Habitat Regulations Assessment of the Blaenau Gwent Replacement Local Development Plan

Preferred Strategy

Blaenau Gwent County Borough Council

60609986

Quality information

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Executive Summary for the Habitats Regulations Assessment of the Blaenau Gwent Local Development Plan Preferred Strategy

Introduction

AECOM was appointed by Blaenau Gwent County Borough Council to undertake a Habitats Regulations Assessment of its Preferred Strategy of its Replacement Local Development Plan (RLDP), which sets out the housing and employment needs for the period between 2018 and 2033. The objective of this assessment was to identify any aspects of the Plan that might cause an adverse effect on the integrity of Natura 2000 sites, otherwise known as European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites), either in isolation or in combination with other plans and projects, and to advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

Legislative Context

The need for an assessment of impacts on European sites is set out within Article 6 of the Habitats Directive and transposed into English and Welsh law by the Conservation of Habitats and Species Regulations 2017 (as amended). The purpose of the Habitats Directive is to "*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*" (Article 2(2)). To ascertain whether the integrity of any European sites will be affected, competent authorities must therefore undertake an HRA of the plan or project in question, including an Appropriate Assessment if necessary, before approving it.

Scope

Given an initial assessment of the relevant European sites within 15km of Blaenau Gwent and the impact pathways present, the HRA addresses the following European sites: Usk Bat Sites SAC, Cwm Clydach Woodlands SAC, River Usk SAC, Aberbargoed Grasslands SAC, Sugar Loaf Woodlands SAC, Cwm Cadlan SAC, Brecon Beacons SAC, Llangorse Lake SAC, Coed y Cerrig SAC and Blaen Cynon SAC.

HRA tasks

Following initial evidence gathering, the first stage of any Habitats Regulations Assessment is a screening for LSEs, essentially an assessment of the risks for European sites, associated with a development plan. If LSEs cannot be excluded, and a mechanism for an adverse interaction between a plan and a receptor site is present, the next stage of HRA, known as Appropriate Assessment, needs to be undertaken. The Appropriate Assessment is a more detailed analysis of the impact pathways and European sites considered at the screening stage. One of the key elements of an Appropriate Assessment is the consideration of mitigation measures, which might protect a European site from potential harmful adverse effects[1]. Furthermore, a recent ruling established that habitats or species outside a European site, which are essential for the functioning of the protected site, must be taken into account in the HRA process[2]. For this HRA, both Task 1 (Screening for Likely Significant Effects; LSEs) and Task 2 (Appropriate Assessment) were carried out.

Findings & Recommendations

The HRA shows that LSEs can be excluded for the identified impact pathways in relation to most European sites. However, due to the combination of missing scientific evidence (i.e. no air quality modelling available) and lacking detail in the current Preferred Strategy (i.e. no site allocations, limited policy wording), a definitive Appropriate Assessment of the following impacts pathways is deferred to the Deposit Plan HRA:

- Atmospheric pollution impacts on the Usk Bat Sites SAC and the Cwm Clydach Woodlands SAC
- Functionally linked land relating to the Usk Bat Sites SAC
- Water quality in the River Usk SAC

Regarding atmospheric pollution adverse effects on the site integrity of the Usk Bat Sites SAC and the Cwm Clydach Woodlands SAC cannot be excluded, because air quality modelling for sensitive habitat

[1] According to a decision by the European Court of Justice, these can no longer be taken into account at the screening stage of HRA. People Over Wind and Sweetman v Coillte Teoranta (C-323/17)
[2] The 2018 Holohan ruling. Case C-461/17

components within these sites is not available. It is recommended to model a minimum of one road transect in each of these SACs to inform the Deposit Plan HRA.

Regarding land that is functionally linked to the Usk Bat Sites SAC, adverse effects on site integrity cannot be excluded because the site allocations are not yet available for assessment. A definitive Appropriate Assessment of this impact pathway is therefore deferred to the Deposit Plan HRA. Nonetheless, to help reduce the potential for adverse effects, it is recommended to insert protective policy wording into the Deposit Plan that recognises the 2km Core Sustenance Zone (CSZ) for lesser horseshoe bats (see HRA for detailed wording). Scientific evidence indicates that foraging and / or commuting habitat within this buffer is essential for the integrity of the bat populations in the SAC.

