



BRIDGEND COUNTY  
BOROUGH COUNCIL

# **Habitats Regulations Assessment of the Bridgend Local Development Plan – Pre-Deposit Proposals**

Screening assessment

November 2008





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## 1 Introduction

- 1.1 Habitats Regulations Assessment (HRA) is required under the European Directive (92/43/EEC) on the 'conservation of natural habitats and wild fauna and flora'. The Directive, ratified in the UK in 1992 seeks to protect the most valuable habitats and species in Europe. Alongside the European Birds Directive (79/408/EEC) this legislation sets the framework for the creation of a network of protected sites across Europe. These are known as Natura 2000 sites or European Sites.
- 1.2 These include sites designated as Special Areas of Conservation (SACs) for their species and habitats and Special Areas of Protection (SPAs) designated for the protection of birds. In Wales it has been agreed to also include sites designated under the Ramsar Convention as Natura 2000 network of protected sites. For the purposes of completeness it is also suitable to include those sites that are currently seeking full designation as part of the Natura 2000 network, namely candidate SAC sites, and potential SPA sites.
- 1.3 Any plan or project that has the possibility of impacting on a Natura 2000 site must be assessed to ascertain the likelihood and significance of effects to the integrity of the site. The Habitats Directive Articles 6(3) and 6(4) sets the requirement for assessment as:
- “Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site’s conservation objectives...”*
- 1.4 Initially the Habitats Directive was misinterpreted into UK legislation and did not require the assessment of land use plans for their potential to impact on Natura 2000 sites. A ruling from the European Court of Justice in October 2005 identified that this was incorrect and the Directive was being improperly implemented. The revised legislation, The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007 was adopted to rectify this situation and sets out the requirement for the assessment of land use plans.

## 2 The Habitats Regulation Assessment process

- 2.1 The HRA is used to describe the process of Appropriate Assessment required under The Conservation (Natural Habitats, &c.) (Amendments) (England and Wales) Regulations 2007.
- 2.2 Guidance on HRA is set out in the draft guidance from WAG that is to be an Annex to Technical Advice Note 5: Nature conservation and planning. This is *'The Assessment of Development Plans in Wales Under the Provision of The Habitats Regulations'* (October 2006).
- 2.3 The HRA process is set up of a number of key stages, this initial stage is 'screening' the LDP Pre-Deposit Proposals (November 2008) to determine the likely extent of HRA needed. The intended outcome of this stage is a decision on whether it is necessary to proceed with further stages of HRA as there is a possibility of significant impacts, or whether impacts are so unlikely as to make further study unnecessary. The stages of screening are therefore:
- identification of all the sites in and around the plan area that may be affected by the LDP (section 3 and Appendix 1)
  - gain an understanding of the conservation objectives of the European sites (section 4 and Appendix 3)
  - establish the main mechanisms by which the LDP could influence the Natura 2000 sites (section 5)
  - drawing out what the specific impacts may be for each site and relevance to the LDP (section 6 and Appendices 5 and 6)
  - concluding the HRA and making decisions on what the next steps of HRA should be (section 7 and Appendix 6).
- 2.4 At this screening stage it is useful to identify strategic or spatial issues in the LDP that may result in impacts on Natura 2000. This allows for the opportunity for these impacts to be avoided early on in the plan preparation process, by seeking alternative approaches or locations for growth.
- 2.5 If the local planning authority determines that the LDP is not likely to have significant effects on European sites it may be proceed without further reference to the HRA process. This should be agreed with the Countryside Council for Wales (CCW).
- 2.6 If it is determined that further HRA is required the next steps are likely to include the need for additional information on the proposals and policies of the LDP. Consultation with CCW will also be carried out to determine the method for the further assessment, as well as more detail on the Natura 2000 sites and their sensitivities.
- 2.7 This stage of the HRA will be looking for ways that any significant effects can be avoided or mitigated against. In order for the LDP to proceed it would have to be shown that this is possible. Where significant effects are identified it may be possible to mitigate against site specific impacts using 'conventional' mitigation measures. This includes measures to prevent

disturbance, use further appropriate assessment, setting planning obligations or conditions. If such an approach is shown to be necessary it will be essential to explicitly state this in the LDP.

- 2.8 For strategic issues, where the impacts cannot be identified on a site specific basis, it may be necessary to include specific policy in the LDP to mitigate or avoid the potential for impact. This may be particularly where the implementation will require a more detailed level of assessment.
- 2.9 It is necessary for the outcomes of the HRA to be discussed and agreed with CCW and, ideally, consensus reached on the conclusions of the HRA.
- 2.10 It should be highlighted at this point that HRA of the LDP does not preclude the need for subsequent appropriate assessment at a more site specific level if identified as necessary when seeking planning permission.

#### **Determining significance**

- 2.11 An important part of the HRA is determining whether the LDP is *likely* to have a *significant* impact on the Natura 2000 sites. The draft assessment guidance on HRA from the Welsh Assembly Government suggests that 'likely' in this context means "*readily foreseeable not merely a fanciful possibility*" and 'significant' means "*not trivial or inconsequential but an effect that is potentially relevant to the site's conservation objectives... The European Court of Justice has held that any effect likely to undermine the conservation objectives of a European sites should be regarded as a likely significant effect...*" (paragraph 2.2.4)<sup>1</sup>.

#### **'In combination' effects**

- 2.12 The regulatory requirements of HRA set out a requirement that in addition to determining if the LDP would have a significant effect on Natura 2000 sites on its own, it is also necessary to assess if there would be any significant effects in combination with other plans and projects.
- 2.13 This 'in combination' assessment will need to look for other plans and projects that also require HRA, such as the LDPs of neighbouring local authorities, as well as projects proposed or underway in the area. In order to achieve this it may be suitable to adopt some type of cross boundary working on HRA issues, and the need for a system to be in place to flag up other strategies and plans in the area that may have relevance to the HRA of the LDP.

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<sup>1</sup> Welsh Assembly Government (October 2006) *Draft Guidance – The Assessment of Development Plans in Wales under the provisions of the Habitats Regulations*

### 3 Identification of Natura 2000 sites

- 3.1 The initial step of the screening process involves identifying the Natura 2000 sites, in and around Bridgend County Borough that the policies and proposals of the Pre-Deposit Proposals LDP could have an impact on.
- 3.2 All Natura 2000 sites within the County Borough, or within 15km of the County Borough boundaries, have been identified, these are:

***Inside the County Borough:***

- Blackmill Woodlands (SAC)
- Cefn Cribwr Grasslands (SAC)
- Kenfig (SAC)

***Outside the County Borough boundaries***

- Dunraven Bay – SAC (3.52km)
- Blaen Cynon – SAC (10.4km)
- Crymlyn Bog / Cors Crymlyn – SAC/Ramsar (11.6km)
- Crymlyn Bog / Cors Crymlyn – Ramsar (11.6km)
- Coedydd Nedd a Mellte – SAC (11.6km)
- Cardiff Beech Woods – SAC (12.32km)
- Cwm Cadlan – SAC (13.7km)

- 3.3 Of these ten identified sites only four are within 15km of the main towns and villages of Bridgend County Borough. These towns and villages are the most likely locations of allocated development through the LDP, therefore it has been decided to concentrate the appropriate assessment on these sites. Furthermore, none of the remaining six sites are located where they are likely to be impacted on by development in Bridgend County Borough, such as being downstream. These four sites carried through into further assessment are:

| <b>Site name</b>                          | <b>Site designation</b> |
|---|-------------------------|
| Blackmill Woodlands                       | SAC                     |
| Cefn Cribwr Grasslands                    | SAC                     |
| Dunraven Bay (outside the County Borough) | SAC                     |
| Kenfig/Cynffig                            | SAC                     |

- 3.4 The information collated on each of the above sites, particularly in relation to vulnerability is from the information database compiled for the '*Habitat Regulations Assessment (HRA): a toolkit to support HRA screening and appropriate assessment*' (South East Wales Strategic Planning Group, 2008).
- 3.5 Basic site plans are shown in Appendix 1, with Appendix 2 showing maps of buffer zones around the four identified sites. The latter Appendix also shows the location of the key strategic employment and residential sites in relation to the four SACs and their buffer zones.



## 4 Natura 2000 site information

- 4.1 Three of the sites identified in 3.2 are within Bridgend County Borough and closest to the areas of population that are most likely to be the focus of new development set through the LDP. In addition details of sites beyond the County Borough boundaries are included where the potential for impact needs to be considered. Site information is derived from the relevant Joint Nature Conservation Committee (JNCC), 'Standard Data Form', and the database compiled as part of the '*Habitat Regulations Assessment (HRA): a toolkit to support HRA screening and appropriate assessment*' (South East Wales Strategic Planning Group, 2008). Appendix 3 contains full detailed tables of each of the identified Natura 2000 sites.

The sites **within** Bridgend County Borough are:

### 4.2 Kenfig/Cynffig - Special Area of Conservation

**Site code:** UK0012566

**Total area:** 1191.67 ha (Kenfig Burrows and Merthyr Mawr Warren)

#### Primary reasons for designation

The Kenfig dune system contains several habitats listed under Annex I of the Habitats Directive and these are a primary reason for its designation. The site is known as Kenfig, but also includes a dune system that is geographically separate at Merthyr Mawr Warren. Therefore, taking a lead from the data forms produced for the sites,, in the descriptions that follow, 'Kenfig' refers to both Kenfig Burrows and Merthyr Mawr Warren unless specifically stated otherwise.

Kenfig is a largely intact dune system in South Wales with extensive areas of **fixed dune** vegetation; this is the **primary feature** of the site. The habitat includes red fescue *Festuca rubra* and lady's bedstraw *Galium verum* and semi-fixed dune grassland with marram *Ammophila arenaria* and red fescue. There is also a relatively large area of more acidic vegetation.

Kenfig contains one of the largest series of dune slacks in Wales, including Kenfig Pool, habitat **Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)**. The dune slacks are species-rich and there are extensive areas of dunes with *Salix repens* ssp. *argentea*, which represent a mature phase in dune slack development. This site is in the central part of the range of this community on the west coast and is a highly representative example of this habitat type.

Kenfig contains the most important example of **humid dune slacks** in the UK, owing to the extent of the habitat type and the conservation of its structure and function. These calcareous dune slacks are also amongst the most species-rich in the UK, supporting communities dominated by a variety of mosses and a number of rare plants, notably around 90% of the UK population of Fen orchid *Liparis loeselii*, for which is part of the reason for SAC designation. The dune variety of fen orchid (var. *ovata*) is currently only known to occur in South Wales and on the coast of Brittany<sup>2</sup>.

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<sup>2</sup> Bridgend County Borough Council, Report of the Executive Director – Environment Cabinet (19 April 2006), Planning Services

Kenfig Pool is a shallow lake system within the extensive sand dune system of Kenfig. The water chemistry is indicative of a coastal, alkaline lake with a moderate nutrient status. High alkalinity, conductivity, sodium and chloride values reflect this marine influence. Elevated calcium values are probably derived from marine shell remains in the sandy substrate. This habitat is characterised as **Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.**

The combined sites contain some species listed under Annex II of the Habitats Directive and these are also primary reasons for designation. They are Fen Orchid *Liparis loSELLi* and Petalwort *Petalophyllum ralfsii*. The very rare fen orchid grows in the humid dune slacks and Kenfig NNR holds 90% of the UK population. The dune variety of fen orchid (var. *ovata*) is currently only known to occur in South Wales and on the coast of Brittany.

The current condition of the SAC varies depending on the feature, although aspects are unfavourably declining.

The particular vulnerabilities of the site are:

- **erosion** most likely due to insufficient sand supply
- **falling water tables** from local extraction of water and/or drainage of adjacent land used for agriculture or housing
- **grazing/scrub** suitable levels need to be maintained to retain habitat and reduce scrub
- **recreation and access** by people and vehicles can adversely affect the dune slack SAC features. This needs to be managed
- **air quality**, eutrophication, photochemical oxidants, particulate matter
- **water quality** the major water quality concerns are related to elevated nutrient levels. Elevated levels of nitrogen have been found at Burrows Well on Merthyr Mawr and there is also some indication that dune slacks are becoming increasingly eutrophic. The nature of the underlying limestone aquifer means that off-site activities a considerable distance away can potentially have an impact on the SAC
- **non-native species**, including coarse fish (such as introduced carp) can have an impact on the species of ponds and slacks
- **the fen orchid**, is vulnerable to dune stabilisation, **petalwort** is vulnerable to this, and impacts of drainage and recreation
- there may also be indirect effects on dunes including atmospheric nutrient deposition, and coastal squeeze due to rising sea levels and increased storminess. The potential for dredging and marine aggregate extraction, through the disruption of coastal processes, to have cumulative and long-term effects on the sand dunes is an area for further investigation.

#### 4.3 Cefn Cribwr Grasslands – Special Area of Conservation

**Site code:** UK0030113

**Total area:** 58.35ha

**GR:** 033741 : 513206

##### **Primary reasons for designation**

The Cefn Cribwr Grasslands SAC constitutes several small patches of grassland. The grasslands contain a habitat type listed under Annex I of the Habitats Directive which is the primary reason for its designation, this is *Molina* meadows on calcareous, peaty or clayey-silt-laden soils. The site also supports an Annex II species, Marsh fritillary butterfly.

The Cefn Cribwr Grasslands is one of four sites representing ***Molinia* meadows** in south and central Wales and is one of the major UK strongholds for this habitat type. At this site, there are extensive stands of M24 *Molinia* – *Cirsium dissectum* fen-meadow, including the heathy sub-type with cross-leaved heath *Erica tetralix*, as well as other forms with a stronger representation of grasses, rushes and small sedges. Transitions to stands of more acidic *Molinia* and *Juncus* pasture, dry neutral grassland and wet scrub vegetation are well-represented. Uncommon and declining species associated with the ***Molinia* meadows** at this site include the nationally rare viper's-grass *Scorzonera humilis* and the nationally scarce soft-leaved sedge *Carex montana*.

Conservation objectives would seek to raise the site to favourable status, with characteristic coverage and mix of species. For the continued presence of marsh fritillary butterfly there needs to be 50ha of suitable habitat, 10ha of which is in good condition, although this does not all need to be within the SAC and could be on nearby land within a 2km radius. Some suitable nearby sites are nationally protected as Sites of Special Scientific Interest (SSSIs). The whole site is currently identified as being in unfavourable condition.

The integrity of the site needs to be maintained and its main vulnerabilities have been identified as:

- the need for appropriate grazing
- maintenance of shelter belts, including hedges, woods and mature trees around the site
- hydrological regime, requiring springs and watercourses to feed the site, with more information needed on the role of these and impacts from nearby open-cast mineral workings
- off-site pollution, two of the component SSSIs lie close to open-cast coal workings and other mineral workings. Release of dust from these sites may impact on the SSSIs but effects are not known, these releases are subject to authorisation from the Environment Agency Wales
- impacts of owners/occupiers of the site, including agricultural improvement

- other impacts include weather and parasites.

#### 4.4 Blackmill Woodlands – Special Area of Conservation

**Site code:** UK0030090

**Total area:** 71.01ha

##### **Primary reasons for designation**

The Blackmill Woodlands are two distinct areas of sessile oak woodland, they are separated by the A4061 and Ogwr Fawr river. The Blackmill Woods contains a habitat listed under Annex I of the Habitats Directive which is the primary reason for its designation.

Woodlands is an example of **old sessile oak woods** at the southern extreme of the habitat's range in Wales, and contributes to representation of the habitat in Wales and in south-west England. The ground flora is restricted by the relative dryness of the site, but the main habitat features of sessile oak *Quercus petraea* canopy, acidic ground flora of *Vaccinium myrtillus* and wavy hair-grass *Deschampsia flexuosa*, and moderate fern and bryophyte cover are present. The woodlands have a long cultural history of management, reflected in the distinctive gnarled appearance of many of the trees.

Long-term management of the site is to see at least 90% of the area covered by semi-natural broadleaved woodland, dominated by oak. At the moment the site is failing on some matters related to condition, including the structure, natural process and regeneration. These failures are mainly related to management issues, such as the number of young seedlings, related to grazing impacts, and insufficient gaps in the canopy.

There are potential impacts on this type of site from air quality, including acidification, photochemical oxidants and particulate matter. All of which can be caused by car/lorry exhaust fumes.

The following site lies **outside** the County Borough boundary:

#### 4.5 Dunraven Bay – Special Area of Conservation

**Site code:** UK0030139

**Site area:** 6.47ha

**Local Authority Area:** Vale of Glamorgan

##### **Primary reason for designation**

Dunraven Bay is primarily designated for the presence of an Annex II species, **Shore Dock *Rumex rupestris***. The 20 or so plants of shore dock *Rumex rupestris* growing here on damp coastal limestone are the **only** remnant of the species' former Bristol Channel range. The species has disappeared through loss of damp dune-slacks and shingle banks from other sites at Merthyr Mawr, Kenfig, Braunton Burrows and Pennard but is relatively secure on this steep, inaccessible site. The Dunraven Bay population is a significant seed-source for recolonisation of Bristol Channel dunes and beach-heads when future management restores these habitats to favourable condition.

The vision is for the feature to be in favourable condition with at least 10 mature plants on site. Threats to the site come from possible disturbance and

loss of essential groundwater seepage, however the site is very inaccessible therefore direct impacts are unlikely and there is currently no identified threat to groundwater, although its source needs to be verified. In the very long-term the threat to the site will be from coastal erosion.

## 5 Local Development Plan issues

- 5.1 The Pre-Deposit Proposals of the Local Development Plan (LDP) set out the Preferred Strategy for guiding development in the County Borough. This includes setting the level of growth the LDP must provide for over the plan period, and the spatial distribution of this growth around the County Borough. This part of the HRA considers how development delivered through the LDP, in particular the Pre-Deposit Proposals, has the potential to impact on the Natura 2000 sites within and near the County Borough.
- 5.2 Reviewing the Pre-Deposit Proposals it is possible to identify some principal matters that are driven by its strategy that may have an impact on Natura 2000 sites. These are:
- an expected housing growth of 8100 new homes in the County Borough in the plan period
  - provision for a growing economy, with the allocation of 160-170 hectares of employment land
  - identifying the towns and villages that are to be the focus for the majority of new development. These are likely to be Bridgend, Pencoed, Porthcawl, Pyle/Kenfig Hill and Maesteg
  - Strategic development allocations: five for employment and four for housing
  - setting policy for minerals and waste.
- 5.3 To enable the screening assessment to be able to identify the potential impacts of policies and proposals on the SACs, it is necessary to establish what are the likely mechanisms of impact. These mechanisms are based on the identified vulnerability of sites, as well as issues that could directly impact on these sites. The mechanisms are:
- direct disturbance from development – this includes development directly causing the loss of whole or part of a site, although this is controlled through national protection policies
  - human disturbance from recreation – where new housing is located near to protected sites it may lead to increased recreational pressures that may cause disturbance of sites and designation features
  - water quality – the impact that development can have on water quality particularly where growth outstrips treatment capacity. Landfill sites, industry and quarrying may also impact on water quality. Water pollution can cause direct impacts on sites and also nutrient enrichment can cause vegetation composition on sites to alter impact adversely affecting the conservation objectives. Uncertainties in the sources of the groundwater that supplies several of the sites means that to identify detailed relationships of development and impact is not possible (Appendix 3)
  - water quantity – new development gives rise to increased water supply

demands, this can result in lowering of water tables that can adversely impact on sites that depend on high water tables to support them. In addition quarrying including open-cast mining can cause water table draw down with potential negative impacts

- air quality – many habitats will be adversely affected by poor air quality, through acidification and deposition causing nutrient enrichment that can result in changes in habitat composition and conservation objectives, Appendix 6 shows where air quality may be having an impact on the sites
- changes in surrounding supporting habitats – loss of nearby open spaces and habitat links, such as hedgerows, can cause negative impacts on species on sites through the loss of supporting breeding populations, linking habitats or shelter features particular where the SAC is divided into a number of distinct areas
- coastal processes – building new coastal defences that change natural processes of accretion and erosion may have an adverse impact on coastal sites, changing the fundamental characteristics of sites and therefore the integrity of the designations.

