

## **WETLANDS HABITAT STATEMENT**

### **1. INTRODUCTION**

Wetlands, like many other habitats in the UK, have been subjected to degradation by the past influence of humans. The majority of wetland areas have either been lost due to land drainage for agriculture, industry, urban sprawl, or physically modified for flood protection schemes. A wide range of environmental factors influence wetlands and their communities. The local geology will have an effect on the chemistry of the water, also the source and quality of the water.

Wetlands play an important role within Caerphilly county borough, providing essential habitats for a diverse range of animals and plants. The numerous ponds, rivers and fens support nationally important species such as water vole and otter. Wetlands are an important habitat type and consequently have been selected for inclusion in this LBAP. Some have been identified in the UK BAP<sup>49</sup>, and are marked with a \*, but others such as ponds are significant for biodiversity conservation locally. The habitats included in this Habitat Statement are:

- **Rivers, Streams and Floodplains**
- **Ponds**
- **Fens\***
- **Reedbeds\***
- **Blanket Bog\***
- **Lowland Raised Bog\***
- **Lakes and Reservoirs** (standing open water\*)
- **Swamps**
- **Canals**

### **2. HABITAT DEFINITIONS**

Where applicable National Vegetation Classification (NVC) Communities are listed in the appendix to this habitat statement.

#### **2.1 Rivers, Streams and Floodplains**

In their natural state rivers are dynamic systems, continually modifying their form. Many rivers in the UK have been physically modified by humans, for example through flood defence structures and impoundments, but such rivers still represent a very valuable biodiversity resource.

The mosaic of features found in rivers and streams support a diverse range of plants and animals, from the truly aquatic species such as the stickleback and fresh water shrimp to those that spend part of their life cycle in the water, such as mayflies and damselflies. A wide range of habitats are associated with rivers and streams from the steep fast flowing conditions in the upper reaches of catchment areas, to meanders, shingle beds and sand bars in the mid to lower reaches.

All rivers and streams in the county borough are covered in this statement, including the adjacent floodplains and grazing marsh. The river often acts as a wildlife corridor link between fragmented habitats in farmed areas. With extensive ditches, banks and other habitats they provide important transitional zones to the floodplain. River floodplains often include grazing marsh in some catchment areas; these are grasslands that are periodically flooded due to their

low-lying position near the coast or in river floodplains. Unimproved sites are very rich areas for wildlife, often supporting rare plant and invertebrate communities and offering good habitat for breeding waders such as lapwing and curlew. However, the majority are improved and/or drained in order to provide for more intensive grazing, resulting in low biodiversity. The drainage ditches, though, can contain important populations of rare plants and invertebrates even where the diversity of the surrounding pastures is low.

## **2.2 Ponds**

The definition by the Pond Conservation Group<sup>35</sup> defines a pond as "an area 1 metre to up to 2 ha which holds water for at least 4 months." The majority of ponds will hold water for 12 months of the year, but where they dry out (usually in high summer) they are known as seasonal ponds. Artificially constructed ponds, such as settlement ponds created to collect silt from run-off (e.g. from roads and land reclamation sites) and garden ponds for aesthetic, ornamental and wildlife reasons, are also included in this category.

## **2.3 Fens**

Fens are peatlands which receive water and nutrients from surface and ground water as well as from rainfall, and they are usually found on peat that is more than 0.5m deep. The water table is at or just below the surface.

The species composition of fens is dependent on the mineral content of the water feeding it, derived from the rocks beneath or adjacent to the fen. The most diverse fens are fed by calcareous waters, but the one fen in Caerphilly county borough is fed with water from base-poor rocks such as shales and sandstones and it is therefore called a 'poor fen'.

## **2.4 Reedbeds**

Reedbeds are characterised by stands of tall, emergent vegetation dominated by the common reed *Phragmites australis*, where the water table is at or above ground level for most of the year. These include areas such as open water fringe habitats at the edges of lakes, and riverine and estuarine watercourses. They can be either freshwater reedbeds or brackish reedbeds in tidal reaches, although Caerphilly has only examples of the former. The common reed can grow up to 3m tall and often forms dense, almost impenetrable stands with a thick ground layer of decaying stem and leaf litter. Areas of open water and ditches are also associated with reedbeds, and small areas of wet grassland (rhos pasture) and wet woodland (carr) may also occur. Key controlling factors that govern the type, composition and zonation of communities present at a site include hydrology (mean water level and seasonal range), water quality (pH, base and nutrient content), soil fertility, successional history, site context and past management (grazing, peat-cutting, burning, etc). Although common reed is always the dominant species other plant species can be found amongst the reed, but when other tall herbs make up a large component it would no longer be classed as a reedbed.

Reedbed includes several NVC communities (see appendix). Several of the larger secluded reedbeds in Wales provide an important habitat for scarce or declining birds such as the bittern and Cetti's warbler. A bittern was last recorded in Caerphilly in 1970. They also support rare and scarce plants and invertebrates.

