

|    |        |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |
|----|--------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|    |        |                       | management regime is ideal for hornet robberfly feature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |
| 7  | 000911 | BP A (non-Ramsar)     | Key management issue is vegetation succession of fen vegetation to tall rank vegetation and woody scrub. Unit is currently ungrazed. Need to consider introduction of grazing; cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Scrub control is carried out to reduce scrub encroachment. Overtopping of Crymlyn Brook could be leading to a replacement of transition mire habitat here, through over-wetting and perhaps nutrient enrichment. Clearing out Crymlyn Brook to address this issue, together with nutrient reduction measures, is being explored and should be carried forward.                                                                                                 | Yes |
| 8  | 000914 | BP B                  | Key management issue is vegetation succession of fen vegetation to tall rank vegetation and woody scrub. Part of unit (including calcareous fen vegetation) is grazed by cattle belonging to neighbouring tenant farmer. Need to consider increased grazing. Cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Burning is another possible management option. Scrub control is carried out to reduce scrub encroachment.                                                                                                                                                                                                                                                                        | Yes |
| 9  | 000915 | BP C                  | Current non-intervention management is ideal for alluvial forest/wet woodland feature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | No  |
| 10 | 000916 | Tennant Company Canal | Key management issue is vegetation succession of fen vegetation to tall rank vegetation and woody scrub. Part of unit (including calcareous fen vegetation) is grazed by cattle belonging to neighbouring tenant farmer. Need to consider increased grazing; however, much of unit is extremely wet and unsuitable for grazing. Cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Burning is another possible management option. Scrub control is carried out to reduce scrub encroachment. Eutrophication linked to elevated nutrient levels in Crymlyn Brook has also been highlighted as a potential threat to the fen vegetation in this unit, as well as overtopping of Glan y Wern Canal. | Yes |
| 11 | 000920 | Crymlyn Farm A        | Key management issue is vegetation succession of fen vegetation to tall rank vegetation and woody scrub. Unit is currently ungrazed. Need to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Yes |

|    |        |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |
|----|--------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|    |        |                             | consider introduction of grazing; cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Scrub control is carried out to reduce scrub encroachment. Overtopping of Crymlyn Brook could be leading to a replacement of transition mire habitat here, through over-wetening and perhaps nutrient enrichment. Clearing out Crymlyn Brook to address this issue, together with nutrient reduction measures, is being explored and should be carried forward.                                                                                                                                              |     |
| 12 | 000922 | Crymlyn Farm B (non-Ramsar) | Key management issue is vegetation succession of fen vegetation to tall rank vegetation and woody scrub. Unit is currently ungrazed. Need to consider introduction of grazing; cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Scrub control is carried out to reduce scrub encroachment. Overtopping of Crymlyn Brook could be leading to a replacement of transition mire habitat here, through over-wetening and perhaps nutrient enrichment. Clearing out Crymlyn Brook to address this issue, together with nutrient reduction measures, is being explored and should be carried forward. | Yes |
| 13 | 000923 | Glan y Wern Farm            | Key management issue is vegetation succession of fen vegetation (and associated uncommon species) to tall rank vegetation and woody scrub. Unit is currently ungrazed. Need to consider introduction of grazing; however, unit is very wet and unsuitable for grazing. Cutting of vegetation (and removal of arisings) using specialised machinery should also be considered. Burning is another possible management option. Scrub control is carried out to reduce scrub encroachment.                                                                                                                                                               | Yes |
| 14 | 000927 | Tennant Canal               | Tennant Canal requires regular sympathetic management to maintain open water habitat and marginal tussocky vegetation for fen raft spider. The current management, carried out by the Tennant Canal Company, is ideal.                                                                                                                                                                                                                                                                                                                                                                                                                                | No  |
| 15 | 000928 | Fen                         | Key management issue is vegetation succession of fen vegetation (and associated uncommon species) to tall rank vegetation and woody scrub. Unit is ungrazed and there is no history of grazing at the site (no stockproof boundaries). Cutting of vegetation (and removal of arisings)                                                                                                                                                                                                                                                                                                                                                                | Yes |

|    |        |                         |                                                                                                                                                                                                                                        |    |
|----|--------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
|    |        |                         | using specialised machinery could be considered. Burning is not a viable management option due to the close proximity of housing and also the recreational use of the site. Scrub control is carried out to reduce scrub encroachment. |    |
| 6b | 002511 | CCW grassland B         | Grassland is grazed by horses, and scrub control is carried out to prevent scrub encroachment. Current management regime is ideal for hornet robberfly feature.                                                                        | No |
| 18 | 007044 | Ramsar boundary error B |                                                                                                                                                                                                                                        | No |

## 6.2 Ongoing management

Grazing should continue where it is currently taking place at Crymlyn Bog. Opportunities to expand grazing should continue to be explored, although restoring grazing to much of the site is highly problematic due to the very wet ground and inaccessibility.

Scrub control is already carried out on an annual basis and this should continue, often targeted towards stands of SAC calcareous fen and transition mire vegetation.

Open water restoration work has been carried out in recent years, to benefit fen raft spider and other open water-dependent species. Extending this work to the currently disused sections of the Tennant Canal (unit 2) and Glan-y-wern Canal (unit 3) should continue to be explored.

Measures to tackle the over-topping of Crymlyn Brook with nutrient-enriched water need to be decided and implemented, as do measures to tackle over-topping of the Glan y Wern Canal. Any other problems with point-source inputs of nutrients also need to be tackled as required, as well groundwater migration of leachate from the Tir John landfill site; the latter issue is currently being addressed through a variation to the existing permit for the Tir John site.

## 7. GLOSSARY

This glossary defines some of the terms used in this **Core Management Plan**. Some of the definitions are based on definitions contained in other documents, including legislation and other publications of Natural Resources Wales and the UK nature conservation agencies.

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Action</b>                  | A recognisable and individually described act, undertaking or project of any kind, specified in section 5 or 6 of a Core Management Plan or Management Plan, as being required for protecting, managing or enhancing one or more of the features for which a site is designated.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Attribute</b>               | A quantifiable and monitorable characteristic of a feature that, in combination with other such attributes, describes its condition.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Common standards</b>        | See JNCC common standards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Condition</b>               | A description of the state of a feature in terms of qualities or attributes that are relevant in a nature conservation context. For example, the condition of a habitat usually includes its extent and species composition and might also include aspects of its ecological functioning, spatial distribution and so on. The condition of a species population usually includes its total size and might also include its age structure, productivity, relationship to other populations and spatial distribution. Aspects of the habitat(s) on which a species population depends may also be considered as attributes of its condition. Condition is considered favourable when all the conservation objectives are being met. |
| <b>Conservation management</b> | Acts or undertaking of all kinds, including but not necessarily limited to actions, taken with the aim of achieving the conservation objectives of a site. Conservation management includes the taking of statutory and non-statutory measures, it can include the acts of any party and it may take place outside site boundaries as well as within sites. Conservation management may also be embedded within other frameworks for land/sea management carried out for purposes other than achieving the conservation objectives.                                                                                                                                                                                               |
| <b>Conservation objective</b>  | The expression of the desired state of a feature, expressed as a composite statement defining the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | condition that we wish the feature to be in. Each feature has one conservation objective.                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Core Management Plan</b>           | A Natural Resources Wales document containing the conservation objectives for a site and a summary of other information contained in a full site Management Plan.                                                                                                                                                                                                                                                                                          |
| <b>Factor</b>                         | Anything that has influenced, is influencing, or may influence the condition of a feature. Factors can be natural processes, human activities or effects arising from natural process or human activities. They can be positive or negative in terms of their influence on features, and they can arise within a site or from outside the site. Physical, socio-economic or legal constraints on management of the site can also be considered as factors. |
| <b>Favourable condition</b>           | See condition.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Favourable conservation Status</b> | The Habitats Directive definition of Favourable Conservation Status (FCS) is given in full in section 4.                                                                                                                                                                                                                                                                                                                                                   |
| <b>Feature</b>                        | The species population, habitat type or other entity for which a site is designated. The ecological or geological interest which justifies the designation of a site and which is the focus of conservation management.                                                                                                                                                                                                                                    |
| <b>Integrity</b>                      | See Site integrity.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>JNCC common standards</b>          | A set of principles developed jointly by the UK nature conservation agencies to help ensure a consistent approach to monitoring and reporting on the features of sites designated for nature conservation, supported by guidance on identification of attributes and monitoring methodologies.                                                                                                                                                             |
| <b>Key Feature</b>                    | The habitat or species population within a management unit that is the primary focus of management and monitoring in that unit.                                                                                                                                                                                                                                                                                                                            |
| <b>Management Plan</b>                | The full expression of a designated site's legal status, vision, features, conservation objectives, performance indicators and management requirements. A complete management plan may not reside in a single document, but may be contained in a number of documents (including in                                                                                                                                                                        |

particular the Core Management Plan) and sets of electronically stored information.

### **Management Unit**

An area within a site, defined according to one or more of a range of criteria, such as topography, location of features, tenure, patterns of land/sea use. The key characteristic of management units is to reflect the spatial scale at which site management and monitoring can be most effectively organised. They are used as the primary basis for differentiating priorities for conservation management and monitoring in different parts of a site, and for facilitating communication with those responsible for management of different parts of a site.

### **Monitoring**

An intermittent (regular or irregular) series of observations in time, carried out to show the extent of compliance with a formulated standard or degree of deviation from an expected norm. In monitoring of sites designated for habitat and species conservation, the formulated standard is the quantified expression of favourable condition based on attributes.

### **Operational limits**

The levels or values within which a factor is considered to be acceptable in terms of its influence on a feature. A factor may have both upper and lower operational limits, or only an upper limit or lower limit. For some factors an upper limit may be zero.

### **Performance indicators**

The attributes and factors together with their associated target values (or ranges of values) which provide the standard against which information from monitoring and other sources is used to determine the degree to which the conservation objectives for a feature are being met.

### **Plan or project**

**Project:** Any form of construction work, installation, development or other intervention in the environment, the carrying out or continuance of which is subject to a decision by any public body or statutory undertaker.

**Plan:** a document prepared or adopted by a public body or statutory undertaker, intended to influence decisions on the carrying out of **projects**.

Decisions on plans and projects which affect Natura 2000 and Ramsar sites are subject to specific legal and policy procedures.

**Site integrity**

This is defined in Welsh Government policy as the coherence of a site's ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it is designated.

**Site Management Statement (SMS)** The document containing Natural Resources Wales' views about the management of a site issued as part of the legal notification of an SSSI under section 28(4) of the Wildlife and Countryside Act 1981, as substituted.

**Special Feature**

See feature.

**Specified limits**

The levels or values for an attribute which define the degree to which the attribute can fluctuate without creating cause for concern about the condition of the feature. The range within the limits corresponds to favourable, the range outside the limits corresponds to unfavourable. Attributes may have lower specified limits, upper specified limits, or both.

**Unit**

See management unit.

**Vision Statement**

The statement conveying an impression of the whole site in the state that is intended to be the product of its conservation management. A 'pen portrait' outlining the conditions that should prevail when all the conservation objectives are met. A description of the site as it would be when all the features are in favourable condition.

## 8. REFERENCES

Bosanquet, S.D.S., Reed, D.K., Bevan, J.M.S., Jones, P.S., Jones, R.A., Westwood, S. & Woodman, J.P. (2005). Lowland Peatland Survey Site Report: Pant y Sais (Site No. SS79/5aP). Unpublished CCW report.

Bosanquet, S.D.S., Reed, D.K., Bevan, J.M.S., Birch, K.S., Jones, P.S., Guest, D.G., Hudson, N. & Woodman, J.P. (2009). Lowland Peatland Survey Site Report: Crymlyn Bog (Site No. SS69/21P). Unpublished CCW report.

Wilkinson, K. (2013a). *Crymlyn Bog SAC monitoring report: calcareous fen with Cladium mariscus and species of the Carex davalliana*. Unpublished CCW report.

Wilkinson, K. (2013b). *Crymlyn Bog SAC monitoring report: transition mires and quaking bogs*. Unpublished CCW report.

Wilkinson, K. & Bevan, J.M.S. (2009). *Crymlyn Bog SAC monitoring report: alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*. Unpublished CCW report.

## 9. APPENDICES

These performance indicators describe the evidence, including in particular evidence to be obtained from monitoring of sites and features, that will be used to inform judgements about whether or not the conservation objectives (in section 4 of the Core management plans) are being met.

These performance indicators should NOT be used as a substitute for the conservation objectives, including in particular for the purposes of assessing plans and projects. The assessment of plans and projects should be made in view of the conservation objectives set out in section 4.