## 6 Initial scoping for impacts

- 6.1 At this early stage of the LDP there is still much detail yet to be defined. Therefore, only a preliminary assessment can be made as part of the HRA. When the LDP reaches more advanced stages in preparation when detailed policies and proposals have been formulated it will be necessary to reconsider the HRA assessment.
- 6.2 Appendix 4 shows the initial impact identification for the SAC sites, looking at where these impacts may arise and what this might mean for the integrity of the site. Appendix 5 shows the screening assessment of the policies of the Pre-Deposit Proposals and the potential for significant impacts on the SACs. These appendices consider where impacts may arise, and the possible ways of mitigating against them. The assessment tables show that there is the potential for the LDP to have an impact on the three sites in the County Borough; however impacts on the Dunraven Bay SAC are unlikely.
- 6.3 In addition to providing an initial overview of the vulnerability of the SAC sites, this stage of assessment can help in LDP preparation by identifying the matters that the LDP spatial strategy will need to address. By identifying where impacts may arise as part of the appraisal it may be possible for the LDP to better direct development through the spatial strategy to avoid or mitigate against potentially adverse effects.
- 6.4 Paragraphs 6.5 to 6.8 summarise the mechanisms by which development, directed through the LDP, could have an impact on the identified sites. In addition to these impacts there always remains the possibility of sites being destroyed or partly destroyed through development or actions directly on the SAC site. However the high level of protection Natura 2000 sites have through national policy should make this extremely unlikely.
- 6.5 *Blackmill Woodlands SAC*  
Air pollution is a possible impact on the long-term survival of this site, particularly through acidification. The source of which, in this area, is predominantly road traffic. The need to reduce car travel and associated emissions is well recognised as an important matter for sustainable development in general and the LDP to address. Appendix 6 shows that acid and nitrogen deposition, and ozone, all of which are related to combustion exhaust, may already have had an impact on this site.

There is also the possibility of human disturbance having an adverse impact on the site, although this is less likely. It will be important that this is monitored as part of site management.

Policies that may bring impacts specifically to this site are:

- SP1 that focuses development towards Bridgend and the Valleys Gateway amongst other locations.
- SP3 that includes various transportation schemes including road improvements
- SP8 identifies the Brynmenyn industrial estate as being suitable for a potential strategic waste treatment facility



- SP13 includes a strategic allocation for housing at Parc Derwen, Bridgend the SAC which lies within the 5km buffer zone around the SAC.

**Matters for consideration in the LDP:**

- emissions from increased traffic created through new development, particularly on the A4061, could have air quality impacts that would directly impact on vegetation in the SAC
- potential for development or actions to have a direct impact on the site.

**HRA next steps:**

- although the risk of impact of the Bridgend LDP on the Blackmill Woodlands SAC is low it cannot be ruled out at this stage and therefore further assessment of impact will be necessary at the next stage of LDP preparation

**6.6 Kenfig SAC**

Consisting of Kenfig Burrows and Merthyr Mawr Warren the combined sites are a large and valuable habitat and that could experience a range of impacts. Water and air pollution could cause nutrient enrichment resulting in changes to the types and abundance of vegetation, with an impact on species that are integral to the combined site designation. These impacts can be from poor water quality from insufficient treatment of waste water, with air quality impacts coming from fossil fuel burning including road traffic, and therefore can in part be addressed through the LDP, although this would need to be in combination with the implementation of other measures to control pollution. Appendix 6 does not show that air quality is currently a problem, although this could change in future.

There could also be impacts of water quantity, with the pools and dune slacks on the combined site requiring high ground water levels. Therefore, water demand from new built development could have an impact on this. So suitable policies will need to be in place to ensure the efficient use of water in new development, as well as ensuring new abstraction are not in locations that would adversely impact on the groundwater feeding the combined site. In addition, mineral workings can have an impact, such as quarry dewatering and the possible impacts of this on the SAC will need to be taken into account by the LDP through minerals policy for new mineral developments or the review of existing permissions.

There is a nearby group of quarries including Cornelly, where continued operation and/or expansion could have an impact on the integrity of the SAC. This is particularly in relation to water quantity as de-watering of the sites may have an impact on the ground water levels necessary for maintaining dune slacks.

Changes in coastal processes are having the greatest impact on this combined site at the current time, and this can only partly be influenced by the LDP. Built development close to the inland boundary of both parts of the

site may have adverse impacts on the natural processes of the dune system migrating inland as it builds on the seaward side. New sea defence works could adversely impact the accretion of sediment on the seaward side that is the essential habitat for the identified species. Despite this issue being largely beyond the control of the LDP, it will be necessary to consider how development along the coast may impact on the combined site.

The combined site can also be adversely affected by recreational uses, up to a certain level such uses can be effective in maintaining the habitat conditions needed to support the species that are a primary reason for SAC designation. However, too much pressure from recreation and misuse of the two parts of the site by vehicles could have adverse impacts. Therefore, it may be suitable for the LDP to consider controlling the amount of new housing development directed to nearby areas in order to protect the combined site from these impacts.

Policies that may bring impacts specifically to this site are:

- SP1 that focuses development towards Porthcawl amongst other locations.
- SP3 that includes various transportation schemes including road improvements
- SP6 and SP7 on minerals supply and protection, that may lead to eventual additional mining and quarrying
- SP8 identifies the Heol-y-Splott, South Cornelly and Village Farm, Pyle industrial areas as being suitable for potential strategic waste treatment facilities
- SP10 identifies strategic employment allocations in close proximity to the SAC, at Island Farm, Bridgend and Ty Draw Farm, North Cornelly
- SP12 relates to tourism development, with a focus on Porthcawl, this may have an impact on the Kenfig SAC
- SP13 includes a strategic residential site for housing at Porthcawl Waterfront which is within the 2km and 5km bufferzone around the combined site.

**Matters for consideration in the LDP:**

- As with all the SACs direct impact from development or actions needs to be avoided.
- New housing development in the vicinity could give rise to increased recreational pressure on the combined site, with possible negative impacts if levels of use are too high or not managed carefully.
- Water quantity issues may arise from new development giving rise to the need for increased levels of water abstraction, including through quarry extensions, with the potential for impacts on the humid dunes and slacks.

- Increased development and higher levels of car use can have an adverse impact on water quality at the combined site from nutrient enrichment, through water and air pollution.
- The LDP needs to manage mineral workings to avoid the impacts on the water table and the quantity of water feeding the SAC.
- At this stage it is important to ensure that the LDP does not give rise to any new development on the coast that is likely to further interrupt the movements of sediment that feed the dune system. Further investigation of the impacts of mineral dredging will also need to be considered, particularly in conjunction with the other nearby coastal minerals authorities that undertake dredging, there is the potential here for in-combination impacts.

#### **HRA next steps**

- Impacts of the LDP on the Kenfig SAC cannot be ruled out at this stage, therefore further assessment of impacts will be necessary at the next stage of LDP preparation.

#### **6.7 Cefn Cribwr Grasslands SAC**

These grassland sites will be affected by a lack of water, as parts are characterised by wet heath and scrub. Therefore development that causes lowering of the water table, either through abstraction to supply new development or through quarrying processes needs to be managed appropriately to avoid harm to the SAC. This will need to be addressed through appropriate strategy and policies of the LDP.

The current and continued operation of the Cefn Cribwr quarry adjacent to the north eastern grassland patch has the potential to impact on the integrity of the site. Impacts are most likely from hydro-geological mechanisms, with impacts of continued quarry operation on the water table. In addition the mineral protection zone, as shown in the current UDP, extends well into the SAC therefore there is a potential risk of loss of the site to quarry extension.

Grasslands can also be adversely affected by air quality impacts, and as with other sites this is likely to be from road traffic emissions. Air quality is not currently an issue in this location (Appendix 6) but could be in the future.

The marsh fritillary butterfly that is found on the SAC could also be affected by changes to the habitats off-site. This SAC comprises four related habitat patches that are separated from one another by over 1km, therefore to retain viable populations on site they must be connected. Therefore development between and around the SAC patches will need to be subject to suitable control in order to provide the open space, wooded areas and hedges that are essential to the continued survival of the site and its conservation objectives. The LDP will have a major role to play in ensuring the continued protection, and if suitable enhancement, of this area.

Policies that may bring impacts specifically to this site are:

- SP1 that focuses development towards Bridgend and the Valleys Gateway amongst other locations such as Pyle and North Cornelly lie within the 2km and 5km bufferzone around the site.

- SP3 that includes various transportation schemes including road improvements are near the SAC
- SP6 and SP7 on minerals supply and protection that may lead to eventual additional mining and quarrying, and which has already impacted on this SAC
- SP8 identifies the Heol-y-Splott, South Cornelly as suitable for potential strategic waste treatment facilities is near the SAC
- SP10 identifies a strategic employment allocation Ty Draw Farm, North Cornelly which is near the SAC
- SP13 includes a strategic allocation for housing at the Parc Derwen, Bridgend, which is within the 5km bufferzone around the site..

#### **Matters for consideration in the LDP**

- As with all the SACs direct impact from development or actions needs to be avoided.
- In order to protect the integrity of this SAC it will be necessary for the LDP to consider how to protect green space and linking features around the designated site as well as on the site itself. This is essential in order to support the continued viability of species within the protection area, such as the marsh fritillary butterfly.
- Water levels will need to be maintained and therefore development and mineral extraction requiring dewatering and abstraction will need to be controlled.
- The LDP will have to consider whether it is possible to control impacts of continued and further quarry operation through policy, to ensure impacts to the SAC are suitably managed.

#### **HRA next steps**

- Impacts of the LDP on the Cefn Cribwr Grasslands SAC cannot be ruled out at this stage, therefore further assessment of impacts will be necessary at the next stage of LDP preparation.

#### **6.8 *Dunraven Bay SAC***

This site is designated solely for the presence of a particular type of plant, as this is the only remaining part of its range on the Bristol Channel Coast. The impacts of development on this site will be from changes in groundwater, as the plants rely on a constant water supply. It is not exactly known what would effect this specific water supply, but care will need to be taken by development in the parts of Bridgend CB nearest to this site to ensure it does not harm groundwater availability.

There are no direct policy impacts of the Pre-Deposit Proposals on this SAC.

#### **Matters for consideration in LDP:**

- This area is outside of Bridgend County Borough, yet the town of Bridgend is within 10km from the site. There is the potential for development, particularly if this gave rise to an increased water demand, to have an impact on the Dunraven Bay SAC.

### HRA next steps

- Impacts of the LDP on the Dunraven Bay SAC are very unlikely, however, it may be suitable to look again at this when the full LDP is developed.

### In-combination effects

- 6.9 It is important to consider other plans and projects that may also have an influence over the Natura 2000 sites, and how the LDP could affect these to change the significance of impact on the sites. This is a requirement of Article 6(3) of the Habitats Directive.
- 6.10 Most significantly in this instance it will be the LDPs of the neighbouring local authority areas that it will be important to consider. In this case it is the Neath Port Talbot County Borough, Vale of Glamorgan and Rhondda Cynon Taff County Borough. These LDPs are at various stages of completion, at the present time possible in-combination impacts that may need to be monitored are:
- *Blackmill Woodlands SAC*  
Other local authorities' LDPs are unlikely to affect these two woodland sites, as this site is entirely within Bridgend County Borough. There are no current plans for improvements to the A4160 that runs through the site adjacent to one of the woodland areas in Welsh Assembly Government highways plans and the draft RTP prepared by the South East Wales Transport Alliance.
  - *Cefn Cribwr Grasslands SAC*  
Other local authorities' LDPs are unlikely to affect these four areas of protected grassland as they are entirely within Bridgend County Borough, and a distance from the County Borough Boundaries. This is noted in the 'Vale of Glamorgan Appropriate assessment screening report'. This states '*it is considered highly unlikely that the draft Preferred strategy... would result in development likely to have a significant effect on the integrity of the primary features of this designated site*'. Although it is identified that it is suitable to take a precautionary approach to the possible impacts.  
  
The current operation of the Cefn Cribbwr sandstone quarry could have combined impacts on the grassland SAC. It is located abutting the north eastern grassland area, and therefore its operation and/or extension could have adverse impacts on the site. Although it is in part controlled through the development plan policies, other influences beyond the control of planning may be influential.
  - *Kenfig SAC*  
For the most part the impacts of the other LDPs are unlikely to have an impact on the SAC areas, with the exception of the Neath Port Talbot Plan, as additional growth to the south of Port Talbot may put extra recreation pressure on this area, with combined growth from this area and within Bridgend County Borough giving rise to a significant increase in population within close proximity of the Kenfig site. Similarly growth near the Merthyr Mawr Warren section of the Kenfig

SAC, within the Vale of Glamorgan, may impact on the nature conservation value of this site, such as development at Ogmores-by-Sea which borders the SAC.

The coastline may be affected by matters beyond the scope of the LDP in the long-term. For instance the *Shoreline Management Plan sub-cell 8b: Worm's Head to Lavernock Point* (Swansea Bay Coastal Engineering Group, March 2001) indicates that this stretch of coast may have undergone a process of managed retreat in the long-term that may reduce the overall size of the Kenfig SAC through natural processes. There may also be impacts of coastal management on Dunraven Bay SAC.

Other coastal plans that may give rise to an in-combination impact include the Second Shoreline Management Plan which is currently in preparation and the Environment Agency Wales's Catchment Flood Management Plan, and River Basin District Management Plans which are also currently being prepared.

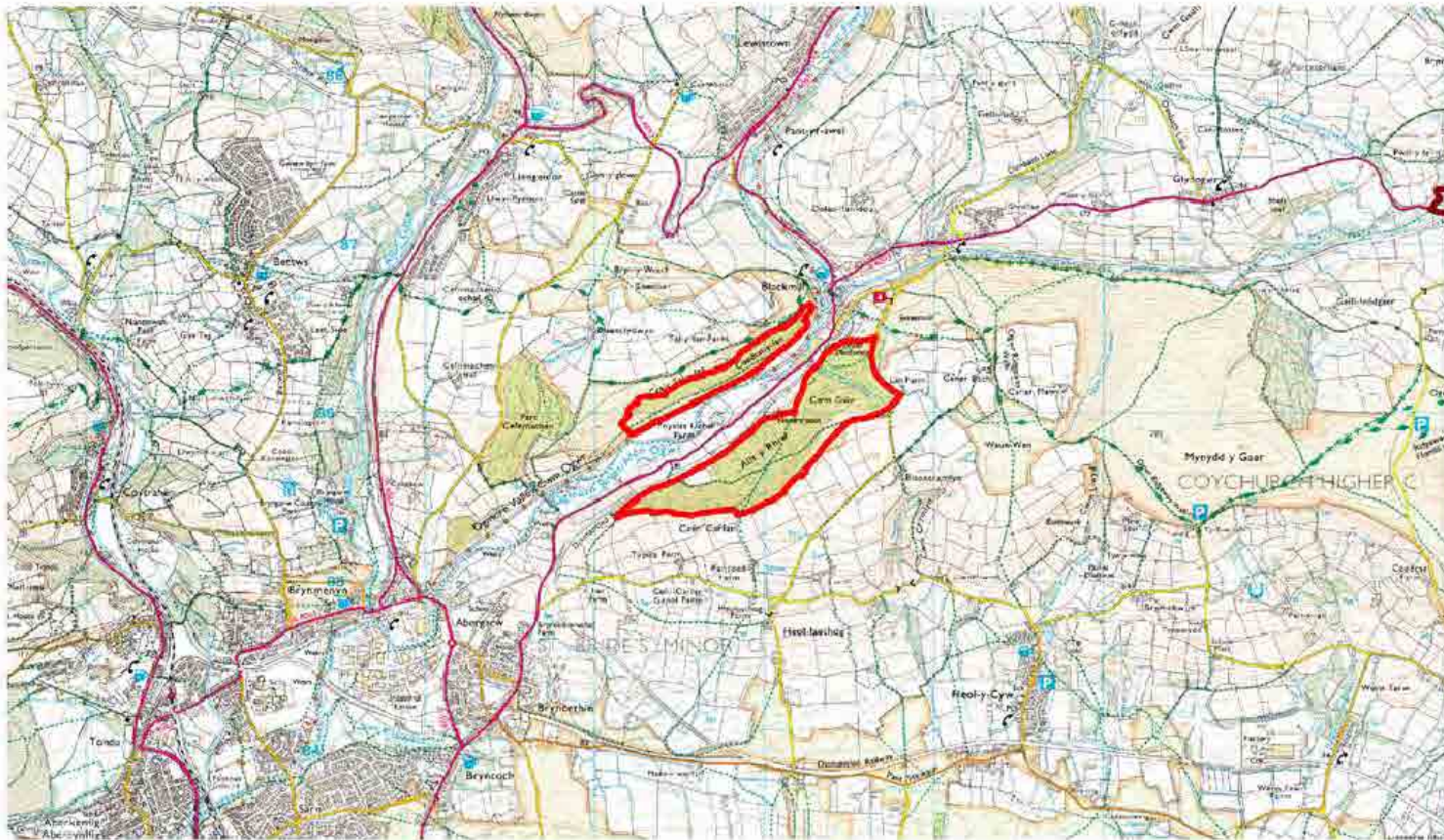
## **7 Next steps**

- 7.1 The Habitats Regulations Assessment Screening for Bridgend LDP emerging spatial strategy has identified the potential for negative impact several Natura 2000 sites in the Bridgend County Borough. These are the *Kenfig*, *Cefn Cribwr Grasslands*, and *Blackmill Woodlands* SACs. It is possible that these impacts can be entirely avoided or mitigated against through the LDP strategy and policies; however it will be necessary to review this HRA of a more advance version of the plan in order for complete assessment to take place.
- 7.2 It is clear at this stage is it will be necessary for the LDP to recognise these sites in preparing strategy and developing plan policies.

