

IN THE MATTER OF

The Infrastructure Planning (Examination Procedure) Rules 2010

Application by Mynydd y Gwynt Ltd for an Order Granting Development
Consent for the Mynydd y Gwynt Wind Farm

DEADLINE X

Species Protection Plan

14th May 2015

APPENDIX 11.20:

SPECIES PROTECTION PLAN

Species Protection Plan

Background and Introduction

1. This plan has been created to mitigate against any potential adverse impacts upon any European or Nationally Protected Species (excluding bats for which a separate Bat Protection Plan has been developed).
2. The Plan covers the following taxa:
 - Mammals (Otter, Water Vole, Badger);
 - Birds (breeding birds, Red Kite, Golden Plover); and
 - Reptiles (Common Lizard).
3. The terms Study Area and Site are used in this document; both terms denote the red line boundary for the development.

Personnel Induction

4. An Ecological Clerk of Works (ECOW) will be appointed and in place during the Construction period. All relevant site personnel will be given an induction by the ECOW. The induction will be in a format of a toolbox talk with the aim of:
 - Making personnel aware of legal obligations placed on them in relation to protected species by national and international legislation and by the conditions of any licence which may be obtained;
 - Making personnel aware of their personal responsibility for ensuring that no infringement of legislation or breach of any licence condition occurs;
 - Ensuring personnel understand that no person or work is allowed within exclusion zones without prior agreement and/or supervision by an ecological consultant or ECOW;
 - Ensuring personnel understand the procedure to be followed when encountering a dead or injured species within site works. The ECOW is to be called to the location immediately. The ECOW will collect the injured animal. The ECOW will be responsible for ensuring that any injured or dead animals are handed over to the proper authorities for care, as well as reporting the circumstances to the appropriate authorities.

Mammals

Otter

Rationale and Methodology

5. As part of the Environmental Impact Assessment (EIA) Otter (*Lutra lutra*) have been surveyed broadly following the methodology detailed in Chanin (2003), adapted to cover all

the watercourses lying within the Study Area. Linear water features throughout the site were surveyed for signs of Otter presence and activity. The principal waterways in the locality are the River Wye to the west of the site and the River Bidno to the east of the site bordering the Hafren forest. All of the streams on-site drain into the River Wye. Streams draining the site include the hillside streams, into which flow a number of smaller streams and drainage ditches. Otter patrol and mark all watercourses within an area to establish 'ribbon' territories, for foraging and to exclude rivals.

6. Survey entailed searching all streams and rivers within close proximity of watercourses for signs of Otter, including spraints (faeces), tracks, paths, food remains and shelters (holts and couches). This last (i.e. the presence of holts and / or couches) represents a particularly important survey requirement, in that breeding sites and resting places are specifically mentioned in the European legislation covering this species. Survey after heavy rain was avoided wherever possible, as such conditions frequently wash otter signs away. Habitat type and quality were recorded, and positions of features established using a GPS. Sightings of live Otter were also recorded (there were no sightings). Otter surveys were carried out in October 2005, October and November 2009 and repeated again in March 2014.

Findings

7. During the 2009 Otter surveys, spraints were found along the River Wye and the Nant Iago. Otter spraints were also found at a number of places along the Nant y Gwrdd, including around the emergence of the stream at SN 83597 85432. Two spraints were also found on the Nant Cwm-y-foel at SN 83247 84368, just to the west of a pond. The location of spraints from the 2009 and 2014 surveys are listed in Table 1.
8. During the 2014 surveys, spraints were recorded in three locations along the Afon Bidno, in three locations along the River Wye and in a single location on the Nant Cwm-y-foel (west of the pond). The majority of the spraints recorded were single and were also not fresh. The only locations that more than one spraint were found were at SN84098 85241 (on the Afon Bidno, old spraints), SN83643 83440 (on the Wye to the east of Llidart coch) and at SN84369 84843 (Afon Bidno, further south than the other spraints recorded). The location of spraints from 2014 are listed in Table 1.

Grid Ref	Description	Date	Location
SN 82579 85914	Otter spraint	02/11/2009	
SN 83247 84368	2 Otter spraints	29/10/2009	Molinia clump in stream
SN 83028 85071	Otter spraint	29/10/2009	

Table 1: Otter Survey Results – 2009, 2014			
Grid Ref	Description	Date	Location
SN 82711 85119	Otter spraint	29/10/2009	on rock
SN 82562 85324	Otter spraint	29/10/2009	on rock
SN 83597 85432	Otter spraint	30/10/2009	on rock
SN 83127 85190	Otter spraint	30/10/2009	
SN 84098 85241	Single spraint	25/03/2014	On flat rock in Afon Bidno
SN84489 84799	3 spraints	25/03/2014	On boulder in Afon Bidno
SN883871 83329	Spraint (old)	24/03/2014	
SN83643 83440	Spraint (fresh and older)	24/03/2014	Stone
SN884424 84832	Spraint (fresh and older)	25/03/2014	Stone
SN84369 84843	Several spraints (not fresh)	25/03/2014	Stone
SN83017 84156	Spraint (not fresh)	31/03/2014	Regular sprainting point on large stone in centre of stream – varying ages
SN82507 846991	Spraint (not fresh)	24/03/2014	Stone