### 9.1 Appendix 1.1 - Performance indicators for Feature 1: Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (EU habitat code 7210)

| Performance indicators |             | The calcareous fen with <i>Cladium mariscus</i> and species of the <i>Carex davallianae</i> at Crymlyn Bog SAC will be in favourable condition when:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Extent                 | Lower limit | <p>The extent and distribution of calcareous fen habitat should be at least that mapped as shown on Map 1 (Crymlyn Bog) &amp; 2 (Pant-y-sais fen) (Bosanquet 2009 &amp; Bosanquet 2005, revised in 2011).</p> <p>And</p> <p>Within the mapped areas of calcareous fen there are no stands of dense scrub &gt; 10 x 10 m.</p>                                                                                                                                                                                                                                                                                                                                                                                              |
| Quality                | Lower limit | <p>All of the following criteria should be met:</p> <ul style="list-style-type: none"> <li>At least two areas of '<i>Cladium</i> dominated vegetation' should be retained on Crymlyn Bog.</li> <li>There should be no areas of '<i>Cladium</i> dominated vegetation' within stands mapped as open, calcareous fen shown on Maps 3 &amp; 4 (NVC communities S24 and '<i>Carex elata</i> – <i>Molinia</i> vegetation') (Bosanquet 2009 &amp; Bosanquet 2005, revised 2011).</li> <li>Vegetation meeting the definition of good condition calcareous fen should make up at least: 50% of each of plots B, D and E; 60% of plot A; and 70% of both plots C and F.</li> </ul> <p>Sample plot locations are shown on Map 5.</p> |

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| <b>Site specific habitat definitions</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| Calcareous fen                           | There are a number of communities that make up this Annex I habitat and they are variable in their composition. They include species-poor stands dominated by <i>Cladium mariscus</i> , sometimes with <i>Molinia caerulea</i> (S2 and <i>Cladio-Molinietum</i> vegetation), vegetation dominated by <i>Carex elata</i> and <i>Molinia</i> in association with other calcareous species (' <i>Carex elata</i> – <i>Molinia</i> vegetation') and more species-rich stands where <i>Lysimachia vulgaris</i> , <i>Juncus subnodulosus</i> , <i>Ranunculus lingua</i> , <i>Rumex hydrolapathum</i> or <i>Typha angustifolia</i> are frequent (NVC community S24) |  |
| Good quality calcareous fen              | <b>Within a 2 m radius</b> of each sampling point:<br>1. <i>Carex elata</i> is present along with at least three of the following positive indicators: <i>Lythrum salicaria</i> , <i>Osmunda regalis</i> , <i>Lysimachia vulgaris</i> , <i>Potentilla palustris</i> , <i>Rumex hydrolapathum</i> , <i>Ranunculus lingua</i> , <i>Carex pseudocyperus</i> , <i>Eupatorium cannabinum</i> , <i>Typha angustifolia</i> or <i>Juncus subnodulosus</i><br>2. The cover of <i>Phragmites australis</i> is <30%<br>3. The cover of <i>Cladium mariscus</i> is <20%<br>4. Scrub > 1m tall is absent<br>5. Non-natives are absent                                     |  |
| <i>Cladium</i> dominated vegetation      | Stands of vegetation > 20 x 20 m where <i>Cladium mariscus</i> forms > 50% cover.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| Scrub                                    | <i>Salix</i> sp., <i>Betula</i> sp., <i>Alnus glutinosa</i> , <i>Frangula alnus</i> or <i>Rhododendron</i> sp.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Stand of scrub                           | An area of continuous cover dominated by scrub species that is > 10 x 10 m.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| Non-native                               | Any species that is not native to south Wales.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |

## 9.2 Appendix 1.2 - Performance indicators for Feature 2: Transition mires and quaking bogs (EU habitat code 7140)

| Performance indicators |             | To maintain the transition mire and quaking bogs habitat at Crymlyn Bog/Cors Crymlyn SAC in favourable condition where:                                                                               |
|------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Extent                 | Upper limit | Not set                                                                                                                                                                                               |
|                        | Lower limit | The extent and distribution should be at least that mapped by the Phase II team (Bosanquet 2009 & Bosanquet 2005, revised in 2011)<br>Plus at least an additional 3 ha of transition mire and quaking |

|                                                        |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                        |                    | bog habitat should be restored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Quality</b>                                         | <b>Lower limit</b> | At least 60% of the vegetation within each of Plots 1 to 6 at Crymlyn Bog and Plots 1 and 2 at Pant-y-sais Fen (shown on Map 3) is referable to good condition transition mire and quaking bogs habitat.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Definitions</b>                                     |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Transition mire and quaking bogs                       |                    | In the main bulk of the habitat some or all of the following species <i>Carex rostrata</i> , <i>Potentilla palustris</i> , <i>Equisetum fluviatile</i> or <i>Menyanthes trifoliata</i> are present, sharing dominance in varying combinations (NVC community S27). However, in some stands <i>Sphagna</i> species (particularly <i>squarrosus</i> and <i>subnitens</i> in stands referable to M5 and M21), <i>Narthecium ossifragum</i> (in M21) or <i>Erica tetralix</i> (in M15 'swampy variant') are more prevalent along side these four more typical poor fen species.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Good condition transition mire and quaking bogs        |                    | <p>Within any 1m radius the following criteria are met:</p> <ul style="list-style-type: none"> <li>• <b>Either</b> <i>Carex rostrata</i> forms &gt;30% cover <b>or</b> at least 4 of the following positives are present: <i>Berula erecta</i>, <i>Carex echinata</i>, <i>C. limosa</i>, <i>C. rostrata</i>, <i>Equisetum fluviatile</i>, <i>Eriophorum angustifolium</i>, <i>E. gracile</i>, <i>Menyanthes trifoliata</i>, <i>Potentilla palustris</i>, <i>Sparganium erectum</i>, <i>Sphagnum squarrosus</i> or <i>S. subnitens</i> with at least one of the four positives being a key transition mire and quaking bogs indicator species.</li> <li>• There are 50 or less green aerial shoots of <i>Phragmites australis</i></li> <li>• The individual covers of each of <i>Molinia caerulea</i>, <i>Carex paniculata</i> and <i>Carex elata</i> are &lt;20%</li> <li>• There are &lt;10 green aerial shoots of <i>Cladium mariscus</i></li> <li>• Scrub &gt;1m tall is absent</li> </ul> |
| Key transition mire and quaking bogs indicator species |                    | <i>Carex limosa</i> , <i>C. rostrata</i> , <i>Equisetum fluviatile</i> , <i>Eriophorum gracile</i> , <i>Menyanthes trifoliata</i> and <i>Potentilla palustris</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|       |                                                                                                            |
|-------|------------------------------------------------------------------------------------------------------------|
| Scrub | <i>Alnus glutinosa</i> , <i>Salix</i> sp., <i>Betula</i> sp., <i>Frangula</i> sp. or <i>Rhododendron</i> . |
|-------|------------------------------------------------------------------------------------------------------------|

### 9.3 Appendix 1.3 - Performance indicators for Feature 3: Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) (EU habitat code 91E0)

| Performance indicators                           |             | To maintain the <i>alluvial forest</i> feature of Crymlyn Bog in favourable condition the following criteria should be met:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Extent                                           | Upper limit | No further expansion of the alluvial forest is desired. Additional spread will not affect the condition of the woodland feature but would impact on the condition of the fen habitats.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                  | Lower limit | Desired extent as shown in Map 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Quality                                          | Upper limit | None set                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                  | Lower limit | At least 75% of the alluvial forest will be in good condition.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Definitions                                      |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alluvial forest                                  |             | Woodland with a canopy and shrub layer dominated by <i>Salix</i> sp., <i>Betula pubescens</i> or <i>Alnus glutinosa</i> , in any combination. <i>Frangula alnus</i> should be frequent in the shrub layer. The groundflora is typically dominated by <i>Carex paniculata</i> , although in slightly drier areas <i>Molinia caerulea</i> may be present. Other species that occur in the ground flora include <i>Lysimachia vulgaris</i> , <i>Osmunda regalis</i> , <i>Lythrum salicaria</i> , <i>Solanum dolcamara</i> , <i>Iris pseudacorus</i> , <i>Scutellaria galericulata</i> and <i>Sparganium erectum</i> .                                                                                                                                                                            |
| Good condition alluvial forest                   |             | Woodland where, in a 15m radius: <ul style="list-style-type: none"> <li>At least 95% of the canopy is made up of <i>Salix</i> sp., <i>Alnus glutinosa</i> or <i>Betula pubescens</i>, in any combination</li> <li>Viable regeneration of a typical alluvial forest species is at least present</li> <li>At least one over mature tree is present</li> </ul> And where, in a 5m radius: <ul style="list-style-type: none"> <li><i>Carex paniculata</i> is present along with at least 2 of the following: <i>Lysimachia vulgaris</i>, <i>Osmunda regalis</i>, <i>Lythrum salicaria</i>, <i>Solanum dolcamara</i>, <i>Iris pseudacorus</i>, <i>Scutellaria galericulata</i> or <i>Sparganium erectum</i></li> <li>and <i>Urtica dioica</i> and <i>Pteridium aquilinum</i> are absent</li> </ul> |
| Viable regeneration of a typical alluvial forest |             | Re-growth from a fallen stem, base of a tree or a sapling that is >1m in height yet does not reach the canopy of either <i>Salix</i> sp., <i>Betula pubescens</i> or <i>Alnus glutinosa</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Over mature tree                                 |             | A tree with a trunk that is >20cm in diameter at chest height which either has at least one dead limb over 10cm in diameter or a dead crown or has fallen or is slumping.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



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## **STANDARD DATA FORM for sites within the 'UK national site network of European sites'**

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the [Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 \(2011/484/EU\)](#).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the [SPA homepage](#) and [SAC homepage](#) on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

<https://jncc.gov.uk/>



# NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),  
Proposed Sites for Community Importance (pSCI),  
Sites of Community Importance (SCI) and  
for Special Areas of Conservation (SAC)

SITE UK0012885  
SITENAME Crymlyn Bog/ Cors Crymlyn

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## 1. SITE IDENTIFICATION

|                      |                                   |                             |
|----------------------|-----------------------------------|-----------------------------|
| <b>1.1 Type</b><br>B | <b>1.2 Site code</b><br>UK0012885 | <a href="#">Back to top</a> |
|----------------------|-----------------------------------|-----------------------------|

### 1.3 Site name

Crymlyn Bog/ Cors Crymlyn

|                                              |                                   |
|----------------------------------------------|-----------------------------------|
| <b>1.4 First Compilation date</b><br>1995-06 | <b>1.5 Update date</b><br>2015-12 |
|----------------------------------------------|-----------------------------------|

### 1.6 Respondent:

**Name/Organisation:** Joint Nature Conservation Committee

**Address:** Joint Nature Conservation Committee Monkstone House City Road Peterborough  
PE1 1JY

**Email:**

**Date site proposed as SCI:** 1995-06

**Date site confirmed as SCI:** 2004-12

**Date site designated as SAC:** 2004-12

**National legal reference of SAC designation:**

Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010  
(<http://www.legislation.gov.uk/uksi/2010/490/contents/made>).

## 2. SITE LOCATION

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## 2.1 Site-centre location [decimal degrees]:

### Longitude

-3.888333333

### Latitude

51.63638889

## 2.2 Area [ha]:

299.42

## 2.3 Marine area [%]

0.0

## 2.4 Sitelength [km]:

3.0

## 2.5 Administrative region code and name

### NUTS level 2 code

### Region Name

|      |            |
|------|------------|
| UKL2 | East Wales |
|------|------------|

## 2.6 Biogeographical Region(s)

Atlantic (100.0  
%)

# 3. ECOLOGICAL INFORMATION

## 3.1 Habitat types present on the site and assessment for them

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| Annex I Habitat types                                                                    |    |    |            |               |              | Site assessment  |                  |              |        |
|------------------------------------------------------------------------------------------|----|----|------------|---------------|--------------|------------------|------------------|--------------|--------|
| Code                                                                                     | PF | NP | Cover [ha] | Cave [number] | Data quality | A B C D          | A B C            |              |        |
|                                                                                          |    |    |            |               |              | Representativity | Relative Surface | Conservation | Global |
| 7140  |    |    | 8.08       | 0             | G            | B                | C                | B            | B      |
| 7210  | X  |    | 59.88      | 0             | M            | A                | B                | B            | B      |
| 91E0  | X  |    | 7.46       | 0             | G            | C                | C                | B            | C      |

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

# 4. SITE DESCRIPTION

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#### 4.1 General site character

| Habitat class       | % Cover           |
|---------------------|-------------------|
| N16                 | 8.3               |
| N08                 | 0.6               |
| N06                 | 1.6               |
| N07                 | 86.0              |
| N10                 | 3.5               |
| Total Habitat Cover | 99.99999999999999 |

#### Other Site Characteristics

1 Terrestrial: Soil & Geology: sandstone,clay,peat 2 Terrestrial: Geomorphology and landscape: lowland, valley

#### 4.2 Quality and importance

Transition mires and quaking bogs for which this is considered to be one of the best areas in the United Kingdom. Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* for which this is considered to be one of the best areas in the United Kingdom. which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares. Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) for which the area is considered to support a significant presence.

#### 4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

| Negative Impacts |                              |                             |                        |
|------------------|------------------------------|-----------------------------|------------------------|
| Rank             | Threats and pressures [code] | Pollution (optional) [code] | inside/outside [i o b] |
| H                | H01                          |                             | B                      |
| H                | J02                          |                             | I                      |
| H                | K02                          |                             | I                      |
| H                | A04                          |                             | I                      |
| H                | H04                          |                             | B                      |
| L                | H05                          |                             | I                      |

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

| Positive Impacts |                               |                             |                        |
|------------------|-------------------------------|-----------------------------|------------------------|
| Rank             | Activities, management [code] | Pollution (optional) [code] | inside/outside [i o b] |
| M                | J02                           |                             | I                      |
| M                | A10                           |                             | I                      |
| M                | A04                           |                             | I                      |
| M                | G03                           |                             | I                      |
| M                | D05                           |                             | I                      |

#### 4.5 Documentation

The Natural Resources Wales weblink below provides access to information on its designated sites. Detailed information about this Natura 2000 site can be accessed via the Management Plan link provided in Section 6.2. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-lan>

[http://jncc.defra.gov.uk/pdf/Natura2000\\_StandardDataForm\\_UKApproach\\_Dec2015.pdf](http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf)

### 5. SITE PROTECTION STATUS (optional)

#### 5.1 Designation types at national and regional level:

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| Code | Cover [%] |
|------|-----------|
| UK00 | 8.4       |

| Code | Cover [%] |
|------|-----------|
| UK01 | 44.0      |

| Code | Cover [%] |
|------|-----------|
| UK04 | 91.6      |

## 6. SITE MANAGEMENT

### 6.1 Body(ies) responsible for the site management:

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|               |                         |
|---------------|-------------------------|
| Organisation: | Natural Resources Wales |
| Address:      |                         |
| Email:        |                         |

### 6.2 Management Plan(s):

An actual management plan does exist:

|                                                 |                                                                                                                                                                                                         |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Yes         | Name: CRYMLYN BOG / CORS CRYMLYN<br>Link: <a href="https://naturalresources.wales/media/675011/crymlyn-bog-sac-english.pdf">https://naturalresources.wales/media/675011/crymlyn-bog-sac-english.pdf</a> |
| <input type="checkbox"/> No, but in preparation |                                                                                                                                                                                                         |
| <input type="checkbox"/> No                     |                                                                                                                                                                                                         |

## EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the [official European Union guidelines for the Standard Data Form](#) (also referencing the relevant page number).