Appendix 1

Natura 2000 Sites / European nature conservation sites  
in and near Bridgend County Borough





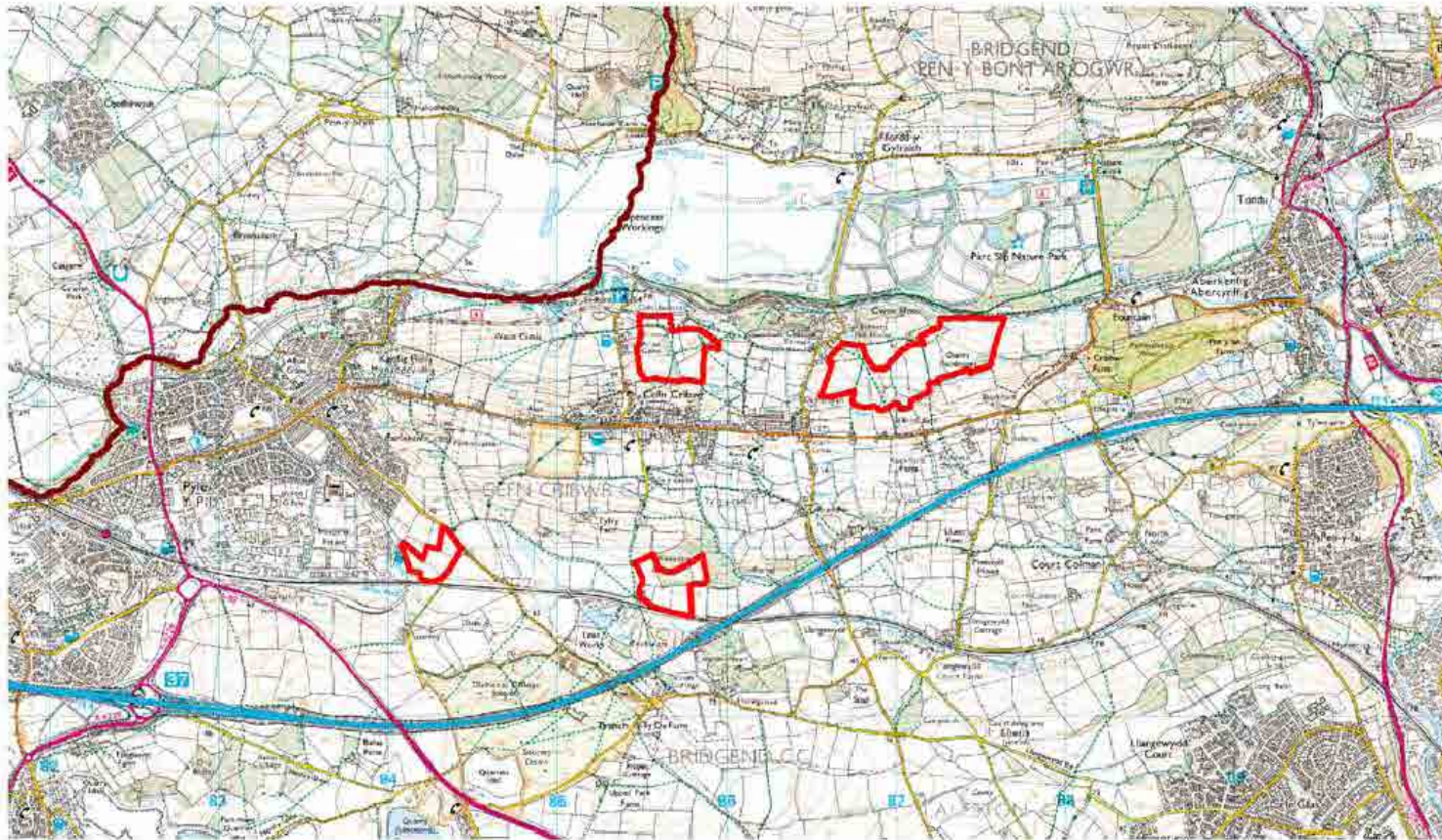
Title: Blackmill Woodlands Special Area of Conservation

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Scale: 1:30000





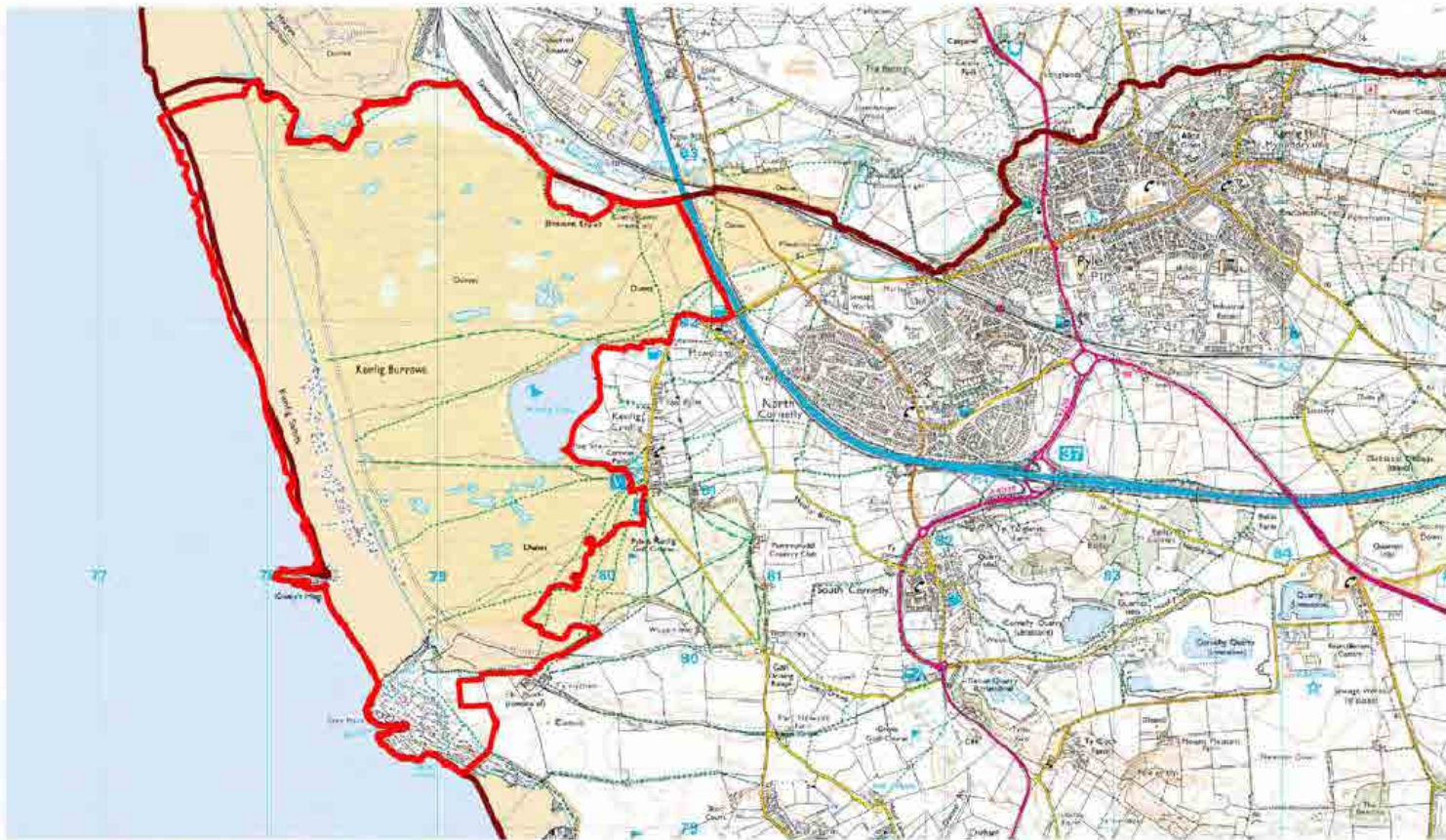
Title: Cefn Cribwr Grasslands Special Area of Conservation

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Title: Kenfig (Kenfig Burrows) Special Area of Conservation

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Title: Kenfig (Merthyr Mawr Warren) Special Area of Conservation

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Title: Dunraven Bay Special Area of Conservation

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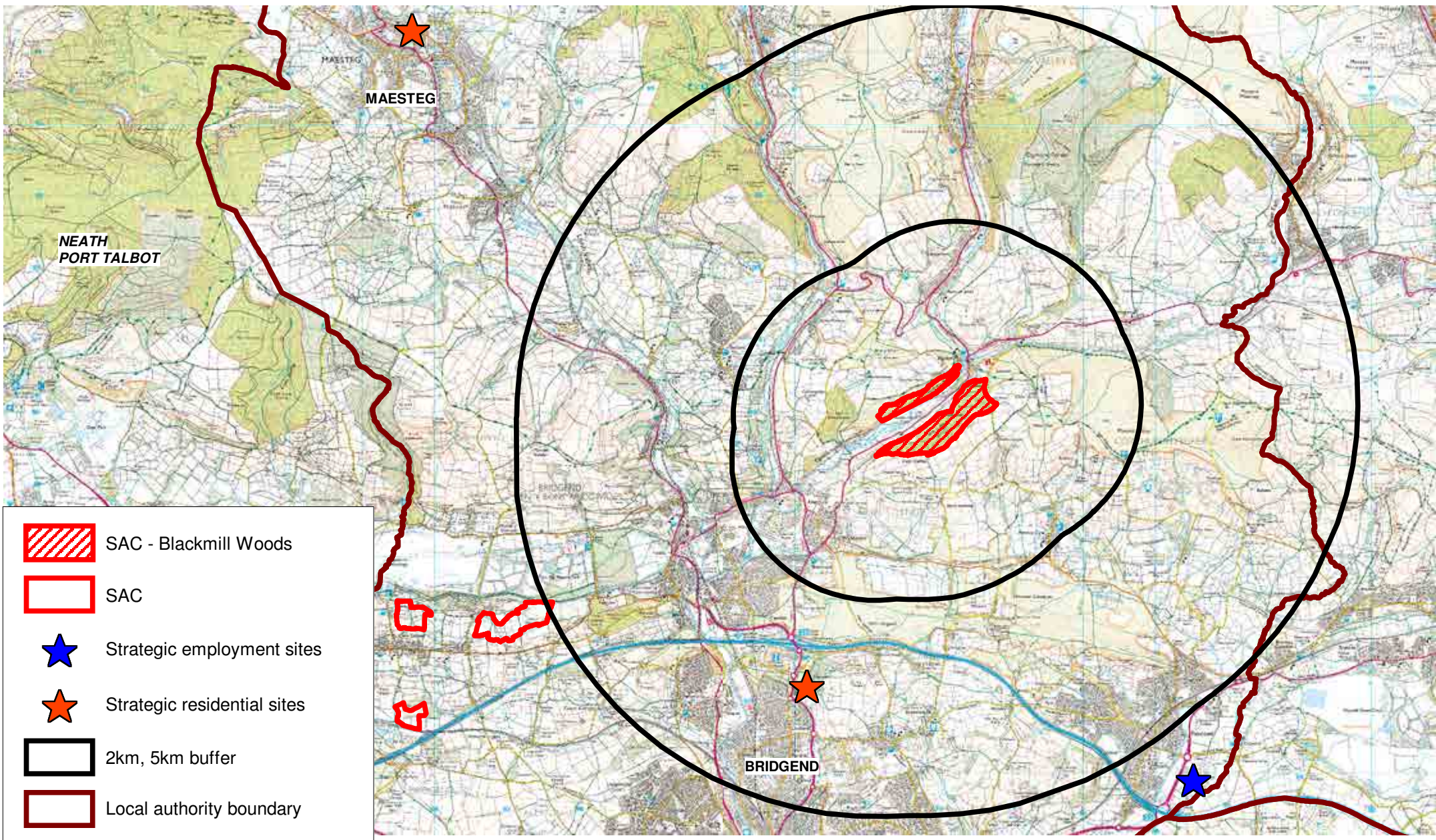
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## **Appendix 2**

**2 and 5km buffer zones around the SAC sites identified for further investigation**





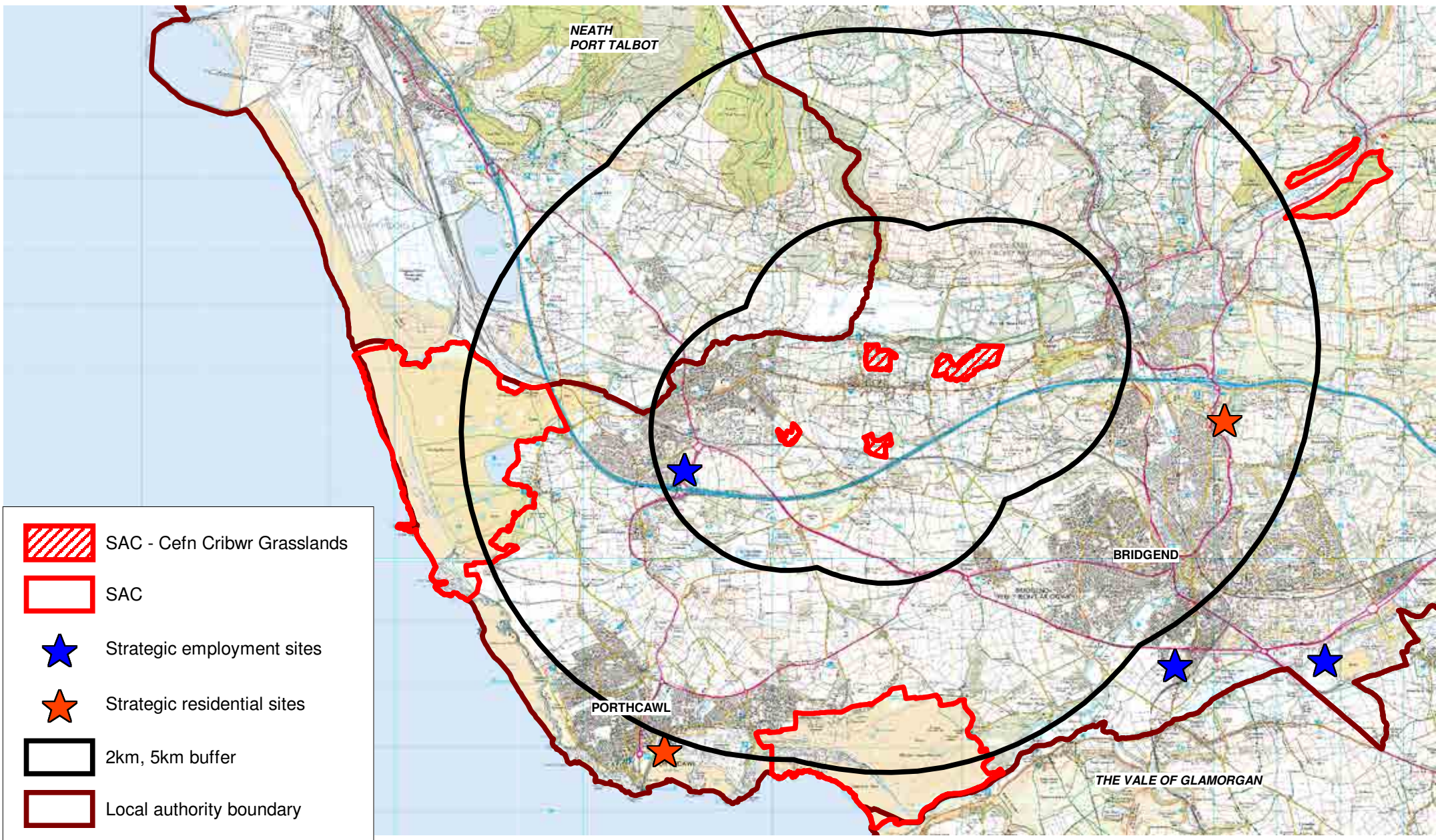
2km and 5 km Buffers for Blackmill Woods  
Special Area of Conservation



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Scale: 1:70000








 SAC - Cefn Cribwr Grasslands

 SAC

 Strategic employment sites

 Strategic residential sites

 2km, 5km buffer

 Local authority boundary

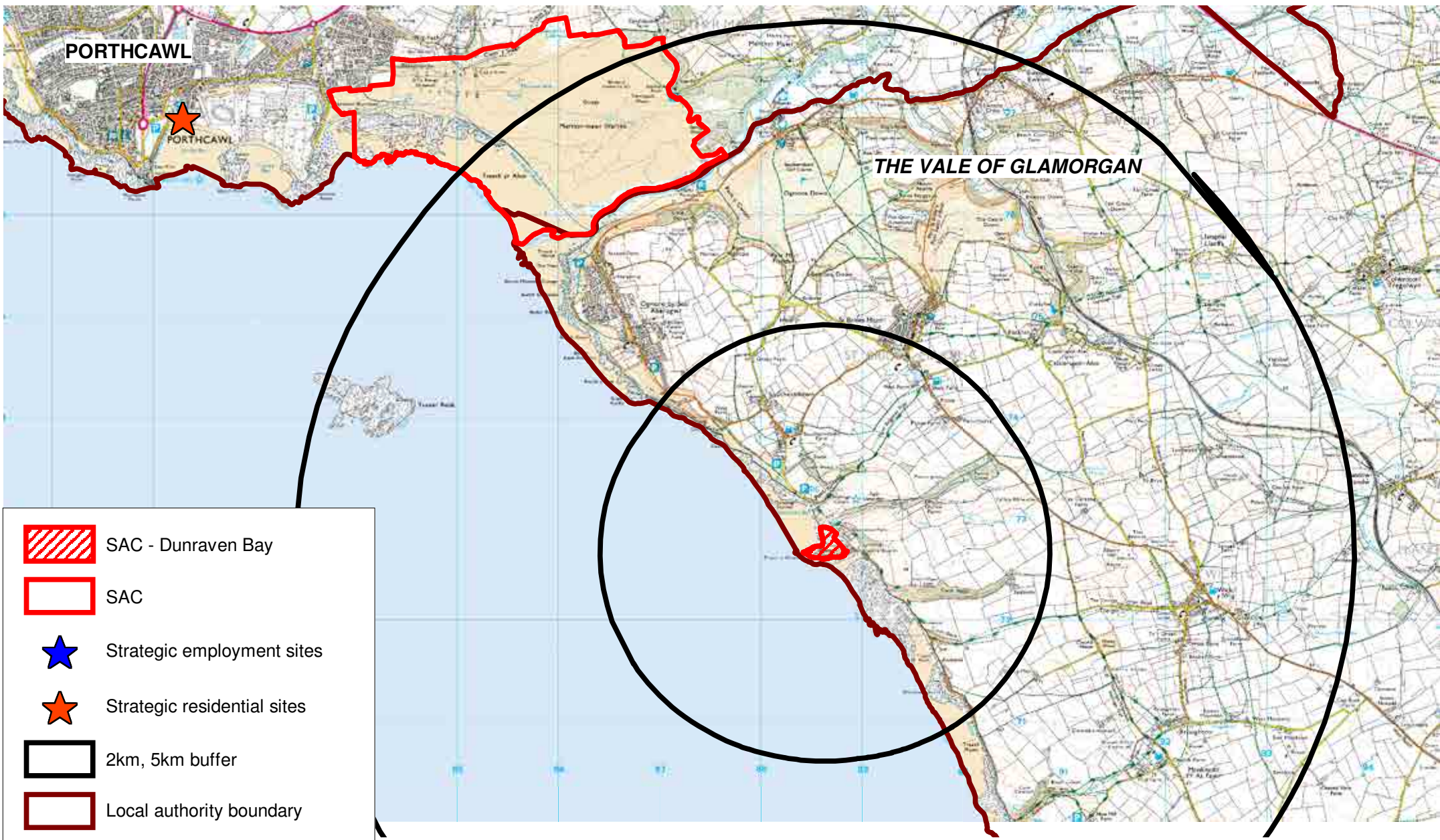
### 2km and 5 km Buffers for Cefn Cribwr Grasslands Special Area of Conservation