## **2.5 Blanket Bog**

Blanket bog is a general term used for peat-forming ecosystems where the ground is periodically or permanently waterlogged by high rainfall, poor drainage and a high water table. Peat forms not only in wet hollows but also over large expanses of the undulating land surface,

usually between 250 – 700 m. They are seldom found on slopes of up to 30% hence the descriptive name blanket bog. Rainfall is the sole supply of water and the dominant supply of nutrients to the peat vegetation. The vegetation is dominated by heather (*Calluna vulgaris*), cross-leaved heath (*Erica tetralix*), deer grass (*Scirpus cespitosus*), cotton grasses (*Eriophorum vaginatum* and *E. angustifolium*) and purple moor-grass (*Molinia caerulea*). These species are found in various combinations and dominance depending on the altitude and the degree of water logging and drainage. Blanket bog often occurs in a mosaic with rock outcrops, acid grassland and upland dry heath.

The presence of hard, acidic rock and base deficient soils favours the development of surface, acid loving plant communities in which *Sphagnum* is abundant. The drainage is usually diffuse and undisturbed blanket bog often shows a hummock-and-hollow structure, with *Sphagnum*-rich pools in the hollows.

## **2.6 Lowland Raised Bog**

Lowland raised bogs are peatland ecosystems, which develop primarily, but not exclusively, in lowland areas such as on estuarine floodplains, along river flood plains and in topographic depressions. In such locations drainage may be impeded and the resultant water-logging provides anaerobic conditions which slow down the decomposition of plant material, leading to an accumulation of peat. The continued accumulation of peat elevates the bog surface above groundwater levels in the surrounding area to form a gently curving dome, from which the term 'raised' bog is derived. The thickness of the peat varies considerably, but is known to exceed 12 metres in some areas.

## **2.7 Lakes and Reservoirs**

Lakes are defined as natural permanent water bodies of 1ha or more<sup>12</sup>. Reservoirs are also permanent bodies of water, but have been constructed artificially. Three different types of lakes and reservoirs are described below.

### **2.7.1 Oligotrophic lakes and reservoirs**

Oligotrophic waters are nutrient poor and typically found in the northern and western parts of Britain. Waters tends to be clear with a low biomass of plankton, and have restricted aquatic plant growth and invertebrate populations. These lakes and reservoirs are important for invertebrate groups such as mayflies and caddis, and usually support reasonable numbers of native brown trout (*Salmo trutta*), minnow (*Phoxinus phoxinus*) and stickleback (*Gasterosteus aculeatus*). Water is generally very clear with a rocky or sandy substrate and usually has a pH of less than 7. Discolouration may occasionally occur due to the presence of acids derived from peat within the catchment area.

### **2.7.2 Mesotrophic lakes and reservoirs**

Mesotrophic lakes and reservoirs are generally found between the nutrient-poor mountain lakes and the more nutrient-rich lakes in the lowlands. They are capable of sustaining the highest diversity of flora and fauna, but are particularly sensitive to disturbance from a range of activities which stimulate nutrient supply. The water is sometimes discoloured by phytoplankton, and has a pH usually around or slightly below neutral. Approximately 600 known or potentially mesotrophic lakes have been identified within the UK, 33 of these being within Wales. Further work is being carried out to confirm the status of these waters, as samples have to be taken on a quarterly basis to establish an average nutrient level.

### 2.7.3 Eutrophic lakes and reservoirs

These are the end result of the process of nutrient enrichment. They are rich in plant nutrients, particularly phosphates, and support large populations of both plants and animals. Indeed, many are nationally important wintering sites for large numbers of wildfowl. Water is generally clouded with algae, pH is usually over 7 and substrates tends to be highly organic mud and silt. Eutrophic waters also contain large populations of coarse fish, particularly Roach (*Rutilus rutilus*), Bream (*Abramis brama*) and Pike (*Esox lucius*).

### 2.8 Swamps

This habitat is defined as emergent or frequently inundated vegetation, occurring over peat or mineral soils. Swamp contains tall emergent vegetation typical of the transition between open water and exposed land. Swamps are generally standing water for a large part of the year, and the species typically include both mixed and single-species stands of bulrush (*Typha* spp), common reed, (*Phragmites australis*), reed canary-grass (*Phalaris arundinacea*), reed sweet-grass (*Glyceria maxima*), tussock sedge (*Carex paniculata*), lesser pond sedge (*C. acutiformis*), bottle sedge (*C. rostrata*) or other tall sedge. Single-species stands are mainly found in deeper water (single stands of common reed have been described separately in section 2.4).

### 2.9 Canals

Canals can be very important for wildlife and often support highly diverse assemblages of plants and animals, particularly those that no longer carry heavy boat traffic. The aquatic habitats together with the margins, towpath and hedge, or other boundary features provide shelter and/or emergence sites for aquatic, semi-aquatic and terrestrial animals. Canal tunnels and bridges may provide important roosting and breeding sites for bats. The associated habitats are themselves often species-rich, and some are relicts from formerly widespread habitats such as unimproved grassland, marsh and wet woodland/carr. Canals can also provide important linear corridors for the movement of species.

## 3. CURRENT STATUS

### 3.1 Rivers and Streams

Caerphilly county borough covers two main river catchments: the Ebbw and Rhymney, within which the rivers Ebbw, Rhymney and Sirhowy flow, along with their tributaries and streams (**Map 1.1**). Ancient and semi-natural woodlands, heathland, wet marshy grassland areas (rhos pasture), and other species-rich grasslands are often found alongside rivers in the county borough.