### 1.1 Site type

| CODE | DESCRIPTION                                                                                                                            | PAGE NO |
|------|----------------------------------------------------------------------------------------------------------------------------------------|---------|
| A    | SPA (classified Special Protection Area)                                                                                               | 53      |
| B    | cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)       | 53      |
| C    | SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar) | 53      |

### 3.1 Habitat code

| CODE | DESCRIPTION                                                                                                                  | PAGE NO |
|------|------------------------------------------------------------------------------------------------------------------------------|---------|
| 1110 | Sandbanks which are slightly covered by sea water all the time                                                               | 57      |
| 1130 | Estuaries                                                                                                                    | 57      |
| 1140 | Mudflats and sandflats not covered by seawater at low tide                                                                   | 57      |
| 1150 | Coastal lagoons                                                                                                              | 57      |
| 1160 | Large shallow inlets and bays                                                                                                | 57      |
| 1170 | Reefs                                                                                                                        | 57      |
| 1180 | Submarine structures made by leaking gases                                                                                   | 57      |
| 1210 | Annual vegetation of drift lines                                                                                             | 57      |
| 1220 | Perennial vegetation of stony banks                                                                                          | 57      |
| 1230 | Vegetated sea cliffs of the Atlantic and Baltic Coasts                                                                       | 57      |
| 1310 | Salicornia and other annuals colonizing mud and sand                                                                         | 57      |
| 1320 | Spartina swards (Spartinion maritimae)                                                                                       | 57      |
| 1330 | Atlantic salt meadows (Glaucopuccinellietalia maritimae)                                                                     | 57      |
| 1340 | Inland salt meadows                                                                                                          | 57      |
| 1420 | Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)                                               | 57      |
| 2110 | Embryonic shifting dunes                                                                                                     | 57      |
| 2120 | Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")                                                   | 57      |
| 2130 | Fixed coastal dunes with herbaceous vegetation ("grey dunes")                                                                | 57      |
| 2140 | Decalcified fixed dunes with Empetrum nigrum                                                                                 | 57      |
| 2150 | Atlantic decalcified fixed dunes (Calluno-Ulicetea)                                                                          | 57      |
| 2160 | Dunes with Hippophya• rhamnoides                                                                                             | 57      |
| 2170 | Dunes with Salix repens ssp. argentea (Salicion arenariae)                                                                   | 57      |
| 2190 | Humid dune slacks                                                                                                            | 57      |
| 21A0 | Machairs (* in Ireland)                                                                                                      | 57      |
| 2250 | Coastal dunes with Juniperus spp.                                                                                            | 57      |
| 2330 | Inland dunes with open Corynephorus and Agrostis grasslands                                                                  | 57      |
| 3110 | Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)                                 | 57      |
| 3130 | Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea | 57      |
| 3140 | Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.                                                          | 57      |
| 3150 | Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation                                               | 57      |

| CODE | DESCRIPTION                                                                                                                          | PAGE NO |
|------|--------------------------------------------------------------------------------------------------------------------------------------|---------|
| 3160 | Natural dystrophic lakes and ponds                                                                                                   | 57      |
| 3170 | Mediterranean temporary ponds                                                                                                        | 57      |
| 3180 | Turloughs                                                                                                                            | 57      |
| 3260 | Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation                       | 57      |
| 4010 | Northern Atlantic wet heaths with Erica tetralix                                                                                     | 57      |
| 4020 | Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix                                                                 | 57      |
| 4030 | European dry heaths                                                                                                                  | 57      |
| 4040 | Dry Atlantic coastal heaths with Erica vagans                                                                                        | 57      |
| 4060 | Alpine and Boreal heaths                                                                                                             | 57      |
| 4080 | Sub-Arctic Salix spp. scrub                                                                                                          | 57      |
| 5110 | Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)                                        | 57      |
| 5130 | Juniperus communis formations on heaths or calcareous grasslands                                                                     | 57      |
| 6130 | Calaminarian grasslands of the Violetalia calaminariae                                                                               | 57      |
| 6150 | Siliceous alpine and boreal grasslands                                                                                               | 57      |
| 6170 | Alpine and subalpine calcareous grasslands                                                                                           | 57      |
| 6210 | Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)            | 57      |
| 6230 | Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)              | 57      |
| 6410 | Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)                                                 | 57      |
| 6430 | Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels                                              | 57      |
| 6510 | Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)                                                                  | 57      |
| 6520 | Mountain hay meadows                                                                                                                 | 57      |
| 7110 | Active raised bogs                                                                                                                   | 57      |
| 7120 | Degraded raised bogs still capable of natural regeneration                                                                           | 57      |
| 7130 | Blanket bogs (* if active bog)                                                                                                       | 57      |
| 7140 | Transition mires and quaking bogs                                                                                                    | 57      |
| 7150 | Depressions on peat substrates of the Rhynchosporion                                                                                 | 57      |
| 7210 | Calcareous fens with Cladium mariscus and species of the Caricion davallianae                                                        | 57      |
| 7220 | Petrifying springs with tufa formation (Cratoneurion)                                                                                | 57      |
| 7230 | Alkaline fens                                                                                                                        | 57      |
| 7240 | Alpine pioneer formations of the Caricion bicoloris-atrofuscae                                                                       | 57      |
| 8110 | Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)                                     | 57      |
| 8120 | Calcareous and calcshist scree of the montane to alpine levels (Thlaspietalia rotundifoliae)                                         | 57      |
| 8210 | Calcareous rocky slopes with chasmophytic vegetation                                                                                 | 57      |
| 8220 | Siliceous rocky slopes with chasmophytic vegetation                                                                                  | 57      |
| 8240 | Limestone pavements                                                                                                                  | 57      |
| 8310 | Caves not open to the public                                                                                                         | 57      |
| 8330 | Submerged or partially submerged sea caves                                                                                           | 57      |
| 9120 | Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robur-petraeae or Ilici-Fagenion) | 57      |
| 9130 | Asperulo-Fagetum beech forests                                                                                                       | 57      |
| 9160 | Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli                                                  | 57      |
| 9180 | Tilio-Acerion forests of slopes, scree and ravines                                                                                   | 57      |
| 9190 | Old acidophilous oak woods with Quercus robur on sandy plains                                                                        | 57      |
| 91A0 | Old sessile oak woods with Ilex and Blechnum in the British Isles                                                                    | 57      |
| 91C0 | Caledonian forest                                                                                                                    | 57      |
| 91D0 | Bog woodland                                                                                                                         | 57      |
| 91E0 | Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)                           | 57      |
| 91J0 | Taxus baccata woods of the British Isles                                                                                             | 57      |

### 3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

| CODE | DESCRIPTION                               | PAGE NO |
|------|-------------------------------------------|---------|
| A    | Excellent representativity                | 57      |
| B    | Good representativity                     | 57      |
| C    | Significant representativity              | 57      |
| D    | Non-significant presence representativity | 57      |

### 3.1 Relative surface

| CODE | DESCRIPTION | PAGE NO |
|------|-------------|---------|
| A    | > 15%-100%  | 58      |
| B    | > 2%-15%    | 58      |
| C    | ≤ 2%        | 58      |

### 3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

| CODE | DESCRIPTION                     | PAGE NO |
|------|---------------------------------|---------|
| A    | Excellent conservation          | 59      |
| B    | Good conservation               | 59      |
| C    | Average or reduced conservation | 59      |

### 3.1 Global assessment (abbreviated to 'Global' in data form)

| CODE | DESCRIPTION       | PAGE NO |
|------|-------------------|---------|
| A    | Excellent value   | 59      |
| B    | Good value        | 59      |
| C    | Significant value | 59      |

### 3.2 Population (abbreviated to 'Pop.' in data form)

| CODE | DESCRIPTION                | PAGE NO |
|------|----------------------------|---------|
| A    | > 15%-100%                 | 62      |
| B    | > 2%-15%                   | 62      |
| C    | ≤ 2%                       | 62      |
| D    | Non-significant population | 62      |

### 3.2 Degree of conservation (abbreviated to 'Con.' in data form)

| CODE | DESCRIPTION                     | PAGE NO |
|------|---------------------------------|---------|
| A    | Excellent conservation          | 63      |
| B    | Good conservation               | 63      |
| C    | Average or reduced conservation | 63      |

### 3.2 Isolation (abbreviated to 'Iso.' in data form)

| CODE | DESCRIPTION                                                     | PAGE NO |
|------|-----------------------------------------------------------------|---------|
| A    | Population (almost) Isolated                                    | 63      |
| B    | Population not-isolated, but on margins of area of distribution | 63      |
| C    | Population not-isolated within extended distribution range      | 63      |

### 3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

| CODE | DESCRIPTION       | PAGE NO |
|------|-------------------|---------|
| A    | Excellent value   | 63      |
| B    | Good value        | 63      |
| C    | Significant value | 63      |

### 3.3 Other species – essentially covers bird assemblage types

| CODE | DESCRIPTION                       | PAGE NO          |
|------|-----------------------------------|------------------|
| WATR | Non-breeding waterbird assemblage | UK specific code |
| SBA  | Breeding seabird assemblage       | UK specific code |

| BBA | Breeding bird assemblage (applies only to sites classified pre 2000) | UK specific code |
|-----|----------------------------------------------------------------------|------------------|
|-----|----------------------------------------------------------------------|------------------|

#### 4.1 Habitat class code

| CODE | DESCRIPTION                                                                                    | PAGE NO |
|------|------------------------------------------------------------------------------------------------|---------|
| N01  | Marine areas, Sea inlets                                                                       | 65      |
| N02  | Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)            | 65      |
| N03  | Salt marshes, Salt pastures, Salt steppes                                                      | 65      |
| N04  | Coastal sand dunes, Sand beaches, Machair                                                      | 65      |
| N05  | Shingle, Sea cliffs, Islets                                                                    | 65      |
| N06  | Inland water bodies (Standing water, Running water)                                            | 65      |
| N07  | Bogs, Marshes, Water fringed vegetation, Fens                                                  | 65      |
| N08  | Heath, Scrub, Maquis and Garrigue, Phygrana                                                    | 65      |
| N09  | Dry grassland, Steppes                                                                         | 65      |
| N10  | Humid grassland, Mesophile grassland                                                           | 65      |
| N11  | Alpine and sub-Alpine grassland                                                                | 65      |
| N14  | Improved grassland                                                                             | 65      |
| N15  | Other arable land                                                                              | 65      |
| N16  | Broad-leaved deciduous woodland                                                                | 65      |
| N17  | Coniferous woodland                                                                            | 65      |
| N19  | Mixed woodland                                                                                 | 65      |
| N21  | Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas) | 65      |
| N22  | Inland rocks, Screes, Sands, Permanent Snow and ice                                            | 65      |
| N23  | Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)           | 65      |
| N25  | Grassland and scrub habitats (general)                                                         | 65      |
| N26  | Woodland habitats (general)                                                                    | 65      |

#### 4.3 Threats code

| CODE | DESCRIPTION                                                | PAGE NO |
|------|------------------------------------------------------------|---------|
| A01  | Cultivation                                                | 65      |
| A02  | Modification of cultivation practices                      | 65      |
| A03  | Mowing / cutting of grassland                              | 65      |
| A04  | Grazing                                                    | 65      |
| A05  | Livestock farming and animal breeding (without grazing)    | 65      |
| A06  | Annual and perennial non-timber crops                      | 65      |
| A07  | Use of biocides, hormones and chemicals                    | 65      |
| A08  | Fertilisation                                              | 65      |
| A10  | Restructuring agricultural land holding                    | 65      |
| A11  | Agriculture activities not referred to above               | 65      |
| B01  | Forest planting on open ground                             | 65      |
| B02  | Forest and Plantation management & use                     | 65      |
| B03  | Forest exploitation without replanting or natural regrowth | 65      |
| B04  | Use of biocides, hormones and chemicals (forestry)         | 65      |
| B06  | Grazing in forests/ woodland                               | 65      |
| B07  | Forestry activities not referred to above                  | 65      |
| C01  | Mining and quarrying                                       | 65      |
| C02  | Exploration and extraction of oil or gas                   | 65      |
| C03  | Renewable abiotic energy use                               | 65      |
| D01  | Roads, paths and railroads                                 | 65      |
| D02  | Utility and service lines                                  | 65      |
| D03  | Shipping lanes, ports, marine constructions                | 65      |
| D04  | Airports, flightpaths                                      | 65      |
| D05  | Improved access to site                                    | 65      |
| E01  | Urbanised areas, human habitation                          | 65      |
| E02  | Industrial or commercial areas                             | 65      |