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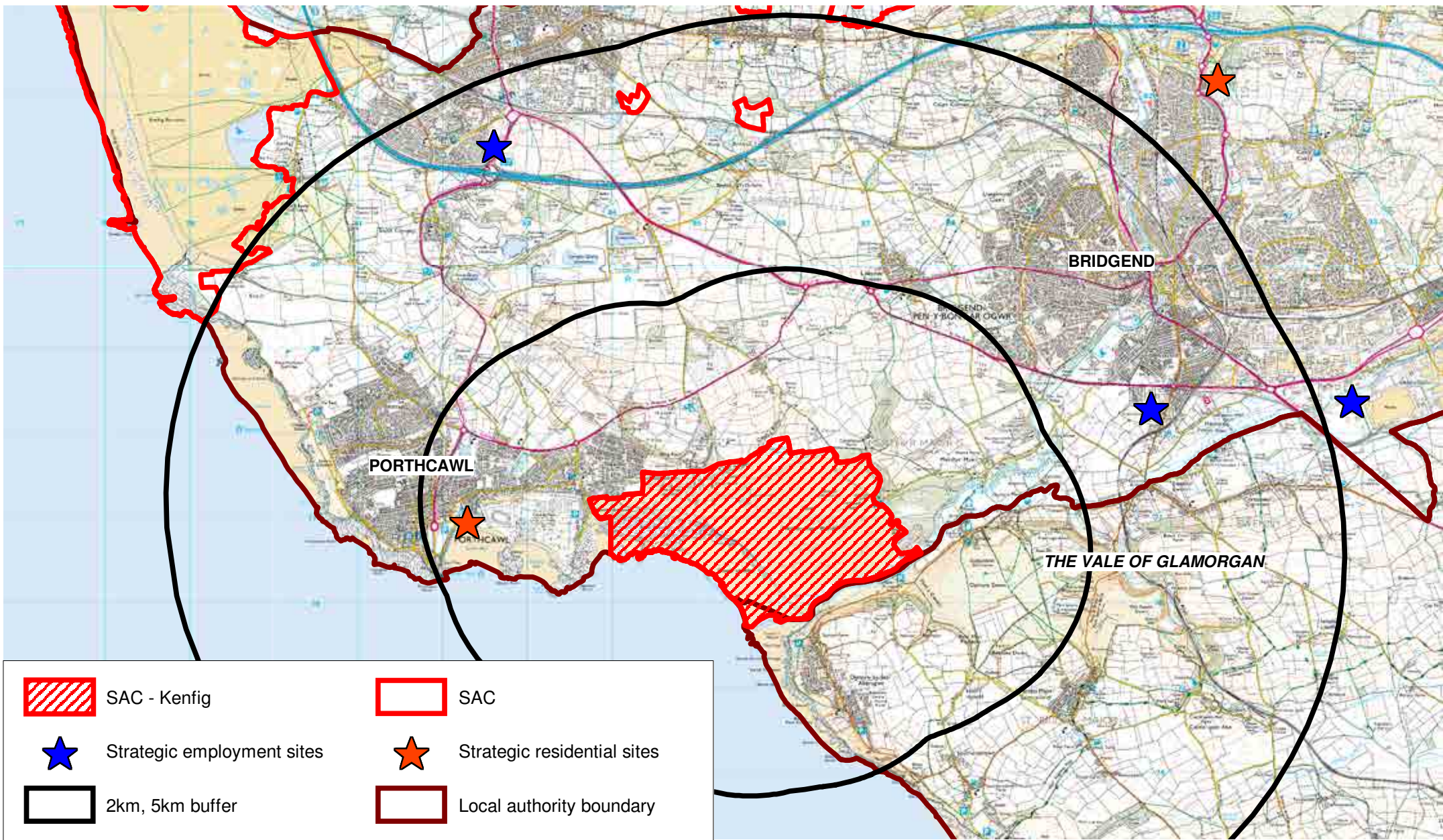
2km and 5 km Buffers for Dunraven Bay  
Special Area of Conservation









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Scale: 1:60000





- |  |   |
|--|---|
|  SAC - Kenfig                |  SAC                         |
|  Strategic employment sites |  Strategic residential sites |
|  2km, 5km buffer             |  Local authority boundary    |

2km and 5 km Buffers for Kenfig (Merthyr Mawr Warren)  
Special Area of Conservation

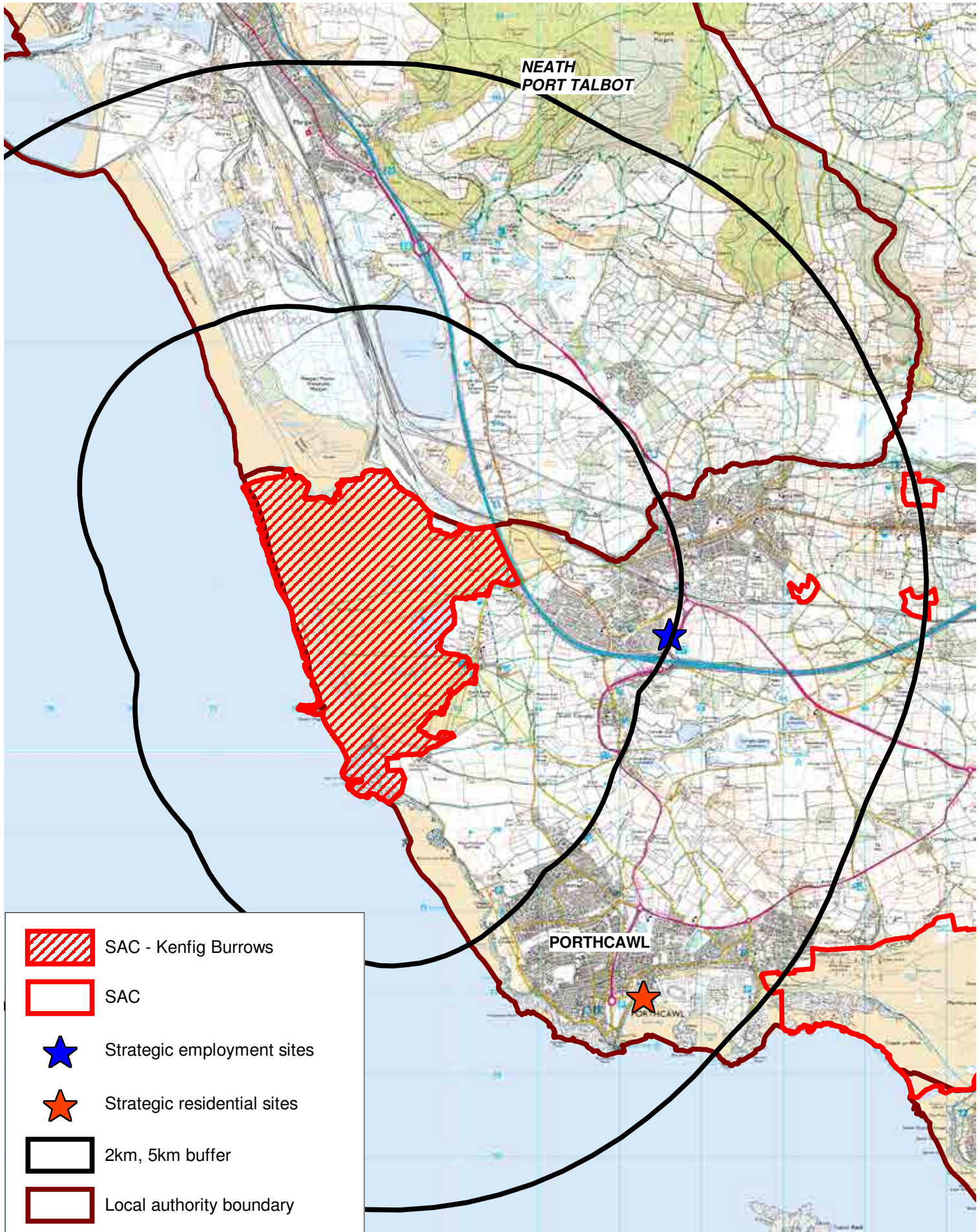
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Scale: 1:60000







-  SAC - Kenfig Burrows
-  SAC
-  Strategic employment sites
-  Strategic residential sites
-  2km, 5km buffer
-  Local authority boundary

2km and 5 km Buffers for Kenfig (Kenfig Burrows)  
Special Area of Conservation

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**Appendix 3**  
**SAC site forms**

extract from the: *Habitat Regulations Assessment (HRA): a toolkit to support HRA screening and appropriate assessment* (South East Wales Strategic Planning Group, 2008) – information database

| <b>Site Name: Blackmill Woodlands</b><br><b>Location Grid Ref: SS929859</b><br><b>JNCC Site Code: <u>UK0030090</u></b><br><b>Size: 71.01</b><br><b>Designation: SAC</b> | <b>Habitats Regulations Assessment: Data Proforma</b>  |
|---|--|
| <b>Site Description</b>   | <p>Blackmill Woodlands is an example of old sessile oak woods at the southern extreme of the habitat's range in Wales, and contributes to representation of the habitat in Wales and in south-west England. The site is situated within Bridgend County Borough and is approximately 3km away from the City of Bridgend. The A4061 runs directly between the two areas that comprise to make up the SAC. The ground flora is restricted by the relative dryness of the site, but the main habitat features of sessile oak <i>Quercus petraea</i> canopy, acidic ground flora of <i>Vaccinium myrtillus</i> and wavy hair-grass <i>Deschampsia flexuosa</i>, and moderate fern and bryophyte cover are present. The woodlands have a long cultural history of management, reflected in the distinctive gnarled appearance of many of the trees.</p>   |
| <b>Qualifying Features</b>  | <p>Annex I Habitats primary reason for selection:</p> <ul style="list-style-type: none"> <li>■ <u>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</u></li> </ul>   |
| <b>Conservation Objectives</b>  | <p><b>Conservation Objective for Feature 1:</b><br/> <b>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</b></p> <p>Vision for feature 1<br/> There is only one feature for the site, and so the vision for this feature is the same as that for the site:<br/> At least 90% of the site will be covered by semi-natural broadleaved woodland. The trees will be locally native broadleaved species, with a dominance of oak in the canopy. In the long term, the canopy will include trees of a wide range of age classes, with particular attention given to retaining old or veteran trees and encouraging natural regeneration of tree species, in particular oak. Dead wood, standing and fallen, will be maintained where possible to provide habitat for invertebrates, fungi and other woodland species. The tree canopy will not be completely closed; approximately 10% of the woodland will include a naturally occurring dynamic, shifting pattern of gaps.</p> <p>It is required that the feature be in a favourable conservation status, where all of the conditions set out in the Performance Indicators table are satisfied, and all factors affecting the achievement of these conditions are under control.</p> <p>Performance indicators for Feature 1</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and</p> |

|   |  |                          |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
|---|--|--------------------------|----------------------|--------------------------|--------|------|------|---------------------------------|------|------|--------------|------|------|-------------|------|------|--------------------|------|------|
|   | <p>projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <a href="#">Blackmill Woodlands Management Plan</a>.</p>   |                          |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| <p><b>Component SSSIs</b></p>   | <ul style="list-style-type: none"> <li>Blackmill Woodlands - is composed of 2 management units Allt Y Rhiw (Unit 1) and Craig Tal Y Fan (Unit 2), the SAC covers the same area. A map of the management units can be viewed on the <a href="#">CCW website</a>.</li> </ul>   |                          |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| <p><b>Key Environmental Conditions (factors that maintain site integrity)</b></p> | <ul style="list-style-type: none"> <li><b>Management of woodland</b> - focus on restoring an uneven age structure and providing increased opportunity for natural regeneration through removal of grazing and gap creation/maintenance.</li> </ul>   |                          |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| <p><b>SAC Condition Assessment</b></p>  | <p><b>Conservation Status of Feature 1:<br/>Old sessile oak woods with Ilex and Blechnum in the British Isles</b></p> <table border="0" data-bbox="616 558 1680 758"> <tr> <td>Broad Attribute</td> <td>Allt Y Rhiw (Unit 1)</td> <td>Craig Tal Y Fan (Unit 2)</td> </tr> <tr> <td>Extent</td> <td>PASS</td> <td>PASS</td> </tr> <tr> <td>Structure and Natural Processes</td> <td>FAIL</td> <td>FAIL</td> </tr> <tr> <td>Regeneration</td> <td>FAIL</td> <td>FAIL</td> </tr> <tr> <td>Composition</td> <td>PASS</td> <td>PASS</td> </tr> <tr> <td>Quality Indicators</td> <td>PASS</td> <td>PASS</td> </tr> </table> <p>The results shown above indicate that both Allt y Rhiw and Craig Tal-y-Fan failed to meet the limits set for two of the broad attributes, namely Structure, Natural Process and Regeneration. A closer look at the data reveals that both woodland blocks had insufficient gaps in the canopy, although the average number of gaps per sample was slightly higher for Craig Tal Y Fan than for Allt Y Rhiw. With regard to regeneration, seedlings &gt; 5cm high were seen throughout Allt Y Rhiw and as a result this woodland block passed the limits set for this attribute. However fewer seedlings were seen throughout Craig Tal Y Fan and this woodland block failed this attribute. It is worth noting however that this attribute needs to be assessed over a ten-year period. Both woodland blocks failed to have sufficient seedlings and saplings within canopy gaps. To summarise, the feature within this site is considered to be in <b>unfavourable</b> condition. However Unit 1 should be classified as <b>unfavourable recovering</b> and Unit 2 as <b>unfavourable declining</b>.</p> | Broad Attribute          | Allt Y Rhiw (Unit 1) | Craig Tal Y Fan (Unit 2) | Extent | PASS | PASS | Structure and Natural Processes | FAIL | FAIL | Regeneration | FAIL | FAIL | Composition | PASS | PASS | Quality Indicators | PASS | PASS |
| Broad Attribute   | Allt Y Rhiw (Unit 1)   | Craig Tal Y Fan (Unit 2) |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| Extent  | PASS   | PASS                     |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| Structure and Natural Processes   | FAIL   | FAIL                     |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| Regeneration  | FAIL   | FAIL                     |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| Composition   | PASS   | PASS                     |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |
| Quality Indicators  | PASS   | PASS                     |                      |                          |        |      |      |                                 |      |      |              |      |      |             |      |      |                    |      |      |



|  |   |
|--|---|
| <p><b>Vulnerabilities (includes existing pressures and trends)</b></p> | <ul style="list-style-type: none"> <li>■ <b>Grazing</b> - Sheep grazing has, and continues to have, a major impact on the condition of the site with significant problems as a result of the heavy grazing in the Craig Tal-y-Fan (unit 2) woodland block. Excessive sheep grazing leads to a severely impoverished ground flora and severely inhibits the growth or recruitment of young seedlings and saplings for regeneration. Cessation of all grazing over a long period could be detrimental to the field layer, especially bryophytes, as they can become shaded out. The ideal is either to mimic the very low level within a natural woodland ecosystem, or to periodically vary grazing pressure.</li> <li>■ <b>Air pollution*</b> - Possible in-combination effect of EA permitted licences, currently under investigation.             <ul style="list-style-type: none"> <li>○ Acidification.</li> <li>○ Eutrophication.</li> <li>○ Photochemical oxidants.</li> <li>○ Particulate matter.</li> </ul> </li> </ul>   |
| <p><b>Landowner/ Management Responsibility</b></p>                     | <p>These woodlands are situated entirely on Common Land, and are subject to rights of common. These include the lopping of branches for firewood which has resulted in the distinctive gnarled shape of many of the trees.</p>  |
| <p><b>HRA/AA Studies undertaken that address this site</b></p>         | <p>HRA Screening of the County Council of the City and County of Cardiff Local Development Plan Preferred Strategy Sept 2007.<br/><a href="http://www.cardiff.gov.uk/ObjView.asp?Object_ID=9788">www.cardiff.gov.uk/ObjView.asp?Object_ID=9788</a></p> <ul style="list-style-type: none"> <li>■ The Screening states that the most likely mechanism for the Preferred Strategy to have a significant effect on this site is through airborne pollution.</li> </ul> <p>AA Screening of the Vale of Glamorgan Local Development Plan Preferred Strategy Dec 07.<br/><a href="http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.pdf">http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.pdf</a></p> <ul style="list-style-type: none"> <li>■ It is considered unlikely that the Vale of Glamorgan LDP Draft Preferred Strategy LDP would result in development likely to have a significant effect on the integrity of the primary features of this site. The remaining activities that could adversely affect the designated site are extremely localised and site specific and will not be affected by the draft preferred strategy.</li> </ul> |

\* Air Pollution Information System (APIS). Oak Woodland. Available from:  
[http://www.apis.ac.uk/cgi\\_bin/habitat\\_result.pl?habResult=Oak+woodland&choice=allHabs&haborspec=habitat&submit.x=23&submit.y=8](http://www.apis.ac.uk/cgi_bin/habitat_result.pl?habResult=Oak+woodland&choice=allHabs&haborspec=habitat&submit.x=23&submit.y=8)

| <p><b>Site Name: Cefn Cribwr Grasslands</b><br/><b>Location Grid Ref: SS870830</b><br/><b>JNCC Site Code: <u>UK0030113</u></b><br/><b>Size: 58.35</b><br/><b>Designation: SAC</b></p> | <p><b>Habitats Regulations Assessment: Data Proforma</b></p>   |
|---|--|
| <p><b>Site Description</b></p>  | <p>The site(s) is situated to the east of Bridgend in close proximity to the M4. This is one of four sites representing <i>Molinia</i> meadows in south and central Wales, one of the major UK strongholds for this habitat type. At this site, there are extensive stands of M24 <i>Molinia – Cirsium dissectum</i> fen-meadow, including the heathy sub-type with cross-leaved heath <i>Erica tetralix</i>, as well as other forms with a stronger representation of grasses, rushes and small sedges. Transitions to stands of more acidic <i>Molinia</i> and <i>Juncus</i> pasture, dry neutral grassland and wet scrub vegetation are well-represented. Uncommon and declining species associated with the <i>Molinia</i> meadows at this site include the nationally rare viper’s-grass <i>Scorzonera humilis</i> and the nationally scarce soft-leaved sedge <i>Carex montana</i>.</p> <p>The Cefn Cribwr group of SSSIs is also of importance for the presence of marsh fritillary butterflies. This small species, whose wings have an attractive chequerboard pattern of red, brown and cream, is now rare throughout Britain, and is only found where its food plant, devil’s bit scabious, grows in abundance.</p> |
| <p><b>Qualifying Features</b></p>   | <p>Annex I Habitats primary reason for selection:</p> <ul style="list-style-type: none"> <li>▪ <u>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</u></li> </ul> <p>Annex II Species qualifying feature:</p> <ul style="list-style-type: none"> <li>▪ <u>Marsh fritillary butterfly <i>Euphydryas (Eurodryas, Hypodryas) aurinia</i></u></li> </ul>  |
| <p><b>Conservation Objectives</b></p>   | <p><b>Conservation Objective for Feature 1:</b><br/><b>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</b></p> <p>Vision for feature 1</p> <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>▪ eu-Molinion marshy grassland will occupy between 50% and 55% of the total site area.</li> <li>▪ The remainder of the site will be other semi-natural habitat or areas of permanent pasture.</li> <li>▪ The following plants will be common in the eu-Molinion marshy grassland: purple moor-grass <i>Molinia caerulea</i>; meadow thistle <i>Cirsium dissectum</i>; <i>Carex hostiana</i>; <i>Carex pulicaris</i>; devil’s bit scabious <i>Succisa pratensis</i>; carnation sedge <i>Carex panicea</i>; saw wort <i>Serratula tinctoria</i> and; tormentil <i>Potentilla erecta</i>.</li> </ul>   |



- Cross-leaved heath *Erica tetralix* and common heather *Calluna vulgaris* will also be common in some areas.
- Rushes and species indicative of agricultural modification, such as perennial rye grass *Lolium perenne* and white clover *Trifolium repens* will be largely absent from the eu-Molinion marshy grassland.
- Scrub species such as willow *Salix* (excluding *Salix repens*) and birch *Betula* will also be largely absent from the eu-Molinion marshy grassland.
- All factors affecting the achievement of the foregoing conditions are under control.

