

EXTENDED PHASE ONE HABITAT SURVEY

Land at Gwynfaes
Rhandirmwyn
Llandovery

GRID REFERENCE: SN 77864104

Report for Roger Parry and Partners
11 Oct 2018



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1 INTRODUCTION

1.1 BACKGROUND

Arbor Vitae were commissioned to carry out a Phase One Habitat Survey, including a Protected Species survey, of land at Gwynfaes. This land is the subject of a planning application for the erection of a new poultry shed.

This report presents the results of a field survey carried out on 5 September 2018.

1.2 DETAILS OF PROPOSED WORKS

The work will involve the construction of one new poultry building, along with an access track and feed bins (see Figure 3). The building will house 8000 poultry. Two existing sheds currently accommodate a total of 22,000 birds. The northernmost of these will be retrofitted with new high velocity ridge fans as part of this development.

Access will be created from the existing track which services the adjacent, existing shed.

The ranging area will include the remainder of the field to the north of the shed.

1.3 SCOPE OF SURVEY

This report sets out to establish the base-line ecological condition of the site and to identify and evaluate any potential impacts which the scheme may have, taking account of any mitigation and enhancement to the ecology which the scheme can offer.

Construction of the building inevitably involves a change of land use and therefore has the potential to remove existing habitat and to physically disturb protected species, if present.

The nature of the immediate and surrounding habitat indicated that the following species could theoretically be affected by physical disturbance of habitats.

Protected or key species potentially affected:

- Badgers
- Bats
- Breeding birds

Other priority species considered were dormice and great crested newts. Although dormice have strongholds in other parts of Carmarthenshire to the south, this is a rare species in this part of the county. The absence of standing water within 50 metres of the site ruled out the need for consideration of great crested newts.



This report sets out the results of the field surveys and desk study, along with an assessment of potential ecological impacts of the construction of the new building.

The ammonia modelling report (Ref: AS Modelling and Data Ltd) concluded that the *detailed modelling conducted at a low resolution predicts that the process contribution of the existing and proposed poultry houses at Gwynfaes to annual mean ammonia concentrations and nitrogen deposition rates would not exceed the Natural Resources Wales lower threshold percentage of the relevant Critical Level or Critical Load at discrete receptors located at Rhos Dolau-Bran SSSI, Mwyngloddfa Nantymwyn SSSI and Cwm Doethie – Mynydd Mallaen SAC/Elenudd Mallarn SPA.*

However, the detailed modelling at a higher resolution predicts that the *process contribution of the existing and proposed poultry houses at Gwynfaes to annual mean ammonia concentrations would exceed the Natural Resources Wales lower threshold percentage of the precautionary Critical Level of 1.0 µg/m³ at the discrete receptors located at two of the closest AWs.*

2 SITE DESCRIPTION

2.1 LOCATION AND LANDSCAPE

The proposed construction site is located at Gwynfaes, an isolated farm near Rhandirmwyn, a hamlet 5 kms north of Llandovery (see Figure 1 Location plan). The farm is a former dairy unit, now converted to free range egg production. It lies in undulating countryside at approximately 187 metres AOD.

The proposed site for the new shed is on a grass field to the south of the existing buildings (see Figure 3). The site will occupy the southerly, flat section of the field adjacent to the existing poultry shed to the north.

The site is bounded by a recently translocated hedgerow to the east and by open field to the west which in turn is bounded by a minor road. The area as a whole is typical of an upland stock farm. Fields are almost all in grass and are generally small in scale with wide, often tall, hedges separating them. Small patches of broad-leaved woodland are frequent in the area as a whole, many of these being on ancient woodland sites.

A small stream flows 250 metres to the north of the proposed site through a steeply sloping narrow wooded valley.



3 SURVEY METHODOLOGY

3.1 DESK STUDY

A number of data sets were investigated to ascertain the presence or otherwise of nearby land designations, scheduled sites or protected species. Sources which were used included MAGIC, and West Wales Biodiversity Information Centre (WWBIC).

3.2 FIELD SURVEY

One visit was made to the site on the 5 September 2018 to survey that part of the farm affected both by the new building and also by the ammonia exceedance area. The site was surveyed to identify specific habitats and potential opportunities for protected species. Adjacent land was inspected for evidence of key habitats or key species. An assessment of the available habitats both on and adjacent to the site led to consideration of the potential of the site for the following protected species:

- Badger
- Bats
- Breeding birds

Badgers

An area within 50 metres of the site was closely searched for the following signs of badger activity: setts, tracks and footprints, latrines and snuffle holes.

Bats

Any structures or trees suitable to support bats would be assessed for their potential to act as bat roost.

Breeding birds

The habitat was assessed in terms of suitability for breeding birds, including any nearby hedgerows or trees.

3.3 PERSONNEL

The survey was carried out by Will Prestwood BSc Hons: an experienced ecologist and surveyor at Arbor Vitae Environment.