The **River Rhymney** rises above the town of Rhymney. It is a deep cutting river, passing southwards through a relatively wide valley for approximately 58km, before discharging into the Severn Estuary at Cardiff. The total catchment area is 233km<sup>2</sup> with 275km of rivers and streams within it. The river passes through the towns of Rhymney, New Tredegar, Bargoed, Ystrad Mynach and Caerphilly<sup>25</sup>. Important habitats on the **Nant Bargoed Rhymney**, for example, include a wet marshland, with frequent broadleaved woodlands on the middle and lower reaches, and good habitats containing species poor, rush dominated, semi-improved grassland. Improvements to water quality, has given rise to the return of otters to the Rhymney River. Fish species found in the **Rhymney** include salmon, sea, brown and rainbow trout, stickleback, chub, dace, roach, minnow, common eel and grayling.

The **River Ebbw Fawr** starts at several small streams north of Carno Reservoir in the Brecon Beacons. The actual **River Ebbw** forms at the confluence of the Ebbw Fawr and Ebbw Fach at

Aberbeeg, north of Crumlin. From the source of the Ebbw Fawr to the River Usk the river travels 47km. The River Ebbw passes through main settlements of Crumlin, Newbridge, Abercarn, Crosskeys and Risca, and finally passes into Newport<sup>25</sup>. It has been greatly modified by successive periods of industrialisation over many years. Activities such as mining have caused many changes to the channel and associated flora. Since much of the industrial activity has ceased many of the natural features associated with rivers have started to return, e.g. berms riffles and pools within previously modified channels. Signs of otters have been recorded in the lower Ebbw.

The source of the **River Sirhowy** can be found to the west of Shon-Sheffrey's Reservoir below Trefil in Blaenau Gwent county borough. From its source it travels 32.6km before entering the river Ebbw north of Risca. The catchment area is 76.1 km<sup>2</sup>. The river passes through Tredegar, Blackwood, Pontllanfraith, Ynysddu, Cwmfelinfach and into Crosskeys<sup>25</sup>. Ancient woodland bank flora is quite common on this river, including species such as wavy hair grass *Deschampsia flexuosa*, remote sedge *Carex remota*, wood sorrel *Oxalis acetosella* and fern *Dryopteris* spp. Such communities occur frequently where the valley side ancient woodland is adjacent to the channel.

The rivers of Caerphilly county borough like many other valley rivers have suffered due to past industrial practices and urban development. More recently extensive flood alleviation schemes have resulted in loss of floodplain habitat, and have also altered the course and nature of the riverbed and bank. Erosion of banks has also been caused by canalisation and the removal of tree cover in historic times. Eutrophication is a major problem in more recent times and can have a detrimental effect on the floodplain habitat that still retains some connection with the main stream.

Since the decline of coal mining and other traditional heavy industry the quality of watercourses in Caerphilly county borough has greatly improved. Wildlife is returning and the rivers, tributaries and flood plains are fast becoming significant contributors to the biodiversity of the county borough. We are now witnessing the return of the otter, dipper and grey wagtail. However, several areas of the catchment are suffering pollution from sewage and metaliferous mine waters and extensive littering of windblown and fly-tipped materials.

The following Sites of Importance for Nature Conservation (SINC) contain rivers or streams within their boundaries<sup>4</sup>: **(Map 1.1)**

- 10: **Craig Ysgwydd-Gwyn**; several small streams run through site
- 11: **Cwm-Llydrew Wood**; ancient oak wood alongside stream
- 15: **Coed Deri-Newydd**; stream flows through site
- 19: **Y-Graig Mire**; stream issues on site
- 37: **Nant Cwm-Crach**; part of site is an alder lined stream
- 39: **Cwmsyflog River Meadow**; alongside the River Rhymney
- 43: **Pentwyn Fields**; small stream and pond
- 44: **Princetown Meadows**; a number of streams run through site
- 62: **Caenau Cwm-Corrwg**; River Sirhowy flows through site
- 70: **Cyncoed Fields**; stream through part of site
- 88: **Brittania Woods**; various streams running through the woodland
- 110: **Cwm Gawni Woodland**; with stream
- 117: **Nant Cae'r-Moel Swamp and Woodland**; stream through woodland
- 149: **Cwmcarn Slopes**; Nant Carn provides an important stream habitat with a range of riffles, pools and undercut banks

- 157: **Coed y Mochyn, Risca**; river runs through woodland  
 167: **Churchill Meadows**; 2 minor streams run through site, water cress is abundant

The total area of coastal and floodplain grazing marsh in Wales has been estimated at 80,000 ha. This amounts to 3.9% of the total area of Wales, and 17% of the habitat within the UK. In Caerphilly county borough, floodplain grazing marsh is limited to small areas adjacent to the main rivers as identified on Map 1.1.

### 3.2 Ponds

Current figures for England and Wales indicate that 63% of ponds have been lost over the past 100 years, and are continuing to be lost in Britain as a whole at a rate of 9,000 per year<sup>35</sup>. Ponds are considered wildlife havens, for half of Britain's wetland plants and 300 Red Data Book species are associated with ponds. Research data collected on behalf of the EA and the DETR suggests that ponds are as important a wildlife habitat as rivers. The research identified 431 species of invertebrates in 200 best ponds in Britain, compared to 377 species in the 600 best rivers. Ponds were found to contain 78 'Nationally Notable' species, compared with 41 in rivers; and there were also 26 Red Data Book species found in ponds, twice the number found in rivers<sup>32</sup>. Ponds are also significant habitat for common species which may become endangered if there is further pond loss, for example the common frog *Rana temporaria*, or smooth newt *Triturus vulgaris*. Article 10 of the EU Habitats and Species Directive<sup>23</sup> identifies ponds, among other habitats, as stepping-stones that "are essential for the migration, dispersal and genetic exchange of wide ranging species".