| CODE | DESCRIPTION                                                                                                                                                                                                                                                                                                                             | PAGE NO |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| E03  | Discharges                                                                                                                                                                                                                                                                                                                              | 65      |
| E04  | Structures, buildings in the landscape                                                                                                                                                                                                                                                                                                  | 65      |
| E06  | Other urbanisation, industrial and similar activities                                                                                                                                                                                                                                                                                   | 65      |
| F01  | Marine and Freshwater Aquaculture                                                                                                                                                                                                                                                                                                       | 65      |
| F02  | Fishing and harvesting aquatic resources                                                                                                                                                                                                                                                                                                | 65      |
| F03  | Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.) | 65      |
| F04  | Taking / Removal of terrestrial plants, general                                                                                                                                                                                                                                                                                         | 65      |
| F05  | Illegal taking/ removal of marine fauna                                                                                                                                                                                                                                                                                                 | 65      |
| F06  | Hunting, fishing or collecting activities not referred to above                                                                                                                                                                                                                                                                         | 65      |
| G01  | Outdoor sports and leisure activities, recreational activities                                                                                                                                                                                                                                                                          | 65      |
| G02  | Sport and leisure structures                                                                                                                                                                                                                                                                                                            | 65      |
| G03  | Interpretative centres                                                                                                                                                                                                                                                                                                                  | 65      |
| G04  | Military use and civil unrest                                                                                                                                                                                                                                                                                                           | 65      |
| G05  | Other human intrusions and disturbances                                                                                                                                                                                                                                                                                                 | 65      |
| H01  | Pollution to surface waters (limnic & terrestrial, marine & brackish)                                                                                                                                                                                                                                                                   | 65      |
| H02  | Pollution to groundwater (point sources and diffuse sources)                                                                                                                                                                                                                                                                            | 65      |
| H03  | Marine water pollution                                                                                                                                                                                                                                                                                                                  | 65      |
| H04  | Air pollution, air-borne pollutants                                                                                                                                                                                                                                                                                                     | 65      |
| H05  | Soil pollution and solid waste (excluding discharges)                                                                                                                                                                                                                                                                                   | 65      |
| H06  | Excess energy                                                                                                                                                                                                                                                                                                                           | 65      |
| H07  | Other forms of pollution                                                                                                                                                                                                                                                                                                                | 65      |
| I01  | Invasive non-native species                                                                                                                                                                                                                                                                                                             | 65      |
| I02  | Problematic native species                                                                                                                                                                                                                                                                                                              | 65      |
| I03  | Introduced genetic material, GMO                                                                                                                                                                                                                                                                                                        | 65      |
| J01  | Fire and fire suppression                                                                                                                                                                                                                                                                                                               | 65      |
| J02  | Human induced changes in hydraulic conditions                                                                                                                                                                                                                                                                                           | 65      |
| J03  | Other ecosystem modifications                                                                                                                                                                                                                                                                                                           | 65      |
| K01  | Abiotic (slow) natural processes                                                                                                                                                                                                                                                                                                        | 65      |
| K02  | Biocenotic evolution, succession                                                                                                                                                                                                                                                                                                        | 65      |
| K03  | Interspecific faunal relations                                                                                                                                                                                                                                                                                                          | 65      |
| K04  | Interspecific floral relations                                                                                                                                                                                                                                                                                                          | 65      |
| K05  | Reduced fecundity/ genetic depression                                                                                                                                                                                                                                                                                                   | 65      |
| L05  | Collapse of terrain, landslide                                                                                                                                                                                                                                                                                                          | 65      |
| L07  | Storm, cyclone                                                                                                                                                                                                                                                                                                                          | 65      |
| L08  | Inundation (natural processes)                                                                                                                                                                                                                                                                                                          | 65      |
| L10  | Other natural catastrophes                                                                                                                                                                                                                                                                                                              | 65      |
| M01  | Changes in abiotic conditions                                                                                                                                                                                                                                                                                                           | 65      |
| M02  | Changes in biotic conditions                                                                                                                                                                                                                                                                                                            | 65      |
| U    | Unknown threat or pressure                                                                                                                                                                                                                                                                                                              | 65      |
| XO   | Threats and pressures from outside the Member State                                                                                                                                                                                                                                                                                     | 65      |

## 5.1 Designation type codes

| CODE | DESCRIPTION                               | PAGE NO |
|------|-------------------------------------------|---------|
| UK00 | No Protection Status                      | 67      |
| UK01 | National Nature Reserve                   | 67      |
| UK04 | Site of Special Scientific Interest (GB)  | 67      |
| UK05 | Marine Conservation Zone                  | 67      |
| UK06 | Nature Conservation Marine Protected Area | 67      |
| UK86 | Special Area (Channel Islands)            | 67      |
| UK98 | Area of Special Scientific Interest (NI)  | 67      |
| IN00 | Ramsar Convention site                    | 67      |
| IN08 | Special Protection Area                   | 67      |
| IN09 | Special Area of Conservation              | 67      |

**APPENDIX 3**  
**Information Sheet and Site Citation for**  
**Crymlyn Bog Ramsar**

# Information Sheet on Ramsar Wetlands (RIS)

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

## Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

---

## 1. Name and address of the compiler of this form:

### Joint Nature Conservation Committee

Monkstone House

City Road

Peterborough

Cambridgeshire PE1 1JY

UK

Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948

Email: [RIS@JNCC.gov.uk](mailto:RIS@JNCC.gov.uk)

FOR OFFICE USE ONLY.

DD MM YY

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|  |  |  |
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Designation date

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|  |  |  |  |  |  |
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Site Reference Number

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## 2. Date this sheet was completed/updated:

Designated: 08 June 1993

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## 3. Country:

UK (Wales)

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## 4. Name of the Ramsar site:

Crymlyn Bog

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## 5. Designation of new Ramsar site or update of existing site:

**This RIS is for:** Updated information on an existing Ramsar site

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## 6. For RIS updates only, changes to the site since its designation or earlier update:

### a) Site boundary and area:

**\*\* Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

**7. Map of site included:**

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) **hard copy** (required for inclusion of site in the Ramsar List): yes ✓ -or- no ☐;
- ii) **an electronic format** (e.g. a JPEG or ArcView image) Yes
- iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** yes ✓ -or- no ☐;

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

**8. Geographical coordinates (latitude/longitude):**

51 38 08 N 03 53 16 W

**9. General location:**

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Swansea

Crymlyn Bog lies within a south Wales industrial and urban landscape between Swansea and Neath, 1 km inland of the coast.

**Administrative region:** Abertawe/ Swansea; Castell-Nedd a Porth Talbot/ Neath and Port Talbot

**10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 264.18**

Min. 7

Max. 9

Mean 8

**12. General overview of the site:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Crymlyn Bog comprises a floodplain-valley mire located within a lowland coastal context and is the most extensive wetland of its type in Wales. The mire features a complex mosaic of vegetation types, supporting examples of swamp, tall herb fen, fen meadow and carr communities. The site supports an exceptionally wide range of rich and poor fen communities, some of which bear a close floristic affinity to certain floodplain mires in East Anglia. The presence of significant areas of saw sedge *Cladium mariscus* swamp is notable in extensive stands of this uncommon vegetation type, occurring at only three other sites in Wales. Crymlyn Bog is part of a larger inter-estuarine complex which includes the adjacent Pant y Sais fen.

**13. Ramsar Criteria:**

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

**1, 2, 3**

**14. Justification for the application of each Criterion listed in 13 above:**

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

Largest example of valley floodplain topogenous mire in South Wales, and one of the largest surviving fens in the west of Britain. Very few other sites are known to support a comparable complexity and diversity of vegetation. Habitats Directive Annex I features present on the SAC include:

- H7140 Transition mires and quaking bogs
- H7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
- H91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*

#### Ramsar criterion 2

Supports a substantial population of the nationally-rare slender cotton-grass *Eriophorum gracile*, and a rich invertebrate fauna including many rare and highly localised species.

#### Ramsar criterion 3

The site supports 199 vascular plant species including 17 regionally-uncommon and one nationally-rare.

See Sections 21/22 for details of noteworthy species

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### 15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

#### a) biogeographic region:

Atlantic

#### b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

---

### 16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

|                                   |                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soil & geology                    | mud, clay, peat, nutrient-poor                                                                                                                                                                                                                                                                                                                          |
| Geomorphology and landscape       | lowland, floodplain, pools                                                                                                                                                                                                                                                                                                                              |
| Nutrient status                   | eutrophic, highly eutrophic, mesotrophic, oligotrophic                                                                                                                                                                                                                                                                                                  |
| pH                                | acidic, alkaline, strongly acidic                                                                                                                                                                                                                                                                                                                       |
| Salinity                          | fresh                                                                                                                                                                                                                                                                                                                                                   |
| Soil                              | mainly organic                                                                                                                                                                                                                                                                                                                                          |
| Water permanence                  | usually permanent                                                                                                                                                                                                                                                                                                                                       |
| Summary of main climatic features | Annual averages (Cardiff, 1971–2000)<br>( <a href="http://www.metoffice.com/climate/uk/averages/19712000/sites/cardiff.html">www.metoffice.com/climate/uk/averages/19712000/sites/cardiff.html</a> )<br>Max. daily temperature: 14.3° C<br>Min. daily temperature: 6.8° C<br>Days of air frost: 33.0<br>Rainfall: 1111.7 mm<br>Hrs. of sunshine: 1518.0 |

**General description of the Physical Features:**

No information available

**17. Physical features of the catchment area:**

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Crymlyn Bog has been described as a natural oasis in a densely industrial landscape. The bog at Crymlyn is surrounded by a major oil refinery, a waste disposal tip and large housing estates. Earlier, industries used its water to establish a transport system, and the remains of a 19th century canal network are still evident today.

The bog is the most extensive area of lowland fen in Wales, and it lies in the flood plain of the Neath river estuary. The plants here are more typical of East Anglia. The habitats include swamps, meadows, tall reed beds, and waterlogged scrub, mainly of willow, where the wetter areas merge with woodland.

**18. Hydrological values:**

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

No special values known, Water supply

**19. Wetland types:**

Human-made wetland, Inland wetland

| Code  | Name                                         | % Area |
|-------|----------------------------------------------|--------|
| U     | Peatlands (including peat bogs swamps, fens) | 79.9   |
| W     | Shrub-dominated wetlands                     | 9.8    |
| Other | Other                                        | 9.2    |
| 9     | Canals and drainage channels                 | 0.7    |
| Tp    | Freshwater marshes / pools: permanent        | 0.4    |

**20. General ecological features:**

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

This site embraces the more acid range of variation of the Calcareous fens with *Cladium mariscus* habitat type and is relatively species-poor. It is one of the largest sites for *Cladium* spp in south Wales. There are large stands of *Cladium* spp, with transitions to a highly distinctive suite of tall-herb fen communities, often dominated to varying degrees by *Phragmites australis*. The area is also important for the occurrence of a substantial population of the nationally-rare cotton-grass *Eriophorum gracile*.

Plant communities grade from *Sphagnum* dominated poor fen with *Narthecium ossifragum* and *Utricularia vulgaris* to more eutrophic associations with *Typha angustifolia*, *Typha latifolia*, *Cladium mariscus* and *Carex elata*. *Molinia caerulea* is dominant in drier areas, with stands of pure *Phragmites australis* reedswamp where conditions are wettest. Willow-birch and alder carr woodland with *Carex paniculata* occur on the eastern margins.

The site supports an exceptionally wide range of rich- and poor-fen communities, some of which bear a close floristic resemblance to certain floodplain mires in East Anglia, including S2 *Cladium mariscus* swamp and sedge-beds, and *Cladio-molinietum* communities which are in the central part of the bog.

A key feature concerns the presence of tall herb fen communities transitional between swamp and fen, with sedge beds dominated by *Cladium mariscus* being of particular importance.

Also of international significance is the Transition Mire and Quaking Bog community, characterised by the presence of *Carex rostrata*, *Menyanthes trifoliata*, *Carex limosa* and supporting good stands of the nationally important *Eriophorum gracile*.

Ecosystem services

## 21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

### Nationally important species occurring on the site.

#### Higher Plants.

*Eriophorum gracile*.

## 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

#### Birds

### Species Information

#### Nationally important species occurring on the site.

#### Invertebrates.

The more significant wetland rarities at Crymlyn Bog include:

*Dolomedes plantarius*

*Crossocerus vagabundus* (Panzer) Hymenoptera, Sphecidae

*Pteromicra leucopeza* (Meigen) Diptera, Sciomyzidae

*Cephalops perspicuus* (de Meijere) Diptera, Pipunculidae

*Gyrinus suffriani* (Scriba 1855) Coleoptera, Gyrinidae

*The nationally scarce hornet robberfly Asilus crabroniformis occurs on the drier grassland slopes bordering the fen*

## 23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

*Aesthetic*

*Archaeological/historical site*

*Environmental education/ interpretation*

*Livestock grazing*

*Non-consumptive recreation*

*Scientific research*

*Sport fishing*

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?  
No

If Yes, describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

---

#### 24. Land tenure/ownership:

| Ownership category                 | On-site | Off-site |
|------------------------------------|---------|----------|
| Local authority, municipality etc. | +       | +        |
| Private                            | +       |          |
| Public/communal                    | +       |          |

---

#### 25. Current land (including water) use:

| Activity                     | On-site | Off-site |
|------------------------------|---------|----------|
| Nature conservation          | +       | +        |
| Tourism                      | +       | +        |
| Recreation                   | +       | +        |
| Current scientific research  | +       | +        |
| Fishing: recreational/sport  | +       | +        |
| Fishing: subsistence         | +       | +        |
| Livestock watering hole/pond | +       | +        |
| Grazing (unspecified)        | +       | +        |
| Rough or shifting grazing    | +       | +        |
| Industrial water supply      | +       | +        |
| Industry                     |         | +        |
| Flood control                | +       | +        |
| Oil/gas production           |         | +        |
| Transport route              |         | +        |
| Urban development            |         | +        |

---

**26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

Explanation of reporting category:

1. Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.
2. Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.

NA = Not Applicable because no factors have been reported.

| Adverse Factor Category | Reporting Category | Description of the problem (Newly reported Factors only) | On-Site | Off-Site | Major Impact? |
|-------------------------|--------------------|----------------------------------------------------------|---------|----------|---------------|
| Eutrophication          | 1                  |                                                          | +       |          |               |
|                         |                    |                                                          |         |          |               |

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

Is the site subject to adverse ecological change? NO

**27. Conservation measures taken:**

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

| Conservation measure                                  | On-site | Off-site |
|-------------------------------------------------------|---------|----------|
| Site/ Area of Special Scientific Interest (SSSI/ASSI) | +       | +        |
| National Nature Reserve (NNR)                         | +       |          |
| Site management statement/plan implemented            | +       |          |
| Other                                                 | +       |          |
| Special Area of Conservation (SAC)                    | +       | +        |
| Management plan in preparation                        | +       |          |

**b) Describe any other current management practices:**

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

**29. Current scientific research and facilities:**

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

**Environment.**

*A review of the hydrological processes at Crymlyn Bog NNR was completed by the Environmental Consultancy at the University of Sheffield, on contract to CCW in March 1998. Following the announcement by BP/Mobil Llandarcy in November 1997 of the closure of the oil refinery over the next two years, CCW and the Environment Agency continue to work closely with BP and their consultants regarding the implementation of a comprehensive risk-based strategy to the long-term amelioration of the refinery site and its redevelopment for housing. This includes associated pollutant influences on the adjacent Crymlyn Bog. During 2004 CCW and the Environment Agency worked jointly on a detailed hydrological and nutrient assessment of the site to ascertain the overall nutrient loading on sensitive mire communities (Headley 2004). These studies will also inform CCW's long term aspirations for the restoration of historical water channels. It is proposed to continue with a water quality monitoring programme and further studies will be undertaken in 2005 to inform restoration work on a relict canal and the Crymlyn Brook. A presentation of this recent research was given to the British Hydrological Society in 2004.*

#### **Flora.**

*Annual census of slender cotton-grass Eriophorum gracile.*

(no longer current)

Preliminary survey for lichens and bryophytes of the wet woodlands

#### **Fauna.**

Monitoring of hornet robberfly, survey for additional populations of the fen raft spider, and moth-trapping.

