

APPENDIX 11.21:

HABITAT MANAGEMENT PLAN

Table of Contents

INTRODUCTION	3
STEERING GROUP	3
CONSTRUCTION PHASE	3
HABITAT PLAN AND OVERALL OBJECTIVES.....	4
ESGAIR Y MAESNANT BACKGROUND	4
Nant Y Gwrdy Background.....	10
Specific Proposals	11
Esgair y Maesnant	11
Nant y Gwrdy	11
Other Proposals.....	11
Monitoring	12
Habitat Monitoring.....	12
Bird Monitoring	13
Butterfly Monitoring	13
Timetable and Reporting.....	13
REFERENCES	13

Introduction

1. This Plan comprises detail of how the area of land known as the Mynydd y Gwynt is to be managed to enhance the habitat and conservation value of the site. The Plan is intended to be a "LIVE" document comprising workable measures to achieve objectives set out in the planning permission and S106 agreement for the development. Should any of the measures set out in the plan become unworkable for whatever reason; the plan may be amended by the Steering Group, providing such amendment does not result in a major departure from the plan in its current format.
2. A guiding principle of this plan is that unless contradicted within this document or by subsequent decisions made by the Steering Group then the management prescriptions as set out in the current Glastir agreement including stocking levels will remain in force for the life of the wind farm even after the official Glastir agreement comes to an end. In addition the plan lays emphasis on blanket bog and wet heath restoration and management for Upland breeding waders, these objectives will involve tackling *Molinia* domination. Another focus will be to ensure the continued value of a key area that supports Small pearl-bordered fritillary. This documents also details the ecological monitoring programme associated with the development.
3. Examination of existing grip drains has shown them to be in the process of natural in-filling and re-colonization by vegetation, this process has been undergoing for many years and today many are already scarcely visible on the ground. This process will progressively impede flows, provided that no work is undertaken to clean out the grips. This being the case, it is considered unnecessary to actively block them. Nonetheless, the option of blocking some grips should natural colonization not continue as anticipated will be kept under review by the Steering Group.

Steering Group

4. A Steering Group with five members, comprising representatives of the Owners, Developer, the County Council, the Royal Society for the Protection of Birds ("RSPB") (or if not then another conservation body), and Natural Resources Wales ("NRW") shall be established by the Developer before the commencement of the Development. The Steering Group shall meet on an annual basis to discuss the effectiveness of the measures contained within this Agreement, and to agree any amendments, provided they do not constitute a major departure, in either nature or scale, agreement being reached by means of a simple majority. In the event that an agreement over a particular issue cannot be reached, the County Council will hold the casting vote.
5. The implementation of the Habitat Management Plan shall ensure not to affect the day to day operation of the Windfarm and shall not be allowed to become a significant risk to the health, safety or welfare of animals or any other permitted use of the land. Should such a situation arise, then the Steering Group may agree amendments to the plan in accordance with the above.

Construction Phase

6. No construction activities associated with the Development shall take place on the site between 25th March and 30th June to avoid disturbance to breeding birds.

Habitat Plan and Overall Objectives

7. The Objectives of the Habitat Management Plan are as follows:
 - ensuring the survival of the peat islands (remnant areas that have avoided peat cutting) on Esgair y Maesnant;
 - to control Purple-moor-grass on Esgair y Maesnant and in so doing enhance habitat quality for breeding waders;
 - ensuring the continued medium term positive management of the wet open young woodland and pond around Nant y Gwrdy; and
 - to see an overall maintenance of habitat quality.
8. Glanrhyd has been subject to a Glastir agreement since 1st January 2014, this replacing a completed Tir Gofal agreement. Unless contradicted by prescriptions given in this document or amended by the Steering Group, for the area know as Mynydd y Gwynt (see **Figure 11.13**), the Glastir Management Prescriptions will continue to be abided by for as long as the wind farm is operational.
9. The plan will be in force for as long as the turbines are in-situ, at present this is planned to be 25 years.
10. The management plan specifically focuses on two areas:
 - Esgair y Maesnant; and
 - the fenced area alongside the Nant y Gwrdy, including the pond.
11. For these two areas management prescriptions may vary from those mandated under the Glastir Agreement. The Management Committee may wish to extend the habitat improvement and peat stabilisation works to other areas where appropriate, including Tir Gwyn and the eastern arm.