There are a large number of potential ponds in Caerphilly county borough, but as yet there has been no systematic survey to identify their presence and importance for wildlife. For example, settlement ponds are found at Penallta Community Park, and there are several quarry ponds, e.g. on Mynydd-y-Grug and Llanbradach Quarry SSSI and several ponds occur in Aberbargoed Fields SAC. There are also likely to be a large number of garden ponds in the county borough, and a community survey of these is required.

The following Sites of Importance for Nature Conservation (SINC) contain ponds within their boundaries<sup>4</sup>: **(Map 1.2)**

- 3: **Tair Carreg Moor**; contains 4 ponds  
 6: **Mile End Pond**, Abertysswg  
 9: **Cefn Gelligaer**; series of ponds on part of site  
 25: **Hafrodrissclawdd**, east of Markham; includes a small artificial pond  
 43: **Pentwyn Fields**; pond as part of site  
 44: **Princetown Meadows**; a number of ponds add to the diversity of this site  
 52: **Cefn Hengoed Hillside**; pond in the eastern part of site  
 61: **Valentec Nature Reserve**  
 74: **Nelson Ponds**, Tredomen  
 87: **Upper Trelyn Marsh**; small pond on site  
 101: **Pant-Ysgawen Fields**, Tredomen; 2 small ponds provide additional habitat on part of site  
 115: **Pwllgwinau**, east of Newbridge; deep pond on site (all 3 species of newt present)  
 126: **Maesycwmmmer Meadows**; includes a farm pond on part of site  
 131: **Twyn Yr Oerfel**; upland mire and pond  
 140: **Coedcae Newydd**; deep pond in flooded quarry  
 151: **Twmbarlwm**; several seasonal ponds near road  
 162: **Coed y Brain**, Penyrheol; pond in the Llanbradach quarry  
 183: **Coed Cefn-Pwll-Du**; area of colliery spoil and associated pond

### 3.3 Fens

The UK is thought to host a large proportion of the fen surviving in the EU. As in other parts of Europe fen vegetation has declined dramatically in the past century. Generally fens in intensively farmed lowland areas occur less frequently, are smaller in size and more isolated than in other parts of the UK. Fens are dynamic semi-natural systems and in general, management is required to maintain open-fen communities and their associated species-richness. Without appropriate management (e.g. mowing, grazing, burning, peat-cutting, scrub clearance), natural succession will lead to the formation of scrub and woodland.

CCW's Phase 1 Habitat Survey recorded a total of 2728 ha of fen (basin, valley and floodplain mire). The LBAP Target Guide (CCW)<sup>12</sup> currently in preparation gives a figure of 10 ha of valley mire in Caerphilly county borough, and a total of fen and flush (soligenous fen) at 26 ha. In the county borough, **Nelson Bog SSSI** (SINC 55) (**Map 1.3**) supports the only significant example of fen, but there are likely to be small fragments of fen that occur in other sites.

### 3.4 Reedbeds

Reedbed remains a rare habitat in the UK with only an estimated 5000ha, and of the 900 or so sites contributing to this total, only about 50 are greater than 20ha, and these comprise a significant proportion of the total area. CCW's Phase 1 Habitat Survey identified 48 ha of single-species swamp that includes reedbeds as a component, but the report did not quantify the extent and distribution of reedbeds in the Gwent and Glamorgan regions.

Many reedbeds are small in size with critically small populations of associated species. Most of the large areas of reedbed have been lost as a result of land drainage and water abstraction, and the predicted rise in sea level could also destroy many important coastal examples.

In Caerphilly county borough the main area known for reedbed is **Nelson Bog SSSI** (SINC 55), (**Map 1.4**) in association with its fen habitat<sup>4</sup>. This site is significant for its population of breeding birds, in particular the reed bunting and water rail. There are also water vole and (perhaps) otter at this important local wetland area. However, there is a lot of overlap between reedbed, swamp and fen habitats, with these often having a small component of reedbed. Management proposals should therefore ensure that all wetland features are retained.

### 3.5 Blanket Bog

The British Isles has between 10-15% of the total world resource of blanket bog (approximately 1.48 million hectares) and a major part of the total resource of blanket bog in the EU occurs in the UK<sup>12</sup>. Scotland has by far the largest proportion of this, approximately 1,060,000 ha, with Wales supporting around 70,000 ha (4.7% of the UK total) and England some 215,000ha. Significant proportions of peat soil, probably in excess of 10%, no longer support blanket bog vegetation. Comprehensive figures for changes to the total UK resource are not known, but studies carried out in Scotland suggest a 21% reduction in the extent of blanket mire between the 1940s and 1980s. This has mainly been attributed to afforestation, and substantial losses to forestry are reported in Wales. Further losses can be put down to drainage and heavy grazing, peat cutting and atmospheric pollution, resulting in significant habitat change in, for example, mid and south Wales and the Pennines. The Welsh resource has particular biogeographical significance as blanket mire is absent across much of this latitudinal range in England, disappearing south of the Pennines until Dartmoor in the south-west. Welsh examples also encompass much of the core range of ecological variation of this habitat in Britain. Much is above 250m where the annual precipitation exceeds 1200mm, and in Upland areas. However, an

estimated 540ha of blanket bog occurs at elevations below the general upper limit of agricultural enclosure in Wales.