#### Performance indicators for feature 1

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the [Cefn Cribwr Grasslands Management Plan](#).

#### **Conservation Objective for Feature 2: Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia***

#### Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The site will contribute towards supporting a sustainable metapopulation of the marsh fritillary in the Cefn Cribwr area. This will require a minimum of 50ha of suitable habitat, of which at least 10ha must be in good condition, although not all is expected to be found within the SAC. Some will be on nearby land within a radius of about 2km.
- The population will be viable in the long term, acknowledging the extreme population fluctuations of the species.
- Habitats on the site will be in optimal condition to support the metapopulation.
- At least 40ha within the SAC & associated SSSI will be marshy grassland suitable for supporting marsh fritillary, with *Succisa pratensis* present and only a low cover of scrub.
- At least 8ha will be marsh fritillary breeding habitat in good condition, dominated by purple moor-grass *Molinia caerulea*, with *S. pratensis* present throughout and a vegetation height of 10-20cm over the winter period.
- Suitable marsh fritillary habitat is defined as stands of grassland where *Succisa pratensis* is present and where scrub more than 1 metre tall covers no more than 10% of the stands
- Optimal marsh fritillary breeding habitat will be characterised by grassland where the vegetation height is 10-20 cm, with abundant purple moor-grass *Molinia caerulea*, frequent "large-leaved" devil's-bit scabious *Succisa pratensis* suitable for marsh fritillaries to lay their eggs and only occasional scrub. In peak years, a density of 200 larval webs per hectare of optimal habitat will be found across the site.
- The marshy grassland will be well sheltered by hedgerows and mature trees.

|   |  |
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|   | <ul style="list-style-type: none"> <li>▪ All factors affecting the achievement of the foregoing conditions are under control.</li> </ul> <p>Performance indicators for feature 2</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <a href="#">Cefn Cribwr Grasslands Management Plan</a>.</p>   |
| <p><b>Component SSSIs</b></p>   | <ul style="list-style-type: none"> <li>▪ Bryn-Bach, Cefn Cribwr.</li> <li>▪ Pen y Castell Cefn Cribwr.</li> <li>▪ Waun-fawr, Cefn Cribwr.</li> <li>▪ Caeau Cefn Cribwr.</li> </ul> <p>There are 12 management units of which numbers 1 to 10 comprise to form the Cefn Cribwr Grasslands SAC. A map showing the management units can be viewed on the <a href="#">CCW website</a>.</p>   |
| <p><b>Key Environmental Conditions (factors that maintain site integrity)</b></p> | <ul style="list-style-type: none"> <li>▪ <b>Livestock grazing</b> - Without an appropriate grazing regime, the grassland would become rank and eventually turn to scrub and woodland. Conversely, overgrazing, or grazing by inappropriate stock (particularly sheep) would also lead to unwanted changes in species composition, through selective grazing, increased nutrient inputs and poaching. Grazing levels (the number of grazing animals and the period of grazing) need to be assessed against feature condition and modified accordingly. The preferred livestock regime is light grazing by cattle and ponies between April and November at a rate of 0.4LSU/ha/yr. Grazing alone may not be sufficient to prevent the gradual encroachment of scrub, woodland or bracken. A scrub control programme may need to be implemented. The abundance of rushes may also increase and may need to be controlled by topping subject to condition assessments. The habitat management required on this site will be best achieved through management agreements with the owners/occupiers. Agreements should specify grazing periods and levels and other details necessary for the management of the site, namely scrub control, rush topping, and fencing/gates required. The life cycle and population dynamics of the marsh fritillary, particularly the periodic population crashes, make it difficult to assess whether the population is in a state to maintain itself in the long-term. In addition, further site specific data is required to establish confidence in the influence of grazing levels on habitat condition for marsh fritillaries. Annual monitoring of larval web densities and habitat condition are required until some confidence on these issues is achieved.</li> <li>▪ <b>Shelter belts</b> - Hedgerows, woodland and mature trees in and around the site provide the sheltered conditions which the marsh fritillary requires. These should be retained and managed. On each component SSSI <ul style="list-style-type: none"> <li>○ Lower limit: at any given time least 80% of the existing mature hedgerows (over 4 metres tall) should be retained. The remaining 20% should be subject to a sustainable hedgerow management rotation. The existing blocks of woodland should be retained.</li> </ul> </li> </ul> |

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|  | <ul style="list-style-type: none"> <li>▪ <b>Hydrological regime</b> - The eu-Molinion marshy grassland is dependent on a number of springs and watercourses feeding the site. CCW states that investigation is required to achieve a better understanding of the hydrological regime and to confirm that adjacent mineral workings are having no significant adverse effects.</li> </ul>   |
| <p><b>SAC Condition Assessment</b></p> | <p><b>Conservation status for Feature 1:<br/>Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caeruleae</i>)</b></p> <p>This assessment relates to monitoring results from 2001 and provisional results from monitoring undertaken in 2007.</p> <p>The current status of the feature is <b>Unfavourable</b></p> <p>The status within each management unit where Eu-Molinion is Key Habitat:</p> <p>Caeau Cefn Cribwr SSSI:<br/> MU1 Unfavourable<br/> MU2 Unfavourable<br/> MU3 Unfavourable<br/> MU5 Unfavourable</p> <p>Pen y Castell SSSI:<br/> MU1 Unfavourable<br/> MU2 Unfavourable</p> <p>Bryn Bach SSSI:<br/> MU1 Unfavourable</p> <p>Waun Fawr SSSI:<br/> MU1 Unfavourable</p> <p><b>Conservation status for Feature 2: Marsh fritillary butterfly <i>Euphydryas (Eurodryas, Hypodryas) aurinia</i></b></p> <p>Both larvae and adults of marsh fritillary have been recorded on the site more recently, but it is suspected that the site does not currently support the required density of larval webs that would indicate a sustainable metapopulation. The current status of the feature is <b>unfavourable</b></p> <p>The status within each management unit where marsh fritillary butterfly is the Key species:</p> |

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|  | <p>Caeau Cefn Cribwr SSSI:<br/>MU5 Unfavourable<br/>MU7 Unfavourable<br/>MU8 Unfavourable</p> <p>Pen y Castell SSSI:<br/>MU1 Unfavourable<br/>MU2 Unfavourable</p> <p>Bryn Bach SSSI:<br/>MU1 Unfavourable<br/>MU3 Unfavourable</p>   |
| <p><b>Vulnerabilities (includes existing pressures and trends)</b></p> | <ul style="list-style-type: none"> <li>▪ <b>Inappropriate Grazing</b> - There is a danger of under/over grazing.</li> <li>▪ <b>Burning</b> - is not a sympathetic habitat management tool for maintaining marsh fritillary populations. Burning should only be employed in the restoration of Eu Molinion/marshy grassland, where marsh fritillaries are known not to breed.</li> <li>▪ <b>Hydrological regime</b> - The marshy grassland communities are strongly influenced by the quantity and base status of the groundwater. Reductions in the quality and quantity of the water in the springs and watercourses feeding the site may lead to a loss of marshy grassland or changes in species composition. Conversely, reduced/impeded drainage may lead to ground-water stagnation and a different change in species composition, e.g. increased abundance of rushes. Two of the component SSSIs lie close to opencast coal workings and other active mineral workings. These may have indirect effects on the hydrological regime.</li> <li>▪ <b>Off-site pollution</b> - Two of the component SSSIs lie close to opencast coal workings and other active mineral workings. The effects of the releases of lime dust into the atmosphere from the adjacent works on the SSSI are not known; these emissions are subject to the authorisation of other competent authorities, particularly the Environment Agency. CCW states that further investigation is required to establish the existence and significance of any adverse effects.</li> <li>▪ <b>Owner/occupier objectives</b> - the owners/occupiers of the land typically have an interest in securing some financial/agricultural benefit from the land. This return could be optimised by the agricultural improvement of the land, e.g. by installing new drainage, fertiliser application, or re-seeding; however these operations would cause significant long-term damage to the eu-Molinion marshy grassland.</li> <li>▪ <b>Weather conditions</b> - Weather conditions have an effect on the breeding success of the marsh fritillary. In</li> </ul> |

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|  | <p>particular, poor weather conditions during the adult flight period will reduce opportunities for mating, egg-laying and dispersal from core areas. Weather conditions during early spring influence the rate of larval development of the marsh fritillary and the effects of the parasitic wasp (see below). This factor is outside the influence of the site manager and an operational limit is not required.</p> <ul style="list-style-type: none"> <li>▪ <b>Parasites</b> - The larvae of marsh fritillaries can be parasitised by species of braconid wasp of the <i>Cotesia</i> genus. The parasites can have good years and infect a large number of larval webs, causing a crash in the subsequent adult population of marsh fritillary. This factor is outside the influence of the site manager; and an operational limit is not required.</li> </ul>  |
| <p><b>Landowner/ Management Responsibility</b></p>             | <ul style="list-style-type: none"> <li>▪ N/A</li> </ul>  |
| <p><b>HRA/AA Studies undertaken that address this site</b></p> | <p>AA Screening of the Vale of Glamorgan Local Development Plan Preferred Strategy Dec 07.<br/><a href="http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.pdf">http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.pdf</a></p> <ul style="list-style-type: none"> <li>▪ It is considered highly unlikely that the Draft Preferred Strategy for the Vale of Glamorgan LDP would result in development likely to have a significant effect on the integrity of the primary features of the designated site(s). However, Marsh Fritillary butterflies have been recorded within the Vale of Glamorgan and while it is considered highly unlikely that they originated from the Cefn Cribwr Grassland site, the species has been known to range up to 15 kilometres from its primary habitat. In addition, as the Vale supports a number of similar grassland habitats, it is considered that a precautionary approach should be adopted and further investigations undertaken.</li> </ul> |

| <p><b>Site Name: Dunraven Bay</b><br/><b>Location Grid Ref: SS886727</b><br/><b>JNCC Site Code: <u>UK0030139</u></b><br/><b>Size: 6.47</b><br/><b>Designation: SAC</b></p> | <p><b>Habitats Regulations Assessment: Data Proforma</b></p>  |
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| <p><b>Site Description</b></p>   | <p>Dunraven Bay SAC is situated on a southwest facing cliff about 1km south east of the village of Southerndown in the Vale of Glamorgan. The coastline is generally eroding and the 20 or so plants of shore dock growing here on damp coastal limestone are the only remnant of the species former Bristol Channel range. This has now declined to six individuals due to cliff falls removing plants. The Dunraven Bay population is a significant seed-source for recolonisation of Bristol Channel dunes and beachheads when future management restores these habitats to favourable condition.</p>  |
| <p><b>Qualifying Features</b></p>  | <p>Annex II Species primary reason for selection:</p> <ul style="list-style-type: none"> <li>▪ <u>Shore dock</u> <i>Rumex rupestris</i></li> </ul>  |
| <p><b>Conservation Objectives</b></p>  | <p><b>Conservation Objective for Feature 1:</b><br/><b><i>Rumex rupestris</i> (shore dock)</b></p> <p>Vision for feature 1</p> <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>▪ There are at least 10 mature plants at the site</li> <li>▪ The plant present are flowering and setting seed</li> <li>▪ The population is stable and viable in the long term.</li> </ul> <p>Performance indicators for Feature 1</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <u>Dunraven Bay Management Plan</u>.</p> |
| <p><b>Component SSSIs</b></p>  | <ul style="list-style-type: none"> <li>▪ Southerndown Coast SSSI</li> </ul> <p>A map of the site can be viewed on the <u>CCW website</u>.</p>   |

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| <p><b>Key Environmental Conditions (factors that maintain site integrity)</b></p> | <ul style="list-style-type: none"> <li>■ <b>Manage Scrub</b> - no increase in area of scrub from 2003 area.</li> <li>■ <b>Hydrological regime</b> - Availability of water seeping down the cliff face, Shore dock appears to prefer slightly damp ground.</li> </ul>   |
| <p><b>SAC Condition Assessment</b></p>  | <p><b>Conservation Status of Feature 1:<br/><i>Rumex rupestris</i> (shore dock)</b></p> <p>In September 2003, 14 plants with flowering spikes greater than 10cm were identified (10 of which were confirmed as being shore dock). There was at least one plant found in each of the two areas, A and B. Therefore these two attributes were considered to be favourable.</p> <p>In October 2004, 10 plants were identified again with at least one plant in Area A and one in Area B. Therefore these attributes are again considered to be favourable. It is noted however that due to lateness in the season it was extremely difficult to locate the plants, even with binoculars and it is likely that more plants were present.</p> <p>In 2006 a cliff fall swept away 4 of the plants, leaving 6 remaining. The feature is therefore considered to be <b>unfavourable</b>.</p>   |
| <p><b>Vulnerabilities (includes existing pressures and trends)</b></p>            | <p>The <i>Rumex rupestris</i> colony has a naturally very restricted distribution within the site, being limited to a small area of groundwater seepage. It is accessible only with difficulty and this gives it natural protection from grazing animals and accidental damage by people. It is important that the hydrological regime is maintained but there are no known threats to it at present. Research will be undertaken to ascertain the source of the groundwater.</p> <p>In the very long term, the current site of the <i>R. rupestris</i> colony will be lost as a result of coastal erosion. Nothing can be done to prevent this, but the natural processes of erosion may be expected to simultaneously create replacement habitat for this plant in the immediate vicinity.</p>   |
| <p><b>Landowner/ Management Responsibility</b></p>                                | <ul style="list-style-type: none"> <li>■ N/A</li> </ul>  |
| <p><b>HRA/AA Studies undertaken that address this site</b></p>                    | <p>AA Screening of the Vale of Glamorgan Local Development Plan Preferred Strategy Dec 07.<br/><a href="http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.pdf">http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.pdf</a></p> <ul style="list-style-type: none"> <li>■ The Screening concludes that development resulting from the LDP in the proximity of the SAC is therefore unlikely to be of scale that would result in a detrimental impact upon the site. While increased pressure for recreation could result from increased housing provision, the location of the site within the Glamorgan Heritage Coast, which is actively managed for conservation, affords it significant protection. In addition, the location of the species population on an inaccessible liassic limestone cliff face means that it is highly unlikely to be impacted</li> </ul> |

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|  | <p>upon by increases in recreational pressure. While increases in airborne pollution could impact upon the site, its location within industrial south Wales means that it is already subject to high levels of pollution and it is therefore considered unlikely that development resulting from the LDP would result in a significant detrimental effect on the integrity of the primary features of the designated site. Notwithstanding the above it is considered that the sites close proximity to Bridgend could result in in-combination effects on the site and that a precautionary approach should be adopted and further investigations undertaken.</p> |
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| <b>Site Name: Kenfig/ Cynffig</b><br><b>Location Grid Ref: SS790813</b><br><b>JNCC Site Code: <u>UK0012566</u></b><br><b>Size: 1191.67</b><br><b>Designation: SAC</b> | <b>Habitats Regulations Assessment: Data Proforma</b>   |
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| <b>Site Description</b>   | <p>Kenfig is a largely intact dune system in south Wales with extensive areas of fixed dune vegetation with red fescue <i>Festuca rubra</i> and lady's bedstraw <i>Galium verum</i> and semi-fixed dune grassland with marram <i>Ammophila arenaria</i> and red fescue. The site also contains one of the largest series of dune slacks in Wales. The dune slacks are species-rich and there are extensive areas of dunes with <i>Salix repens</i> ssp. <i>argentea</i>, which represent a mature phase in dune slack development. This site is in the central part of the range of this community on the west coast and is a highly representative example of this habitat type.</p> <p>Kenfig Pool is a shallow lake system within the extensive sand dune system of Kenfig, alongside Swansea Bay in south Wales. The water chemistry is indicative of a coastal, alkaline lake with a moderate nutrient status. High alkalinity, conductivity, sodium and chloride values reflect this marine influence. Elevated calcium values are probably derived from marine shell remains in the sandy substrate. Large stands of common reed <i>Phragmites australis</i> are found on the pool's seaward side. Grey club-rush <i>Scirpus lacustris</i> ssp. <i>tabernaemontani</i>, sea club-rush <i>Scirpus maritimus</i>, branched bur-reed <i>Sparganium erectum</i> and yellow iris <i>Iris pseudacorus</i> are also present.</p> <p>The site is also designated as it is one of two sites selected for petalwort <i>Petalophyllum ralfsii</i> in south Wales and supports a large population of the species, numbering thousands of thalli. The calcareous dune system has many dune slacks that include the early successional, open slack vegetation this species requires. It also holds the largest populations of fen orchid <i>Liparis loeselii</i> in the UK, comprising about 50% of the UK resource. Management of the site is directed towards the maintenance and enhancement of the populations of fen orchid. The variety that occurs here, as at Whiteford Burrows, is var. <i>ovata</i>, which is currently known to occur only in Wales and on the coast of Brittany, as well as in the past at Braunton Burrows, Devon, England.</p> |
| <b>Qualifying Features</b>  | <p>Annex I Habitats primary reason for selection:</p> <ul style="list-style-type: none"> <li>■ <u>Fixed dunes with herbaceous vegetation ('grey dunes')</u>* Priority feature</li> <li>■ <u>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</u></li> <li>■ <u>Humid dune slacks</u></li> <li>■ <u>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</u></li> </ul> <p>Annex I Habitats qualifying feature:</p> <ul style="list-style-type: none"> <li>■ <u>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</u></li> </ul> <p>Annex II Species primary reason for selection:</p>   |

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|                                       | <ul style="list-style-type: none"> <li>▪ <u>Petalwort</u> <i>Petalophyllum ralfsii</i></li> <li>▪ <u>Fen orchid</u> <i>Liparis loeselii</i></li> </ul>  |
| <p><b>Conservation Objectives</b></p> | <p><b>Conservation Objective for Feature 1 and 2:<br/>Humid dune slacks and Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</b></p> <p>NB The division between ‘humid dunes’ and ‘dunes with <i>Salix repens</i> ssp. <i>argentea</i> is unclear and difficult to define. The humid dune slack habitat includes both successional young and mature slacks, which equate to NVC communities SD13-16. The dunes with <i>Salix repens</i> spp. <i>argentea</i> equate to drier areas of mature dune slack, and the low hummocks found around dune slacks which support <i>Salix repens</i>. These are sometimes known as hedgehog dunes. Because of the difficulties in separating these two habitats, for the purposes of monitoring these features are considered together.</p> <p>Vision for feature 1</p> <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>▪ Dunes with <i>Salix repens</i> and humid dune slacks will occur as part of the dune system, their location will be determined by natural processes and appropriate grazing management</li> <li>▪ A range of successional stages will be found in both features</li> <li>▪ Factors affecting the features will be under control</li> </ul> <p>Performance indicators for Feature 1 &amp; 2</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <u>Kenfig Management Plan</u>.</p> <p><b>Conservation Objective for Feature 3:<br/>Fixed dunes with herbaceous vegetation (‘grey dunes’)</b></p> <p>Vision for feature 3</p> <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>▪ Fixed dunes with herbaceous vegetation (grey dunes) will occur where older, shifting dunes become more</li> </ul> |

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|  | <p>stabilised and in early successional stages become colonised by lichens and other species indicative of the transition from less mobile habitat.</p> <ul style="list-style-type: none"> <li>▪ The habitat will encompass a range of successional stages throughout the area, determined by patterns of natural factors and grazing.</li> <li>▪ Grey dunes will comprise a significant part of the dune system but will increase and decrease in extent and location as natural processes determine the landscape of the dune systems</li> <li>▪ All factors are under management control</li> </ul> <p>Performance indicators for Feature 3</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <u>Kenfig Management Plan</u>.</p> <p><b>Conservation Objective for Feature 4:<br/>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</b></p> <p>Vision for feature 4</p> <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>▪ Submerged <i>Chara</i> beds (mainly <i>Chara aspera</i> and <i>C. virgata</i>) growing in relatively shallow water form the predominant submerged macrophyte vegetation throughout most of the lake.</li> <li>▪ <i>Chara</i> occur at more than 50% frequency along regular surveillance transects within the Western and Central arms.</li> <li>▪ Charophyte species and uncommon pondweeds such as <i>Potamogeton gramineus</i> and <i>P. x nitens</i> are present in other embayments and pools, including <i>Tolypella glomerata</i> in dune pools.</li> <li>▪ The lake is spring-fed so nutrient levels remain low. One of the main nutrients (phosphorus) reaches no more than 25 micrograms per litre in regular sampling areas. Nitrogen levels in the water are low (less than 1 milligram per litre) and declining or stable.</li> <li>▪ The lake water is clear, but well vegetated with dense beds of submerged and marginal plants. A Secchi disc is visible on the lake bed in the deepest part of the lake (2.6m).</li> <li>▪ Water depth is relatively stable, fluctuating naturally with groundwater.</li> <li>▪ Reed, swamp and fringing bur-reed are restricted to shallow zones – covering not more than 10 % of the site.</li> <li>▪ All factors affecting the achievement of these conditions are under control.</li> </ul> <p>Performance indicators for Feature 4</p> |
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The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the [Kenfig Management Plan](#).