Finally, regarding water quality, a full Appropriate Assessment will be undertaken for the Deposit Plan, when the spatial distribution of development and its associated Wastewater Treatment Works (WwTWs) infrastructure is available. If significant development in the north-eastern section of Blaenau Gwent is coming forward, which is served by WwTWs that discharge into the catchment of the River Usk SAC, it is recommended that precautionary wording is incorporated into an appropriate policy of the Deposit Plan to ensure that any new development can be accommodated within the permitted headroom of WwTW infrastructure (see HRA for detailed wording). However, is understood that little development may come forward in this area because it is within the planning control of Brecon Beacons National Park Authority rather than Blaenau Gwent County Borough Council.

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1. Background

Introduction

AECOM was appointed by Blaenau Gwent County Borough Council (hereafter referred to as 'BGC') to undertake a Habitats Regulations Assessment of its Preferred Strategy for its Replacement Local Development Plan (RLDP). The objective of this assessment was to identify any aspects of the Plan that would cause an adverse effect on the integrity of Natura 2000 sites, otherwise known as European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either in isolation or in combination with other plans and projects, and to advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

This RLDP is a replacement for the Local Development Plan that was adopted in 2012 and covered the period between 2006 and 2021. The new RLDP will cover the years 2018 to 2033, building upon the previous

. The emerging RLDP is the Council's proposal for land use, which will determine where and how much development will take place in the County Borough, but it will also outline which areas are to be protected from development. The Preferred Strategy RLDP sets out the housing and employment needs (and other strategic approaches) within the County Borough. It is projected within the RLDP that 2,115 residential dwellings and 46ha of employment land (delivering a minimum of 1,500 new jobs) will be delivered across the County Borough within the RLDP's period. However, given its relatively early stage the RLDP does not yet set out the specific sites where development is to be allocated, the distribution of which is likely to be important for determining the magnitude of linking impact pathways affecting European sites. As such, the Appropriate Assessment (the second stage of the HRA process) and definitive recommendations for some impact pathways are deferred to the Deposit Plan stage of the RLDP. Furthermore, some of the evidence base needed to make an informed judgment is not yet available (see later discussion), meaning that this HRA identifies some areas for further work.

Although the development allocations are not yet available, BGC has developed five Spatial Growth Options, which broadly set out how development is to be distributed across Blaenau Gwent. For example, Option 5 (Sustainable Economic growth), which is the currently preferred option, proposes a relatively high level of population growth, including the delivery of between 1,755-2,155 homes and estimates a loss of a minimum of 240 people in the working age population across the County Borough within the RLDP period. The Option further proposes an uneven spatial distribution of development based on a Sustainable Settlement Assessment, with Ebbw Vale being the Tier 1 Primary Settlement. Some of the other Options allocate more residential and employment growth but suggest a more even distribution of this across the authority. Despite the relatively broad nature of the Spatial Growth Options, this HRA will examine their likely implications for European sites regarding the identified impact pathways. However, due to the (intentional) lack of detail, it will not be within the scope of this HRA to provide a definitive assessment of the currently Preferred Option. A definitive analysis would involve Appropriate Assessment of all relevant impact pathways, which will be fully undertaken for the Deposit Plan, when the site allocations and more detailed policy text is available.

An initial assessment of the designated sites surrounding Blaenau Gwent and the potential impact pathways for the Blaenau Gwent RLDP indicates that several European sites require consideration, most notably the Usk Bat Sites SAC and the Cwm Clydach Woodlands SAC, which both lie partly within the Borough boundary. However, it is to be noted that both SACs do not fall within Blaenau Gwent's Local Planning Authority boundary, but within the planning boundary of the adjoining Brecon Beacons National Park Authority. Furthermore, various European sites outside the County Borough boundary, e.g. the River Usk SAC and the Brecon Beacons SAC might also be connected to development in the RLDP via a cross-boundary linking impact pathway, and these will also require consideration. The UK is bound by the terms of the Habitats Directive (92/43/EEC). Under Article 6(3) of the Habitats Directive, an appropriate assessment is required, where a plan or project is likely to have a significant effect upon a European Site, either individually or 'in combination' with other projects.

Legislative Context

The need for an assessment of impacts on European sites is set out within Article 6 of the Habitats Directive and transposed into English and Welsh law by the Conservation of Habitats and Species Regulations 2017 (as amended). The ultimate aim of the Habitats Directive is to "*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*" (Article 2(2)). This aim relates to habitats and species, not the European Sites themselves, although the European Sites have a significant role in delivering favourable conservation status.