Esgair y Maesnant Background

12. *Molinia* domination is a problem over much of the wet areas of Mynydd y Gwynt and here *Molinia* is 'swamping' bog and wet heath habitats. The presence of some tussocks of *Molinia* should be viewed as positive features, for example Curlew and other upland birds often nest in *Molinia* tussocks, however dense blankets of *Molinia* smother better quality habitat and does not provide good habitat for breeding waders. Esgair y Maesnant, amounting to over 68 hectares, primarily supports bog habitat along with some wet heath; these habitats are to a varying degree adversely affected by an excess of *Molinia*, see example photo in **Photo 11.1**. Curlew, were breeding on Esgair y Maesnant until 2008 and it was their final breeding locality before they disappeared from Mynydd y Gwynt. Esgair y Maesnant also supports many peat islands (see **Photo 11.2**), here areas of deeper peat rise above the surrounding moorland, these peat islands typically have vertical walls.



Photo 11.1 Wet Heath Habitat & Abundant *Molinia* SN 83282 86422



Photo 11.2 Series of Peat Islands Looking South East from SN 83350 86257

13. The largest peat island is around 1 hectare (see **Photo 11.3**), though most are much smaller than this. Peat islands appear to be remnant areas of peat that have survived after many years of historical peat cutting for fuel (**Photo 11.4**). The edges of peat islands are very sensitive to grazing and here bare peat is often exposed, due to their sensitivity peat islands can probably not tolerate any grazing by stock at all (**Photo 11.5**).
14. Where *Molinia* occurs with heather *Calluna vulgaris*, it may be encouraged by burning, a traditional management method of heather moorland. Where grasses already dominate (as opposed to *Calluna*), frequent burning has been shown to favour *Molinia* at the expense of other grass species (*Grant et al, 1996*). Therefore burning is not considered a suitable method to control *Molinia*.
15. Grazing by cattle is one of the best ways to control *Molinia* – grazing by sheep typically encourages *Molinia* as sheep selectively graze and prefer not to eat this plant. Drier habitats (those on shallow peat) such as wet heaths can tolerate a much higher level of grazing, than very wet, anaerobic habitats (those on deep peat) such as blanket bog. Cattle control of *Molinia* is more effective when cattle graze during the summer (ADAS, 2004), however at Mynydd y Gwynt such grazing should also take into account the needs of breeding birds.



Photo 11.3 Largest Peat Island SN 83375 86317



Photo 11.4 Edge of Peat Island and Historical Peat Cutting Area to Left SN 83141 86230



Photo 11.5 Eroding Edge of Peat Island SN 83359 86365 (note many sheep footprints in bare peat)

16. Esgair y Maesnant supports habitat mosaics which are mostly bog with smaller areas of wet heath (smaller areas of other habitat are also present, including flush, bog pools, acid grassland and dry heath); Peat islands are a common feature over much of the area, and underlying habitats are degraded by an excess of *Molinia*. As unenclosed habitat mosaics it is very difficult to provide a single grazing regime that will both, tackle *Molinia* dominance while protecting sensitive peat based habitats. Under the present Glastir agreement Esgair y Maesnant is treated as category 411 Additional Management to reduce stocking. The agreement mandates grazing with '45 sheep during the summer', and in terms of LSUs equates to between 0 and 0.15 LSU/ha, dependent upon the month, with no winter grazing. This regime appears to be a continuation of the previous Tir Gofal protocol whereby Esgair y Maesnant was treated as blanket bog and grazed at the an overall stocking rate of 0.05 LSU per hectare (equivalent to 45 sheep – summer grazing). This grazing regime is appropriate for most of the blanket bog habitat, however, it is insufficient for the wet heath habitats and is insufficient in controlling incumbent stands of dense *Molinia*. In addition the regime is likely to continue to allow erosion of peat at the edges of some peat islands.
17. As wet heath and blanket bog habitat are best maintained by very different stocking levels, an ideal mechanism would have been to separate these habitats through fencing with stocking at the appropriate level. DEFRA recommend that in order to control *Molinia* grazing should take place for two months during the summer at, the heavy rate of, 0.75 cows/ hectare (DEFRA, unknown). At Esgair y Maesnant this however, is not practical as