3.4 CONSTRAINTS

There were no constraints to the survey being carried out successfully.



4 SURVEY RESULTS

4.1 DESK STUDY

Nature conservation or other designations

There are three designated Sites of Special Scientific Interest within a 5 km radius around the site:

Cwm Doethie – Mynydd Mallaen SSSI and SAC: 2740 metres to the west

Rhos Dolau-Bran - 3210 metres to the south east

Mwyngloddfa Nantymynn SSSI – 3240 metres to the north

The area around the site within a radius of 1km supports eight recognised areas of Ancient Woodland (AW) See Figure 4.

Priority species

A total of 19 Priority species (including protected species) have been recorded within one kilometre of the site (See Figures 5 and 6 for details). This includes species regarded by WWBIC as Category 1 and Category 2 species.

4.2 HABITATS ON CONSTRUCTION SITE

Improved grassland

The new poultry building will occupy land which is currently improved grassland. The sward contains a very limited range of species.

Hedgerows (see Figure 2)

Hedgerow 1 lies to the south of the proposed shed site. This hedge, mainly of hazel, has recently been pollarded and moved to a new position. New growth is appearing and it has evidently survived the translocation.

Hedgerow 2 forms the southern boundary hedge of the site field but will not be affected by the development. This is a very mixed species, native hedgerow.

4.3 **PROTECTED SPECIES**

Badgers

No badger setts are located within 50 metres of the site and there is no evidence that badgers use the site for foraging or for access.

Bats

There are no features on the site which might provide bats with roost sites.

Breeding birds

No habitat with potential as nest sites will be affected. Plan to fence hedgerows and plant new hedgerows within the ranging area will benefit breeding birds.

4.4 **ADJACENT HABITATS**

ANCIENT WOODLAND 'A' (see Figure 2)

This area of woodland totals approximately 1.6 hectares and includes a section of semi-natural, ancient woodland (0.83 ha) and a section of younger plantation (0.77 ha) created approximately 20 years ago. The semi-natural woodland occupies a steep south facing slope above a small stream with smaller, adjoining and contiguous areas to the west on both sides of the stream valley.

This woodland is dominated by sessile oak which occupies 90 per cent of the canopy. Alder is frequent along the stream. The shrub layer is sparse other than occasional old hazel coppice at the eastern end of the wood and occasional young holly and patches of bramble.

The ground flora is limited though typical of the habitat type with bluebell, wood sorrel, greater stitchwort, creeping soft grass and bracken. Male fern is occasional with polypody growing on occasional trees. Nearer the stream, the flora is more diverse with enchanter's nightshade, opposite-leaved golden saxifrage, remote sedge, hard fern and broad buckler fern. Cocksfoot is notably frequent in some parts, probably testament to former sheep grazing in the wood and an increased nutrient status.

Deadwood habitats are frequent. Bryophytes are limited on the drier upper slopes but more frequent near the stream and on lower slopes where humidity is higher.

A spring and flushed are towards the western end support a richer flora including reed canary grass, lady fern and hemlock water dropwort.

The young plantation consists of mainly native species, notably oak, silver birch, ash and rowan.



ANCIENT WOODLAND 'B'

This woodland extends to 0.6 hectares on the west side of the minor road and is in the ownership of others. The woodland was inspected with the owner's permission. It forms part of a small farm which is entirely within Glas Tir Advanced.

The woodland occupies a slope (in places extremely steep), at the foot of part of which runs a small stream. The woodland is entirely semi-natural and supports predominantly closed canopy oak woodland. Many of the oak trees are notable due to their considerable age and, therefore, girth. A small section of ash and alder woodland exists near the stream. The shrub layer is well-developed with hazel, hawthorn, holly and blackthorn. The ground flora is diverse and varies from the drier slopes to the damper soils nearer the foot of the slope. Species include bluebell, common violet, wood sorrel, male fern, hard fern, soft shield fern on upper slopes with enchanter's nightshade, creeping jenny, remote sedge, opposite leaved golden saxifrage, barren strawberry and lady fern on lower slopes. Honeysuckle is frequent and bramble forms dense patches in places.

The site is notable for the diversity and abundance of epiphytic ferns and bryophytes. Polypody fern is especially abundant. The lichen flora too appears diverse and well-developed. The abundance of ferns and bryophytes is probably a result of the age of the woodland, the lack of grazing and other disturbance, and the damp, sheltered conditions.

RUSH PASTURE

Farmland to the south of the site is managed within the Glas Tir scheme and is all within 'low input' options. A field immediately adjacent to the field within which the new poultry shed will be constructed is an area of rush pasture. This field has impeded drainage and is dominated in parts by *Juncus spp* with a range of other wet grassland species such as greater bird's foot trefoil. The field was not surveyed in detail but appears to include frequent nettle in places which probably indicate existing raised nutrient levels.