The Habitats Directive applies the precautionary principle[3] to European Sites. Consent should only be granted for plans and projects once the relevant competent authority has ascertained that there will either be no likelihood of significant effects, or no adverse effect on the integrity of the European Site(s) in question. Where an Appropriate Assessment has been carried out and results in a negative impact, or if uncertainty remains over the significant effect, consent will only be granted if there are no alternative solutions and there are Imperative Reasons of Over-riding Public Interest (IROPI) for the development and compensatory measures have been secured.

To ascertain whether site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question. Figure 1 provides the legislative basis for an Appropriate Assessment.

Habitats Directive 1992

Article 6 (3) states that:

"*Any plan of 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 or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."*

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

"*A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … must make an appropriate assessment of the implications for the plan or project in view of that site's conservation objectives… The competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site."*

Figure 1. The legislative basis for Appropriate Assessment

Over the years, 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Habitats Regulations, from screening through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of "Appropriate Assessment". Throughout this Report the term HRA is used for the overall process and restricts the use of Appropriate Assessment to the specific stage of that name.

Scope of the Project

There is no pre-defined guidance that dictates the physical scope of an HRA of a Plan document. Therefore, in considering the physical scope of the assessment, we were guided primarily by the identified impact pathways (called the source-pathway-receptor model) rather than by arbitrary 'zones'. Current guidance suggests that the following European sites be included in the scope of assessment:

[3] The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as:
"*When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis*".

- All European sites within the Blaenau Gwent County Borough boundary; and,
- Other European sites within 15km shown to be linked to development within the County Borough boundary through a known 'pathway' (discussed below).

Briefly defined, impact pathways are routes by which the implementation of a policy within a Local Plan document can lead to an effect upon a European designated site. An example of this would be new residential development resulting in an increased population and thus increased recreational pressure, which could then affect European sites by, for example, disturbance of wintering or breeding birds. Guidance from the English Ministry of Housing, Communities and Local Government (MHCLG) states that the HRA should be '*proportionate to the geographical scope of the* [plan policy]' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (MHCLG, 2006, p.6).

While MHCLG does not have authority in Wales, this basic principle has also been reflected in court rulings. The Court of Appeal[4] has ruled that providing the Council (competent authority) was duly satisfied that proposed mitigation could be 'achieved in practice' to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Core Strategy document)[5]. In this case the High Court ruled that for '*a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Reg 61 of the Habitats Regulations'*.

Given an initial assessment of the relevant European sites and the impact pathways present, and referring to the HRA work that was undertaken for the adopted LDP and the Initial HRA Screening Report for the new RLDP produced in October 2018, this report will discuss the following European sites:

- Usk Bat Sites SAC;
- Cwm Clydach Woodlands SAC;
- River Usk SAC;
- Aberbargoed Grasslands SAC;
- Sugar Loaf Woodlands SAC;
- Cwm Cadlan SAC;
- Brecon Beacons SAC;
- Llangorse Lake SAC;
- Coed y Cerrig SAC; and
- Blaen Cynon SAC.

An introduction to these sites, their qualifying features (species and habitats), conservation objectives, and threats and pressures to site integrity are set out in Chapter 3 of this report.

In order to fully inform the screening process, several studies and information databases have been consulted to determine Likely Significant Effects (LSEs) that could arise from the draft RLDP. These include:

- Future development proposed (and, where available, HRAs) for the adjoining authorities of Powys, Monmouthshire, Caerphilly and Torfaen;
- Road traffic statistics from the Department for Transport (https://roadtraffic.dft.gov.uk);
- Journey-to-work data from the Population Census 2011 (https://www.nomisweb.co.uk/census/2011/WU03UK);

[4]No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015
[5]High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

- Brecon Beacons National Park 2016 / 2017 visitor survey[6] (which covers some of the SACs investigated in this HRA);
- The HRA produced for the adopted Blaenau Gwent LDP;
- Core Management Plans for relevant European sites;
- The UK Air Pollution Information System (www.apis.ac.uk); and
- Multi Agency Geographic Information for the Countryside (MAGIC) and its links to SSSI citations and the JNCC website (www.magic.gov.uk).

Quality Assurance

This report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2017).