The presence and variety of associated plants, birds, invertebrates and lower plants, particularly species of bog moss (*Sphagnum* spp.), are important indicators of this habitat's quality. Notable species include bog rosemary (*Andromeda polifolia*), hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), skylark (*Alda arvensis*), golden plover (*Pluvialis apricaria*), short-eared owl (*Asio flammeus*) and the nationally scarce large heath butterfly (*Coenonympha tullia*) which is confined to this habitat.

In Caerphilly county borough all blanket bog appears to have been modified in both upland and lowland areas, and occurs on the following SINCS<sup>4</sup>: **(Map 1.5)**

- 1: **Traed y Milwyr, Llechryd** (on peat)
- 54: **Waun Rydd, Gelligaer** (on peat)
- 175: **Nant Gwaunybara Mire** (on peat)

### **3.6 Lowland Raised Bog**

In the UK lowland raised bogs are a particular feature of cool, rather humid regions such as the north-west lowlands of England, the central and north-east lowlands of Scotland, Wales and Northern Ireland. Remnants also occur in some southern and eastern localities, such as Somerset, South Yorkshire and Fenland. As elsewhere across NW Europe there has been a dramatic decline in the area of lowland raised bog habitat since around the start of the nineteenth century. The area of lowland raised bog in the UK retaining a largely undisturbed surface is estimated to have diminished by around 94% from an original c.95,000 ha to c6,000 ha at the present day, with a reduction from 4,000 ha to 800 ha in Wales (England: 37,500 ha to 500ha; Scotland: 28,000 ha to 2,500 ha, Northern Ireland 25,000 ha to 2,000 ha)<sup>49</sup>. Historically, the greatest decline has occurred through agricultural intensification, afforestation, and commercial peat extraction. Future decline may result from the gradual desiccation of bogs damaged by a range of drainage activities and/or a general lowering of groundwater tables.

Lowland raised bogs support a distinctive range of animals including a variety of breeding waders and wildfowl, and invertebrates. The raised bog surface may support a patterned mosaic of pools, hummocks and lawns, a micro-topography created in part by plant growth. This provides a range of water regimes supporting different species assemblages. Plant accumulation preserves a unique and irreplaceable record of plant and animal remains and some atmospheric deposits from which it is possible to assess historical patterns of vegetation, climate change and human land use.

Caerphilly county borough supports only one known example of a raised bog at **Nelson Bog SSSI**<sup>4</sup> (SINC 55) **(Map 1.6)**. The majority of the bog however was lost in the 1970s as a result of tipping colliery spoil, and the remaining area is heavily modified from drying out and heavy grazing.

### **3.7 Lakes and reservoirs**

Lakes and reservoirs within the county borough tend to be restricted to the upland areas of common land, or in the case of the Rhymney reservoir, in the valley area north of the A469 constituting an impoundment of the catchment area of the river Rhymney. Very few areas of open standing water are found along the valley floors or near urban developments. There are a

small number of exceptions, however, these being Caerphilly castle moat and the lakes at Parc Cwm Darran.

During the past ten years, an increasing number of smaller areas of open water have been constructed as commercial fisheries, but the nature conservation value of these is limited. Almost all lakes and reservoirs within the county borough are nutrient poor (oligotrophic) with the exception of Pen-y-fan pond. This is the only example of moderately nutrient rich (mesotrophic) water in the area, and one of only 33 in Wales.

Lakes and reservoirs within the county borough are all privately owned, (with the exception of Caerphilly Moat, Pen-y-fan pond and Parc Cwm Darran lake) either by industrial organisations such as Chorus (British Steel) and British Coal or Dwr Cymru/Welsh Water. All are man made and no examples of natural lakes occur in the county borough. They provide a variety of functions including water supply for drinking, or as a cooling agent. Former mine and canal feeder ponds are now leased to angling clubs or syndicates. The following lakes or reservoirs occur in Caerphilly county borough: **(Map 1.7)**

**Oligotrophic Examples:**

Rhymney reservoirs; SO 103103 and SO 098105  
 Butetown pond; SO 101091  
 Rhaslas pond; SO 095072  
 Nant y Draenog reservoir; ST 189935  
 Jepsons pond SO 085093  
 SI NC 147: Distillery Pond, Abercarn (reservoir)<sup>4</sup>

**Mesotrophic Examples:** Pen-y-fan pond SO 006198 (Pen-y-Fan Pond and Meadows SI NC); this is an unusual example of a mesotrophic lake in the county borough, because its geographical location generally corresponds with typical oligotrophic water. Situated in an upland area, between the Ebbw and Sirhowy valleys, it receives its water from a single rain-fed stream emerging from Mynydd Pen-y-fan, an area of acidic habitats.