5 EVALUATION OF RESULTS AND POTENTIAL ECOLOGICAL IMPACT

5.1 HABITATS

Improved grassland

The main habitat associated with the construction site and in the ranging area is improved grassland. This is of negligible ecological interest and has little potential to support protected species.

Hedgerows

No hedgerows will be disturbed. One hedgerow on the edge of the site has recently been translocated. A total of 141 metres of new native hedgerow are planned to be planted.

5.2 PROTECTED SPECIES

Badgers

No active setts were recorded within 50 metres of the site. The development will have no impact on badgers.

Bats

No features used by bats for roosting or foraging will be affected.

Breeding Birds

No features used by breeding birds will be directly affected by the proposals.

5.3 ADJACENT HABITATS

ANCIENT WOODLAND

The ammonia report concludes the following:

The detailed modelling at a higher resolution predicts that, for the process contribution to ammonia concentrations, the predicted exceedances are approximately 0.26 ha from the existing poultry houses and approximately 0.22 ha from the existing and proposed houses at the western-most unnamed AW and 0.69 ha from the existing houses and 0.67 ha from the existing and proposed poultry houses at the eastern-most unnamed AW.



For the process contribution to nitrogen deposition, the predicted exceedances are approximately 0.21 ha from the existing poultry houses and approximately 0.11 ha from the existing and proposed poultry houses at the western-most unnamed AW and 0.62 ha from the existing poultry houses and 0.50 ha from the existing and proposed poultry houses at the eastern-most unnamed AW.

(Ref: AS Modelling and Data Ltd. Report on the Modelling of the Dispersion and Deposition of Ammonia etc)

In summary:

	Exceedance at AW 'A'	Exceedance at AW 'B'
PC TO NH3 CONCENTRATIONS		
Existing poultry house	0.69 ha	0.26 ha
Ex and proposed poultry houses	0.67 ha	0.22 ha
PC TO NITROGEN DEPOSITION		
Existing poultry house	0.62	0.21
Ex and proposed poultry houses	0.50	0.11

The two woodlands referred to are Ancient Woodland 'A' and Ancient Woodland 'B' will experience an ammonia exceedance over 0.67 hectares and 0.22 hectares respectively (see Figure 7).

An exceedance in ammonia levels above the critical level within these two woodlands has implications for any plant species within the woods which have a sensitivity or intolerance to increased nitrification. In particular these include bryophytes and lichens, many of which are known to be highly sensitive and intolerant. A positive response to increased nitrogen compounds is likely to be shown in the long term by species which are tolerant and these include such species as nettles, elder and bramble. These have the capacity to out-compete native woodland flora in the long-term, to the detriment of the woodland habitat.

Ancient Woodland 'A' is essentially semi-natural but has been modified to some extent in the past by grazing, by culverting of part of the stream and by creation of stone tracks. The wood has an impoverished structure with little shrub layer or woody recruitment or regeneration. Almost the entire woodland is likely to experience an exceedance of accepted ammonia levels.

Ancient Woodland 'B' is an excellent example of an undisturbed ancient woodland with excellent structure, many mature trees and it exhibits a wide diversity of bryophytes and abundant growth of ferns, notably *Polypodium vulgare*. The degree of ammonia exceedance is limited to 0.22 hectares but the impact even on a small area should be considered as significant.



RUSH PASTURE

Ammonia concentration and nitrogen deposition modelling has been carried out in relation to three receptor points in this field.

The Critical Load for this habitat is 10-15 kg/ha. The ammonia and nitrogen modelling for the three receptor points are as follows:

X(m)	Y(m)	Maximum annual mean ammonia concentration at ground level		Maximum annual mean nitrogen deposition rate		
		Existing	Proposed	Deposition Velocity (m/s)	Existing	Proposed
		PC (µg/m³)	PC (µg/m³)		PC (kg/ha)	PC (kg/ha)
277725	241200	2.10	1.58	0.02	10.91	8.21
277725	241225	1.86	1.42	0.02	9.66	7.38
277750	241225	2.43	1.75	0.02	12.62	9.09

In terms of the predicted nitrogen deposition, the existing PC is in exceedance of the lower critical load (10 kg/ha) in parts of the field. However, given the proposed modifications, the PC is below the lower critical load for all the field.

6 MITIGATION AND ENHANCEMENT

6.1 HABITAT MITIGATION

No habitats on the site will be physically affected by the construction of the new shed and therefore no specific mitigation is required.

6.2 PROTECTED SPECIES MITIGATION

No specific protected species mitigation is required.

6.3 MITIGATION/COMPENSATION FOR INCREASED AMMONIA CONCENTRATIONS

Reduction of ammonia concentrations by way of mitigation is unlikely to be effective in the near future, although the planting of trees within the vicinity of the new poultry shed is likely to reduce ammonia levels when trees are established.