[6] Strategic Research & Insight. 2017. Brecon Beacons National Park Visitor Survey 2016-17. Available at https://www.beacons-npa.gov.uk/wp-content/uploads/Brecon-Beacons-Visitor-Survey-Final-report-May-2017-English-.pdf [Accessed on the 29/08/2019]

2. Methodology

Introduction

The HRA has been carried out with reference to the general EC guidance on HRA[7] and the Welsh Government's guidance on HRA: Technical Advice Note 5 (Nature Conservation and Planning) 2009 and The Planning Series: 16 – Habitats Regulations Assessment. AECOM has also been mindful of the implications of European case law in 2018, notably the Holohan ruling and the People over Wind ruling, both discussed below.

Figure 2 below outlines the stages of HRA according to current EC guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

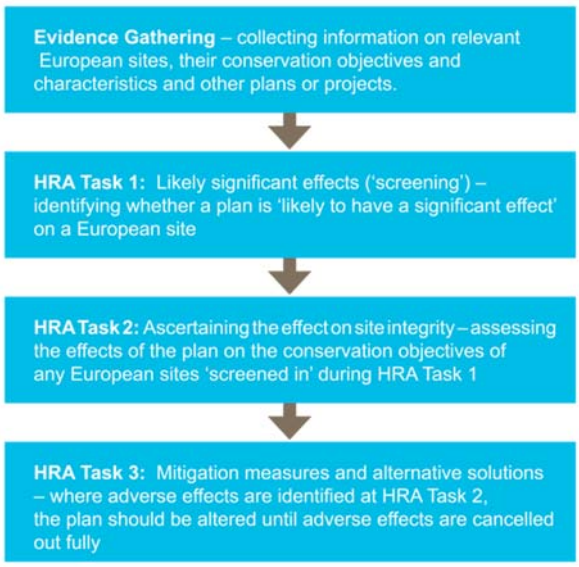

Figure 2. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001[1].

Description of HRA Tasks

HRA Task 1 – Likely Significant Effects (LSE)

Following evidence gathering, the first stage of any Habitats Regulations Assessment is a Likely Significant Effect (LSE) test - essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

"Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"

The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites. This stage is undertaken in Chapter 4 of this report and in Appendix A.

HRA Task 2 – Appropriate Assessment (AA)

Where it is determined that a conclusion of 'no likely significant effect' cannot be drawn, the analysis has proceeded to the next stage of HRA known as Appropriate Assessment. Case law has clarified that 'appropriate assessment' is not a technical term. In other words, there are no particular technical

[7] European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.

analyses, or level of technical analysis, that are classified by law as belonging to appropriate assessment rather than determination of likely significant effects.

By virtue of the fact that it follows Screening, there is a clear implication that the analysis will be more detailed than undertaken at the Screening stage and one of the key considerations during appropriate assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the appropriate assessment would take any policies or allocations that could not be dismissed following the high-level Screening analysis and analyse the potential for an effect in more detail, with a view to concluding whether there would actually be an adverse effect on integrity (in other words, disruption of the coherent structure and function of the European site(s)).

A decision by the European Court of Justice[8] concluded that measures intended to avoid or reduce the harmful effects of a proposed project on a European site may no longer be taken into account by competent authorities at the Likely Significant Effects or 'screening' stage of HRA. That ruling has been taken into account in producing this HRA.

Also. in 2018 the Holohan ruling[9] was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that '*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, … typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*' [emphasis added]. This has been taken into account in the HRA process, particularly regarding habitat outside the Usk Bat Sites SAC but which may be important for sustaining the SAC bat population.

HRA Task 3 – Avoidance and Mitigation

Where necessary, measures are recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on European sites. There is considerable precedent concerning the level of detail that a Local Plan document needs to contain regarding mitigation for recreational impacts on European sites. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.

In evaluating significance, AECOM has relied on professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the European sites considered within this assessment.

When discussing 'mitigation' for a Local Development Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the details of the mitigation measures themselves since the Local Development Plan document is a high-level policy document.

[8] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)
[9] Case C-461/17

3. European Designated Sites

Usk Bat Sites SAC

Introduction

The SAC comprises a wide variety of different habitats, including bogs and marshes (40.2%), heath and scrub (32.2%), Alpine and sub-alpine grassland (3.9%), dry grassland and steppes (3.8%) and broad-leaved deciduous woodland (3.4%).

Mynydd Llangatwg, the area making up large parts of the SAC, consists mainly of open moorland and bog, and represents one of the largest sections of exposed upland limestone crag in south Wales. The Craig y Cilau National Nature Reserve (NNR), which covers a large portion of the limestone escarpment, comprises areas of limestone grassland, scree, woodland and scrub. An extensive system of caves and sinkholes has developed beneath the Mynydd Llangatwg.

