	0.069
8	River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England)	0.01373	3.36	3.37373	1-3	0.457667	112.4577	0.01166	3.36	3.37166	1-3	0.388667	112.3887	0.00207	0.069
9	Dee Cliffs| Farndon	0.00982	3.27	3.27982	1-3	0.327333	109.3273	0.0083	3.27	3.2783	1-3	0.276667	109.2767	0.00152	0.0506667
10	Llay Bog	0.00858	1.89	1.89858	1-3	0.286	63.286	0.00725	1.89	1.89725	1-3	0.241667	63.24167	0.00133	0.0443333

Summary

The findings of the SCAIL assessment highlights that increasing the available slurry storage capacity at Borras Head farm with a new slurry separator and a new cylindrical slurry store will reduce the process contribution for ammonia from the farm to the protected sites with 5 km of the farm. The farm business has to move from the daily application of slurry to land to storing slurry over the 5 month winter period and complying with the closed period of CoAPR. The maximum reduction in process contribution of 0.02966 mg m^{-3} is to the closest protected site namely Vicarage Moss. However, there is a reduction in process contribution for all 10 protected sites.