9. Six Otter spraints were found on the south end of the River Wye (outside the application area) in October 2005. The surroundings of the river in this part (unlike the rest) have overhanging willow and scrub with root hollows and other potential areas for breeding Otter. The spraints were found on rocks in three different places separated by about 40m and 120m. It is likely that this area is an important section of at least one Otter's territory. On the eastern edge of the site, there was also one small single spraint found on Nant y Crug and two small spraints on River Bidno, one in the rushes where the flush joined the stream. In May 2005, a spraint and large pile of frog bones was found at the edge of the small pool on Waun Goch. Despite having been checked on many subsequent occasions no further spraints have been found by this pool. These findings indicate that Otters feed (on frogs, small mammals and aquatic species) and travel at least occasionally to the north eastern end of the application area.
10. The results from the re-survey in March 2014 indicate that usage of the Afon Bidno and the Wye 250m north of Pont Rhydgaled are the most frequently used sections of river within the application area. Use of the Nant Cwm-y-foel appears to be light and occasional. In 2014, no records of spraints were made from the Nant y Gwrddy.

Mitigation and Method Statement

Pre-construction Survey and Mitigation

11. Prior to commencement of the development, a pre-construction survey for Otter following the methodology as outlined in paragraphs 5 - 6 above based on Chanin (2003) will take place. The survey boundary will be the Study Area.
12. Following the surveys all relevant construction drawings and plans should have an indication of any Otter holts and resting places and watercourses within 100m of specific working locations.

Mitigation During Construction

- Construction activities will be 100m outside of known holts for Otters and 30m of known resting places to minimise disturbance and risk to species;
- Appropriate exclusion zones will be created around holts and resting places, using temporary fencing or some similar method to delineate and highlight the area;
- Construction activities involving heavy machinery and blasting within 100m from a resting place / holt will not commence until one hour after sunrise, ceasing one hour before sunset. Sunrise and sunset time can be obtained from the internet (www.timeanddate.com) and will be adjusted for the site latitude and then displayed in contractor compounds;
- All open excavations will be ramped to enable easy exit by Otter;
- Culvert pipes stored on site will be capped or if caps are not available, stored vertically, to prevent entrapment;
- Work on culverts will only take place during the day and at the end of each working

day the watercourse will be cleared of any construction material so the Otters can pass through unobstructed;

- Design of any permanent or temporary lighting will be such that it will be directed away from watercourses;
- All felling and construction personnel will be provided with an emergency telephone contact for the ECOW; and
- A site speed limit of 19 mph for all construction traffic will be imposed across the site.

Licensing

13. It is not anticipated that any known resting places will be affected by construction activities, if monitoring reveals that any will be, appropriate mitigation will be developed, in consultation with NRW and implemented. If necessary an application will be made for a European Protected Species (EPS) Licence to Disturb Otter.
14. No works will take place in such locations until an EPS Licence to Disturb has been obtained.

Monitoring

15. During each year of survey, all relevant areas will be checked at least twice, so as to take into account seasonal variations in use of the site. These checks will take place at least one month apart; where practical one check will take place during early spring so as to coincide with frog spawning. Frogs are a key food resource for Otter on the site.
16. If new resting places etc. are found, this information will be added to site plans and appropriate exclusion zones will be created.
17. Monitoring will take place:
 - Pre-construction;
 - During construction;
 - Post-construction, for the first two years;
 - Five years post-construction; and,
 - Then at 10 and 15 years, after which time a decision will be made as to whether the monitoring programme should continue.
18. Remedial measures will be initiated if the pre-construction survey or construction monitoring reveals that there is an Otter holt within 100m, or a resting place within 30m of any construction activities.

Water Vole

Rationale and Methodology

19. As part of the EIA Water Vole (*Arvicola terrestris*) have been surveyed for based on searching along and adjacent to on-site watercourses, following the methodology of Strachan and Moorhouse (2006). In particular, areas of marshy grassland dominated by Soft Rush (*Juncus effusus*) and Purple Moor-grass (*Molinia caerulea*) adjacent to watercourses, were searched. Survey concentrated on searching for field signs, principally droppings, feeding remains (for example, piles of pith from Soft Rush) and burrows.
20. Habitat type and where relevant, quality were recorded, and positions of features established using a GPS. The type of field sign/s was recorded (i.e. burrows, feeding piles, droppings) as was the extent of individual Water Vole colonies.
21. The Study Area for the Water Vole survey was all watercourses running within the Study Area. Water Vole surveys took place in October 2005, October and November 2009 and March 2014.

Findings

22. During 2009, Water Vole presence was confirmed from a number of locations. Activity was greatest around the Nant y Gwrddy to the east and north of the pond. Latrines and burrows were also found in a number of places along the Nant Cwm-y-foel around SN 83171 84630. Water Vole was found to be present along the River Wye at SN 83665 83403. The location of Water Vole, as assumed by the presence of latrines and burrows, is shown on **Figure 11.9** within the Environmental Statement (ES) and in **Table 2** below.
23. During 2014, Water Vole presence was also confirmed from a number of locations. As in 2009, these were associated with the Nant Cwm-y-foel and with the Nant y Gwrddy (though on this occasion, to the south west of the pond). A number of additional sites were also located adjacent to the River Wye, though a number of these were outwith the application boundary (to the west). Locations of Water Vole records are included within **Figure 11.9** within the ES and in **Table 2** below.