The NNR has been established primarily to protect the lesser horseshoe bat roosts in the caves, a primary reason for selection of this site as a SAC. However, the site also supports a noteworthy assemblage of plants, such as the small-leaved lime, several species of whitebeam, limestone fern, endemic hawkweeds and he alpine enchanter's-nightshade. The various micro-habitats on the cliffs and boulders harbour a typical range of fern, bryophytes and calcareous lichens. Notable lichen species include the jelly lichen *Collema cristatum*, *Leproplacetum chryssodetae* and *Aspicilion calcarean*.

Other Annex I habitats are also present, but not a primary reason for site selection. For example, these include Tilio-Acerion forest along the cliffs, which support rare whitebeams and are intermixed with beechwood in the Clydach Gorge. The bulk of the SAC is immediately north of the County Borough, with a smaller section lying within the County Borough approximately 500m from the nearest settlement, Brynmawr.

Qualifying Features[10]

The site has been designated as a SAC, a site of European importance, for a variety of features.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- European dry heaths
- Degraded raised bogs still capable of natural regeneration
- Blanket bogs
- Calcareous rocky slopes with chasmophytic vegetation
- Caves not open to the public
- *Tilio-Acerion* forests of slopes, screes and ravines

Annex II species that are **a primary reason** for selection of this site

- Lesser horseshoe bat *Rhinolophus hipposideros*

Conservation Objectives[11]

The overarching conservation objectives are outlined in the Core Management Plan for the Usk Bat Sites published by the Countryside Council for Wales. While this document also provides conservation vision statements for the Annex I habitats, only the conservation objectives for the primary site feature are outlined below.

[10] https://sac.jncc.gov.uk/site/UK0014784 [Accessed on 21/08/2019]
[11] https://naturalresources.wales/media/674281/Usk%20Bat%20Sites%20Management%20Plan%20Feb%2008.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]

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 support a sustainable population of lesser horseshoe bats in the River Usk area.
- The population will be viable in the long term, acknowledging the population fluctuations of the species.
- Buildings, structures and habitats on the site will be in optimal condition to support the populations.
- Sufficient foraging habitat is available, in which factors such as disturbance, interruption to flight lines, and mortality from predation or vehicle collision, changes in habitat management that would reduce the available food source are not at levels which could cause any decline in population size or range
- Management of the surrounding habitats is of the appropriate type and sufficiently secure to ensure there is likely to be no reduction in population size or range, nor any decline in the extent or quality of breeding, foraging or hibernating habitat.
- There will be no loss or decline in quality of linear features (such as hedgerows and tree lines) which the bats use as flight lines
- There will be no loss of foraging habitat use by the bats or decline in its quality, such as due to over-intensive woodland management
- All factors affecting the achievement of the above conditions are under control.

Threats / Pressures to Site Integrity[12]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Recreational pressure
- Inappropriate management of main habitats
- Inappropriate water level (in bogs)
- Inappropriate grazing levels
- Impact of atmospheric nitrogen deposition
- Quarrying / mining in the area
- Risk of arson / wildfires

Cwm Clydach Woodlands SAC

Introduction

The Cwm Clydach Woodlands SAC mainly comprises broad-leaved deciduous woodland (88.9%), heath and scrub (9.4%), and some dry grassland and steppes (1.7%). Primarily, the site is characterised by *Asperulo-Fagetum* beech forests that lie close to the limit of their north-western distribution in the UK and within Europe. The main part of the wood is on a steep valley side with a

[12] https://naturalresources.wales/media/674281/Usk%20Bat%20Sites%20Management%20Plan%20Feb%2008.pdf [Accessed on 21/08/2019]

mature canopy of large trees and abundant deadwood. There are also transitions to more acidic beech woodland.

The SAC harbours some rare and characteristic plant species including the whitebeam *Sorbus porrigentiformis*, mountain sedge *Carex montana*, yellow bird's-nest *Monotropa hypopitys* and bird's-nest orchid *Neottia nidus-avis*. The SAC lies north-east of the County Borough, with a small sliver located within the County Borough approximately 1km east of the nearest settlement, Brynmawr.

Qualifying Features[13]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats that are a primary reason for selection of this site:

- *Asperulo-Fagetum* beech forests

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer

Conservation Objectives[14]

The overarching conservation objectives are outlined in the Core Management Plan for the Cwm Clydach Woodland published by the Countryside Council for Wales. While this document also provides conservation vision statements for the non-primary Annex I habitat, only the conservation objectives for the primary site feature are outlined below.