blanket bog and wet heath form intricate habitat mosaics, which, can probably not realistically be separated; blanket bog is the dominant (most of the unit lies on peat soils over 50cm depth). Grazing at the DEFRA recommended level would damage the peat based habitats.

18. Breeding Curlew have declined drastically in Wales, Mynydd y Gwynt is known to have supported at least two pairs of Curlew until 2005 and anecdotal evidence suggests that prior to this it supported many more pairs. Grazing cattle on moorland can create good habitat for breeding Curlew. Curlew like to nest in grassy tussocks that are situated adjacent to open ground; such conditions provide Curlew with nesting sites that are next to feeding areas (on shorter wet turf) and allow views of approaching predators. Grazing cattle create such conditions.
19. There are many issues that may be contributing to the decline in Curlew. The BTO, indicate one factor that could be leading to poor wader recruitment is from ticks and tick borne diseases including Louping ill virus. Although further studies are required indications are that Curlew may be particularly susceptible to ticks and that, while cattle can support ticks the spread from sheep is a greater problem (Game and Wildlife Conservation Trust, 2001).
20. Enhancing the habitat for waders is a priority and Curlew are the principle species targeted here. As cattle can create good habitat for Curlew and sheep are linked to the spread of Louping ill virus, Esgair y Maesnant should be grazed by cattle rather than sheep, at a gentle stocking level. The stocking rate needs to be gentle so as to protect peat based habitats. This management should also be to the benefit of Snipe, which do still breed within the area.
21. It appears clear that grazing by cattle instead of sheep would benefit wet heath and blanket bog habitats through the control of *Molinia* and would also benefit upland breeding waders. However the edges of peat islands are very susceptible to damage through grazing, there is evidence that sheep grazing at current levels are damaging the edges of some peat islands especially the largest peat island (see **Photo 11.5**). Cattle which are larger and heavier could potentially do more damage to these soft edges than sheep. Due to its sensitivity it is proposed to fence off the largest peat island (see **Figure 11.14**) and to remove all stock from it, an area of approximately 1.2 hectares. Monitoring should aim to provide information on the success of cattle grazing and on any adverse effects on peatlands. After the new management regime has been in place for a number of years, the Steering Group should use collected monitoring information to assess whether adverse effects are occurring. If they are occurring the Group can then instigate remediation measures; these could involve mapping and fencing the other peat islands, or allowing limited grazing on the fenced peat island.
22. Grazing should be undertaken April to October while young *Molinia* growth is at its most palatable.
23. An area of Esgair y Maesnant has been highlighted, that supports a dense, deep blanket of *Molinia* see map in **Figure 11.15** and **Photo 11.6**. This dense *Molinia* area, amounting to around 3.8 hectares, is also on deep peat, much of it over 1 metre in depth. To restore the habitat here the dense *Molinia* thatch needs to be removed. The peat soils, sensitive habitats and irregular landform mean that access to this area is problematic, it is however presently accessible by quad-bike and so should also be accessible by other low ground

pressure vehicles, such as Softrak and Argocat. The *Molinia* will then be cut, during the period August to February, using cutting machinery pulled or carried by this vehicle. *Molinia* cutting has been found to be more effective when conducted during dry periods with the flail set low enough to demolish tussocks (Anderson, 2002). The cut *Molinia* will be carried away from Esgair y Maesnant and used for some other purpose such as animal bedding or composted. In the year following cutting and perhaps also in subsequent years, dependant upon results achieved, the cut *Molinia* areas will be grazed, within the period April to October. The area will be grazed by cattle or ponies or other suitable stock (not by sheep) and it may be necessary to temporarily fence this area for such purposes. Details of how this will be achieved will be at the discretion of the Steering Group. Directly to the north of this *Molinia* area lies habitat with Frequent to Abundant heather, so an adequate seed source for the regeneration of the *Molinia* area is present.