Table 2: Water Vole Survey Results			
Grid Ref	Description	Date	Location
SN 83663 83428	2 Water Vole latrines	29/10/2009	North bank of River Wye
SN 83665 83403	3 Water Vole latrines	02/11/2009	South bank of River Wye
SN 82979 83946	3 Water Vole latrines & burrows	29/10/2009	Nant Cwm y foel. Droppings on tyre in stream, within tall Molinia and Soft rush habitat

Table 2: Water Vole Survey Results			
Grid Ref	Description	Date	Location
SN 83146 84460	2 Water Vole latrines & burrows	29/10/2009	Nant Cwm y foel. Latrine on Molinia clump in stream
SN 83196 84490	3 Water Vole latrines & burrows	29/10/2009	Nant Cwm y foel. Large Molinia tussock some soft rush, close to fork in stream
SN 83171 84630	1 Water Vole latrine	29/10/2009	Nant Cwm y foel
SN 83123 84745	3 Water Vole latrines	29/10/2009	Nant Cwm y foel
SN 83581 85427	20 + Water Vole latrines & burrows	30/10/2009	Close to Nant y Gwrddy pond from this location to pond, many large latrines, and burrows
SN 83206 85317	2 Water Vole latrines	30/10/2009	Close to Nant y Gwrddy pond
SN 83240 85415	3 Water Vole latrines	30/10/2009	Close to Nant y Gwrddy pond. Clearing in tall Juncus, a few more latrines up to fence line
SN 83182 85242	Water Vole remains (lower jaws including teeth)	25/03/2014	To south-west of Nant y Gwrddy pond
SN 83045 83621	Feeding signs, several latrines	24/03/2014	River Wye, near Pont Cefn-brwyn
SN 84075 83046	Feeding signs, several latrines	25/03/2014	East of River Wye, north of Pont Rhydgaled
SN 82977 84009	Feeding signs, several latrines	31/03/2014	Nant Cwm-y-foel
SN 83083 84343	Feeding signs, several latrines	31/03/2014	Nant Cwm-y-foel, near pond
SN 83184 84743	Feeding signs, several latrines	31/03/2014	Nant Cwm-y-foel
SN 83265 84851	Feeding signs, several latrines	31/03/2014	Nant Cwm-y-foel
SN 82665 85928	Feeding signs, several latrines	24/03/2014	Small tributary of River Wye, north side of Bryn Daith
SN 82474 85922	Feeding signs, several latrines	24/03/2014	West side of River Wye, west of small plantation
SN 82458 85574	Feeding signs, several latrines, burrows	24/03/2014	West side of River Wye, south of small plantation
SN 83068 85119	Feeding signs, several latrines, burrows	24/03/2014	To south west of Nant y Gwrddy pond
SN 82505 84827	Feeding signs, several latrines, burrows	24/03/2014	West side of River Wye, west side of Y Drum

24. The three streams within the footprint found to host Water Vole are connected by a 2.5km stretch of the River Wye. The streams are each less than 1km apart but are separated from each other by dry grassland hill habitat.
25. The streams are, at least in part, spate streams, tending to be relatively fast flowing and as such, would not represent typical Water Vole habitat. However, the peaty nature of the soils allows burrows to be readily excavated and the streams are bordered by wide swathes of Soft rush and Purple Moor-grass habitat. Such habitat probably helps in facilitating predator (American Mink *Mustela vison*) avoidance (Strachan and Moorhouse, 2006). Particular concentrations of latrines, feeding signs and burrows were noted in M6c flush habitat. This is where Soft Rush provides relatively open habitat, in combination with a soft ground layer of bog-moss (sphagnum). Water Vole signs were recorded in similar habitat alongside the River Wye itself (as well as tributaries) in 2014. It was noted that in areas where Purple Moor-grass becomes more dominant, Water Vole there are fewer signs of Water Vole.
26. The nature of the habitat and the fact that Water Vole was not recorded in 2005, (albeit some potential burrows noted) suggests that the streams may be part of a single Water Vole meta-population, based around the River Wye. The habitat in the tributaries is probably sub-optimal but nevertheless important for Water Vole, functioning as a refuge from predators and as an over flow area when populations expand.
27. During 2005, no definitive signs of Water Vole were recorded within the site. However, on the pond along the Nant y Gwrdd to the north of the site some probable old burrows were found around one bank edge. These were assessed as possibly used by Water Vole, but no active signs were found at the time of the survey (Sep-Oct 2005). Droppings from Field Vole (*Microtus agrestis*) were located in marshy grassland throughout the site.

Mitigation and Method Statement

Pre-construction Survey and Mitigation

28. Prior to commencement of the development on site, a pre-construction survey for Water Vole following the methodology as outlined in paragraph 19 above will take place. The survey boundary will be the Study Area.
29. In addition the Water Vole survey will incorporate the use of rafts as these features are readily used by Water Vole as latrine sites and thus provide more accurate survey and detection potential. Any areas found to accommodate Water Vole close to construction will be marked and protected with an appropriate buffer zone prior to construction commencing.
30. For the duration of the construction period the above surveys will be repeated at 6 month intervals (or as near to, dependant upon appropriate survey timeframes for the species).
31. If new habitat places are found, this information will be added to existing information for the site and the ECOW will evaluate all information in relation to construction.