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

- At least 50% of the canopy-forming trees are beech.
- The canopy cover is at least 80% (excluding areas of crag) and composed of locally native trees.
- The woodland has trees of all age classes with a scattering of standing and fallen dead wood.
- Regeneration of trees is sufficient to maintain the woodland cover in the long term.
- The shrub layer and ground flora can be quite sparse, but where present consist of locally native plants such as yew, hawthorn, wych elm, ash, hazel, field maple and elder, bramble, dog's mercury, enchanter's-nightshade, lords-and-ladies, woodruff, male fern, sanicle, wood melick, ivy, false brome, violets, herb robert, wood avens, and tufted hair-grass.
- Scarcer plants, such as soft-leaved sedge and bird's-nest orchid are locally frequent and, more rarely, yellow bird's-nest orchid can be found.
- All factors affecting the achievement of the above conditions are under control.

Threats and Pressures to Site Integrity[15]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Recreational disturbance (fly-tipping)
- Inappropriate habitat management

[13] https://sac.jncc.gov.uk/site/UK0030127 [Accessed on 21/08/2019]
[14] https://naturalresources.wales/media/675017/cwm-clydach-sac-plan-english.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]
[15] https://naturalresources.wales/media/675017/cwm-clydach-sac-plan-english.pdf [Accessed on 21/08/2019]

- Inappropriate grazing levels
- Invasive species

River Usk SAC

Introduction

The River Usk SAC originates in the west of the Brecon Beacons National Park and flows south-east, joining the Severn Estuary at Newport. The overall from of the catchment is long and narrow, with steep tributaries inflowing along the way to the Severn Estuary. The underlying geology is primarily Devonian Old Red Sandstone resulting in well buffered low-acidity waters. This geology also drives the low-moderate nutrient that characterises the SAC. However, along its course the nutrient status of the SAC is significantly modified by land use within the catchment, which is mainly pastoral and occasional woodland forestry.

The ecological structure and function of the site is highly dependent on hydrological and geomorphological processes, as well as the quality and connectivity of riparian habitats. This is especially the case for mobile animals, such as migratory fish and otters that move throughout the site. For example, the maintenance of a good hydrological regime (i.e. water quality and flows) and a consequent maintenance of current velocity, water depth, dissolved oxygen levels and nutrient status are integral for fish to move around the river.

Example of the species that the SAC is designated for include the sea lamprey *Petromyzon marinus*, Atlantic salmon *Salmo salar* and bullhead *Cottus gobio*. Especially the Atlantic salmon requires unmodified river channels and an obstruction-free migratory route to its spawning gravels. The River Usk SAC is also an important site for otters, acting as a refuge for the species in the 1950s and subsequently as a source population for the re-colonisation of south-east Wales. The SAC lies approximately 3.7km north-east of the County Borough.

Qualifying Features[16]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Annex II species that are a primary reason for selection of this site:

- Sea lamprey *Petromyzon marinus*
- Brook lamprey *Lampetra planeri*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*
- Atlantic salmon *Salmo salar*
- Bullhead *Cottus gobio*
- Otter *Lutra lutra*

Annex II species present as a qualifying feature, but not a primary reason for site selection:

- Allis shad *Alosa alosa*

[16] https://sac.jncc.gov.uk/site/UK0013007 [Accessed on 21/08/2019]

Conservation Objectives[17]

The overarching conservation objectives are outlined in the Core Management Plan for the River Usk SAC published by the Countryside Council for Wales. While this document provides conservation vision statements for all Annex II species, only the conservation objectives for the water course are presented here, as this is essential to maintain the species in favourable conservation status.

- The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary.
- The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process given in Annexes 1-3.
- Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC.
- All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural processes cause them to change.
- Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.
- The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial river banks using stone, concrete or waste materials, unsustainable extraction of gravel, addition or release of excessive quantities of fine sediment, will be avoided.
- River habitat SSSI features should be in favourable condition. In the case of the Usk Tributaries SSSI, the SAC habitat is not underpinned by a river habitat SSSI feature. In this case, the target is to maintain the characteristic physical features of the river channel, banks and riparian zone.
- Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, eg. weirs, bridge sills, acoustic barriers.
- Natural factors such as waterfalls, which may limit the natural range of a species feature or dispersal between naturally isolated populations, should not be modified.
- Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered.
- Flow objectives for assessment points in the Usk Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 1 of this document.
- Levels of nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain nutrients below these levels. It is anticipated that these limits will concur with the standards used by the Review of Consents process given in Annex 2 of this document.