**Conservation Objective for Feature 5:  
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)**

Vision for feature 5

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The quality of the saltmarsh is within specified limits
- There is no increase in erosion along the length of the transition from salt marsh to sand dune
- The saltmarsh flora will continue to include the following scarce species; *Limonium binervosum*, and *Frankenia laevis*
- Light grazing by rabbits and /or stock will continue to be tolerated within limits
- The damaging effects of pony riding will have been reduced or eliminated

Performance indicators for Feature 5

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the [Kenfig Management Plan](#).

**Conservation Objective for Feature 6:  
Petalwort *Petalophyllum ralfsii***

Vision for feature 6

*Petalophyllum ralfsii* will continue to be found at its current locations in each of the two SSSI within the SAC. The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

The species will be found where conditions are suitable in sufficient numbers to form a viable and sustainable population

The population will vary from year to year depending on conditions, especially in drier years, but the long term

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|   | <p>population will remain steady and sustainable<br/>Suitable dune slacks will have patches of bare ground that is being colonised by jelly lichens (<i>Collema</i> spp.) and <i>Barbula</i> mosses.<br/>The factors affecting the feature are under control</p> <p>Performance indicators for Feature 6</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <a href="#">Kenfig Management Plan</a>.</p> <p><b>Conservation Objective for Feature 7:<br/>Fen orchid <i>Liparis loeselii</i></b></p> <p>Vision for feature 7</p> <p>The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>▪ Sufficient suitable habitat is present to support the populations</li> <li>▪ The factors affecting the feature are under control</li> </ul> <p>Performance indicators for Feature 7</p> <p>The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the <a href="#">Kenfig Management Plan</a>.</p> |
| <p><b>Component SSSIs</b></p>   | <ul style="list-style-type: none"> <li>▪ Cynffig/ Kenfig (units 1 to 9)</li> <li>▪ Merthyr Mawr Warren (10 to 16)</li> </ul> <p>The two SSSIs above are divided into 16 management units of which numbers 1, 2, 5 to 9 and 10 to 15 comprise to form the Kenfig SAC. The management units can be viewed on maps available on the <a href="#">CCW website</a>.</p>   |
| <p><b>Key Environmental Conditions (factors that maintain site integrity)</b></p> | <ul style="list-style-type: none"> <li>▪ <b>Hydrological regime</b> - It is thought that the dune slacks at Kenfig and Merthyr Mawr as well as Kenfig Pool are mainly fed by groundwater, and possibly a deep Carboniferous Limestone aquifer. There are also three small ephemeral streams that enter Kenfig Pool. Maintenance of the natural hydrological regime of both dune systems is critical for the maintenance of the character, composition and condition of the features.</li> </ul>   |

- **Water quality** - management should aim to protect and maintain the required water quality. The major water quality concerns are related to elevated macro-nutrient levels. Elevated levels of nitrogen have been found at Burrows Well (a karstic spring) on the Merthyr Mawr component and there is also some indication that dune slacks are becoming increasingly eutrophic. The nature of the underlying limestone aquifer means that off-site activities a considerable distance away can potentially have an impact on the SAC. This effect may occur both spatially and temporally. The limits set for Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. to achieve stable nutrient levels are:

  - Upper limit:
    - Mean annual levels of Total Phosphate (TP) should not exceed 24 microgrammes per litre within the pool. This figure is an annual mean based on the availability of at least four different water samples, collected.
    - AND
    - Winter nitrate (November-February) <1 milligramme per litre.
    - AND
    - No excessive growth of cyanobacteria or green algae
  - Lower Limit:
    - >5mg l<sup>-1</sup> dissolved O<sub>2</sub> throughout the water column
  
- **Air quality** - management should aim to protect and maintain the required air quality. Critical level or exposure (over the averaging/summing period):

  - Acid - 4 keq ha<sup>-1</sup> yr<sup>-1</sup> (calendar year)
  - NO<sub>x</sub> as NO<sub>2</sub> - 30 µg m<sup>-3</sup> (calendar year)
  - SO<sub>2</sub> – 20 µg m<sup>-3</sup> (calendar year and winter Oct 1 to Mar 31)
  - Nitrogen - 10-20 kg ha<sup>-1</sup> yr<sup>-1</sup> (calendar year)
  - Ammonia - 3 µg m<sup>-3</sup> (calendar year)
  - Ozone – 3000 ppb h (3 months)
  
- **Manage/Restrict recreation and access** - People and vehicle access should be managed so that it does not adversely affect the dune slack SAC features. Dune stabilisation works should only be considered in exceptional cases where severe erosion has been caused by vehicle or visitor pressure. The first action should be to manage the source of the problem. Vehicle restrictions to the dunes need to be continued, and be reviewed as problems arise. Wardening and surveillance of access for horse riders among certain areas of the dune slacks at Merthyr Mawr where it is impacting on *P. ralfsii* habitat should be continued, with access to sensitive habitats discouraged via deviation onto other less sensitive habitat.
  
- **Maintain natural coastal processes** - management should be aimed at minimising any constraints to the natural movement of sand. This should allow the continued process of slack formation, maintaining a presence

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|  | <p>of embryo and successional young slacks on site.</p> <ul style="list-style-type: none"> <li>■ <b>Management of Grazing/ Scrub</b> - Humid dune slacks and dunes with <i>Salix repens</i> are maintained by the seasonally high water table, grazing and scrub control. Grazing by domestic stock facilitates rabbit and hare grazing since rabbits tend to graze where the sward is already short. Grazing levels should be set to allow the maintenance of a low, species rich sward throughout the majority of the dune slacks and to reduce the spread of scrub. Continued scrub clearance is necessary at Merthyr Mawr and Kenfig since scrub encroachment has been considerable over the last 30 years and grazing alone cannot keep scrub in check. Where natural processes such as mobility, erosion, and wind scour are significant, scrub invasion is not an issue. Dune slacks should be lightly grazed, preferably by cattle during the summer. Grazing by cattle in winter is acceptable provided supplementary feeding and poaching do not take place. Management aimed at encouraging the return of rabbits and hares at Kenfig, such as mowing and burrow creation, should be continued, and rabbit grazing should be maintained at Merthyr Mawr. Mowing has taken place within certain dune slacks at Kenfig on a regular basis over the past few years, to facilitate the spread of grazing and to some extent to control dense low willow scrub growth and re-growth following initial clearance management. Mowing has achieved good results by reducing the competitive advantage of coarse and woody growth thereby favouring desirable species such as marsh helleborine <i>Epipactis palustris</i>.</li> <li>■ <b>Fishery</b> (Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp) - No further fish species introduction. Removal of the few remaining carp is an essential prerequisite to the site achieving favourable status.</li> </ul> |
| <p><b>SAC Condition Assessment</b></p> | <p><b>Conservation Status and Management Requirements of Feature 1 &amp; 2:<br/>Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) and Humid dune slacks</b></p> <p>These two features have been considered together as the issues and management of both are intimately linked.</p> <p>Conservation Status of Feature 1 &amp; 2<br/>No distinction has been made between the Humid dune slacks and Dunes with <i>Salix repens</i> ssp. <i>argentea</i> as outlined in the conservation objectives, and this monitoring data will be used to determine the condition of both features. Results show that the proportion of early successional stages in Areas Y and Z is below that required. Therefore, vegetation in both areas is considered to be unfavourable. Areas Y and Z contained the largest blocks of embryo and successional young habitat in 1997. As the system is stabilising and no new natural areas of habitat have been created, we can assume that the slack habitats outside of the sample plots are also unfavourable, despite mowing and scraping has artificially created areas of habitat (see comments below). Therefore, the Humid dune slacks and Dunes with <i>Salix repens</i> ssp. <i>argentea</i> at Kenfig SAC are considered to be in <b>unfavourable declining</b> condition (August 2006 SAC Monitoring Report).</p>   |

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|  | <p><b>Conservation Status and Management Requirements of Feature 3:<br/>Fixed dunes with herbaceous vegetation (‘grey dunes’)</b></p> <p>Conservation Status of Feature 3<br/>The fixed dune with herbaceous vegetation feature of Kenfig/Cynffig SAC is considered to be in <b>Unfavourable declining</b> conservation status (August 2006 SAC Monitoring Report). This is due primarily to over-stabilisation, undergrazing and scrub development.</p> <p><b>Conservation Status and Management Requirements of Feature 4:<br/>Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.</b></p> <p>Conservation Status of Feature 4<br/>The Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. feature of Kenfig/Cynffig SAC is considered to be in <b>unfavourable recovering</b> conservation status (2006).</p> <p>The main reason for the unfavourable condition is the presence of introduced fish (carp). If carp removal can be carried out favourable condition should follow. (Burgess et al., 2006)</p> <p><b>Conservation Status and Management Requirements of Feature 5:<br/>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</b></p> <p>Conservation Status of Feature 5<br/>The condition of the Atlantic salt meadows at Merthyr Mawr were assessed as <b>favourable</b> condition on the basis of SAC monitoring carried out in December, 2004. In addition the SSSI salt marsh feature was assessed as being in favourable condition (December, 2004).</p> <p><b>Conservation Status and Management Requirements of Feature 6: Petalwort <i>Petalophyllum ralfsii</i></b></p> <p>Conservation status of Feature 6<br/>The <i>Petalophyllum ralfsii</i> of Kenfig/Cynffig SAC is considered to be in <b>unfavourable declining</b> conservation status (November 2007).</p> <p>This analysis is based on the most recent SAC monitoring report for the feature, which shows that the performance indicators for the habitat and the extent, distribution and numbers of thalli were not met. Long-term surveillance indicates that <i>P. ralfsii</i> used to have a much wider distribution and that it was regularly found with greater than 50 thalli per m<sup>2</sup> in more than two discrete locations within more than two dune slacks.</p> <p><b>Conservation Status and Management Requirements of Feature 6:</b></p> |
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|  | <p><b>Fen Orchid <i>Liparis loeselii</i></b></p> <p>Conservation status of Feature 6<br/>The <i>Liparis loeselii</i> of Kenfig/Cynffig SAC is considered to be in <b>unfavourable declining</b> conservation status (July 2007).</p> <p>This analysis is based on the most recent SAC monitoring report for the feature, which shows that the number of plants and the number of slacks within which it occurs have decreased dramatically. Long-term surveillance indicates that <i>L. loeselii</i> used to have a much wider distribution and that on any occasion it was regularly found in six or more discrete dune slacks with numbers of flowering spikes greater than 200.</p>  |
| <p><b>Vulnerabilities (includes existing pressures and trends)</b></p> | <ul style="list-style-type: none"> <li>▪ <b>Erosion and progradation</b> - Unless artificially constrained, the seaward edges of sand dunes can be a highly mobile feature, though there is a natural trend to greater stability further inland. Very few dune systems are in overall equilibrium, and a majority of those in the UK demonstrate net erosion rather than net progradation; insufficient sand supply is frequently the underlying cause.</li> <li>▪ <b>Falling water tables</b> - As a result of local extraction of water and/or drainage of adjacent land used for agriculture or housing.</li> <li>▪ <b>Grazing</b> - In the absence of human interference, most stable dunes, with the exception of those experiencing severe exposure, would develop into scrub and woodland. The preponderance of grassland and heath vegetation on British dunes is due to a long history of grazing by livestock. Continued grazing is normally necessary to maintain the typical fixed dune communities, but over-grazing, particularly when combined with the provision of imported feedstuffs, can have damaging effects. A more widespread problem is under-grazing, leading to invasion by coarse grasses and scrub, though rabbits are locally effective in maintaining a short turf. Kenfig National Nature Reserve (NNR) has been grazed by sheep in recent years, and grazing is currently under review. Selected dune slacks are mown in order to provide appropriate conditions for the maintenance of these species and the vegetation.</li> <li>▪ <b>Scrub</b> - scrub encroachment has been considerable over the last 30 years and grazing alone cannot keep scrub in check. Where natural processes such as mobility, erosion, and wind scour are significant, scrub invasion is not an issue. Where slacks are more mature, scrub can become a problem especially when grazing ceases or is reduced for a period and early scrub encroachment is not controlled. As scrub becomes established shelter and seeding increases and the problem is then exacerbated as stock cannot gain easy access to graze.</li> <li>▪ <b>Recreation and access</b> - people and vehicle access should be managed so that it does not adversely affect the dune slack SAC features. Dune stabilisation works should only be considered in exceptional cases where</li> </ul> |

severe erosion has been caused by vehicle or visitor pressure. The first action should be to manage the source of the problem. Vehicle restrictions to the dunes need to be continued, and be reviewed as problems arise. Wardening and surveillance of access for horse riders among certain areas of the dune slacks at Merthyr Mawr where it is impacting on *P. ralfsii* habitat should be continued, with access to sensitive habitats discouraged via deviation onto other less sensitive habitat.

- **Natural successional changes** - within the dune systems are detrimental to the plant communities of the dune grassland and humid dune slacks as well as to *Liparis loeselii* and *Petalophyllum ralfsii*, which are species of early successional changes.
- **Air quality\***:
  - Eutrophication.
  - Photochemical oxidants.
  - Particulate matter.
- **Water quality** - The major water quality concerns are related to elevated macro-nutrient levels. Elevated levels of nitrogen have been found at Burrows Well (a karstic spring) on the Merthyr Mawr component and there is also some indication that dune slacks are becoming increasingly eutrophic. The nature of the underlying limestone aquifer means that off-site activities a considerable distance away can potentially have an impact on the SAC. This effect may occur both spatially and temporally.
- **Non-native species** - Large populations of coarse fish (such as introduced carp for example) can distort the balance between the plant community, nutrient levels and the coarse fish population by eating small microscopic animals (zooplankton) that feed on tiny algae (phytoplankton). There should be no new non-native invasive species on the UKTAG Red List present. No increase in *Elodea canadensis*. This species is currently rare.
- The **Fen Orchid** is also under threat from:
  - Natural processes of succession in dune slacks.
  - Work undertaken to stabilise sand dunes.
- The **Pealwort** is also under threat from:
  - Loss of habitat due to development, dune stabilisation and natural succession.
  - Drainage.
  - Recreation.

\* Air Pollution Information System (APIS). Sand Dunes. Available from:

[http://www.apis.ac.uk/cgi\\_bin/habitat\\_result.pl?habResult=Sand+dunes&choice=allHabs&haborspec=habitat&submit.x=17&submit.y=7](http://www.apis.ac.uk/cgi_bin/habitat_result.pl?habResult=Sand+dunes&choice=allHabs&haborspec=habitat&submit.x=17&submit.y=7)

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|  | <ul style="list-style-type: none"> <li>○ Botanical collection.</li> </ul> <p>Indirect effects on dunes include atmospheric nutrient deposition, and coastal squeeze due to rising sea levels and increased storminess. The potential for dredging and marine aggregate extraction, through the disruption of coastal processes, to have cumulative and long-term effects on sand dunes is an area for further investigation.</p>  |
| <p><b>Landowner/ Management Responsibility</b></p>             | <p>All parts of the Kenfig Dunes SSSI are owned by a charitable organisation, the Kenfig Corporation Trust, dedicated to holding the site in trust for the benefit and enjoyment of the community of Kenfig, allowing unrestricted access in time and space. Bridgend County Borough Council manages the site, in consultation with other parties through the Kenfig NNR management committee. Their aim is to maintain and enhance its value for nature conservation, including the provision of educational and public interpretation resources, run from the visitor centre. CCW manage the grazing licences. Fishing is a traditional activity and is dealt with through a separate lease with The Kenfig Hill and District Angling Association.</p>  |
| <p><b>HRA/AA Studies undertaken that address this site</b></p> | <p>AA of the Neath Port Talbot UDP June 2007: <a href="http://www.neath-porttalbot.gov.uk/pdf/udp_200706_appropriate_assessment.pdf">http://www.neath-porttalbot.gov.uk/pdf/udp_200706_appropriate_assessment.pdf</a></p> <ul style="list-style-type: none"> <li>▪ The assessment of potential impacts concluded that the plan policies provide a rigorous test which would prevent a significant impact either alone or in-combination on a European site. The potential impacts that policies were assessed against were: <ul style="list-style-type: none"> <li>○ Water quality;</li> <li>○ Water quantity;</li> <li>○ Air Pollution;</li> <li>○ Human interference; and</li> <li>○ Invasive species.</li> </ul> </li> </ul> <p>AA Screening of Porthcawl Design Code and Land Use Guidance SPG August 07.<br/><a href="http://www.bridgend.gov.uk/Web1/groups/public/documents/report/024319.pdf#xml=?IdcService=GET_EXTERNAL_XML_HIGHLIGHT_INFO&amp;QueryText=%3cNOT%3e+xDepartment+%3cMATCHES%3e+%60A+%2d+Z%60+AND+%3cNOT%3e+dDocName+%3cSUBSTRING%3e+%60MapFile+%60+AND+%28Appropriate+assessment+screening%29&amp;SortField=SCORE&amp;SortOrder=Desc&amp;dDocName=z303234333139&amp;sCollectionID=Web1&amp;HighlightType=PdfHighlight">http://www.bridgend.gov.uk/Web1/groups/public/documents/report/024319.pdf#xml=?IdcService=GET_EXTERNAL_XML_HIGHLIGHT_INFO&amp;QueryText=%3cNOT%3e+xDepartment+%3cMATCHES%3e+%60A+%2d+Z%60+AND+%3cNOT%3e+dDocName+%3cSUBSTRING%3e+%60MapFile+%60+AND+%28Appropriate+assessment+screening%29&amp;SortField=SCORE&amp;SortOrder=Desc&amp;dDocName=z303234333139&amp;sCollectionID=Web1&amp;HighlightType=PdfHighlight</a></p> <ul style="list-style-type: none"> <li>▪ The Screening identified two processes that require further study as they have the potential to effect the site as a result of the SPG. These processes were identified as: <ul style="list-style-type: none"> <li>○ sediment transportation pathways and linkage; and</li> <li>○ hydrological pathways and processes.</li> </ul> </li> </ul> <p>AA Screening of the Vale of Glamorgan Local Development Plan Preferred Strategy Dec 07.<br/><a href="http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.p">http://www.valeofglamorgan.gov.uk/files/Living/Planning/Policy/LDP/Appropriate_Assessment_Screening_Report.p</a></p> |

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|  | <p><u>df</u></p> <ul style="list-style-type: none"><li>■ The Screening concludes that development resulting from the LDP in the proximity of the SAC is therefore unlikely to be of scale that would result in a detrimental impact upon the site. Notwithstanding this, there are three operational quarries (Ewenny, Pant, Lithalun) within 3 kilometres of the SAC. Mineral extraction and/or after use of the site could therefore impact upon the SAC however this is considered to be unlikely due to the distance and ground contours. However, the site should be subject to a more detailed assessment at a later stage of the LDP development.</li></ul> |
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**Appendix 4**  
**Special Areas of Conservation in and around Bridgend County Borough**  
**and the possible impacts of development**



In order to identify what effect the implementation of the LDP could have on Natura 2000 sites in the vicinity of Bridgend County Borough it is necessary to consider what factors may have an impact on the integrity of the site and its purpose for designation. Using the 'Site Issue Briefings' for the sites under consideration it is possible to draw together the characteristics of the site and those factors that, at least in part, could be influenced by the application of the policies and proposals of the LDP. This provides essential background information needed for the continuing assessment as part of HRA as the LDP emerges.