Photo 11.6 Dense *Molinia* on Deep Peat Looking East from SN 83602 86011

Nant Y Gwrdy Background

24. The habitat surrounding the pond around Nant y Gwrdy has been highlighted as a key area for Water Vole, Small Pearl-bordered Fritillary and is also used by Otter and feeding bats. Ensuring the continued medium term positive management of this wet open young woodland and pond around Nant y Gwrdy should be a priority. Although the trees are a valuable part of the habitat here, management is needed to ensure that the area is not further over-shaded by trees and Purple-moor grass.

25. Presently the area around the pond at Nant y Gwrddy is un-grazed. Such management has created a dense undisturbed, insect rich habitat, which benefits the Water vole, Otter and bat interest. For an initial period after the area was fenced, stock removed and trees planted Small pearl-bordered fritillary butterflies would have benefited, as this management created warm micro-climates and appears to have allowed the violets to flourish. Although the well spaced broadleaved trees here appear to be growing at a very slow rate, it is very likely that with time tree growth will cause too much shade, and without grazing the *Molinia* ground layer may out-compete the Violets to the detriment of the butterflies. The aim of management around Nant y Gwrddy must be to ensure that a Violet rich habitat with a warm micro-climate continues to benefit Small Pearl-bordered Fritillary.
26. Monitoring should assess the status of Small Pearl-bordered Fritillary and its food plant *Viola palustris*. On the basis of these results the Steering Group can consider habitat amelioration.

Specific Proposals

27. A timetable for actions is given in summary in **Appendix 1**.

Esgair y Maesnant

28. Fence off the large Peat Island (see **Figure 11.14**) allowing a minimum of 2 metres from the island edge, remove all stock from the area.
29. With the exception of the peat island graze Esgair y Maesnant with cattle (not sheep) at current Glastir stocking rates.
30. Cut sward in area highlighted as containing dense *Molinia* (see Figure 11.15), access to this area by low ground pressure vehicles only, remove cut *Molinia* along with any loose *Molinia* leaf litter. In year following cutting, ensure that young new *Molinia* growth is grazed and removed, this may involve temporary or other fencing of the area, where deemed necessary repeat grazing in future years.

Nant y Gwrddy

31. In Year 2 Nant y Gwrddy to be inspected by an ecologist and using this inspection together with the results from Butterfly Monitoring (see below) the Steering Group will assess whether the area needs management. If management is considered to be necessary then individual trees will need to be marked for removal with the aim being to remove no more trees than necessary to allow violets to flourish. If *Molinia* growth is determined to be detrimental to Violets introduce moderate to heavy grazing for a short period (August to October), with the intention of removing much of the *Molinia* growth.

Other Proposals

32. The owners will ensure that no new drainage systems are installed on the site, and obtain prior approval from the Steering Group before clearing out any existing ditches, such permission shall only be given should any ditches become a significant risk to the health, safety or welfare of animals or any other permitted use of the land;
33. If the Steering Group considers it necessary the developer will implement a program of reinstatement measures within one year of such a decision being made, implementing

techniques and using vegetation as recommended and approved by the Steering Group for the regeneration of on site habitat.

34. To mitigate against potential collision risk, it would be prudent to avoid making the area under and around turbines attractive to Red Kite. In order not to provide these food resources for Red Kite, the following activities will not be undertaken within 150m of turbine hubs:
- lambing;
 - stocking with young lambs that have not yet lost their tails;
 - spreading of manures; and
 - cutting for hay or silage.
35. Lengths of the existing network of tracks have been cut into the hillsides and in some places have resulted in exposed soil slopes which are susceptible to erosion during heavy rainfall. These existing soil slopes will be stabilised and re-vegetated to control erosion and sediment potential. New tracks will have vegetation replaced to minimise erosion potential. To ensure that livestock do not contribute to erosion of track sides and vegetation in ditches, appropriate management, fencing and provision of alternative drinking water locations will be undertaken.