[17] https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]

- Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the Usk SAC, and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the 16 standards used by the Review of Consents process given in Annex 3 of this document.
- Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, will be considered in assessing plans and projects.
- Levels of suspended solids will be agreed between EA and CCW for each Water Framework Directive water body in the Usk SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

Threats and Pressures to Site Integrity[18]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Inappropriate habitat management (e.g. barriers to migration)
- Water quality
- Water flow / level
- Noise / acoustic disturbance
- Non-marine fisheries: recreational and commercial
- Increased sedimentation / siltation

Aberbargoed Grasslands SAC

Introduction

The Aberbargoed Grasslands SAC comprises multiple habitats, including humid grassland (48%), broad-leaved deciduous woodland (32.6%), and heath and scrub (12.8%). The SAC covers 42.5ha and lies southwest facing hillside in the Rhymney Valley, 1km east of Bargoed and thus occupying an urban fringe position.

The fields in the south-western part of the site have reduced drainage and harbour a mixture of marshy grassland communities. Areas of high conservation value include abundant purple moor grass *Molinia caerulea*, meadow thistle *Cirsium dissectum*, devil's bit scabious *Succisa pratensis* and carnation sedge *Carex panicea*. Associated stands of *Molinia caerulea – Potentilla erecta* mire contain abundant purple moor grass with other important plant species, such as common sedge *Carex nigra* and spotted orchid *Dactylorhiza maculata*. The SAC lies approximately 3.7km south of the County Borough.

Qualifying Features[19]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Molinia meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*)

Annex II species that are a primary reason for selection of this site:

[18] https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf. [Accessed on 21/08/2019]
[19] https://sac.jncc.gov.uk/site/UK0030071 [Accessed on 21/08/2019]

- Marsh fritillary butterfly *Euphydryas aurinia*

Conservation Objectives[20]

The overarching conservation objectives are outlined in the Core Management Plan for the Aberbagoed Grasslands SAC published by the Countryside Council for Wales. While this document also provides conservation vision statements for the Annex I habitat, only the conservation objectives for the primary qualifying feature are presented here.

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 support a sustainable metapopulation of the marsh fritillary in the Aberbargoed area. This will require at least 50ha of suitable habitat, although not all of this will be within the SAC
- 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 25ha of the total site area will be marshy grassland suitable for supporting marsh fritillary, with Succisa pratensis present and only a low cover of scrub.
- At least 6.25ha will be good marsh fritillary breeding habitat, dominated by purple moor-grass Molinia caerulea, with S. pratensis present throughout and a vegetation height of 10-20cm over the winter period.
- All factors affecting the achievement of the foregoing conditions are under control.

Threats and Pressures to Site Integrity[21]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Appropriate grazing levels
- Recreational pressure

Sugar Loaf Woodlands SAC

Introduction

The Sugar Loaf Woodlands SAC comprises 173.1ha of broad-leaved deciduous woodland (76.7%), and heath and scrub (23.3%). It is the largest area of old sessile oak woods near the south-eastern fringe of the habitat's range in the UK and Europe. Due to the relatively dry conditions in the SAC, the development of the Atlantic flora is restricted. However, the main plant components of the site are sessile oak *Quercus petraea*, bilberry *Vaccinium myrtillus*, wavy hair-grass *Deschampsia flexuosa*, and extensive fern and bryophyte cover. While the woodland is grazed, it regenerates around the fringes, where transitions to upland grassland and heathland communities occur. The SAC lies just over 7km north-east of the County Borough.

[20] https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]
[21] https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf. [Accessed on 21/08/2019]

Qualifying Features[22]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- *Molinia* meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*)

Annex II species that are a primary reason for selection of this site:

- Marsh fritillary butterfly *Euphydryas aurinia*

Conservation Objectives[23]

The overarching conservation objectives are outlined in the Core Management Plan for the Sugar Loaf Woodlands SAC published by the Countryside Council for Wales.