Bird ringing.

### **30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Used by visiting university groups for studies on entomology, peat stratigraphy and fenland communities, used by local school groups for studies relevant to the National Curriculum. Crymlyn Visitors Centre is used for school groups and talks. It houses a permanent exhibition and is a focal point for field study groups. Meetings and guided walks, focused on the visitors centre. Annual open days. Long-term partnership with Swansea Environment Centre as educational providers and recent Community Liaison work undertaken through the British Trust for Conservation Volunteers (BTCV) (no longer current). Pant y Sais fen is a Local Nature Reserve and is also used by school groups via boardwalk access.

### **31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities.

All low-key: walking, dog walking, birdwatching, sport/recreational fishing in relict canal.

#### **Facilities provided.**

Car parking, nature trails and interpretative leaflets. There are themed open days, guided walks, on-site interpretative information, and disabled access at Pany-y-Sais.

#### **Seasonality.**

Year-round access and use. There is summer wardening April-September.

### **32. Jurisdiction:**

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Countryside Division, Welsh Assembly Government, Cathays Park, Cardiff, CF1 3NQ

### 33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Safeguard Officer, International Designations, Countryside Council for Wales, Maes-y-Ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW

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### 34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

#### Site-relevant references

- Barber, KE & Hughes, PDH (1995) *Palaeoecology and radiocarbon dating of peat deposits at Crymlyn Bog National Nature Reserve, south Wales*. Report for the Countryside Council for Wales. (Contractor: University of Southampton)
- Dumayne-Peaty, L (1998) *Holocene palaeoecology and development of Crymlyn Bog NNR, south Wales. Final report to British Petroleum and Countryside Council for Wales*
- Fowles, A (1994) *Invertebrates of Wales: a review of important sites and species*. Joint Nature Conservation Committee, Peterborough
- Headley, AD (2004) Substratum enrichment at Crymlyn Bog cSAC, south Wales: an analysis of current and future impacts with particular reference to SAC feature fen communities. *CCW Contract Science Report*, No. 652
- Headley, AD (2005) Investigations of canal sediment and peat chemistry at Crymlyn Bog NNR, south Wales. *CCW Contract Science Report*, No. 721
- Headley, AD, Wheeler, BD & Baker, AJM (1992) The impact of man on the vegetation of Crymlyn Bog. In: *Peatland ecosystems and Man: an impact assessment*, ed. by OM Bragg, PD Hulme, HAP Ingram & RA Robertson, 257-261. University of Dundee, Department of Biological Sciences
- Hughes, PDM & Dumayne-Peaty, L (2002) Testing theories of mire development using multiple successions at Crymlyn Bog, West Glamorgan, south Wales, UK. *Journal of Ecology*, 90(3), 456-471
- Jones, PS, Stevens, DP, Blackstock, TH, Burrows, CR & Howe, EA (eds.) (2003) *Priority habitats of Wales: a technical guide*. Countryside Council for Wales, Bangor
- McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough. [www.jncc.gov.uk/SACselection](http://www.jncc.gov.uk/SACselection)
- Robertson, J (2000) Reserve focus – Crymlyn Bog NNR, Glamorgan. *British Wildlife*, 12(1), 22-27
- Rosen, D & Dumayne-Peaty, L (2001) Human impact on the vegetation of south Wales during late historical times: palynological and palaeoenvironmental results from Crymlyn Bog NNR, West Glamorgan, Wales, UK. *The Holocene* 11(1), 11-23
- 

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

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## RAMSAR CONVENTION ON WETLANDS OF INTERNATIONAL IMPORTANCE.

### CRYMLYN BOG SSSI, SOUTH WALES

#### CRITERION 1

Crymlyn Bog SSSI, South Wales qualifies under criterion 1 as the largest example of valley-flood plain mire in Wales. There is no other known example of this type with a comparable complexity and diversity of vegetation in Britain. The site occupies a total area of 243.9 ha of which 60 ha. are managed as National Nature Reserve.

Crymlyn Bog is part of a large inter-estuarine complex which includes the adjacent Pant-y-Sais Fen SSSI. It is classified as a mire type intermediate between that of valley and floodplain and shares hydrological and vegetation characteristics of both. .

The mire features a complex mosaic of vegetation types. Vegetation communities characteristic of both rich-fen and poor fen are represented at the site. The occurrence of rich-fen in Wales (with the important exception of the limestone areas of the Lleyn peninsula and the Isle of Anglesey) is limited owing to the predominance of hard, acid rock types. Therefore, the presence and extent of these communities at Crymlyn is regarded as nationally and internationally significant.

The diversity and spatial distribution of the various communities and sub-communities are related to a number of complicated environmental gradients; chemical nutrient status, toxicity, hydrosere succession, hydrology and management. Industrial impacts upon the site have given rise to a number of the environmental gradients and hence the development of certain communities and the floristic character of other vegetation communities. Despite these impacts the nature conservation interest of the site remains nationally and internationally important.

The mire supports examples of swamp, tall-herb fen, fen meadow and carr communities which form a complex mosaic of continuous fen.

Swamp communities are particularly well represented. Of special note is the occurrence of Cladium mariscus swamp. Sedge swamp is uncommon in Britain, and within Wales only three other fens contain stands of similar extent. These fens are located in North Wales.

Areas of semi-floating fen are characterised by a mosaic of the communities; Carex rostrata-Potentilla palustris and Carex rostrata-Calliergon cuspidatum. This latter community is recognized as nationally rare both in Wales and Great Britain as a whole.

A substantial proportion of the site is characterised by the tall-herb fen community Phragmites australis-Eupatorium cannabinum. This community has a widespread but scattered distribution throughout the lowlands of England and Wales.

However, in Wales the distribution of the community is mainly concentrated within the rich-calcareous mires of North Wales with only a few other sites found elsewhere in Wales.

## CRITERION 2A

The mire contains a substantial population (10,000-100,000 shoots) of the nationally rare slender cotton-grass (Eriophorum gracile) (Schedule 8 species of the Wildlife and Countryside Act 1981). This species, listed as declining throughout Europe (IUCN category C), is found only on 4 other sites in Britain.

Crymlyn Bog is of national importance for its rich invertebrate fauna including many rare and other highly localised species associated with mires. This is a reflection of the mosaic of high quality vegetation communities.

Dragonflies, flies and beetles include regionally species-rich faunas, including species of particular note. The staphylinid beetle Hadronathus longipalpis is only known from one other site in Britain. The water beetle Limnoxenus niger is only known from scattered sites in the south of Britain and the nationally scarce beetles include Cerapheles terminatus and Elaphrus uliginosus. The crane fly fauna is rich in scarce species and the hoverflies include

Parhelophilus consimilis, a very scarce species, as well as Platycheirus perpallidus, a northern species at the southern extremity of its range. The snail-killing flies, a further good indicator group for mire quality, include Tetanocera freyi, which is rare in Britain and the scarce species Dictya umbrarum and Antichaeta anilis. Dragonflies include Ischnura pumilio, Coenagrion pulchellum and Brachytron pratense which are nationally scarce and their occurrence at Crymlyn is of regional importance.

## CRITERION 2B

199 species of vascular plant have been recorded at Crymlyn Bog and of this total one is nationally rare and 17 are recognized as regionally uncommon.

A number of the regionally uncommon species found at Crymlyn Bog are forming part of the western extreme of their geographical range in Britain; Carex elata, C. pseudocyperus and C. mariscus. These species are more typical and frequent in the fenland habitat of East Anglia.

In addition, to the eastern floristic element, the mire also contains species of a more northern distribution; Carex limosa, C. lasiocarpa and Sparganium minimum. The two former species are occurring at the southern end of their Welsh geographical range. The regionally uncommon Osmunda regalis is a species associated with western Britain. Other regionally uncommon species are; Schoenus nigricans, Ranunculus lingua, Baldellia ranunculoides and Juncus subnodulosus.

The site is notable for supporting summer populations in excess of 400 pairs of reed warblers Acrocephalus scirpaceus and 200 pairs of sedge warblers A. schoenobaenus. These populations are of regional importance in Wales.

Dr Wanda Fojt and Mr Alan Stubbs  
CSD  
10/05/90

## **APPENDIX 4**

### **Crymlyn Bog and Pant-y-Sais SSSI Citations**

**CYNGOR CEFN GWLAD CYMRU  
COUNTRYSIDE COUNCIL FOR WALES**

SITE OF SPECIAL SCIENTIFIC INTEREST: CITATION

**SWANSEA AND NEATH PORT TALBOT      CORS CRYMLYN/CRYMLYN BOG**

**Date of Notification:** 1975, 1983, 1985, 1997, 2003

**National Grid Reference:** SS695945

**OS Maps:** 1:50,000 Sheet number: 159 and 170  
1:10,000 Sheet number: SS 69 SE, SS 69 NE  
SS 79 SW, SS 79 NW

**Site Area:** 279.9 ha

**Description:**

Crymlyn Bog is of special interest for its fen (topogenous mire) communities, wet woodland, associated invertebrate assemblages, a substantial population of the nationally rare slender cotton grass *Eriophorum gracile* and a population of the nationally scarce hornet robberfly *Asilus crabroniformis*. It is the most extensive area of lowland fen in South Wales and is situated 3.5 km east of central Swansea within a landscape heavily influenced by past and present industrial activities.

The site is part of a larger inter-estuarine complex including Pant-y-Sais SSSI and the Neath flood plain. Crymlyn Bog owes its form to glacial erosion, followed by a series of Boreal marine incursions, giving rise to sequences of clay and peat. The main fen area which developed on these deposits lies between 5 - 7 m above sea level.

Recent studies of preserved plant remains in the peat have revealed a complex and unusual pattern of vegetation change extending back over 7,000 years. Some parts of the site at least demonstrate that a classic succession took place from open reedswamp through fen and fen carr to rain-fed bog, with the latter persisting for over 1,000 years before reverting to fen. This reversion from bog back to fen is highly unusual and took place at about 1,000 AD, possibly as a result of increased runoff from the site catchment.

The site comprises of a complex mosaic of vegetation types, including communities of both rich and poor fen, swamp, alder carr and acidic grassland. Unusually some of the plant species and communities are more characteristic of East Anglian fens.

Several sources of water and differing patterns of flow have created complex environmental gradients resulting in a wide range of fenland communities. These range from *Sphagnum*-dominated poor-fen, with bog asphodel *Narthecium ossifragum* and greater bladderwort *Utricularia vulgaris*, through others with bottle sedge *Carex rostrata*, marsh cinquefoil *Potentilla palustris* and bog bean *Menyanthes trifoliata*, to more eutrophic and taller associations with lesser bulrush *Typha angustifolia*, bulrush *Typha latifolia*, great fen-sedge *Cladium mariscus*, tufted-sedge *Carex elata* and common reed *Phragmites australis*. Purple moor-grass *Molinia*

*caerulea* becomes dominant in drier areas, with pure *Phragmites* reedswamp where conditions are wettest. The eastern margin bears greater tussock-sedge *Carex paniculata*, and alder carr woodland.

Plant species of particular interest include the nationally rare slender cottongrass *Eriophorum gracile*, whilst tufted sedge, bog-sedge *Carex limosa*, dioecious sedge *Carex dioica*, cyperus sedge *Carex pseudocyperus*, saw sedge, greater spearwort *Ranunculus lingua*, least bur-reed *Sparganium natans*, lesser water-plantain *Baldellia ranunculoides*, slender spike-rush *Eleocharis uniglumis* and black bog rush *Schoenus nigricans* are close to the limit of their British geographical range and/or of limited distribution locally. The royal fern *Osmunda regalis* occurs in several communities and is particularly well represented on this site.

Carr woodland is a rare habitat and this site contains one of the largest areas of alder carr in Wales, characterised by species such as alder *Alnus glutinosa*, alder buckthorn *Frangula alnus*, grey willow *Salix cineria* and downy birch *Betula pubescens*.

Crymlyn Bog is also of national importance for invertebrates, supporting several rare and nationally scarce species. These include the water beetle *Limnoxenus niger*, the crane fly *Pilaria nigropunctata* and the jumping spider *Marpissa radiata*. Open waterways and marginal flushes support the scarce blue-tailed damselfly *Ischnura pumilio* and the variable damselfly *Coenagrion pulchellum*.

Also of note is the hornet robber fly *Asilus crabroniformis*, a declining species nationally, occurring in the traditionally grazed pastures bordering the fen.

There are sizeable breeding populations of reed warbler *Acrocephalus scirpaceus* and sedge warbler *Acrocephalus schoenobaenus* associated with the denser areas of *Phragmites*.

### **Remarks:**

Slender cottongrass *Eriophorum gracile* is listed on Schedule 8 of the Wildlife and Countryside Act.

Cors Crymlyn/Crymlyn bog SSSI is part of Cors Crymlyn/Crymlyn Bog candidate Special Area of Conservation, being host to the following habitats listed in Annex I of the EC Habitats Directive: (Directive 92/43/EEC on the Conservation of Natural habitats and of Wild Fauna and Flora).

‘Calcareous fen with *Cladium mariscus* and species of the *Caricion davallianae*’,  
‘Transition mires and quaking bogs’,  
‘Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-padion*, *Alnion incanae* and *salicion alvae*)’.