Mitigation During Construction

32. The ECOW will carry out further checks during the construction period, including checks ahead of the construction front.
- Following surveys, all relevant construction drawings and plans will include the presence of Water Vole habitat – divided into ‘confirmed’ and ‘potential’ within 100m of specific working locations.
 - Areas of confirmed Water Vole habitat that are situated close to construction areas will be ‘fenced’ to create exclusion zones, to ensure that habitat is protected from construction traffic, personnel and site materials. Confirmed Water Vole locations will include areas that have been found to accommodate these mammals during any previous survey.
 - Construction activities aim to be 25-50m outside confirmed Water Vole habitat (depending on the works involved, to be determined in consultation with the ECOW). The mitigation options for avoiding incidental mortality of Water Voles is dependent upon a number of factors including the magnitude of the impact, the timing of the works, the habitat type, the number of animals likely to be affected and the duration of the works. Precise mitigation options will be determined on a case by case basis by the ECOW, but are likely to involve the use of fencing, habitat buffer zones and pollution prevention measures.
 - Construction activities involving heavy machinery and blasting within 100m from a confirmed Water Vole habitat will not commence until one hour after sunrise, ceasing one hour before sunset. Sunrise and sunset time can be obtained from the internet (www.timeanddate.com) and will be adjusted for the site latitude and then displayed in contractor compounds.
 - All open excavations will be ramped to enable easy exit by mammal species.
 - Design of any permanent or temporary lighting will be such that it will be directed away from watercourses.

Monitoring

33. Monitoring will take place:
- Pre-construction;
 - During construction;
 - Post-construction, for the first two years;
 - Five years post-construction; and
 - Then at 10 and 15 years.
34. Remedial measures will be initiated if the pre-construction survey or construction monitoring reveals that there is confirmed Water Vole habitat within 25-50m of any construction activities. Remedial measures are likely to entail the trapping and re-location of individuals

if the risk to the population is considered significant. Details of exact remedial measures and risk levels will be agreed with NRW. These will include determination of acceptable impacts to a population, before remedial measures become operational.

Badger

Rationale and Methodology

35. Badger (*Meles meles*) are protected under The Badgers Act (1991) and the Protection of Badgers Act (1992) which provides protection for badgers and their setts. The whole of the Study Area was surveyed for signs of residency, including active Badger setts and latrines. Areas of possible Badger activity, including digging and tracks were noted in the field and recorded. Badger survey took place during September and October 2005 and October and November 2009.

Findings

36. Three Badger setts were found within the Study Area and near environs. Only one of these setts was obviously active in 2009; this sett, south of Waun Goch, comprised two holes and five large latrines and was situated on a gravel slope above a stream. The sett was located approximately 120m from an existing track. Signs of Badger feeding 'scuffings' on grassland, indicative of Badger feeding (for invertebrates including soil-dwelling grubs of beetles and moths), were found extensively over areas to the east of this sett.
37. A second sett was found to the north west of Bryn Daith, sited on a large shale heap (just outside of the application area). Although there were potential tracks around, no definitive signs of activity were observed around the six holes. In the grasslands to the east of this sett there were widespread signs of Badger feeding.
38. A third sett was situated in a small mixed woodland south of Y Drum (just outside of the application area). The sett comprised three holes and during 2005 the sett was active with fresh badger hair present. At that time badger feeding signs were found in a number of locations on acid grassland, especially on the south and east slopes of Y Foel. These signs were not observed in 2009.

Mitigation and Method Statement

Pre-construction Survey and Mitigation

39. Prior to commencement of the development on site, a pre-construction survey for Badger, focussing on the presence of Badger setts will take place. The survey boundary will be the Study Area.
40. If new Badger setts are found, this information will be added to site plans and appropriate exclusion zones will be set up.

Mitigation During Construction

- Following surveys, all relevant construction drawings and plans should have an

indication of any Badger setts within 100m of specific working locations.

- Badger setts that are situated close to construction areas will be 'fenced' to create exclusion zones, to ensure that underground tunnels are protected from construction works and heavy machinery.
- Construction activities will aim to be over 30m from Badger setts.
- In the unlikely event that a sett is found within this distance then the ECOW will in conjunction with others design an appropriate approach for works i.e. one that involves using lighter or hand held machinery etc. If alternative working methods are not possible then as a last resort a licence will be made to close the sett / relocate the Badgers.
- Construction activities involving heavy machinery and blasting within 100m from a Badger sett will not commence until one hour after sunrise, ceasing one hour before sunset. Sunrise and sunset time can be obtained from the internet (www.timeanddate.com) and will be adjusted for the site latitude and then displayed in contractor compounds.
- All open excavations will be ramped to enable easy exit by Badger.
- Design of any permanent or temporary lighting will be such that it will be directed away from Badger setts.
- A site speed limit of 19 mph for all construction traffic will be imposed across the site.

Monitoring

41. Survey will also take place during the construction period to ensure that Badger have not taken residence within the construction envelope (within 30m of any development area i.e. any infrastructure) during this period. If they have taken residence then the above mitigation measures will apply.
42. Badger are not a Conservation Priority species and legislation protecting them primarily aims to stop Badger baiting. As such no post-construction monitoring is considered to be necessary.

Birds

Breeding Birds

Rationale and Methodology

43. All birds including their nests and eggs are protected by law under the Wildlife and Countryside Act, 1981.
44. Breeding bird surveys were carried out in 2005 and repeated in 2008 and 2010. The Brown and Shepherd (1993) methodology was adopted for the breeding bird survey. This states that the surveys should be carried out between 08.30 and 18.00. The site is

notionally divided into 500m x 500m quadrats, and each area visited for a constant amount of time. The observer should cover the survey area so that he / she passes within 100m of all points of the site.