A total of 1.0 hectare has been designated for new tree planting. Trees will be predominantly fast-growing native species planted largely within ranging areas. Species will include silver birch, downy birch, common alder, aspen, goat willow, wild cherry, rowan and occasional oak.



A Management Plan will be produced for the long-term management of the ancient woodland and young plantations on the farm. This will include measures to re-fence the woodland to prevent grazing.

Other habitat enhancement measures include the planting of 141 metres of new native hedgerows and the fencing of all hedgerows within the ranging area to prevent grazing and damage by poultry.



7 SUMMARY AND CONCLUSION

An application has been submitted for permission to construct a new building to house 8,000 free range chickens and to install associated infrastructure including access track and feed bins. This building will add to two existing buildings, bringing the total of birds to 22,000.

This change of land-use could have implications for habitats and species of ecological significance, thus necessitating an assessment of the ecological value of the site.

In order to evaluate the potential ecological impact of this development, Arbor Vitae were invited to carry out an Extended Phase One Habitat Survey. This included an assessment of the value or potential of the site to support protected species. This report does not however consider any potential impact of manure spreading.

The site was surveyed on 5 September 2018. A desk study was carried out to ascertain existing nature conservation designations and known records for protected species within the vicinity.

Several sites with statutory designations exist within 5 kilometres, including three SSSIs. Eight ancient woodlands lie within one kilometre.

The land affected by the proposal, including the site for the new building and the ranging area, all lie on improved grassland of minimal ecological value.

An assessment was carried out for badgers, bats and breeding birds. No badgers use the site and no habitats of value to bats or breeding birds will be lost.

The ammonia modelling report has concluded that two areas of ancient woodland within 100 metres of the site will receive ammonia concentrations in exceedance of accepted levels for this habitat. A total of 0.67 ha of Ancient woodland 'A', 90 metres to the north, will be affected and 0.22 ha of Ancient Woodland 'B'. Whilst both woods are semi-natural habitats, AW 'A' has been somewhat disturbed and modified in the past, reducing its ecological value. AW 'B' however, is a prime example of an undisturbed ancient woodland with very high ecological value including a high diversity of bryophytes and abundant ferns.

Ammonia modelling predicts that an adjacent area of rush pasture will experience a PC which is lower than that currently in place with the existing poultry unit and which will be below the Critical Load for this habitat.

Long term mitigation for the impact on nearby ancient woodlands will include the planting of an equivalent area of new native woodland (one hectare).

Further compensation will include adoption of a management plan for existing woodland on the farm, the planting of new hedgerows and the fencing of existing hedgerows to protect them from grazing.



FIGURE 1: LOCATION



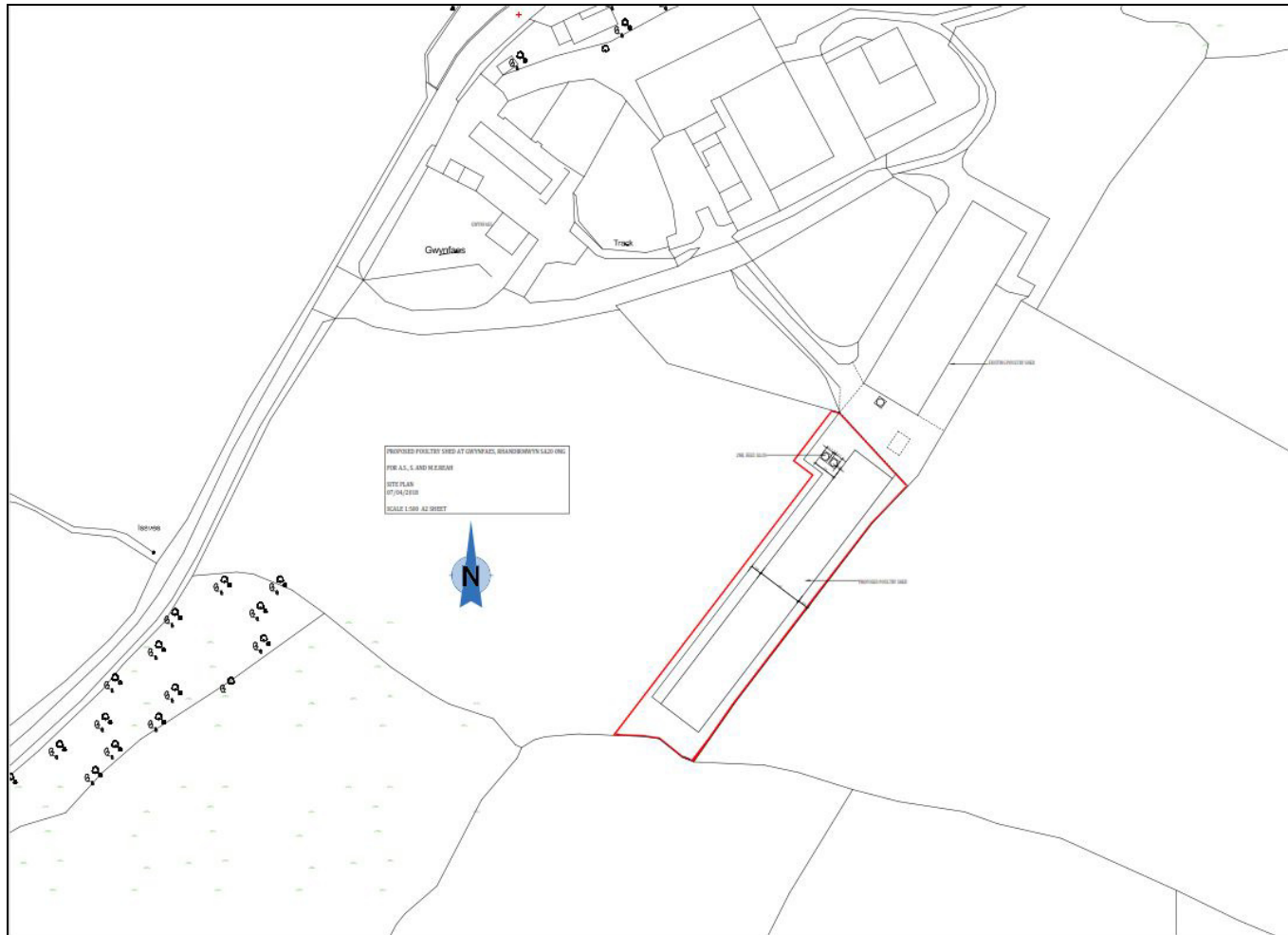
Arbor Vitae Environment Ltd
Lower Betton Farm
Cross Houses
Shrewsbury
Shropshire
SY56JD