The majority of the SSSI area is also designated as a Wetland of International Importance under Ramsar Convention

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**CYNGOR CEFN GWLAD CYMRU  
COUNTRYSIDE COUNCIL FOR WALES**

**SITE OF SPECIAL SCIENTIFIC INTEREST CITATION**

**NEATH PORT TALBOT**

**PANT-Y-SAIS**

**Date of Notification:** 1979, 1983

**National Grid Reference:** SS 716942

**O.S. Maps:** 1:50,000 Sheet number: 170  
1:25,000 Sheet number: SS 79

**Site Area:** 19.5 ha

**Description:**

Predominantly an area of lowland fen located in a narrow valley which was a former course of the River Neath. The site supports a range of fenland communities including *Sphagnum* and bryophyte dominated areas of poorer fen vegetation, *Molinia caerulea* communities, swamp areas with abundant *Typha latifolia* and *Typha angustifolia*, and developing fen carr. Formerly part of the same hydrological system as Crymlyn Bog.

The Tennant Canal section acts as a refuge for aquatic plants, including *Butomus umbellatus* which is rare in the county.

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**APPENDIX 5**

**Crymlyn Bog and Pant-y-Sais SSSI**

**Management Statements**

**CYNGOR CEFN GWLAD CYMRU  
COUNTRYSIDE COUNCIL FOR WALES**

**SITE OF SPECIAL SCIENTIFIC INTEREST: MANAGEMENT STATEMENT**

**CITY AND COUNTY OF SWANSEA      CORS CRYMLYN/CRYMLYN BOG  
NEATH PORT TALBOT**

**Date of Notification:**

**Site Area:**      279.9 Ha

**1.      Introduction**

This management statement contains CCW's opinion of the way in which the SSSI should be managed in order to maintain its special interest. It also provides a basis for future discussions and decisions on the conservation management of the SSSI. It is important that any works described in this statement are fully discussed with and formally consented by CCW, before any of these management activities are started.

The document sets out a vision for the features of interest; it describes the key issues affecting those features and outlines any management considered necessary to safeguard the features.

It is very important to recognise that management may need to change with time. Problems that we are aware of today may be resolved or completely removed and new unforeseen problems may arise. New improved management techniques may also become available. Consequently the management outlined in this document is considered appropriate for the short term but may need to change in the long term.

**2.      Features of Special Scientific Interest**

- Fen
- Wet woodland
- Slender cottongrass
- Rare and scarce invertebrate assemblage
- Hornet robberfly

As well as the features listed above, Cors Crymlyn/Crymlyn Bog SSSI has other habitats that contribute to the special wildlife interest. These include scrub, neutral grassland, marshy grassland, dry heath, open water and flushes and streams. This diversity of habitats is important for a wide range of species. Except where specified below, management of this site should aim to look after these habitats as well as the listed features of interest.

**3.      Long Term Vision for the Site**

**3.1      Fen**

The range of fen communities should be maintained on site and fen should cover approximately 80% of the SSSI area. A wide range of typical species such as common reed, sedges (e.g. bottle sedge and tufted sedge), club-rushes, bur-reeds and bog mosses should be present along with submerged aquatic plants and flowering plants of wetland margins.

Saw sedge Cladium mariscus will be predominant in approximately 14 ha of the fen and transitional/open water fringe fen types will be stable or increasing in area. Stands of vegetation dominated by common reed or scrub should not be expanding at the expense of more species-rich and nutrient poor fen.

The management of the site such as grazing/cutting and maintenance of water levels and water quality should be suitable to maintain the feature in favourable condition in the long term.

### **3.2 Wet Woodland**

Wet woodland will occupy approximately 5% of the SSSI area and should be present in all phases of development from regenerating to over-mature. The following species should be common; grey willow, downy birch and alder with scattered alder buckthorn. The field layer will include greater tussock-sedge, common reed and royal fern. The water table in the woodland should be sufficiently high to maintain the wet woodland character in the long term without causing adverse effect on the adjacent fen habitat.

### **3.3 Slender Cottongrass**

The site should support populations of the slender cottongrass which should not reduce in range within its habitat and which are sustainable in the long term.

### **3.4 Rare and Scarce Invertebrate Assemblage**

The site should support populations of the hornet robberfly Asilus crabroniformis which should not reduce in range within their habitat, nor lose the ability to reproduce and sustain themselves in the long term. In addition the site should sustain a diverse assemblage of other nationally, regionally and locally scarce invertebrates associated with the range of wetland habitats present, such as water beetles, flies and damselflies.

## **4. Key Management Issues**

### **4.1 Fen**

#### **4.1.1 Scrub encroachment**

An ongoing scrub control programme was initiated in the mid 1990's to reverse the natural successional changes on the fen. In the long term the need for scrub control will be kept under regular review. Scrub colonisation can shade out valuable plant communities and large-scale spread of tree and scrub cover will exacerbate drying out of the fen. The spread of scrub in priority areas of fen will be prevented by manual clearance and stump treatment. Some areas of scattered scrub/woodland will be

retained as it provides habitat of value to birds and invertebrates. Areas classed as wet woodland feature will be retained. Total area of woodland or scrub should not exceed 15% of the site.

#### 4.1.2 Non - native invasive plants

Rhododendron occurs on the western boundary of the SSSI and some plants have encroached onto drier parts of the fen. Control measures are in place as for scrub. Japanese knotweed is present on adjacent land, this may need control in future.

#### 4.1.3 Reed encroachment

As well as changes in water level at the site, increases in the nutrient status of water and peat will lead to an increase in dominance of reed at the expense of other valuable plant communities. Future management will look at ways of identifying and isolating sources of plant nutrients and preventing the expansion of existing areas of reed-dominated swamp. It is also intended that management should reduce existing reed cover in priority areas of fen. Grazing is the favoured management although cutting may be considered in future. Fires can promote regeneration of reed.

#### 4.1.4 Nutrient enrichment (Eutrophication)

The site has long been associated with industrial activities, including adjacent former mine workings, power stations, oil refinery and landfill site. Pollutants such as iron-rich mine discharge, oil and pulverised fuel ash have all, over time, affected the site and continue to influence water chemistry and nutrient status (particularly nitrogen levels). Many of the historical sources of pollution from old tips are now isolated and future management will continue to focus on ways of reducing the dispersal of pollutants through effective flow management and containment. Unlike some other lowland fen sites, agricultural run-off is not a major concern at present.

#### 4.1.5 Water levels and quality

Fen vegetation requires water levels to be at, or just below the surface level, all year round. The ideal water balance for the site needs to be identified and inputs, channel flows and outputs may require future management to maintain conditions within acceptable limits and natural fluctuations. Key features of the site's hydrology include the Tennant and Glan y Wern canals and the Crymlyn Brook. The wider catchment area for water draining to the site requires consideration in land use decisions.

#### 4.1.6 Grazing

Traditional summer grazing on the fen has largely ceased in recent times. The reintroduction of light grazing regimes with cattle or ponies adapted to the wet conditions is needed to control reed expansion and maintain an open and species-rich fen community. It will be necessary to keep the grazing regime under review as excessive dunging and poaching would be detrimental.

#### 4.1.7 Burning

The site has a history of periodic burning, possibly as a management tool, but is now discouraged. Whilst burning may have helped to reduce scrub invasion in the past, in uncontrolled situations it is likely to promote drying out of the fen and increasing purple moor grass cover. Invertebrate populations can be adversely affected and damage to upper peat layers and moss vegetation can occur.

## **4.2 Wet Woodland**

### **4.2.1 Water levels and quality**

This “carr” woodland relies on a high water table and this will relate to water levels within the adjacent canal. Appropriate water levels will prevent drying out and subsequent changes in woodland species composition. The community may exhibit trends towards drying out in the very long term as a natural result of the accumulation of leaf litter and increased uptake of water as trees mature. The woodland may become more open in time as trees mature and collapse and some areas could revert to open fen. It may be necessary to initiate some woodland management (e.g. coppicing) in the long term. Whilst the expansion of scrub woodland across the fen will be limited through management, specific areas of wet woodland will be retained. The wet woodland is an integral part of the wetland system and any potential pollutant or nutrient sources will need to be contained as for fen.

## **4.3 Slender Cottongrass**

### **4.3.1 Nutrient enrichment**

Slender cottongrass is a species restricted to low productivity fen systems. It is therefore important that nutrient levels in the peat and surface waters remain low in areas where it occurs.

### **4.3.2 Grazing**

In recent years insufficient summer grazing on the margins of the fen is considered to have contributed to an increasing dominance of reed, which poses a risk to areas supporting slender cotton grass.

## **4.4 Rare and Scarce Invertebrate Assemblage**

### **4.4.1 Scrub and reed encroachment**

Botanical richness and a variety of three-dimensional vegetation structure are important for invertebrates, and this can be maintained by the implementation of suitable grazing or cutting and scrub control regimes.

### **4.4.2 Water levels and quality**

Many of the rare and scarce invertebrates are aquatic species or require a range of open water, flushes, streams and ditch habitats to complete their lifecycles. These

habitats and their water quality should be appropriately maintained to support breeding activity in favourable years.

## **4.5     Hornet Robberfly**

### **4.5.1   Grazing**

The pastures in which the hornet robberfly occurs should be open and prevented from becoming rank. This will be achieved by sustaining a suitable grazing regime with cattle and ponies. Dung beetles are the host species for the hornet robberfly's larvae and fresh dung is therefore needed especially during the critical flight period (July to September).

### **4.5.2   Scrub control**

It will also be necessary to keep the areas of scrub, particularly gorse, under control in the pastures to maintain open grassland.

### **4.5.3   Livestock parasite treatments**

Use of persistent parasite treatments in livestock sterilises dung beetles, which are the host species for the hornet robberfly's larvae. The effects of veterinary chemicals on non-target species and their environment therefore need to be taken into account when implementing grazing regimes.

Confirmed 19.09.06

## **PANT Y SAIS SITE OF SPECIAL SCIENTIFIC INTEREST**



Source: D Painter, CCW

## **YOUR SPECIAL SITE AND ITS FUTURE**

‘Your Special Site and its Future’ is part of our commitment to improve the way we work with Site of Special Scientific Interest (SSSI) owners and occupiers. In this site management statement we explain what is special about the wildlife on your site, and what care is needed to look after its wildlife into the future.

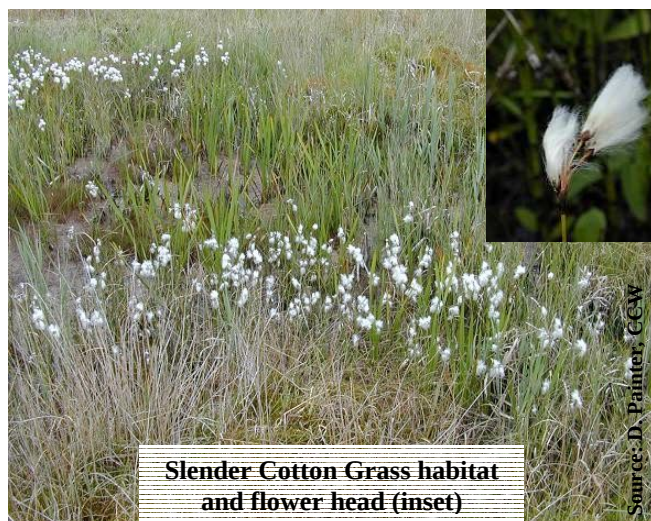
All SSSIs are considered to be of national importance and we recognise the crucial role that owners and occupiers play in their management and protection. We need you to share your views and knowledge of this site with us, to help safeguard it.

We hope that you will find ‘Your Special Site and its Future’ interesting and helpful. Please contact us if there is anything about the site and its management that you would like to discuss.

## What is 'special' about the wildlife at Pant y Sais?

Pant y Sais has 4 special features.

**Species-rich Fen** is a rare habitat. In the past most sites like this would have been drained and converted to farmland. A wide range of typical species such as common reed, Royal fern, sedges (e.g. bottle sedge and tufted sedge), club-rushes, bur-reeds and bog mosses are present. Pant y Sais SSSI is one of the best remaining fragments of species-rich fen in South Wales.



**Slender cottongrass** is a grass with a white cotton-like flower smaller than its common relative Common cottongrass. It is found in the wettest parts of bogs, transitional mires, poor fens and on the edge of Alder carr woodland, typically over liquid peats. Its sites are calcareous or moderately acidic, and have some water movement. Since 1930, Slender cottongrass has become extinct in Norfolk and Dorset and declined to one site in Surrey and two in Hampshire. However, it

appears to be stable in Wales and Ireland; there are large populations at nearby Crymlyn Bog NNR. Losses have been due to drainage, afforestation and infilling. This is an endangered species found in only a few sites and has Red Data-book status.

### Rare and scarce invertebrate assemblage

Because of the range of wetland habitats present, there is diverse insect life such as dragonflies, water beetles, flies, spiders and moths. By comparison, modern agricultural grassland may have as few as one or two species of plant and supports few insects and birds. Pant y Sais SSSI is one of the best areas for invertebrates in the Swansea and Neath Port Talbot area.

**Fen Raft Spider** is a wetland spider dependent on permanent, standing or slow moving water. It lives on the surface of pools and ditches, and amongst emergent vegetation; typically it hunts from 'perches' on stems emerging from the water, taking a wide range of invertebrate prey on or below the surface. Emergent, stiff-leaved vegetation in open, sunny conditions is also required for the construction of nursery webs in which the young are reared. This species is only known from two other UK sites and is an endangered species.



As well as the features listed above, Pant y Sais has other habitats that contribute to the special wildlife interest. These include marshy grassland, wet woodland, running water and fen carr. This diversity of habitats is important for a wide range of species. Except where specified below, management of this site should aim to look after these habitats as well as the listed features of interest.

### **What do we want Pant y Sais to look like?**

The following is a description of how we would like to see the features at Pant y Sais:

*The range of fen communities is maintained on site and fen covers approximately three quarters of the SSSI area. A wide range of typical species such as common reed, sedges (e.g. bottle sedge and tufted sedge), club-rushes, bur-reeds and bog mosses are present along with submerged aquatic plants and flowering plants of wetland margins. Stands of vegetation dominated by common reed or scrub do not expanding at the expense of more species-rich and nutrient poor fen.*

*The site supports populations of the slender cottongrass, which is viable in the long term. The range of this species within the site is not contracting, and enough habitat exists to support the population in the long term. Those factors, which affect this species or its habitat, are under control.*



*Pant y Sais supports populations of insects, which should not reduce in range within their habitat, nor lose the ability to reproduce and sustain themselves, through factors within human control. In addition the site supports a diverse assemblage of nationally, regionally and locally scarce invertebrates associated with the range of wetland habitats present, such as water beetles, flies and damselflies.*

*The site supports populations of the Fen Raft Spider, which must be viable in the long term. The range of this species within the site is not contracting, and enough habitat exists to support the population in the long term. Those factors, which affect this species or its habitat, are under control.*

### **What management is needed on Pant y Sais SSSI and why?**

Although Pant y Sais is an excellent place for wildlife it will only remain so if the necessary management continues. CCW's priority is to work with you to ensure that this management is carried out.