45. All birds were recorded, using standard British Trust for Ornithology (“BTO”) symbols on a relevant scale map. The behaviour of individual birds was also recorded, where appropriate. Birds are said to be breeding if they are observed displaying or singing, adults are repeatedly alarm calling, nests, eggs or young are located, distraction displays are seen and / or territorial disputes are seen.
46. For breeding birds, this methodology requires a minimum of two visits to a site, the first visit during the period early April to mid-May, with the second visit between mid-May to late June. Particular emphasis was put on recording birds of prey, waders (principally Snipe (*Gallinago gallinago*), Lapwing (*Vanellus vanellus*), Curlew (*Numenius arquata*)) and Red Grouse (*Lagopus lagopus scoticus*). The whole area of the site was walked and birds using the site or flying over were recorded, and their locations noted.
47. For the 2008 and 2009 surveys, SNH guidance (2005) on targeting species, has been followed. The guidance recommends targeting species of conservation concern, these are defined as:
 - Annex 1 species of the EC Birds directive;
 - Red listed Birds of Conservation Concern (“BoCC”);
 - Schedule 1 species of the Wildlife and Countryside Act 1982; and
 - In addition Biodiversity Action Plan (“BAP”) species and all raptors and waders were also targeted.

Findings

48. Breeding Bird Surveys carried out in 2010 found a total of seven Species of Conservation Concern (SNH, 2005) plus (the pre-recorded supplementary species) Buzzard and Snipe. Species recorded were:
 - Red Grouse;
 - Red Kite (*Milvus milvus*);
 - Hen Harrier (*Circus cyaneus*);
 - Buzzard (*Buteo buteo*);
 - Snipe;
 - Cuckoo (*Cuculus canorus*);
 - Skylark (*Alauda arvensis*);

- Willow Warbler (*Phylloscopus trochilus*); and
- Bullfinch (*Pyrrhula pyrrhula*).

49. These species are detailed in Table 3.

Species	Estimated Breeding Status	Comments
Red Grouse	1 – 2 pairs	Recorded on Y Foel.
Red Kite	Not Breeding on site	Whole site frequently and regularly used as hunting territory and passage but not breeding on site.
Hen Harrier	Not Breeding on site	Several records over a number of years, mostly males or juveniles.
Kestrel	1 Pair	Breeding just outside Study Area, in isolated conifer block at SN 8250 8580. Three young fledged in 2010.
Buzzard	Not Breeding on site	Whole site frequently and regularly used as hunting territory but not known to breed on site.
Snipe	2 – 3 pairs	Recorded on the south of Waun Goch and Y Foel / Tir Gwyn plateau. Was found in similar locations on earlier surveys
Cuckoo	Min. 1 territory holding male	One record of a singing male on forest edge north of Esgair y Maesnant.
Skylark	Min. 22 pairs	Widespread over higher ground.
Willow Warbler	Min. 4 pairs	Common in suitable habitat on lower ground.
Bullfinch	Min. 1 pair	Limited numbers on site due to lack of suitable habitat.

50. **Figure 11.6** within the ES Ecology Chapter details the on-site distribution of species assessed as breeding during the 2010 Breeding Bird Survey. Breeding Bird Brown and Shepherd surveys were also carried out in 2008 and 2005.

Curlew

51. 'Singing' and calling Curlew were recorded during both the 2005 breeding birds surveys in the west of Esgair y Maesnant / Waun Goch (SN 831 861) on three different occasions, and further south at around SN 836 850 on two separate occasions. Based on the 2005 surveys, two to three pairs of Curlew were thought to be breeding in the Study Area, in the locations identified above. The two breeding bird surveys carried out in May and June 2008 saw little evidence around the original breeding site for Curlews on Waun Goch, although one Curlew was recorded flying over and landing on Bryn Daith (SN 829 858) during both visits. The habitat on Bryn Daith is short rather improved grassland and thus most unlikely

to provide suitable Curlew breeding habitat.

52. On Tir Gwyn however, centred around SN 843 841, on both the 2008 visits, a Curlew was seen circling the area and landing nearby on several occasions. As it was alarm calling, landing and circling, it is probable that a female was sitting on a nest close by. Therefore it is likely that one pair bred in that area in 2008.
53. No Curlew were present during the 2010 breeding bird surveys. In addition to the breeding bird surveys, Vantage Point (“VP”) surveys were also carried out during the breeding season in 2010 and again no Curlew were heard or seen. The bird surveys carried out as part of this development proposal have documented a decline in Curlews at Mynydd y Gwynt from at least two pairs in 2005 to no birds in 2010. Anecdotal evidence from the land owners suggests a drastic decline in Curlew at Mynydd y Gwynt from being ‘numerous’ in the 1950s to not breeding today.

Snipe

54. Snipe are breeding at the south end of Waun Goch (around SN 833 858), having been recorded here in 2010, 2008 and 2005; in 2005 targeted Snipe survey recorded Snipe drumming at this location. Snipe are also likely to be breeding around Y Foel (SN 839 842), having been recorded here in 2010 and 2005.
55. Snipe were recorded around SN 837 849 in 2005, but have not been subsequently seen at this location.