**Eutrophic Examples:** There are no documented cases of eutrophic waters within the county borough, although waters such as Parc Cwm Darren, Caerphilly castle moat and Fochriw feeder pond are potential cases due to the activities of coarse fish that have been stocked into these very shallow waters. Nutrients released into the water column by bottom feeding, the quantity of anglers baits and feed introduced into the water combined with the reduction in light penetration, due to suspended solids, produce a similar effect to that of dense algal blooms. Further work is required to assess the exact status of these waters.

**3.8 Swamps**

CCW's Phase 1 Habitat Survey recorded a total of 1802 ha of swamp in Wales, but it did not distinguish between reedbed and other types of swamp. Swamps are often found in association with fen and reedbed, and only a few fragments of swamp are known in the county borough, in particular Nelson Bog, Llanbradach Swamp and Crown Roundabout Marsh. The CCW LBAP Target Guide draft<sup>12</sup> identifies 9.2 ha of swamp in the county borough. The following Sites of Importance for Nature Conservation contain swamp communities<sup>4</sup>: **(Map 1.8)**

55: **Nelson Bog SSSI**  
 84: **Crown Roundabout Marsh, Pontllanfraith**  
 117: **Nant Cae'r-Moel Swamp and Woodland**  
 126: **Maescwmmmer Meadows**; some areas of mire

- 131: **Twyn Yr Oerfel**; upland mire and pond  
 162: **Coed y Brain**, Penyrheol (Llanbradach swamp)

### 3.9 Canals

Construction of canals in the UK took place predominantly between 1750 and 1830, although some were built much earlier and others later. The main concentration of canal construction was in the Midlands linking it to London. Outlying areas often only had local canals. British Waterways currently owns 2,012 miles (including some river navigation) of canals, representing 52% of the canal network in Britain.

The western arm of the Monmouthshire - Brecon Canal lies within Caerphilly county borough, known as 'The Crumlin Arm'. The canal was first opened in 1796 and within Caerphilly county borough runs from Pontywaun, past Crosskeys, through the centre of Risca to the Newport/Caerphilly county borough boundary between Risca and Rogerstone<sup>15</sup>. At present the canal can no longer be used for navigation along its entire length, as it has been traversed by a number of developments. It is now a series of short linear water bodies connected mainly by pipes beneath roads. There is only very light boat usage on certain lengths and these provide a valuable wildlife resource. The canal contains open water habitats and swamp communities along its edges including stands of reed sweet grass and in places more diverse communities such as water cress, water mint and reedmace, yellow flag and gipsywort<sup>15</sup>. Its margins, towpaths, hedges and tunnels are of high value to wildlife providing a mixture of terrestrial and wetland habitats.

The canal is of importance as a wildlife corridor, for species that use its aquatic and terrestrial habitats, however, it is broken up by roads crossing the canal and so is not as effective as it could be. Some bank stabilisation works have severely reduced the wildlife value in some areas, restricting the colonisation of bank side flora and fauna, but in other areas a more natural margin has developed enabling the establishment of emergent vegetation. Moorhen are breeding in several areas along the canal where reed sweet-grass is dominant, and the water vole and otter may also be attracted to certain areas of the canal, especially where it is in close proximity to the River Ebbw, noted for its otter population<sup>15</sup>. Many species of invertebrates are found on the canal, including a number of dragonflies and damselflies, and could support crayfish, although no survey work has been undertaken to confirm this. **Map 1.9** shows the location of the canal in the county borough.

### 3.10 Associated Species

- **Birds:** Breeding: **reed bunting\***, **kingfisher**, **dipper**, **grey wagtail**, **curlew**, water rail, common sandpiper, black headed gull, mallard, little ringed plover, mallard, heron, teal; Other species: **bullfinch\***, **green woodpecker**, sparrowhawk, common scoter, goosander, sand martin (feeding area), swallow (feeding area), swift (feeding area), divers, cormorant
- **Mammals:** **water vole\***, **European otter\***, **daubentons**, **natterers**, **noctule**, **pipistrelle\***, **lesser horseshoe\* bats**
- **Amphibians:** **great-crested newt\***, **palmate newt**, **smooth newt**, **common toad**, **common frog**
- **Reptiles:** **grass snake**
- **Fish:** **common eel**, **bullhead**, **three-spined stickleback**, **brook lamprey**,

**stone loach, native brown trout, salmon and sea trout**, bream, pike, roach and various other fish species

- **Invertebrates:** **dragonflies and damselflies**
- **Crustacean:** **freshwater white-clawed crayfish\***
- **Plants:** **common reed, Orchids**

### 3.11 Links with Other Habitats

- *Deciduous Woodlands* (wet woodland, e.g. willow and alder carr)
- *Wildlife Corridors* (hedgerows)
- *Species-rich Grasslands* (rhos pasture)
- *Common Land* (mosaic of wetland habitats)
- *Urban*