Sources of information:

'Standard Data Forms' (JNCC) and 'Site Issue Briefing' (CCW) for:

*Kenfig Burrows Special Area of Conservation*

*Blackmill Woodlands Special Area of Conservation*

*Cefn Cribwr Grasslands Special Area of Conservation*

*Dunraven Bay Special Area of Conservation*

Joint Nature Conservation Committee

[www.jncc.gov.uk/ProtectedSites](http://www.jncc.gov.uk/ProtectedSites)

Report of the Executive Director – Environment Cabinet 19<sup>th</sup> April 2006 (Planning Services, Bridgend County Borough Council)

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**Blackmill Woodlands SAC**

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**Other designation** Blackmill Woodlands SSSI

**Local authority area:** Bridgend County Borough

**Description** Two distinct areas of old oak woods.

**Primary reasons for SAC designation (and condition)** Annex I habitats that are a primary reason for selection of this site:  
• old sessile oak woods (**unfavourable – recovering November 2002**)

**Proximity to possible development locations (indicative only)**  
**<5km:** north Bridgend, Aberkenfig, n. Pencoed  
**5-10km** south and west Bridgend, Maesteg, Kenfig Hil, Nant-yffyllon, Pontycymmer, Blaengarw, Nant-y-moel, s. Pencoed, Brackla  
**10-15km** rest of County Borough

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**Possible impact**

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Air pollution The acidification impact of air pollution, particularly for road traffic and other fossil fuel burning, has had and will continue to have an impact on habitats. Policies of the LDP that encourage growth near woodlands, or additional traffic on the A4061 dividing the sites will need to be monitored. The air quality table in Appendix 6 shows that the SAC is currently at risk from air pollution, and this trend may continue.

Human disturbance – fly tipping The impacts of fly tipping has an effect on part of the site. Policies relating to waste disposal and facilities, as well as new development in the area will need to be kept under consideration.

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**HRA and the LDP**

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**Matters for consideration in the LDP** Possible impacts would be from increased traffic movements as a result of new development, particularly if this gives rise to more trips on the A4061, having an impact on the vegetation on site.

. Direct damage from development is a possibility and therefore there is a need to ensure strong protection policies for the SAC.

As the LDP is developed and greater certainty is added on the location and scale of new development the potential for impacts will need to be revisited.

**HRA next steps**

Impacts of the LDP on the Blackmill Woodlands SAC cannot be ruled out at this stage and therefore further assessment of impacts will be necessary at the next stage of LDP preparation.

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**Kenfig SAC**

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| <b>Other designation</b>   | Kenfig Pool and Dunes SSSIs<br>Merthyr Mawr Warrens SSSI<br>Kenfig Pool and Dunes National Nature Reserve (NNR) and Local Nature Reserve (LNR)<br>Merthyr Mawr Warren NNR   |   |
| <b>Local authority area:</b>   | Bridgend County Borough   |   |
| <b>Description</b>   | Two large dune systems either side of the Afon Ogwr. Include steep mobile sand dunes, salt meadows, fixed dunes and slacks and rich flora including rare fen orchid and petalwort.  |   |
| <b>Primary reasons for SAC designation (and condition)</b>           | Annex I habitats that are a primary reason for selection of this site: <ul style="list-style-type: none"><li>• Fixed dunes with herbaceous vegetation (‘grey dunes’) (*Priority feature) <b>(Unfavourable – declining (08/2006))</b></li><li>• Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) <b>(unfavourable – declining (08/2006))</b></li><li>• Humid dune slacks <b>(unfavourable – declining (08/2006))</b></li><li>• Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. <b>(unfavourable – recovering (09/2005))</b></li></ul> Annex II species that are a primary reason for selection of this site: <ul style="list-style-type: none"><li>• Petalwort <i>Petalophyllum ralfsii</i> <b>(unfavourable (10/2001))</b></li><li>• Fen orchid <i>Liparis loeselii</i> <b>(unfavourable – declining (10/2001))</b></li></ul> |   |
| <b>Proximity to possible development locations (indicative only)</b> | <b>Kenfig:</b><br><b>&lt;5km:</b> Pyle, Kenfig Hill, Porthcawl<br><b>5-10km</b> western Bridgend, Maesteg, Aberkenfig,<br><b>10-15km</b> rest of County Borough with the exception of Nant-y-moel   | <b>Merthyr Mawr:</b><br><b>&lt;5km:</b> Bridgend, Porthcawl, Pyle/Kendfig<br><b>5-10km:</b> Aberkenfig, Brackla, Pencoed<br><b>10-15km:</b> Nantyffyllon, Pontycymmer, Omgmore Vale |

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**Possible impact**

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| Changes in coastal processes | The dune system is dynamic, needing to accrete and erode in order to maintain the existing form and species diversity. Changes in coastal processes stopping sand accumulating, cause the dunes to stop growing and become eroded and stops growth of species that favour more bare sand. This cessation of new sediment may be caused by development impacts west along the coast and mineral dredging, with the latter being managed by several initiatives include ‘Marine Aggregate Dredging Policy for South Wales – Consultation Document’. Dredging has stopped and dune stabilisation measures implemented. LDP can have an influence on the need for hard engineered sea defences as well as suitable policies on controlling marine dredging. |
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| Water quality                       | <p>Kenfig pool on the site is predominantly rainwater and groundwater fed. Therefore activities affecting the aquifer even some considerable distance away, in time and geographically, could have an impact on the site. Major concerns include high nutrient levels, with elevated levels found and evidence that water bodies at Merthyr Mawr also are becoming nutrient enriched. This has impact on the types and abundance of species out of keeping with site designation. The water impacts are likely to be from (amongst other things) landfill, existing and disused, and quarrying in the surrounding catchment. Therefore the LDP has a role to play in protecting water quality by ensuring there is sufficient waste water treatment to meet needs in the area.</p>   |
| Water quantity                      | <p>Significant changes in the quantity of water at the two sites could impact on sites, drying out could effect species diversity and threaten the existence of petalwort and fen orchid features. Very low water tables could lead to the sites becoming very saline as salt water intrudes the site. The possible causes of changes in the water table are many but precise relationships are hard to define, and there may be relationships with deepening of several quarries nearby. Impacts could also be from domestic/industrial water abstraction.</p>  |
| Air quality                         | <p>Several features in Kenfig are potentially sensitive to air quality impacts, either through direct impacts to sensitive plant species from high levels of ethylene/ethane; or indirect through changes in water chemistry. Acidification is unlikely to be an impact due to underlying geology. Atmospheric NO<sub>x</sub> levels may be exceeded at the site due to nearby sources including industrial (Margam Steel works and Bagland Bay), agricultural, old landfill sites, transport (particularly M4), wind blown particulates.</p> <p>Merthyr Mawr is shown in to be at particular risk of in-combination impacts of air and water pollution causing nutrient enrichment that adversely impact on the dune slacks, where the petalwort and fen orchid are normally located, and this could cause accelerated rates of vegetation change. Traffic impacts of new development directed through the LDP may therefore have an impact on the site, as could the locations of new potentially polluting industries.</p> <p>Air quality, as shown in Appendix 6, is currently not at levels that would adversely impact on the SAC, although trends need to be monitored.</p> |
| Human impacts/recreational pressure | <p>Kenfig Dunes and Pool and Merthyr Mawr Warren have a long history of use, historically for agriculture and industry, but now predominantly for recreation. Main access and impact are near Candleston Castle at Merthyr Mawr and Kenfig NNR visitor centre and car park. The majority of recreational pressures have minimal impact, and this is mainly from litter, fires and coarse fishing, although it has the potential to cause habitat degradation. Kenfig Dunes are also common land and this has implications for management such as grazing, and little time in the summer for active management. Recreational use can also have positive benefits on site erosion and therefore maintenance of habitats. Development in the vicinity of the SAC will need to help ensure visitor pressure is not so great as it adversely impacts on the site designation features.</p>  |



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Recent evidence shows that the site may be being damaged by recreational use of vehicles on the site, this also has the potential to be exacerbated by an increase in the amount of people living in the area as a result of new housing development.

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#### **HRA and the LDP**

##### **Matters for consideration in the LDP**

As with all the SACs direct impact from development needs to be avoided. Other impacts from new housing development in the vicinity can give be increased recreational pressure on the site, this can have negative impacts if levels of use are too high or not managed carefully. New development could also give rise to the need for increased levels of water abstraction, with impacts on the humid dunes and slacks. Increased development and higher levels of car use can have an adverse impact on the site from nutrient enrichment, through water and air pollution.

Quarrying, even a distance from the site may have impacts on the water table. Therefore where possible the LDP should ensure there are appropriate controls and standards to be met when granting permissions for new or extended quarries.

The LDP needs to manage new mineral workings to avoid the impacts on the water table and the quantity of water feeding the SAC.

At this stage it is important to ensure that the LDP does not give rise to any new development on the coast that is likely to further interrupt the movements of sediment that feed the dune system. Further investigation of the impacts of mineral dredging will also need to be considered, particularly in conjunction with the other nearby coastal minerals authorities that undertake dredging, there is the potential here for in-combination impacts.

##### **HRA next steps**

Impacts of the LDP on the Kenfig SAC cannot be ruled out at this stage and therefore further assessment of impacts will be necessary at the next stage of LDP preparation.

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## Cefn Cribwr Grasslands SAC

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| <b>Other designation</b>   | Bryn-bach, Cefn Cribwr SSSIs<br>Caeau, Cefn Cribwr SSSIs<br>Penycastell, Cefn Cribwr SSSIs<br>Waun-fawr, Cefn Cribwr SSSIs   |
| <b>Local authority area:</b>   | Bridgend County Borough  |
| <b>Description</b>   | Four distinct grassland sites to the west of Bridgend. Special interest includes marshy and species rich neutral grassland with wet heath and scrub, supporting a population of the nationally scarce marsh fritillary butterfly plus other nationally scarce and declining plan species.  |
| <b>Primary reasons for SAC designation (and condition)</b>           | Annex I habitats that are a primary reason for selection of this site: <ul style="list-style-type: none"><li>• <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) (<b>unfavourable – declining October 2002</b>)</li></ul> Annex II species that are present as a qualifying feature but not the primary reason for site selection: <ul style="list-style-type: none"><li>• Marsh Fritillary Butterfly <i>Euphydryas</i> (<i>Eurodryas</i>, <i>Hypodryas</i>) <i>aurinia</i> (<b>unfavourable September 2003</b>)</li></ul>                      |
| <b>Proximity to possible development locations (indicative only)</b> | <b>&lt;5km:</b> Bridgend, Porthcawl, Kenfig Hill, Pyle, Aberkenfig<br><b>5-10km</b> Maesteg, Blaengarw, Pontycymmer, Ogmores Vale, Pencoed, Brackla<br><b>10-15km</b> rest of County Borough   |
| <b>Possible impact</b>   |  |
| Water quantity   | If there was a general drying of the site by fall in the groundwater or springs on the site this would cause a loss of the marshy grassland and changes in species composition. These impacts could be brought about through abstraction and de-watering of sites, with particular significance of the continued and possible extended workings at Cefn Cribwr quarry abutting the north eastern grassland area. Therefore consideration of impacts on the grassland needs to be taken into account when considering new development and minerals sites, and their supply and other water needs. |
| Air quality  | Habitats are at risk of acidification and deposition of nitrogen compounds and above critical loads this can have an impact. The further impacts of road traffic on this site need to be avoided. Therefore development that gives rise to significant increases in road travel should be avoided, as should polluting industries located near SAC sites.<br><br>Air quality, as shown in Appendix 6, is currently not at levels that would adversely impact on the SAC, although trends need to be monitored.   |

Loss of site                      Housing, employment or other development could impact on the site through the direct loss of habitat, as could new mineral workings, and this will need to be managed through the LDP.

Life cycle, population dynamics and habitat requirements of the marsh fritillary                      Supporting a suitable size population of butterfly for its long-term survival could be effected by habitat size shrinking, the loss of peripheral or nearby sites, barriers created by new development or the loss of joining routes and hedgerows and the risks of isolation. This means impacts on areas of open space and natural vegetation wider than the SAC itself may need to be taken into account in order to protect the integrity of the site.

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#### **HRA and the LDP**

**Matters for consideration in the LDP**                      In order to protect the integrity of this SAC it will be necessary for the LDP to consider how to protect green space and linking features around the designated site as well as on the site itself. This is essential in order to support the continued viability of species within the protection area, such as the marsh fritillary butterfly.

·                                      Water levels will need to be maintained and therefore development and mineral abstraction requiring dewatering and abstraction will need to be controlled.

                                        The LDP will have to consider whether it is possible to control impacts of continued and further quarry operation through policy, to ensure impacts to the SAC are suitably managed.

**HRA next steps**                      Impacts of the LDP on the Cefn Cribwr Grasslands SAC cannot be ruled out at this stage and therefore further assessment of impacts will be necessary at the next stage of LDP preparation.

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| <b>Dunraven Bay SAC</b>  |   |
|--|---|
| <b>Other designation</b>   | Southerndown Coast SSSI   |
| <b>Local authority area:</b>   | Vale of Glamorgan   |
| <b>Description</b>   | South west facing cliff on the Bristol Channel. Around 20 shore dock plants are growing on the damp coastal limestone and these are all that is left of the plant in its Bristol Channel range. This area provides a seed-source for this plant to spread to new areas along the Channel, subject to suitable habitat management.   |
| <b>Primary reasons for SAC designation (and condition)</b>           | Annex II species that are a primary reason for selection of this site: <ul style="list-style-type: none"> <li>• Shore dock <i>Rumex rupestris</i> (<b>favourable 10/2003</b>)</li> </ul>  |
| <b>Proximity to possible development locations (indicative only)</b> | <p><b>&lt;5km:</b> none</p> <p><b>5-10km</b> Bridgend, Porthcawl, Brackla</p> <p><b>10-15km</b> Pencoed, Pyle, Kenfig Hill, Aberkenfig,</p>   |
| <b>Possible impact</b>   |   |
| Groundwater  | Groundwater is required to maintain the habitat needed for Shore dock, therefore changes to the water levels could impact on the plant. Care will therefore need to be taken in delivering and controlling development requiring new or higher levels of abstraction, other development that will lower the water table, including quarries. The exact source of groundwater is not yet established, therefore cause and effect impacts will be difficult to predict. |
| Disturbance by humans  | Increased population in the local area could have an impact on the recreation near the site, and could directly disturb the habitat.  |
| <b>HRA and the LDP</b>   |   |
| <b>Matters for consideration in the LDP</b>                          | This area is outside of Bridgend County Borough, yet the town of Bridgend is within 10km from the site. There is the potential for development, particularly if this gave rise to an increased water demand to have an impact on the Dunraven SAC. New development also has the potential to increase visitor pressure on the area.   |
| <b>HRA next steps</b>  | Impacts of the LDP on the Dunraven Bay SAC cannot be ruled out at this stage, although impacts from development in Bridgend County Borough are very unlikely. It may be suitable to look again at potential impacts if further evidence is identified on the source of groundwater, and possible links with Bridgend County Borough.  |