Red Grouse

56. One to two pairs of Red Grouse are breeding on Y Foel / Tir Gwyn, having been recorded during the 2010 surveys. Breeding grouse were also present in this area during both the 2008 and 2005 surveys. Y Foel / Tir Gwyn represents a large block of mire habitat with extensive areas of heather cover and thus provides suitable Red Grouse habitat. Red Grouse are resident at this locality and were observed within the area during most of the monthly VP surveys.

Kestrel

57. In 2010, a pair of Kestrel (*Falco tinnunculus*) bred just outside Study Area, in an isolated conifer block adjacent to the track at around SN 8250 8580. Three young were fledged.

Other Breeding Birds

58. Between 20 and 25 pairs of Skylark and similar numbers of Meadow Pipit (*Anthus pratensis*) are estimated to be breeding in the application area. These are widely dispersed throughout the Study Area and all were recorded within the degraded bog and acid grassland habitats.
59. Stonechat are breeding in the young broad-leaf plantation (SN 834 855). Lesser Redpoll (*Carduelis carbaret*), were seen calling and flying in four different locations: near the large pond around SN 833 853; in Hafren forest; and a small plantation east of the site. It is highly likely that this species bred in some of these locations. Willow Warbler were heard

singing at the edge of the small plantation near SN 833 853, in the young planted broadleaf scrub and east of the site in another scrubby patch bordering the Hafren. A pair of Reed Bunting, are thought to have bred south of SN 833 853 near the stream.

60. In 2005, pairs of Crossbill were recorded on both visits in the Hafren forest and near the farm house at SN 840 828, (both locations are just outside of the application area). It is likely that both these pairs were breeding.
61. Red Kite hunt throughout the site but do not breed within it.
62. In August 2011 a female / juvenile Hen Harrier was seen on the approach to Fawnog y Bont area (lower eastern corner of site). In 2008 an immature Hen Harrier was seen around the north eastern arm of the site around SN 842 858. In 2005, male Hen Harriers were seen during two separate breeding bird surveys, at SN 8500 8350 and at SN 8420 8485. Hen Harrier do not breed within the Study area.
63. In April 2010 a Merlin was seen on Waun Goch sparring with a Kestrel and hunting a Meadow Pipit. In 2005, a male Merlin was recorded on the eastern arm around SN 8433 8395. These Merlin probably breed on Plynlimon which is a known Merlin breeding ground.
64. Cuckoo, Song Thrush, and Siskin have been recorded singing from the edges of the coniferous plantations of the Hafren forest, which border the site on its eastern and northern aspects. These birds are likely to be breeding here.
65. On the southern side of Y Foel, a single male Golden Plover in breeding plumage was recorded in late March 2005.

Mitigation and Method Statement

Pre-construction Surveys and Mitigation

66. Prior to commencement of the development on site, a pre-construction survey for breeding birds following the Brown and Shepherd methodology as outlined in **paragraphs 44-46** above will take place. The survey boundary will be the Study Area. The survey will consist of four visits within the breeding season.
67. Following surveys, all relevant construction drawings and plans will be marked with the location of potential breeding bird habitats within 100m of specific working locations.

Mitigation During Construction

68. In order to avoid damage or disturbance to breeding birds, construction work in potential habitat would ideally be started (in those areas) outside the breeding season of March to August inclusive. Where this is impossible, then the affected areas should be surveyed by a suitably qualified ecologist, directly before work commences to ensure that no breeding birds are present.
69. To avoid disturbing breeding birds any cutting of trees, hedges and scrub would be carried out during the period September through to February. During this period birds will not be breeding and so will not be disturbed. If this is not possible operationally, then it is advised

that a suitably qualified ecologist undertakes checks for nesting birds in advance of felling

70. If birds' nests are found that are occupied or being built, a minimum of 5m of vegetation will be left intact around the nest until the young have fledged (left the nest).
71. All fires will be prohibited on site. Upland habitats are particularly susceptible to fire and, as such, a no smoking policy should be implemented except in designated areas of the site.

Monitoring

72. The monitoring survey will utilise four visits within the breeding season (this is to allow consistency with the Habitat Management Plan). The survey boundary will be the Study Area.
73. If breeding birds are found in new areas, this information will be added to site plans.
74. Monitoring will take place, as advised in SNH (2009):
- Pre-construction;
 - During construction;
 - Post-construction, for the first three years;
 - Five years post-construction; and
 - Then at 10 and 15 years, after which time a decision will be made as to whether the monitoring programme should continue (SNH, 2009).

Birds Red Kite and Golden Plover

Rationale and Methodology

75. Red Kite and Golden Plover (*Pluvialis apricaria*) are both listed under Annex 1 of the EU Birds Directive (79/409/EEC). Both species hunt or feed within the Study Area, though neither species breed there. Special attention has been paid to these species within the ES with Collision Risk Assessments being carried out.
76. Red Kite and Golden Plover were primarily recorded through Vantage Point surveys which were carried out between November 2009 and November 2010.

Vantage Point Bird Survey

77. Vantage Point ("VP") surveys, following SNH (2005) guidance, were carried out during 2009–2010. Birds of prey and waders were targeted and BoCC that were seen were also noted. Two VP observation points were required in order to observe the whole site; one in the north of the site at SN 823 863, and the other in the south of the site at SN 839 842. Ideally, VPs should be placed off-site. However, this was not possible for the Southern VP due to the landform of the area. The surrounding hills were either too far away or had their view obscured by Y Foel. Survey spanned one calendar year from November 2009 to

November 2010 inclusive.