## 4. CURRENT FACTORS AFFECTING THE HABITATS

- Nutrient Enrichment: Nutrient enrichment stimulates the growth of algae that rapidly utilise excess phosphorous and nitrogen dissolved in the water column. Algal blooms, particularly blue green, are thus a common indicator of nutrient enrichment. **(All open water habitats)**. Wetlands are very sensitive to change, particularly where nutrient levels are affected by:
  - the discharge of effluents;
  - leaching and erosion of nutrients from agricultural land and forestry,
  - the liberation of nutrients from lake sediments by bottom feeding coarse fish, and
  - alterations in agricultural management practices and industrial or land development strategies within the catchment areas of lakes and reservoirs can quickly alter the chemical balance of a water body, particularly if shallow and relatively small in size. Oligotrophic waters can become eutrophic within a matter of years. **(lakes and reservoirs)**;
- Climate Change: potential threats from sea level rise and global warming **(All)**
- Inappropriate Management and Neglect: heavy grazing by sheep, cattle and horses and uncontrolled burning which can lead to increased erosion and the loss of characteristic wetland species **(blanket and raised bog)**; lack or inappropriate management of existing wetlands leading to drying, scrub encroachment and succession to woodland **(All)**
- Development: many forms of development can have an effect on wetland habitats, both directly by removing or altering the habitat and indirectly for example by altering surface and ground water movements**(All)**
- Drainage: **(fen, reedbeds, raised bog)**; physical modification and management for drainage, flood prevention and navigation **(rivers, streams and floodplains)**;
- Agriculture: agricultural improvements including drainage and fertiliser application **(blanket bog)**; conversion to intensive agriculture **(fen, reedbeds and ponds)**; use of adjoining land for intensive agriculture, leading to pollution and increased rates **(rivers, streams and floodplains)**;

- Water Abstraction: over abstraction from groundwater or river resulting in low water flows (**rivers and streams**); and drying out of other wetland habitats; water abstraction for industrial use creates greatly fluctuating water levels, particularly amongst those water bodies feeding the Ebbw Vale tin plate works. This creates unstable marginal and aquatic habitats, loss or reduction of marginal and emergent flora with knock-on effects to higher order species and a resultant decrease in biodiversity (**lakes and reservoirs**); abstraction from underlying aquifers may limit the re-wetting potential of certain sites. (**raised bog**)
- Pollution: indirect (diffuse) or direct (point source) pollution, increase in mine water discharge, domestic sewage, agricultural run off, industrial run off, litter and fly-tipping (**rivers, streams and floodplains and reedbeds**); pollution from sulphate and nitrate deposition, and acidification from atmospheric deposition (**blanket bog**); contamination from adjacent landfill, opencast, or agricultural drainage. Current deposition of atmospheric pollutants. (**raised bog**); two stroke oil emissions from boats also cause water borne pollution leading to degradation of water quality and damage to aquatic life (**lakes and reservoirs**)
- Invasive Species: threat from invasion of non-native species such as Japanese Knotweed, mink, North American crayfish (**rivers, streams and canals**); canals are also prone to alien invasion such as (*New Zealand pigmyweed*)
- Forestry: previous planting of trees, mainly non-native species over extensive tracts of bog and also on adjacent tracts of land can affect hydrology. Aerial spraying of fertilisers and pesticides can drift onto bogs; impacts of existing and new plantations on neighbouring areas can dry out adjacent bogs and act as an invasive seed source (**raised and blanket bog**)
- Natural erosion process (**blanket bog, raised bog**)
- Natural succession: wetlands are dynamic, and unless actively managed can revert to woodland (**All except rivers and streams**)
- Human Activities: wake and wash damage from certain forms of powered watersports can cause significant damage to emergent vegetation, this results in a loss of cover for other species, and a reduction in biodiversity. (**lakes and reservoirs and canals**) towpath use has been increased as part of the National Cycleway; light boat use, walking and angling (**canals**)
- Overstocking: of coarse fish species, particularly carp in to small and shallow still-waters, can result in a degradation of water quality through their feeding habits. Increased silt levels within the water column results in an almost total blocking of sunlight and loss of aquatic plant and invertebrate species. (**lakes and reservoirs**)
- Size: small total area of habitat and critically small population sizes of several key species dependent on this habitat. (**reedbeds**)
- Lack of Knowledge amongst planners, farmers and landowners of the value of wetlands for wildlife (**reedbeds, swamps and bogs**)
- Design of Garden Ponds: the location, size, shape, materials and introduced plants and animals are all important considerations when constructing a garden pond. In particular the introduction of non-native species which can become invasive and can spread out into the surrounding area, especially when inadvertently put into more natural ponds.

## **5. CURRENT ACTION**

- 5.1 The Environment Agency and water companies have a statutory duty to further the conservation value of the sites they own or manage (Water Resources Act 1991). The EA also has a statutory responsibility for pollution.
- 5.2 The duty to further conservation applies to the water management functions of the EA from 1996, while the pollution control functions of the Agency must regard the desirability of conserving and enhancing features of special interest.
- 5.3 Where possible, the Environment Agency carries out maintenance work on watercourses in such a way as to enhance the conservation value of the site.
- 5.4 The Environment Agency has prepared a Local Environment Action Plan (LEAPs) for the area; the Eastern Valleys LEAP<sup>21</sup>.
- 5.5 The EA has commenced a programme of Catchment Abstraction Management Strategies (CAMS) which will assess the current water resources and current abstraction to determine whether the catchment is under- or over-utilised. This will be based on the ecological requirements for each catchment (physical, fish, macrophytes, invertebrate populations). The Rhymney catchment is to be assessed during 2001/2002.
- 5.6 Dwr Cymru/Welsh Water actively raise awareness of river management and biodiversity at their Environmental Education Centre at Cilfynydd.
- 5.7 The statutory conservation agencies are funding several lake research projects. These include the CCW Lake Survey and palaeolimnological studies funded by CCW and EN. CCW have also produced a draft guide identifying potentially or confirmed mesotrophic lakes and reservoirs within Wales as part of their LBAP Target Guide (document in preparation).
- 5.8 The EA regularly monitor the quality of all open standing waters, checking for pollution and indicators of nutrient enrichment. Advice should, therefore, be sought from the EA and CCW before management plans are drawn up for any particular area of open standing water.
- 5.9 British Waterways has produced an environmental code of practice designed to instigate more sympathetic operating procedures and to protect and enhance wildlife habitat on canals and has produced its own 'corporate' biodiversity action plan.
- 5.10 CCBC is looking at long-term maintenance issues along the Monmouthshire - Brecon canal.
- 5.11 CCBC Parks Services have carried out long term weed control on the Monmouthshire - Brecon canal.
- 5.12 Local angling clubs/voluntary groups carry out litter picks and vegetation management.
- 5.13 Keep Wales Tidy Campaign, through its Afonydd Glan/Clean Rivers Project, have 8 voluntary river care groups who actively carry out a variety of environmental projects throughout the county borough.