### **What does this mean in practice?**

There are a number of different factors that could damage the special features at Pant y Sais if they are not properly managed. These are the ones we regard as most important:

**Scrub encroachment** can shade out valuable plant communities and large-scale spread of tree and scrub cover will exacerbate drying out of the fen. The spread of scrub in priority areas of fen will be prevented by manual clearance and stump treatment. Botanical richness and a variety of three-dimensional vegetation structure are important for invertebrates, and this can be maintained by the implementation of suitable grazing or cutting and scrub control regimes. In the long term the need for scrub control will be kept under regular review.

**Invasive non-native plants** can be a problem because they compete with native species. Rhododendron occurs in the drier parts of the fen and control measures are in place as for scrub. Japanese knotweed is present on a section of roadside verge and in the car park. The Local Authority, as site owners, regularly treat the car park, and CCW will control the roadside verge populations to prevent encroachment into the fen.

**Reed encroachment** - As well as changes in water level at the site, increases in the nutrient status of water and peat will lead to an increase in dominance of reed at the expense of other valuable plant communities. Future management will look at ways of identifying and isolating sources of plant nutrients and preventing the expansion of existing areas of reed-dominated swamp.

Light summer grazing by ponies targeting reed will be considered as the future management, providing fencing and suitable graziers can be arranged.

**Nutrient enrichment (Eutrophication)** - There are two main water sources: The Tennant Canal and a stream that enters the reserve alongside the car park. Both sources have the potential for eutrophication. Slender cottongrass is a species restricted to low productivity fen systems; therefore it is important that nutrient levels of peat and surface waters remain low in areas where it occurs.

**Water levels and quality** - Fen vegetation requires water levels to be at surface level or just below all year round. The ideal water balance for the site needs to be identified and inputs, channel flows and outputs may require future management to maintain conditions within acceptable limits and natural fluctuations. A key feature

of the site's hydrology is the Tennant Canal. The wider catchment area for water draining to the site requires consideration in land use decisions, including links to the adjacent Red Jacket Fen. Many of the rare and scarce invertebrates are wholly aquatic species or require a range of open water, flushes, streams and ditch habitats to complete their lifecycles. These habitats and their water quality should be appropriately maintained to support breeding activity in favourable years. Sampling by CCW and EA will provide data, which will determine future management.

**Grazing** does not appear to have taken place in the past. The absence of grazing of the fen is considered to have contributed to an increasing dominance of reed, which poses a risk to areas supporting slender cotton grass. The introduction of light summer grazing regimes with cattle or ponies adapted to the wet conditions may be needed to control reed expansion and maintain an open and species-rich fen community. It would be necessary to keep the grazing regime under review, as excessive dunging and poaching would be detrimental. Any livestock would have to be excluded from the well-used boardwalk, and fences should not interfere with visitor access.

**Burning of reed** has occurred in the past. There have been several uncontrolled fires all starting from the boardwalk. Whilst burning may have helped to reduce scrub invasion, in uncontrolled situations it is likely to promote drying out of the fen and increasing purple moor grass cover. Furthermore, invertebrate populations can be adversely affected and damage to upper peat layers can occur. Uncontrolled fires are a potential problem not only to wildlife but also to the nearby village.

## **Finally**

Our knowledge and understanding of wildlife is continually improving. It is possible that new issues may arise in the future, whilst other issues may disappear. This site management statement is written with the best information we have now, but may have to change in the future as our understanding improves. Any information you can provide on the wildlife of your site, its management and its conservation would be much appreciated.

**If you would like to discuss any aspect of your SSSI, or have any concerns about your SSSI, please contact your local CCW office.**

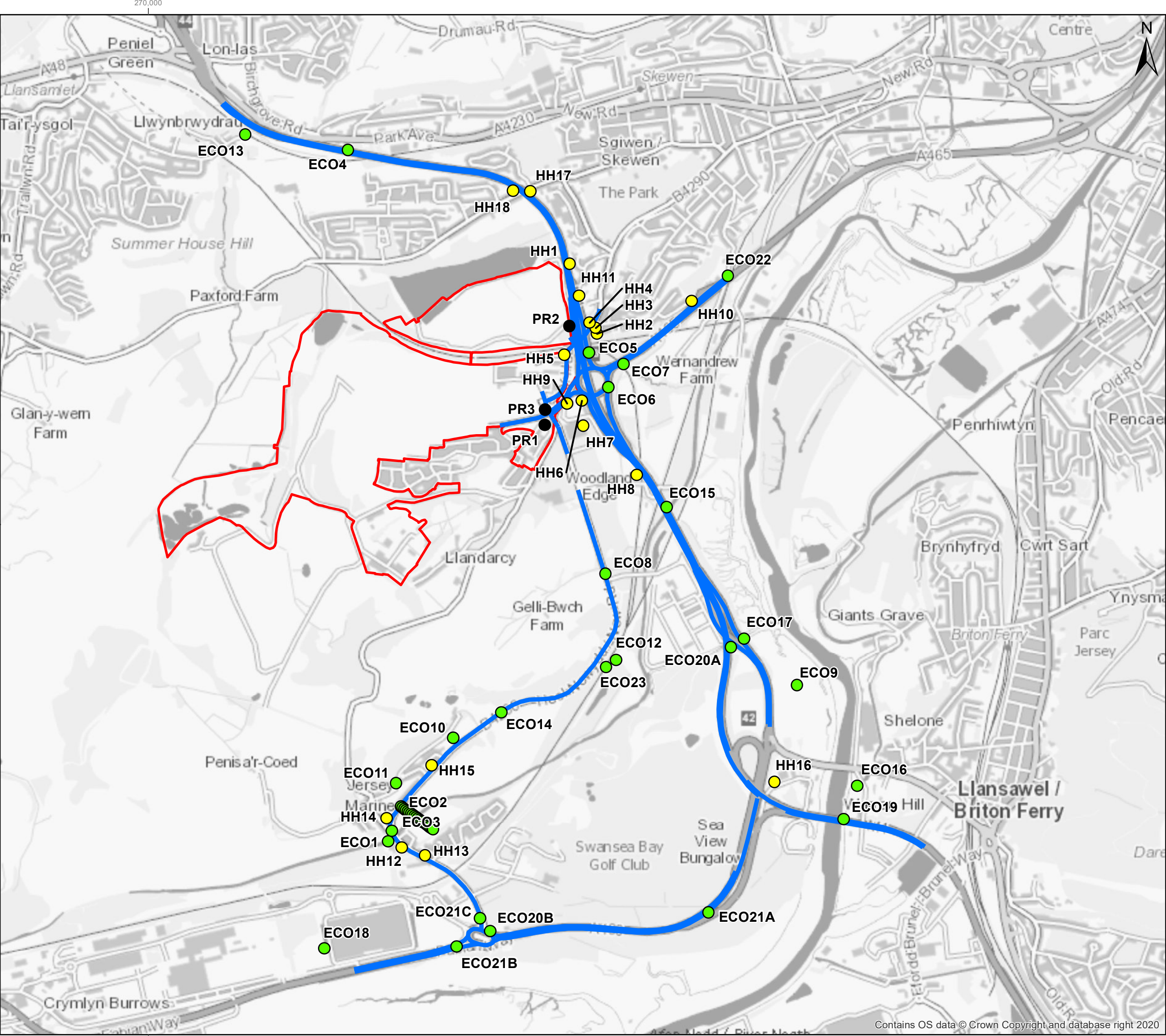
**Your local office is;**  
**CCW**  
**Llys Tawe**  
**Kings road**  
**Swansea**  
**SA1 8PG**

**Telephone: 01972 634960**  
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## **APPENDIX 6**

**Extracts from the Air Quality ES Chapter**

**Prepared by Atkins**



# Coed Darcy

**Figure 6.2: Air Quality Model Domain**

**Key**

**Type**

- Ecological Sensitive Receptors
- Existing Sensitive Receptors
- Proposed Sensitive Receptors
- Modelled Road Links
- Site Boundary

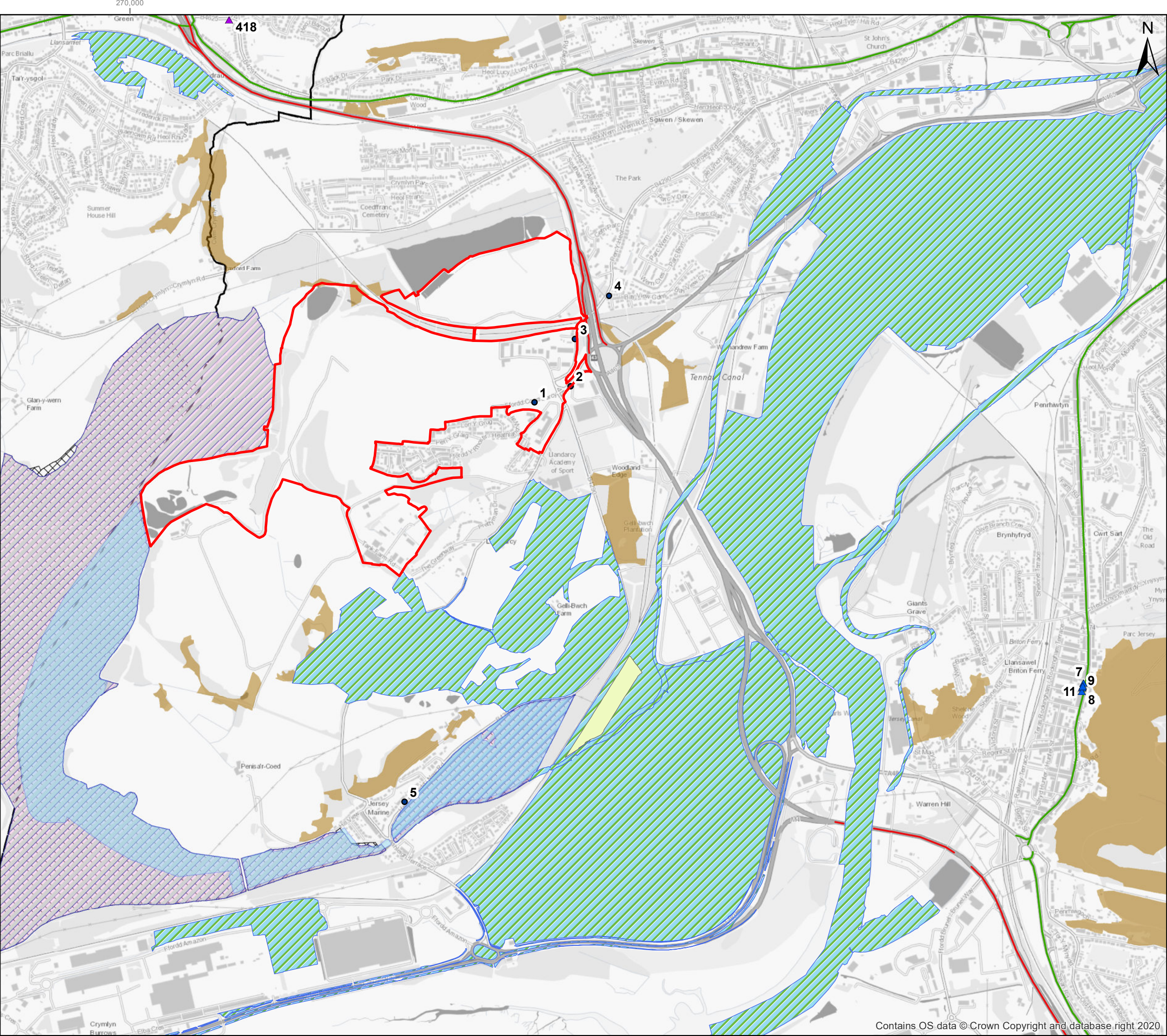
Contains OS data © Crown Copyright and database right 2020

Data sources: Ordnance Survey

0 0.5 1 Km

Scale (at A3): 1:17,574

|                    |                                    |                        |                            |
|--------------------|------------------------------------|------------------------|----------------------------|
| Status: S1         | Purpose of issue: For Coordination | Rev: REV               | Model File Identifier: N/A |
| Reference: 5204064 | Drawn: CW 18/11/2021               | Checked: VS 19/11/2021 | Authorised: VS 19/11/2021  |



# Coed Darcy

Figure 6.3: Air Quality Monitoring and Constraints

Key

Site Boundary

Local Authority Monitoring Locations

Neath Port Talbot County Borough Council

Swansea Council

Atkins Monitoring Locations

2019 PCM Road NO<sub>2</sub> (2018 reference)

Less than 40 µg/m<sup>3</sup>

More than 40 µg/m<sup>3</sup>

Wildlife Trust Reserve

Local Wildlife Sites / SINC

Local Nature Reserves (LNR)

National Nature Reserves (NNR)

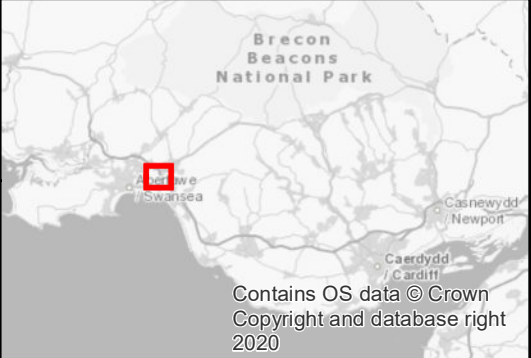
Site of Special Scientific Interest (SSSI)

Special Areas of Conservation (SAC)

