

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

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

CARMARTHENSHIRE

PWLL LAGOON

<u>Date of Notification:</u>	2002, 2006
<u>National Grid Reference:</u>	SN 470011
<u>O.S. Maps:</u>	1: 50,000 Sheet number: 159 1: 10,000 Sheet number: SN 40 SE
<u>Site Area:</u>	5.3 ha

Description:

This former settling lagoon is located on the outskirts of Pwll, Llanelli in south-east Carmarthenshire and occupies an area of former saltmarsh, which was cut off in the 19th Century from the adjacent Burry Inlet when a major railway embankment was constructed. Subsequently, large quantities of pulverised fuel ash (PFA) were dumped in specially- constructed lagoons from the nearby - and now demolished - Carmarthen Bay (Burry Port) Power Station.

The Pwll Lagoon is of special interest due to the presence of contrasting fen and woodland communities, with both calciphile (lime-loving) and calcifuge (lime-hating) species growing in close proximity to each other. Further interest is also provided by the presence of scarce wetland plants and the anthropogenic soils which result from the degradation of PFA.

PFA results from the combustion of coal in power stations and is often initially deposited, in suspension, in specially constructed lagoons. Abandoned PFA sites are now recognised for their botanical diversity but are rapidly declining, due to the cessation of coal burning and stricter waste-disposal legislation. PFA is initially highly alkaline and with a high salt content, but weathered PFA is effectively an infertile calcareous silt, with minimal available nitrogen and low levels of phosphorus and potassium. Often a cement-like ‘pozzolanic’ hard pan develops some 10-20 cm below the surface, impeding root penetration. Not only is the calcareous fen and wet woodland a rare resource in Wales, but also the natural colonisation has produced a diverse unusual community of considerable scientific interest.

The site can be roughly divided into two areas - an open herbaceous fen-covered lagoon in the eastern third and incipient birch-willow woodland in the remaining western two-thirds. Other habitats or communities within these areas are described in more detail in the following notes.

The open fen area has a high water table with streamlets flowing across the site even in mid summer, whilst more general flooding occurs in winter. A community of common reed *Phragmites australis*, with six species of rush, including swathes of the very localised blunt-flowered rush *Juncus subnodulosus*, dominates much of this area; some bulrush *Typha latifolia* is also present. Floristic diversity is provided by greater bird’s-foot trefoil *Lotus pedunculatus*, ragged-robin *Lychnis flos-cuculi*, purple loosestrife *Lythrum salicaria*, water mint *Mentha*

aquatica, common fleabane *Pulicaria dysenterica* and frequent southern marsh-orchid *Dactylorhiza praetermissa*.

Areas which are not dominated by closed herbaceous fen, are covered with sedges - usually glaucous sedge *Carex flacca*, but also distant sedge *C. distans* and false fox-sedge *C. otrubae*. The bare, damp areas of infertile calcareous silts (to which the PFA weathers) hold populations of lesser centaury *Centaureum pulchellum* and an abundance of common sundew *Drosera rotundifolia*, where further leaching has occurred. The notable scarce blue-tailed damselfly *Ischnura pumilio* occurs in some abundance in such areas; this very localized species, which occurs primarily in south-west Britain, has very specific habitat requirements, favouring wetlands in an early successional stage (for the larvae favour shallow water in the early stages of colonisation by higher plants). The occurrence of the keeled skimmer dragonfly *Orthetrum coerulescens* at this site is unusual as, typically, it occurs on base-rich upland flushes. The localized soldier-flies *Stratiomys potamida* and *Odontomyia viridula*, both typical rich-fen species, also occur.

Westwards, the topography of the lagoon changes markedly, comprising low irregular hummocks of about 1m height, separated by interweaving creeks, fen areas and drier ground. In the centre of the woodland, a permanently flooded area surrounded by reedbeds and swamp marks the location of a disused mine shaft. It is this uncapped mine shaft that provides the crucial water source for the site.

The hummocks originated from former floating islands, themselves resulting from the aggregation of floating PFA particles. Upon general earlier drainage of the lagoon, these erstwhile islands stabilised on the lagoon floor to form hummocks. Tree cover, mostly comprising downy birch *Betula pubescens* and grey willow *Salix cinerea* ssp. *oleifolia* has established itself, whilst leaching by rainfall has allowed colonisation by acidophile plants including royal fern *Osmunda regalis*, lemon-scented fern *Oreopteris limbosperma* and hard fern *Blechnum spicant*. Perhaps surprisingly, given the intimate proximity to alkaline areas and the low altitude, bog mosses such as *Sphagnum fimbriatum* and *S. subnitens* also grow here, though this has also been noted at other lowland fens.

Reed buntings and sedge warblers breed in the reedswamp whilst locally noteworthy gatherings of snipe (and a few jack snipe) make use of the more open fen areas in winter.

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