78. In total, 108 hours of observation were made from each VP. During the spring migration period (late March to mid-May) the autumn migration period (early September to early November) and the breeding season (mid-March to mid-July) at least 36 hours of survey were undertaken from each VP. This was augmented by 18 hours from each VP during the winter period (December to February). Numbers, details of flight height and direction of birds were recorded. Flight height was recorded in metres, however, it should be recognised that estimation of flight height is somewhat subjective and difficult.
79. In subsequent analysis, flight height data was categorised into three classes as follows:
- Low = below turbine blade height (less than 30m);
 - Medium = within turbine blade height (30 to 130m); and
 - High = above turbine blade height (over 130m).
80. Maps showing VP results are presented within the ES in **Figure 11.5a** through to **Figure 11.5d**.

Red Kite Nest Survey

81. A Red Kite nest survey was carried out targeting a zone of 2km around the Study Area, following methodologies as described in Hardey et al. (2009) and Gilbert et al. (1998) and involved pinpointing sites through observation of behaviour over time, focussing on birds displaying signs of occupancy of territories.

Collision Risk Assessment

82. Collision Risk Assessment was carried out for two bird species using the SNH Collision Risk Model ("CRM"), set out and developed by Band et al. (2007). The model is designed to estimate the number of bird collisions over the course of the survey period, usually one year, and involves a three-stage calculation process. The assessment was carried out for both the V90 and the V105 turbine models.
83. The VP and other bird surveys found clear evidence that two Species of Conservation Concern were using the site regularly, and exhibiting flight lines within range of the rotors. These species being Golden Plover and Red Kite.
84. All other species observed were not recorded in sufficient numbers to be considered here, as their use of the site is not regular enough to be suitable for Collision Risk Modelling.

Findings

85. Red Kite were observed 31 times from the northern VP and 25 times from the southern during the VP surveys. Despite these comparable figures the total and Medium height observation times was far greater in the North (157 and 109 minutes) than in the South (33 and 15 minutes). This shows that Red Kite were more active in the north and that most of this activity was within the Medium height category. Red Kite are not breeding within the

Study Area.

- 86. Red Kite were recorded for a total of 3.2 hours. A high proportion of Red Kite sightings were made in the 'Medium' height class during the breeding period. Sightings of Red Kite during the breeding period were heavily weighted to the North VP.
- 87. There are no Red Kite nesting sites within 2km of the Study Area
- 88. Golden Plover comprised a modest number of sightings (9) of at times large numbers of individuals. Golden Plover were recorded for 4.2 hours. Please note that sighting time is a function of both the time observed and the number of birds seen. Thus, the time observed is multiplied by the number of birds. Golden Plover are usually recorded in flocks and so although flocks were seen for relatively brief periods the sighting time is relatively high.
- 89. Most Golden Plover records relate to the South VP and the months of November and December, though a call was also heard in September 2010. At the South VP, birds were observed on 6 occasions, sometimes feeding and sometimes apparently passing over; flock size ranged between 6 and 40 birds. Birds were observed for between five seconds and nine minutes. At the North VP Golden Plover were observed three times in November 2009 flying over, travelling in a westerly direction, with observations lasting for brief periods (5 to 15 seconds). A bird was also heard but not seen in January 2010. The data suggests that Golden Plover migrate over the site in autumn / early winter and at that time the southern part of the site around Tir Gwyn is used as a temporary feeding ground.
- 90. Table 4 below presents observed time of activity, for Red Kite and Golden Plover over the site, in minutes by height class and VP.

Table 4: Red Kite & Golden Plover Recorded from Each VP, by Times Observed (minutes) and Height Class				
		North VP	South VP	Total Species Time*
	Low	32.2	16.2	48.4
Red Kite	Medium	109.0	14.8	123.8
	High	16.2	2.3	18.5
	Low	1.7	134.4	136.1
Golden Plover	Medium	3.4	64.1	67.5
	High	1.3	47.6	48.9
* note time observed is for a single bird, e.g. a flock of 40 birds observed for 1 minute would result in a species time of 40 minutes				

Collision Risk

91. Collision Risk Assessment was carried out for Red Kite and Golden Plover, collision predictions are summarised in Table 5 below.

Table 5: Collision Risk		
	V90	V105
Red Kite	1.06	1.79
Golden Plover	1.39	1.84

Mitigation and Method Statement

Pre-construction Surveys and Mitigation

92. Pre-construction survey will be carried out where works are scheduled to commence within 400m of 'mature' woodland (including conifer plantation) within the period February to August, a survey of the woodland edge should be undertaken to ensure that Red Kite have not begun nesting in these areas. The maximum zone within which Red Kite could be disturbed by construction activities is likely to be 400m (Ruddock & Whitfield, 2007).

Operation Mitigation

93. High Red Kite activity levels at Mynydd y Gwynt correlate with the lambing season. The lambing season and the period thereafter provides a resource which is of great value to a species that relies to a large part on scavenging. Afterbirth, lamb and ewe fatalities and docked (removed) tails all act as a food resource for Red Kites and are attractive to these birds.
94. At other times of year, the spreading of manure and the cutting of grass (as hay or silage) also attracts Kites, probably through the associated invertebrates in manure and the small mammals etc. which are flushed when grass is cut. In order not to provide food resources for Red Kite, the following activities will not be undertaken within 150m of turbine hubs:
- lambing of more than 15% of the flock;
 - stocking with young lambs that have not yet lost their tails (tail docking to be undertaken with a heated docking iron, rather than rubber rings);
 - spreading of manures; and
 - cutting for hay or silage.