FIGURE 2: AERIAL PHOTOGRAPH



Arbor Vitae Environment Ltd
Lower Betton Farm
Cross Houses
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FIGURE 3: SITE LAYOUT



Arbor Vitae Environment Ltd
 Lower Betton Farm
 Cross Houses
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FIGURE 4: ANCIENT WOODLANDS WITHIN 1 KM

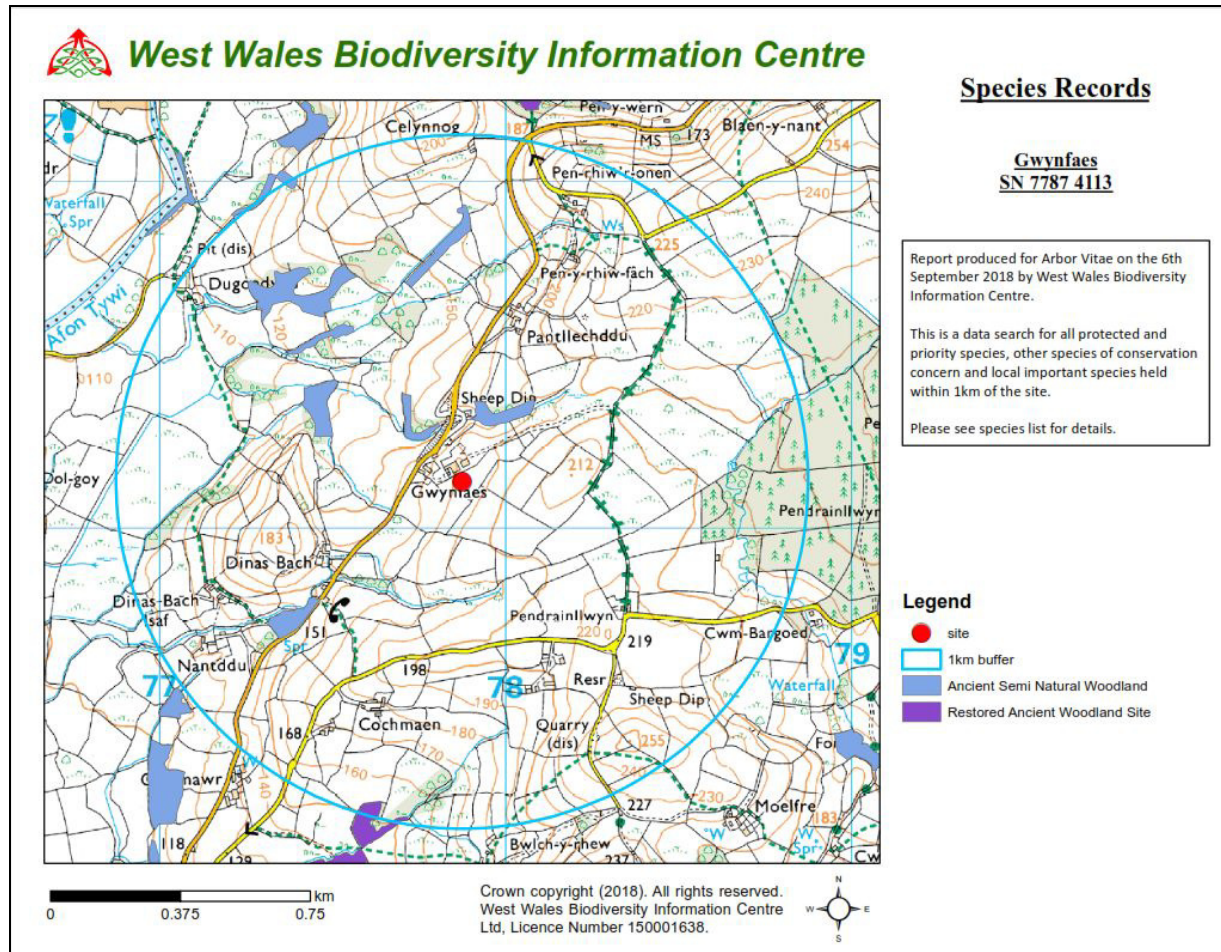


FIGURE 5: MAP OF PRIORITY SPECIES RECORDS WITHIN 1 KM

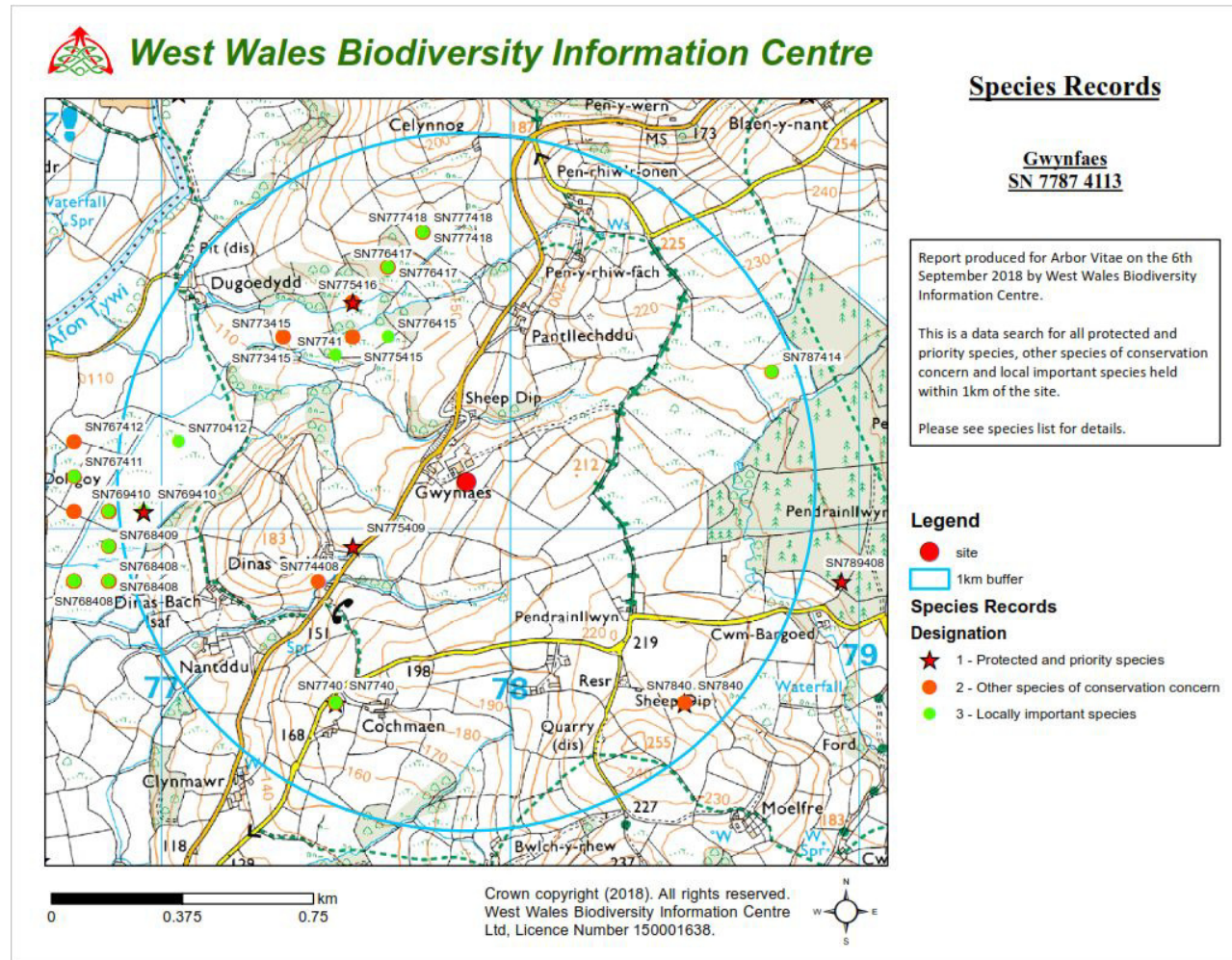
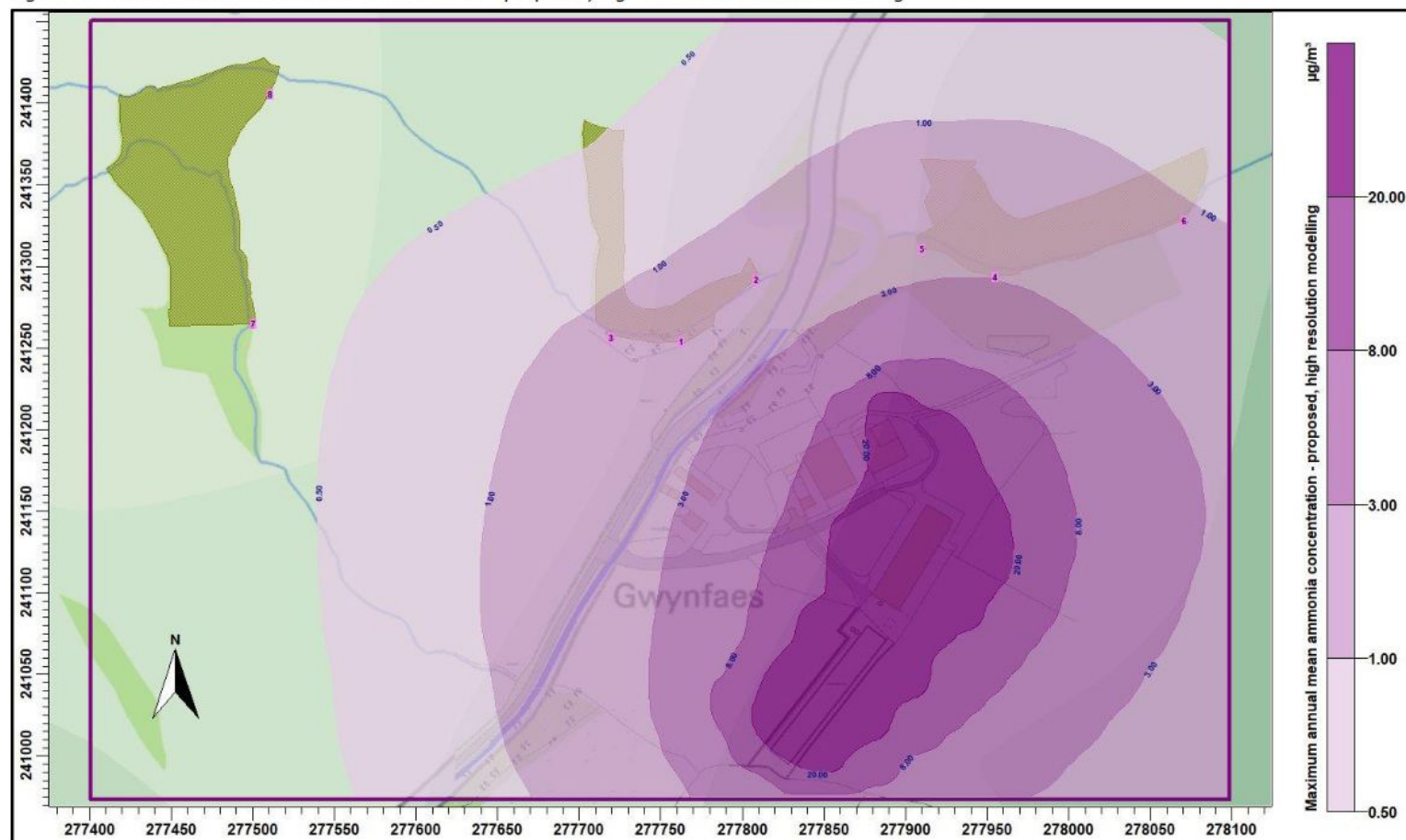