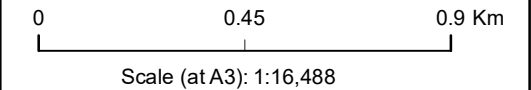
RAMSAR

Ancient Woodland

Local Authority Boundary



Data sources: Ordnance Survey, Lie Geo-Portal for Wales



|                    |                                    |                        |                            |
|--------------------|------------------------------------|------------------------|----------------------------|
| Status: S1         | Purpose of issue: For Coordination | Rev: REV               | Model File Identifier: N/A |
| Reference: 5204064 | Drawn: CW 18/11/2021               | Checked: VS 18/11/2021 | Authorised: VS 19/11/2021  |

## Appendix 6.1. Summary of Modelled Traffic Data

| Link ID | Link Description                                                                        | Base 2019 |      | Without the Proposed Development |      | With the Proposed Development |      | Speed (kph) |
|---------|-----------------------------------------------------------------------------------------|-----------|------|----------------------------------|------|-------------------------------|------|-------------|
|         |                                                                                         | AADT      | HDV% | AADT                             | HDV% | AADT                          | HDV% |             |
| 1       | A465 (East)                                                                             | 26,217    | 4.8  | 28,888                           | 4.8  | 29,380                        | 4.7  | 113         |
| 2       | A465 (West)                                                                             | 25,496    | 5.0  | 28,095                           | 5.0  | 28,583                        | 4.9  | 113         |
| 3       | M4 Junction 43 Southbound On-Slip                                                       | 15,166    | 5.1  | 16,801                           | 5.0  | 18,389                        | 4.7  | 113         |
| 4       | M4 Junction 43 Northbound Off-Slip                                                      | 15,062    | 5.1  | 16,687                           | 5.0  | 18,264                        | 4.7  | 64          |
| 5       | B4290 (West) between M4 Junction 43 and B4290/ Ffordd Coed Darcy Junction               | 6,959     | 2.9  | 7,913                            | 2.8  | 11,216                        | 2.3  | 64          |
| 6       | B4290 (East) between B4290/ Ffordd Coed Darcy Junction and M4 Junction 43               | 7,962     | 2.8  | 9,000                            | 2.7  | 12,331                        | 2.3  | 64          |
| 7       | M4 Junction 43 Northbound On-Slip                                                       | 13,981    | 3.8  | 15,482                           | 3.8  | 16,732                        | 3.6  | 113         |
| 8       | M4 Junction 43 Southbound Off-Slip                                                      | 13,692    | 3.7  | 15,165                           | 3.7  | 16,403                        | 3.5  | 64          |
| 9       | B4290 (East) between B4290/ Ffordd Coed Darcy Junction and M4 Junction 43               | 8,026     | 2.7  | 9,069                            | 2.6  | 12,400                        | 2.2  | 48          |
| 10      | B4290 (West) between M4 Junction 43 and B4290/ Ffordd Coed Darcy Junction               | 5,642     | 3.6  | 6,486                            | 3.4  | 9,789                         | 2.7  | 48          |
| 11      | B4290 link south of B4290/ Ffordd Coed Darcy Junction                                   | 8,377     | 4.5  | 9,898                            | 4.1  | 10,975                        | 3.8  | 48          |
| 12      | Ffordd Coed Darcy                                                                       | 2,707     | 2.5  | 2,707                            | 2.5  | 7,615                         | 1.5  | 48          |
| 13      | B4290 between B4290/ Ffordd Coed Darcy Junction and B4290/ Darcy Business Park Junction | 8,826     | 2.5  | 9,642                            | 2.5  | 13,230                        | 2.2  | 48          |

| Link ID | Link Description                                                                                        | Base 2019 |      | Without the Proposed Development |      | With the Proposed Development |      | Speed (kph) |
|---------|---------------------------------------------------------------------------------------------------------|-----------|------|----------------------------------|------|-------------------------------|------|-------------|
|         |                                                                                                         | AADT      | HDV% | AADT                             | HDV% | AADT                          | HDV% |             |
| 14      | Darcy Business Park                                                                                     | 1,803     | 1.7  | 1,803                            | 1.7  | 3,328                         | 2.0  | 32          |
| 15      | B4290 Pen-Y-Heol between B4290/ Darcy Business Park Junction and Proposed Bowling Green Access Junction | 7,724     | 2.4  | 8,448                            | 2.4  | 10,892                        | 2.1  | 48          |
| 16      | B4290 Pen-Y-Heol, north of proposed Bowling Green Access Junction                                       | 4,519     | 9.2  | 4,821                            | 9.0  | 5,566                         | 8.0  | 48          |
| 17      | Bowling Green Access                                                                                    | 0         | 0.0  | 0                                | 0.0  | 2,023                         | 1.0  | 48          |
| 18      | M4 Junction 43 Southbound Off-Slip                                                                      | 13,692    | 3.7  | 15,165                           | 3.7  | 16,403                        | 3.5  | 113         |
| 19      | M4 Junction 43 Northbound Off-Slip                                                                      | 15,062    | 5.1  | 16,687                           | 5.0  | 17,937                        | 4.8  | 113         |
| 20      | M4 (North) between M4 J42 western spur and M4 J43                                                       | 48,935    | 4.8  | 53,840                           | 4.8  | 55,417                        | 4.7  | 113         |
| 21      | M4 (South) between M4 J42 western spur and M4 J43                                                       | 44,380    | 5.9  | 48,842                           | 5.9  | 50,431                        | 5.7  | 113         |
| 22      | M4 (East) between M4 J43 and M4 J44                                                                     | 46,262    | 6.1  | 50,888                           | 6.1  | 52,126                        | 5.9  | 113         |
| 23      | M4 (West) between M4 J43 and M4 J44                                                                     | 49,971    | 5.4  | 54,957                           | 5.4  | 56,206                        | 5.3  | 113         |
| 24      | M4 (North) between M4 J43 Northbound Off-Slip and M4 J43 Northbound On-Slip                             | 33,874    | 4.7  | 37,154                           | 4.7  | 37,154                        | 4.7  | 113         |
| 25      | M4 (South) between M4 J43 Southbound Off-Slip and M4 J43 Southbound On-Slip                             | 32,570    | 7.1  | 35,723                           | 7.1  | 35,723                        | 7.1  | 113         |
| 26      | M4 J43 Roundabout                                                                                       | 15,553    | 4.4  | 17,237                           | 4.4  | 18,895                        | 4.1  | 48          |

| Link ID | Link Description                                                               | Base 2019 |      | Without the Proposed Development |      | With the Proposed Development |      | Speed (kph) |
|---------|--------------------------------------------------------------------------------|-----------|------|----------------------------------|------|-------------------------------|------|-------------|
|         |                                                                                | AADT      | HDV% | AADT                             | HDV% | AADT                          | HDV% |             |
| 27      | B4290 between B4290/ Llandarcy Junction and B4290 / Ffordd Coed Darcy Junction | 8,360     | 4.5  | 9,879                            | 4.1  | 10,956                        | 3.8  | 48          |
| 28      | B4290 , south of B4290/ Llandarcy Junction                                     | 6,298     | 5.0  | 6,958                            | 4.9  | 8,035                         | 4.4  | 48          |
| 29      | B4290 , between A483/ B4290/ Ffordd Amazon Junction and Jersey Marine          | 5,125     | 2.6  | 5,688                            | 2.6  | 6,765                         | 2.3  | 48          |
| 30      | A483 (East), west of A483/ B4290/ Ffordd Amazon Junction                       | 16,899    | 2.5  | 18,823                           | 2.5  | 19,629                        | 2.5  | 80          |
| 31      | A483 (West), west of A483/ B4290/ Ffordd Amazon Junction                       | 17,197    | 3.5  | 19,154                           | 3.5  | 19,968                        | 3.4  | 80          |
| 32      | A483 (East), east of A483/ B4290/ Ffordd Amazon Junction                       | 17,065    | 3.7  | 18,941                           | 3.7  | 19,211                        | 3.6  | 80          |
| 33      | A483 (West), east of A483/ B4290/ Ffordd Amazon Junction                       | 17,261    | 4.4  | 19,158                           | 4.4  | 19,431                        | 4.4  | 80          |
| 34      | B4290, between Jersey Marine and B4290/ Llandarcy Junction                     | 6,646     | 5.4  | 7,111                            | 5.3  | 8,188                         | 4.7  | 48          |
| 35      | M4 (North) between M4 Junction 41 and M4 Junction 42                           | 41,497    | 5.3  | 45,640                           | 5.3  | 46,822                        | 5.2  | 80          |
| 36      | M4 (South) between M4 Junction 41 and M4 Junction 42                           | 35,960    | 5.3  | 39,567                           | 5.2  | 40,759                        | 5.1  | 80          |
| 37      | M4 (North) between A483/A48 Junction and M4 J42                                | 18,764    | 3.5  | 20,622                           | 3.5  | 21,016                        | 3.5  | 113         |
| 38      | M4 (South) between A483/A48 Junction and M4 J42                                | 19,447    | 3.3  | 34,892                           | 4.3  | 35,289                        | 4.2  | 80          |
| 39      | M4 (North) between M4 J42 Eastbound and Westbound slips                        | 30,126    | 5.6  | 33,218                           | 5.6  | 34,401                        | 5.4  | 80          |

## Environmental Statement

Coed Darcy



| Link ID | Link Description                                        | Base 2019 |      | Without the Proposed Development |      | With the Proposed Development |      | Speed (kph) |
|---------|---------------------------------------------------------|-----------|------|----------------------------------|------|-------------------------------|------|-------------|
|         |                                                         | AADT      | HDV% | AADT                             | HDV% | AADT                          | HDV% |             |
| 40      | M4 (South) between M4 J42 Eastbound and Westbound slips | 12,590    | 10.0 | 13,951                           | 9.9  | 15,142                        | 9.3  | 80          |
| 41      | Roundabout in the vicinity of A483 and Ffordd Amazon    | 9,803     | 3.9  | 10,881                           | 3.8  | 11,286                        | 3.7  | 48          |

**APPENDIX 7**

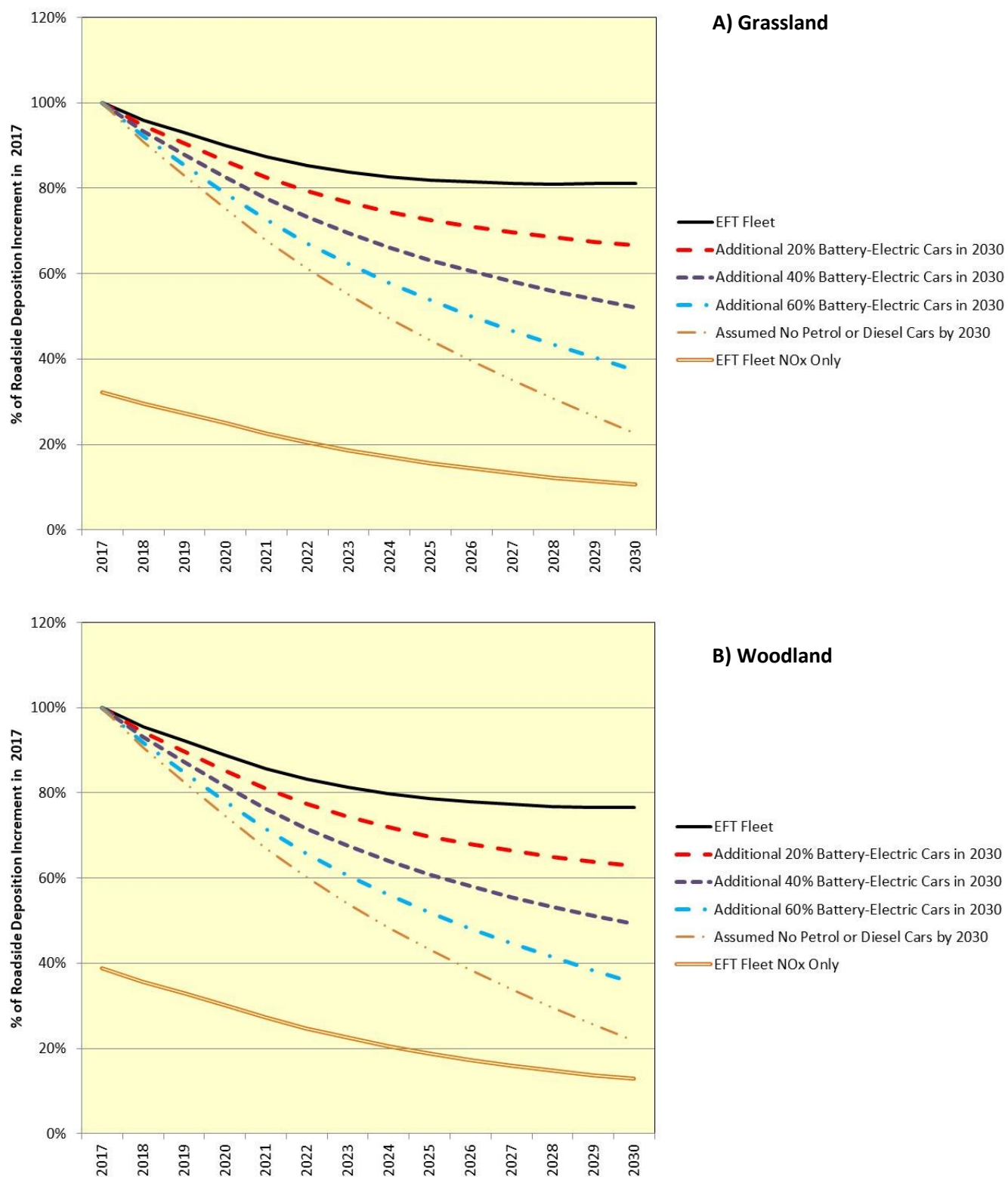
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**Assessing Impacts**

**On Nitrogen-sensitive Habitats’**

**(Extracts)**



**Figure 22: Five Different Projections for Roadside Traffic-related Nitrogen Deposition based on Different Battery-electric car Uptake (also showing NAEI/EFT-based projection based on NOx only) (model assumptions as per Figure 19)**



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