Monitoring

95. A VP survey will take place, each month, utilising the 2 existing VP locations, with the number of hours undertaken ensuring that at least 36 hours are undertaken from each VP

so that this VP data will allow an assessment to be made of the extent to which the selected species are using the site during and post construction. Pre-construction data is already available and thus VP surveys will begin during construction as follows:

- Pre-construction;
- During construction;
- Post-construction, for the first three years;
- Five years post-construction; and
- Then at 10 and 15 years, after which time a decision will be made as to whether the monitoring programme should continue (SNH, 2009).

Carcass Monitoring

96. Monitoring of the area below turbines will take place post-construction to assess the extent to which Red Kite and Golden Plover, along with other species are subject to collision impacts.
97. Monitoring will commence with a trial to assess local conditions in respect of the extent and the speed at which corpses are being scavenged (see Whitfield et al., undated). Based upon findings from this study collision searches will take place under turbines at intervals which will be determined through findings of the trial study; the interval will not be less than one month. The use of search dogs will be considered.
98. Carcass monitoring will take place for the first two years post-construction.
99. If post-construction monitoring reveals that either of these species are being adversely affected by the development (unacceptably high mortality levels) then a mitigation plan will be agreed with the planning authority / NRW, this mitigation plan will probably include measures to turn off selected turbines at particular times of the day / season.

Reptiles

Rationale and Methodology

100. The only species of reptile recorded during reptile survey at Mynydd y Gwynt were Common Lizard. Common Lizard along with the other three species of widely occurring reptile are protected under Section 9 of the Wildlife and Countryside Act (1981) from Intentional killing, injury and trade.
101. During 2010 a reptile survey was carried out by undertaking refugia searches. Methodology followed that as detailed in the Herpetofauna Workers Manual (JNCC 1998). Consequently, refugia were located at each of the proposed turbine locations together with targeted track locations; refugia were inspected on five occasions during the survey period.
102. A number of laybys which are scheduled to be newly created or extended as part of the development were also assessed for the presence of reptiles.

Findings

103. The 2010 targeted reptile search resulted in a very low number of records, with just one single reptile being recorded. A Common Lizard (*Lacerta vivipara*) was documented at SN 83726 85266, close to the existing track.
104. Over several years many other surveys of various kinds have taken place at Mynydd y Gwynt, during this period a few incidental records for Common Lizard (*Lacerta vivipara*) were also made, always during the summer/autumn. These were mainly on areas of degraded peat bog.
105. Although none were seen during the lay-by survey widespread reptiles such as Common Lizard and Slow-worm (*Anguis fragilis*) could potentially be present on several of the proposed lay-bys sites.

Mitigation and Method Statement

106. Numbers of reptiles are very low within the development footprint, which is almost certainly a result of the altitude of the site and inclement associated weather, thus conditions for reptile are poor and the mitigation selected is proportional to this.
107. To mitigate against harm to reptiles the following methods during construction will be followed:
 - Prior to construction areas of vegetation will be strimmed to a height of between 100 and 150mm. The direction of strimming will be selected to encourage the movement of any reptiles present into habitats which will not be affected by the development. This will encourage reptiles to vacate the construction locality and move into adjacent habitat. There are considerable areas of similar adjacent habitats available.
 - After a resting period of 2-7 days, the remainder of the vegetation will be cut / removed. All vegetation will be removed from the area to prevent potential areas of refuge being created for reptiles to shelter in.
 - Works will be carried out under the supervision of the ECOW / an Ecologist.
108. To safeguard reptiles and to mitigate against any potential impacts on reptiles, the following measures would be carried out at the proposed lay-bys which have potential for reptiles, when the reptiles are active during the months of April to September inclusive. That is, before they choose a hibernation site which may be located within the area to be developed.
109. A suitably qualified ecologist should search proposed lay-by at Hold Point 13 before the following procedures are carried out.
110. The grassland vegetation should be carefully reduced to ground level including any grassland vegetation for 3m at either end of the lay-by.
111. All refuges such as logs, pieces of metal etc. should be carefully removed from site by

hand.

112. If any reptiles are encountered during the clearance of the grassland and / or during the development they should be left alone and all work should be stopped until they have moved off the site.
113. If any of the works at the lay-bys involve removal of sections of a hedgerow then it will be necessary to exclude reptiles from the working areas with reptile fencing and further advice should be sort.

Monitoring

114. No monitoring is suggested for reptiles. The difficulties of obtaining accurate population estimates, particularly as populations are likely to be very low, means that any recorded changes in populations are likely to be inaccurate or based on non-reliable data.

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Appendix 1 Species Management Plan Timetable of Monitoring Actions

Receptor	Pre-construction	During Construction	Post-construction					
			Year 1	Year 2	Year 3	Year 5	Year 10	Year 15
Otter	✓	✓	✓	✓		✓	✓	✓
Water Vole	✓	✓	✓	✓		✓	✓	✓
Badger	✓	✓						
Breeding Birds (Brown & Shepherd)	✓	✓	✓	✓	✓	✓	✓	✓
Red Kite & Golden Plover (VP survey)		✓	✓	✓	✓	✓	✓	✓
Red Kite Nesting	✓							
Carcass Monitoring Trial			✓					
Carcass Monitoring			✓	✓				