- 5.14 The Forestry Commission has produced 'Forests and Water Guidelines' giving details of best forest practice around watercourses.
- 5.15 An estimate of the blanket bog resource in Great Britain is being carried out through the National Peatlands Resource Inventory (NPRI) resourced by SNH, and work undertaken by DoE (now DEFRA). The NPRI maps and assesses the peatland resource using satellite imagery and soil map information, backed up by field validation.
- 5.16 The Tir Gofal agri-environment scheme in Wales includes blanket bog as a component of moorland and includes specific guidelines for the management of bogs. It also contains provisions which may benefit management of coastal and floodplain grazing marsh in the future.
- 5.17 Conservation bodies in the UK have also received funding from the EU, through the EC LIFE (Nature) Programme, for projects that develop techniques for the management and restoration of peat bogs.
- 5.18 Under the Wildlife and Countryside Act 1981 (as amended) the unlicensed release into the wild of non-native animals, some established alien species (including the European pond terrapin and certain species of amphibia, fish and crayfish) and some plants is prohibited.
- 5.19 Many wetland sites within Caerphilly county borough have been designated as SSSI and/or SINCS which offers them some protection, for example Nelson Bog SSSI comprising a mosaic of various wetland habitats, Llanbradach Quarry SSSI, and a large number of SINCS.

## **6. CONSERVATION DIRECTION**

### **6.1 Main Objectives** for wetland habitats are to:

- **Survey** to identify the distribution, extent and condition of wetlands in the county borough.
- **Maintain** and improve the quality, state, structure and conservation interest of wetlands, through the use of integrated management plans and the sensitive management of adjacent land.
- **Create/restore** wetland features or areas of maximum wildlife benefit, wherever possible.
- **Promote** the importance of wetlands to all sectors of the community to raise awareness of their significance for biodiversity and the local environment.

### **6.2 Possible actions:**

- Carry out Environmental Assessments of developments which will have an impact on wetlands and their associated habitats.
- Promote the importance of all wetland habitats and floodplains to the general public, water companies and other organisations, businesses and individuals involved with wetland features and watercourses.
- Develop a local inventory and agree a framework for identifying the extent and quality of the wetland resource, the factors affecting the habitats and action required for conservation.

- Encourage and promote the appropriate management (grazing, burning, etc) of all wetland areas in the county borough.
- Continue survey and monitoring work for habitats and associated species in wetland areas to identify the extent and quality of the existing resource and opportunities for restoration/re-creation.
- Enhance existing river corridors and wetland habitats (e.g. EA, CCW, CCBC).
- Seek alternative uses that are compatible with wildlife interests to prevent draw-down of redundant reservoirs and subsequent loss of open water habitats.
- Rehabilitate areas of damaged blanket bogs where the hydrological integrity is suitable for restoration (e.g. drain blocking).
- Protect blanket bogs from inappropriate uses by identifying them in local authority plans, and in Forest Indicative Strategies.
- Promote alternatives to peat for use in horticulture.
- Secure cross-sector Government Department policies for sustainable utilisation of extensive peatland resources, based on principles of conservation.
- Carry out a Pond Survey throughout the county borough to include all types of pond, including a garden pond survey where the involvement of the local communities may be possible.

## APPENDIX - NVC Communities

### Fens

Information on NVC fen communities present in Caerphilly county borough is not available because the Phase 2 Habitat Survey has not been carried out by CCW. However the main fen community at Nelson Bog is likely to be: S27: *Carex rostrata* - *Potentilla palustris* tall herb fen.

### Reedbeds

- S4: Common reed swamp and reedbeds  
*Phragmites australis* swamp and reedbeds  
= areas of reed-swamp that retain some water throughout the year.
- S25: Common reed - hemp agrimony fen  
*Phragmites australis* - *Eupatorium cannabinum* fen
- S26: Common reed - common nettle fen  
*Phragmites australis* - *Urtica dioica* fen  
= reed -fens which become dry in summer

### Canals

- S5: Reed Sweet-grass swamp  
*Glyceria maxima* swamp

This community is dominated by reed sweet-grass, usually with few other species except on the margins. It is characteristic of eutrophic conditions; nutrient-rich waters. It is a lowland community and has a restricted distribution in Wales.