**Appendix 5**

**Screening assessment of the Policies of the Pre-Deposit Proposals**

| Pre-Deposit Policy   | Possible impacts to SACs  | Likelihood of significant adverse impact     | Moving forward with the HRA assessment  |
|--|---|--|---|
| <p><b>Policy SP1: Strategic development distribution</b><br/>Sets the out the settlements / areas that will be the focus of growth.</p>                                      | <p>The policy sets out the spatial strategy for the LDP, including the distribution of growth to defined settlements. This includes focus of development in Porthcawl and Bridgend both of which are in proximity to SAC sites – Blackmill Woodlands, Kenfig and Cefn Cribwr Grasslands.</p> <p>The location of development may result in impacts to the SACs. Growth in Porthcawl risks increasing impacts in on the Kenfig SAC through visitor pressure. The general impact of increased amounts of growth may also have air quality related impacts on the SACs, such as the Blackmill Woodlands. If there is insufficient water treatment infrastructure in place large amounts of new development could also have adverse impacts on water quality, with potential impacts on the SAC.</p> | <p>Moderate to high likelihood of impact</p> | <p>Impacts can not be discounted at this stage; however the extent of impacts may depend on the allocation of specific sites, and other strategic policies.</p> <p>Additional wording or policy criteria may be suitable in the LDP to reflect the importance of protecting the integrity of the SAC, and undertaking Habitats Regulation Assessment where necessary. Protection may also require the joint implementation of other plans and strategies to mitigate against risks related to visitor pressure, air quality and water quality protection.</p> |
| <p><b>Policy SP2: Sustainable place making principles</b><br/>The policy sets out a range of principles for new development to help secure more sustainable development.</p> | <p>The policy is a broad policy setting criteria for all new development to meet. These criteria include policies on using land efficiently and safeguarding biodiversity, avoiding water pollution. The implications of this policy should be positive in protecting the designated area, although actual impacts will depend on the policy’s successful implementation.</p>   | <p>Positive impact</p>                       | <p>No action.</p>   |
| <p><b>Policy SP3: Strategic transport planning principles</b><br/>This policy sets out the intention for promoting more sustainable transport</p>                            | <p>The intent of the policy is to increase the viability of alternatives to car travel in the County Borough. This may have positive implications related to improving or maintaining air quality, and therefore potentially avoid adverse impacts on SACs from poor air quality.</p> <p>However, there proposals in the policy that include</p>  | <p>Moderate likelihood of impact</p>         | <p>Proposals for junction improvements may need to include assessment of the air quality impacts of any increase in traffic this may cause, in order to be able to better identify impacts on nearby SACs.</p> <p>Additional wording or policy criteria may be</p>  |



| Pre-Deposit Policy  | Possible impacts to SACs   | Likelihood of significant adverse impact | Moving forward with the HRA assessment  |
|---|--|--|---|
| in the County Borough, it also include the specific transport schemes that need to be implemented.  | road improvements, and this may increase traffic in some locations, with possible adverse impacts relating to air quality and impacts on SACs. Risks include improvements from junction 35 of the M4 within 2km of the Blackmill Woodlands, and junction 37 within 2km the Kenfig SAC and Cefn Cribwr Grasslands.  |  | suitable in the LDP to reflect the importance of protecting the integrity of the SAC, and undertaking Habitats Regulation Assessment where necessary.   |
| <p><b>Policy SP4: Conservation of the natural environment</b><br/>This policy sets out criteria for protecting the landscape and nature conservation assets of the County Borough.</p>                              | This policy relates positively to protecting the SACs.   | Positive impact                          | The policy could include wording to ensure the indirect impacts of proposed development on the SAC are taken into account.  |
| <p><b>Policy SP5: Conservation of the built and historic environment</b></p>  | The policy will not lead to development and therefore will have no impact on the SACs.   | None                                     | No action   |
| <p><b>Policy SP6: Minerals supply</b><br/><b>Policy SP7: Minerals protection</b><br/>These two policies include the safeguarding of minerals resources, and this includes protecting them for possible eventual</p> | The safeguarded sites for minerals could eventually be used for mineral extraction. The impacts of this on the SACs could come from: impacts on the water availability, effects on groundwater levels, impacts from dust and air quality, and direct loss of habitats that are part of SACs or essential to the protection of site integrity. The SACs that may be most at risk are the Cefn Cribwr Grasslands, in terms of air quality, water supply and protection of nearby areas to protect SAC integrity. There is the possibility of impacts on the Kenfig SAC also related to water | Moderate to high likelihood of impact    | Minerals policies of the LDP will need to recognise the potential for open-cast coal mining and quarrying and dedging to have an adverse impact on the SACs. This will need to include the possible direct impacts land take, in addition to less direct impacts, for instance air quality, water supply and the impacts of loss of habitats that support the integrity of the SAC sites. Some of these controls will be through planning decisions; others may be through authorisation and licensing by other bodies, |

| Pre-Deposit Policy  | Possible impacts to SACs   | Likelihood of significant adverse impact | Moving forward with the HRA assessment  |
|---|--|--|---|
| future use.   | <p>supply.</p> <p>The site does not include criteria for the control of marine dredging and there is the possibility that this could adversely affect coastal SACs, reliant on sand recharge, this includes the Kenfig SAC sites.</p>  |  | <p>such as the Environment Agency.</p> <p>Additional wording or policy criteria may be suitable in the LDP to reflect the importance of protecting the integrity of the SAC, and undertaking Habitats Regulation Assessment where necessary.</p>  |
| <p><b>Policy SP8: Waste management</b><br/>This policy sets out the locations where new waste treatment facilities will be permitted. These are all on existing employment sites.</p> | <p>The proposed sites for the waste treatment facilities include those that are in close proximity to SAC sites. The actual impact will depend on the type of facility developed, for example, some types may have more potential for adverse air quality impacts, or risk of water quality impacts. However, some type of facility may have little possibility of adversely effecting the sites. There will also be the associated impact of increased traffic movements, with possible air quality effects.</p> <p>The proposed sites in proximity of SAC sites are:</p> <ul style="list-style-type: none"> <li>• Brynmenyn Industrial Estate is in 2km of Blackmill Woodlands that is sensitive to air quality impacts</li> <li>• Heol-y-Splott, South Cornelly and Village Farm Industrial Estate, Pyle are within 5km of the Kenfig SAC and the 2km of the Cefn Cribwr Grassland SAC (Village Farm is immediately adjacent). Both of these sites are sensitive to water availability and quality, and may also be sensitive to air quality</li> </ul> | Moderate to high likelihood of impact    | <p>The implementation of waste treatment sites will need to have regard to the potential impact on SAC sites, looking at direct and indirect impacts. It may be suitable to consider including additional controls in the policy to limit which types of water treatment facility may be suitable in each location.</p> <p>Additional wording or policy criteria may be suitable in the LDP to reflect the importance of protecting the integrity of the SAC, and undertaking Habitats Regulation Assessment where necessary.</p> |
| <p><b>Policy SP9: Energy generation and conservation</b><br/>This sets policy for renewable energy</p>  | <p>The policy does not directly relate to the SAC sites, there is the possibility of impacts from some types of renewable energy technology could affect sites, although impacts may be controlled through other policies.</p>   | Low likelihood of impact                 | <p>Protection of SAC sites from this type of development should be controlled through other policy.</p>   |

| Pre-Deposit Policy  | Possible impacts to SACs  | Likelihood of significant adverse impact | Moving forward with the HRA assessment  |
|---|---|--|---|
| generation.   |   |  |   |
| <p><b>Policy SP10: Employment and the economy</b><br/>This policy sets out the strategic sites that will be allocated for employment uses</p>                   | <p>There is the potential for the development of new employment sites to have an impact on the SAC sites. This is unlikely to be from direct land take, but there may be impacts related to air quality and water use from new employment development; and air quality from possible increases in traffic movement, from new businesses.</p> <p>The maps in Appendix 2 show buffers around sites. These indicate that:</p> <ul style="list-style-type: none"> <li>• Island Farm, Bridgend is within 5km of Kenfig SAC</li> <li>• Ty Draw Farm, North Cornelly is within 2km of the Kenfig SAC and the Cefn Cribwr Grasslands, development in this location could have adverse impacts on the SAC through water use and impacts on water supply</li> </ul> | Moderate to high likelihood of impact    | <p>There is the potential for impacts of new economic development at Ty Draw Farm, North Cornelly on two of the SAC sites. Policy controls will need to be in place to ensure the exact form and type of development does not harm the protected sites.</p> <p>Additional wording or policy criteria may be suitable in the LDP to reflect the importance of protecting the integrity of the SAC, and undertaking Habitats Regulation Assessment where necessary.</p> |
| <p><b>Policy SP11: Retailing and commercial centres</b><br/>The policy sets out the locations where new retail and commercial development will be directed.</p> | These development sites are mainly within existing settlements and are unlikely to have a direct impact on the SAC sites. The Retail Parks are within 5km of the Kenfig SAC.  | Low likelihood of impact                 | The impacts are low and appropriate policy control to protect the SACs should help avoid adverse impacts.   |
| <p><b>Policy SP12: Tourism</b><br/>This policy is related to the increasing income in the</p>   | This policy includes improving the role Porthcawl for tourism. There is the risk that this may have an adverse impact on the Kenfig SAC, which is one of the key attractions to visitors to this area . Increased visitor pressure has the potential to harm the dune   | Moderate likelihood of impact.           | To avoid the impacts of increased visitor pressure, it will be necessary for the LDP to include policies to guide new development away from the SAC. There will also be the need to implement other strategies, such as visitor and   |

| Pre-Deposit Policy  | Possible impacts to SACs  | Likelihood of significant adverse impact | Moving forward with the HRA assessment  |
|---|---|--|---|
| County Borough from tourism.  | characteristics, and therefore site integrity.  |  | habitat management plans to protect the SAC from visitors.  |
| <p><b>Policy SP13: Housing</b><br/>This policy sets out the overall housing provision expected, at 8100 homes, and the strategic allocations for housing.</p> | <p>The large amount of development expected through this policy may have impacts on the SACs. This could be from the increase in car travel this may create, with air quality impacts having the potential to adversely impact on some of the SACs. There may also be impacts on water, with increased demand for housing having possible impacts on groundwater levels that are important for several SACs. Water treatment infrastructure will also need to be in place to help avoid water quality related impacts.</p> <p>Appendix 2 shows the buffer zones for the SACs and the strategic allocated housing sites. This shows that:</p> <ul style="list-style-type: none"> <li>• Parc Derwen, Bridgend is within 5km of the Blackmill Woodlands and Cefn Cribwr Grasslands, the likelihood of direct impacts is low</li> <li>• Porthcawl Waterfront is within 2km of the Kenfig SAC (Merthyr Mawr) and this may create increased visitor pressure in this area, new sea defences may also have an impact on coastal process with adverse impact on site integrity</li> </ul> | Moderate to high likelihood of impact    | <p>Development on the proposed scale has the potential to adversely impact on the SACs. These impacts may depend on the exact location of new development, and possible changes in air quality, water availability and water quality. The specific development at Parc Derwen and particularly Porthcawl Waterfront will need to be taken into account in the design and form of new development. This may include the need to prevent visitor pressure impacts, aim to reduce car travel (air quality), ensure development is making more efficient use of water and design sea defence works to consider impacts on the Kenfig SAC.</p> <p>Additional wording or policy criteria may be suitable in the LDP to reflect the importance of protecting the integrity of the SAC, and undertaking Habitats Regulation Assessment where necessary.</p> |
| <p><b>Policy SP14: Community uses</b><br/>This policy sets out a policy approach to protect community facilities and provide new ones.</p>                    | It is unlikely that this policy will have any impact on SACs, the majority of community sites are found within settlements away from SAC sites.   | None                                     | No action   |
| <p><b>Policy SP15: Infrastructure</b></p>   | The policy may have positive implications for the SACs by including the possibility of agreements   | None                                     | No action   |

| <b>Pre-Deposit Policy</b>   | <b>Possible impacts to SACs</b> | <b>Likelihood of significant adverse impact</b> | <b>Moving forward with the HRA assessment</b> |
|---|---------------------------------|---|---|
| The policy sets out matters over which agreements will be sought for new infrastructure | biodiversity enhancement.       |   |   |

## **Appendix 6**

### **Background Environmental Conditions & Trends – Air Quality**

extract from the information database of the *Habitat Regulations Assessment (HRA): a toolkit to support HRA screening and appropriate assessment'* (South East Wales Strategic Planning Group, 2008).



## Glossary<sup>1</sup>

- **Acid deposition<sup>2</sup>** - Atmospheric input to ecosystems of pollutants which may acidify soils and freshwaters; this includes species derived from SO<sub>2</sub>, NO<sub>x</sub> and NH<sub>3</sub> emissions, as well as a number of other minor pollutants. Acid deposition is more general than acid rain, since it includes both wet deposition and dry deposition.
- **Ammonia (NH<sub>3</sub>)** - in the atmosphere results primarily from the decomposition and volatilisation of animal wastes. As such it is in principle a natural trace gas. Emissions of ammonia lead to the deposition of nitrogen to vegetative surfaces through processes of wet and dry deposition.
- **Critical load** - a quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge. The exceedance of a critical load is defined as the atmospheric deposition of the pollutant above the critical load.
- **Exceedance** - violation of environmental protection standards by exceeding allowable limits or concentration levels.
- **Fine Particles (PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub>)** - Particulate Matter less than 10 microns, tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. Fine Particles are composed of a wide range of materials arising from a variety of sources including:
  - combustion sources (mainly road traffic);
  - secondary particles, mainly sulphate and nitrate formed by chemical reactions in the atmosphere, and often transported from far across Europe;
  - coarse particles, suspended soils and dusts (e.g. from the Sahara), seasalt, biological particles and particles from construction work.
- **Nitric Oxide (NO)** - precursor of ozone, nitrogen dioxide (NO<sub>2</sub>), and nitrate; usually emitted from combustion processes. Converted to NO<sub>2</sub> in the atmosphere, it then becomes involved in the photochemical process and/or particulate formation. Nitric oxide (NO) is mainly derived from road transport emissions and other combustion processes such as the electricity supply industry. NO is not considered to be harmful to health. However, once released to the atmosphere, NO is usually very rapidly

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<sup>1</sup> APIS (Accessed on 04/09/08) Glossary. Available online: <http://www.apis.ac.uk/glossary.htm>

<sup>2</sup> APIS (Accessed on 04/09/08) Overview - Acid Deposition. Available online: [http://www.apis.ac.uk/overview/pollutants/overview\\_Acid\\_deposition.htm](http://www.apis.ac.uk/overview/pollutants/overview_Acid_deposition.htm)

oxidised to nitrogen dioxide (NO<sub>2</sub>), which is harmful to health. NO<sub>2</sub> and NO are both oxides of nitrogen and together are referred to as nitrogen oxides (NO<sub>x</sub>).

- **Nitrogen deposition**<sup>3</sup> - is the term used to describe the input of reactive nitrogen species from the atmosphere to the biosphere. Most concern has addressed the impacts of nitrogen deposition to terrestrial ecosystems, but impacts may also occur in the marine environment. The pollutants that contribute to nitrogen deposition derive mainly from nitrogen oxides (NO<sub>x</sub>) and ammonia (NH<sub>3</sub>) emissions.
- **Nitrogen oxide (NO<sub>x</sub>)** - product of combustion of fossil fuels (transport, electricity supply industry); a major contributor to the formation of ozone in the troposphere and acid deposition.
- **Ozone (O<sub>3</sub>)** - is not emitted directly from any man-made source in any significant quantities. In the lower atmosphere, O<sub>3</sub> is primarily formed by a complicated series of chemical reactions initiated by sunlight. Close to the earth's surface ("tropospheric ozone") it is produced photochemically from hydrocarbons, NO<sub>x</sub> and sunlight, and is a major component of smog. The chemical reactions do not take place instantaneously, but can take hours or days, therefore ozone measured at a particular location may have arisen from emissions many hundreds or even thousands of miles away. Maximum concentrations, therefore, generally occur downwind of the source areas of the precursor pollutant emissions.
- **Sulphur dioxide (SO<sub>2</sub>)** - is produced when a material, or fuel, containing sulphur is burned. Globally, much of the sulphur dioxide in the atmosphere comes from natural sources, but in the UK the predominant source is power stations burning fossil fuels, principally coal and heavy oils. Widespread domestic use of coal can also lead to high local concentrations of SO<sub>2</sub>.

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<sup>3</sup> APIS (Accessed on 04/09/08) Overview – Nitrogen Deposition. Available online: [http://www.apis.ac.uk/overview/pollutants/overview\\_N\\_deposition.htm](http://www.apis.ac.uk/overview/pollutants/overview_N_deposition.htm)

## Air Pollution Deposition against Critical Loads at Natura 2000 sites in South East Wales

The primary focus of table 1 is on pollutants which have a direct impact on habitats and species, or impact through their deposition in the UK. These include regional tropospheric pollutants such as sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), ammonia (NH<sub>3</sub>), ozone (O<sub>3</sub>), acid deposition and nitrogen deposition.

The results shown in the table 1 should be used in conjunction with the detailed Natura 2000 Site Information, as although a site may be considered at risk from air pollution in the table below, the detailed information within the characterisations may show that the site is in actual fact not vulnerable to the affects of air pollution.

### Key:

|                               |               |
|-------------------------------|---------------|
| Site within acceptable limits |               |
| Site exceeds critical load    |               |
| n/a                           | Not available |

Table 1: Air Pollution Deposition against Critical Loads at Natura 2000 sites

| Deposition/<br>Critical Load                                | Acid deposition<br>keq/ha/yr | Ammonia<br>µg/m <sup>3</sup> | Nitrogen<br>deposition<br>kg N/ha/year | Nitrogen oxides<br>µg NO <sub>x</sub> (as<br>NO <sub>2</sub> ) m <sup>-3</sup> | Ozone<br>ppb hours | Sulphur dioxide<br>µg/m <sup>3</sup> | At Risk? |
|---|------------------------------|------------------------------|--|--|--------------------|--------------------------------------|----------|
| <b>Blackmill Woodlands</b> (Location Grid Ref: SS929859)    |                              |                              |  |  |                    |                                      |          |
| Deposition  | 2.76                         | 1.1                          | 33.7                                   | 14.6   | 5369               | 1.4                                  | Yes      |
| Critical Load   | 0.81                         | 3                            | 10-15                                  | 30   | 5000               | 20                                   |          |
| Exceedance  | 1.95                         | -1.9                         | 23.7 to 18.7                           | -15.4  | 369                | -18.6                                |          |
| <b>Cefn Cribwr Grasslands</b> (Location Grid Ref: SS870830) |                              |                              |  |  |                    |                                      |          |
| Deposition  | n/a                          | 1.1                          | 14.8                                   | 15.6   | 2969               | 2.7                                  | No       |
| Critical Load   | n/a                          | 3                            | 15-25                                  | 30   | 3000               | 20                                   |          |
| Exceedance  | n/a                          | -1.9                         | -0.2 to -10.2                          | -14.4  | -31                | -17.3                                |          |

| Deposition/<br>Critical Load                      | Acid deposition<br>keq/ha/yr | Ammonia<br>µg/m <sup>3</sup> | Nitrogen<br>deposition<br>kg N/ha/year | Nitrogen oxides<br>µg NO <sub>x</sub> (as<br>NO <sub>2</sub> ) m <sup>-3</sup> | Ozone<br>ppb hours | Sulphur dioxide<br>µg/m <sup>3</sup> | At Risk? |
|---|------------------------------|------------------------------|--|--|--------------------|--------------------------------------|----------|
| <b>Dunraven Bay</b> (Location Grid Ref: SS886727) |                              |                              |  |  |                    |                                      |          |
| Deposition  | n/a                          | 0.5                          | 10.6                                   | n/a  | n/a                | 1.7                                  | No       |
| Critical Load                                     | n/a                          | 3                            | 10-15                                  | n/a  | n/a                | 20                                   |          |
| Exceedance  | n/a                          | -2.5                         | 0.6 to -4.4                            | n/a  | n/a                | -18.3                                |          |
| <b>Kenfig</b> (Location Grid Ref: SS790813)       |                              |                              |  |  |                    |                                      |          |
| Deposition  | 0.91                         | 0.3                          | 9.4                                    | 12.4   | 2800               | 1.9                                  | No       |
| Critical Load                                     | 4                            | 3                            | 10-20                                  | 30   | 3000               | 20                                   |          |
| Exceedance  | -3.09                        | -2.7                         | -0.6 to -10.6                          | -17.6  | -200               | -18.1                                |          |

#### Limitations:

- Table is based on data that was collected at different timescales. Acid deposition information is taken from a 3 year average (2003-2005) whereas data relating to ammonia represents a single year (2005).
- The table does not consider the critical loads for individual species. Where a site is designated primarily for a particular species (e.g. Dunraven Bay), data is based on the habitat on which the species is reliant or the habitat that covers the majority of the site.
- The data is specific to a particular grid reference (available from the JNCC), which focuses on the centre of that European site. It does not therefore take account of the varying air quality levels across sites, for example, the Wye Valley and Forest of Dean Bat Sites SAC is composed of a number of different units spread out over a large area.
- The table does not take account of current or future trends in air quality.