Monitoring

Habitat Monitoring

36. The Developer will carry out or procure the carrying out of a programme of monitoring of the effects of the implementation of the measures set out in this Agreement ("the Habitat Monitoring Programme").
37. The Habitat Monitoring Programme shall be carried out by a consultant approved by the Steering Group, such approval not to be unreasonably withheld or delayed. Staff from organisations represented on the steering group will also be allowed access to the management area, subject to the owner's permissions, such permission not to be unreasonably withheld or delayed.
38. The Habitat Monitoring Programme will focus particularly on vegetation community characteristics in areas of blanket bog, wet and dry heath; the general wetness of the site and cover of heather and *Molinia* will be important features; works may include local fixed-point photography. Esgair y Maesnant is particularly targeted for habitat enhancement and so will be a key site for monitoring.
39. The Habitat Monitoring Program shall include the monitoring of vegetation at several (maximum 10) locations to be agreed with NRW; to include transects across sections of access track, together with interfaces between turbine bases and semi-natural habitat, peat islands (including, those both fenced and unfenced) and control locations. At these locations, 1 metre quadrant data shall be collected at intervals (10 metres) along 200 metre transects.

Bird Monitoring

40. The Developer will procure the carrying out of a programme of monitoring to assess the effect (if any) of the wind turbines on birds ("the Bird Monitoring Programme"). The Bird Monitoring Programme will expressly include the Brown & Shepard monitoring of breeding waders and will be carried out during March to June.
41. The Developer will procure the carrying out of the Bird Monitoring Programme by a consultant approved by the Steering Group (such approval not to be unreasonably withheld or delayed) using the Brown and Shepherd survey method, with two additional visits to further quantify skylark populations. Bird surveys will focus on three areas (see **Figure 11.13**):
- Esgair y Maesnant (to the north);
 - the north-eastern arm of moorland around SN 845855, presently surrounded by forestry; and,
 - Tir Gwyn/ Y Foel (to the south east).

Butterfly Monitoring

42. Monitoring of Small Pearl-bordered Fritillary will take place within the fenced area alongside the Nant y Gwrddy. At the same time monitoring of the butterfly's food plant - Violets (usually Marsh Violet *Viola palustre*) will be carried out. Such monitoring will inform the management of this area.

Timetable and Reporting

43. The Monitoring Programme shall be carried out on the following basis:
- a. Prior to commencement of the Development, a baseline survey shall be carried out.
 - b. Further surveys shall be carried out two years, five years, ten years and fifteen years after the completion of construction.
44. A report setting out the conclusions of the surveys shall be submitted to the Steering Group. The Developer will provide the Steering Group with the results of the surveys as soon as reasonably practicable after such surveys have been carried out.
45. The Developer shall implement or procure the implementation of appropriate modifications to the measures which are recommended within the Habitat Monitoring Plan reports and which are agreed by the Steering Group.

REFERENCES

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APPENDIX 1: MONITORING AND ACTION TIMETABLE

Mynydd y Gwynt Wind Farm Habitat Management Plan Timetable of Actions

Prior to Construction	Construction	Immediately Post Construction	plus 2 years	plus 5 years	plus 10 years	plus 15 years
Fence large peat Island		Begin cattle grazing Esgair y Maesnant				
Habitat, Bird & Butterfly Monitoring		Cut Molinia August to February, remove cut material and litter. The young Molinia growth will need to be grazed, this may need the area to be fenced. In the following year (April to October) graze with stock other than sheep. Repeat process in subsequent years if necessary.	Habitat, Bird & Butterfly Monitoring	Habitat, Bird & Butterfly Monitoring	Habitat, Bird & Butterfly Monitoring	Habitat, Bird & Butterfly Monitoring
			Visual Assessment of Esgair y Maesnant & Nant y Gwrdy by Ecologist to assess Peat Island, Molinia area & Fritillary habitat			

The Steering Group will aim to meet on an Annual basis