FIGURE 6: LIST OF PRIORITY SPECIES RECORDS WITHIN 1 KM

<i>Category</i>	<i>Grid Ref</i>	<i>Scientific Name</i>	<i>Common Name</i>	<i>Record Type</i>	<i>Near Distance (m)</i>	<i>Observers</i>	<i>Determiner</i>	<i>Record Date</i>
1	SN775409	Lepus europaeus	Brown Hare	Field Observation	373	Vaughn Matthews	Vaughn Matthews	27/02/2017
1	SN775416	Boloria selene	Small Pearl-bordered Fritillary	Field Observation	610	Graham Motley	Graham Motley	12/07/1994
1	SN7740	Milvus milvus	Red Kite	Field Observation	737	S. Davies	S. Davies	19/05/2016
1	SN7740	Turdus philomelos	Song Thrush	Field Observation	737	S. Davies	S. Davies	19/05/2016
1	SN7840	Acanthis cabaret	Lesser Redpoll	Field Observation	890	John Lloyd	John Lloyd	10/02/2016
1	SN7840	Accipiter gentilis	Goshawk	Field Observation	890	J.V. Lloyd	J.V. Lloyd	10/02/2016
1	SN769410	Zootoca vivipara	Common Lizard	Field Observation	929	Graham Motley	Andrew Lucas	08/08/1994
1	SN769410	Zootoca vivipara	Common Lizard	Field Observation	929	Jim Bevan;Graham Motley;J. Murphy	Barney Gill	08/08/1994
2	SN774408	Prionus coriarius	Tanner Beetle	Field Observation	511	Neil Matthew	Neil Matthew	12/08/2003
2	SN775415	Potentilla erecta	Tormentil	Quadrat	528	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	21/07/1994
2	SN775415	Calluna vulgaris	Heather	Woodland Rec Sheet	528	F Warner	F Warner	21/08/1968
2	SN775415	Ranunculus flammula	Lesser Spearwort	Woodland Rec Sheet	528	F Warner	F Warner	21/08/1968
2	SN775416	Carex echinata	Star Sedge	Quadrat	610	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN775416	Potentilla erecta	Tormentil	Quadrat	610	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN776417	Potentilla erecta	Tormentil	Quadrat	656	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN776417	Carum verticillatum	Whorled Caraway	Quadrat	656	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN776417	Nardus stricta	Mat-grass	Quadrat	656	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN773415	Potentilla erecta	Tormentil	Quadrat	670	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN773415	Carum verticillatum	Whorled Caraway	Quadrat	670	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN773415	Ranunculus flammula	Lesser Spearwort	Quadrat	670	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	12/07/1994
2	SN777418	Potentilla erecta	Tormentil	Quadrat	727	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	21/07/1994
2	SN777418	Carum verticillatum	Whorled Caraway	Quadrat	727	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	21/07/1994
2	SN777418	Nardus stricta	Mat-grass	Quadrat	727	David Stevens;Graham Motley;Jamie B	Sam Bosanquet	21/07/1994
2	SN7740	Regulus regulus	Goldcrest	Field Observation	737	S. Davies	S. Davies	19/05/2016
2	SN7740	Phylloscopus trochilus	Willow Warbler	Field Observation	737	S. Davies	S. Davies	19/05/2016
2	SN7740	Periparus ater	Coal Tit	Field Observation	737	S. Davies	S. Davies	19/05/2016
2	SN7840	Periparus ater	Coal Tit	Field Observation	890	John Lloyd	John Lloyd	10/02/2016
2	SN7840	Euphrasia rostkoviana subsp. rostkoviana	Eyebright	Field Observation	890	James Iliffe;Mary Iliffe	Richard Pryce	25/06/1993
2	SN787414	Carum verticillatum	Whorled Caraway	BRC Card	930	Mr Iliffe	Mr Iliffe	23/07/1993

FIGURE 7: MAP OF AMMONIA EXCEEDANCE ZONE

Figure 7b. Maximum annual ammonia concentration – proposed, high resolution detailed modelling






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From : AS Modelling and Data Ltd. Report on the Modelling of the Dispersion and Deposition of Ammonia etc

Arbor Vitae Environment Ltd
 Lower Betton Farm
 Cross Houses
 Shrewsbury
 Shropshire
 SY56JD

APPENDIX 1: PHOTOGRAPHS

	<p>THE PROPOSED SITE</p>
	<p>ANCIENT WOODLAND 'A'</p> <p>SPARSE SHRUB LAYER AND ABUNDANT OF GRASS SPECIES IN GROUND FLORA</p>
	<p>ANCIENT WOODLAND 'A'</p> <p>STREAM AT FOOT OF SLOPE</p>

	<p>YOUNG PLANTATION</p>
	<p>EXISTING RANGING AREA TO FORM PART OF NEW WOODLAND PLANTING AREA</p>
	<p>ANCIENT WOODLAND 'B'</p>

	<p>ANCIENT WOODLAND 'B'</p>
	<p>ANCIENT WOODLAND 'B'</p> <p>EPIPHYTIC GROWTH OF FERNS ON FALLEN TREES</p>
	<p>ANCIENT WOODLAND 'B'</p> <p>EPIPHYTIC BROPHYTES ON STANDING TREES</p>

REFERENCES

AS Modelling and Data Ltd (2018) A Report on the Modelling of the Dispersion and Deposition of Ammonia from the Existing and Proposed free-range Egg-Laying Chicken Houses at Gwynfaes, Rhandirmwyn, Llandovery in Carmarthenshire