The vision for this feature is for it to be in favourable conservation status within the site, as a functioning and regenerating* oak wood, where all of the following conditions are satisfied:

- The wooded area is no less than 122 ha;
- The remainder of the site is semi-natural acid grassland, heathland, bracken and scrub, often forming a transition zone at the woodland edge;
- Saplings of birch *betula* spp, oak *Quercus petraea*, alder *Alnus glutinosa* or holly *Ilex aquifolium* dominate the tree regeneration;
- Young beech *Fagus sylvatica* and sycamore *Acer pseudoplatanus* trees are rare;
- The woodland ground flora is composed of a range of typical native plants including bilberry *Vaccinium myrtillus*, wavy-hair grass *Deschampsia flexuosa* and the mosses *Plagiothecium undulatum*, *Rhytidiadelphus loreus*, *Dicranum majus*.
- The liverwort *Bazzania trilobata* to continue to be present in its core area of Unit 1.
- All factors affecting the achievement of these conditions will under control.

* A "functioning and regenerating oak woodland" would include all the positive attributes described in the performance indicators.

Threats and Pressures to Site Integrity[24]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Inappropriate habitat management
- Invasive species

[22] https://sac.jncc.gov.uk/site/UK0030072 [Accessed on 21/08/2019]
[23] https://naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]
[24] https://naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf. [Accessed on 21/08/2019]

Cwm Cadlan SAC

Introduction

The Cwm Cadlan SAC is a 84.2ha site that harbours a variety of habitats, including humid grassland (52.4%), improved grassland (16.6%), bogs and marshes (15.5%), broad-leaved deciduous woodland (7.6%), heath and scrub (5%), and dry grassland and steppes (2.3%).

The SAC is the largest example of Molinia meadows in Wales. Its most typical form of *Molinia caerulea – Cirsium dissectum* fen-meadow is developed extensively, with some transitions to base-rich flush and neutral grassland also present. Notably, the globe-flower *Trollius europaeus* occurs towards its UK's southern limit.

Furthermore, Cwm Cadlan supports a suite of short-sedge mire communities overlying Carboniferous limestone. The most widely occurring communities are referable to NVC type M10 *Carex dioica – Pinguicula vulgaris*, often occurring in conjunction with purple moor-grass *Molinia caerulea*. Other characteristic species include common butterwort *Pinguicula vulgaris*, bog pimpernel *Anagallis tenella*, marsh arrowgrass *Triglochin palustris*and the moss *Campylium stellatum*. The SAC lies approximately 12km west of the County Borough.

Qualifying Features[25]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats that are a primary reason for selection of this site:

- *Molinia* meadows on calcareous, peaty or clayey-silt laden soils (*Molinion caeruleae*)
- Alkaline fens

Conservation Objectives[26]

The overarching conservation objectives are outlined in the Core Management Plan for the Cwm Cadlan SAC published by the Countryside Council for Wales.

Molinia meadows

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

- Fen-meadow will occupy at least 26 ha of a total area of marshy grassland habitat which itself will cover at least 42 ha.
- The remainder of the site will mainly consist of other semi-natural habitat, including alkaline fen. • Typical fen-meadow plants will be common.
- Plants indicating agricultural modification or alteration to hydrology and drying of soils will be absent or present at only low cover.
- Although rushes are frequent, the more bulky species will not exceed 33% cover.
- Bare ground will generally not exceed 5% cover and vegetation litter 25%.
- Dense scrub will be largely absent from the fen-meadow, but it is probably desirable for invertebrates and birds to have a sparse scattering of shrubs or trees.
- All factors affecting the achievement of these conditions are under control.

Alkaline fens

[25] https://sac.jncc.gov.uk/site/UK0013585 [Accessed on 21/08/2019]
[26] https://naturalresources.wales/media/675014/cwm-cadlan-sac-plan-english.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]

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

- Alkaline Fen will occupy about 11 ha or more.
- The remainder of the site will mainly consist of other semi-natural habitat including fenmeadow. • Typical alkaline fen plants will be common.
- Plants indicating agricultural modification or alteration of hydrology and drying of soils will be absent or present only at low cover.
- Although rushes are frequent, the more bulky species will not exceed 33% cover.
- Bare ground will generally not exceed 5% cover and vegetation litter 10 %.
- Scrub species will be largely absent from the alkaline fen.
- At selected springheads, water should flow in all but the most severe drought conditions.
- All factors affecting the achievement of these conditions are under control.

Threats and Pressures to Site Integrity[27]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Inappropriate habitat management
- Invasive species
- Atmospheric pollution

Brecon Beacons SAC

Introduction

The Brecon Beacons SAC is located to the south of the town of Brecon in the Brecon Beacon National Park. The Old Red Sandstone cliffs support the most southerly distribution of calcareous rocky slopes with chasmophytic vegetation in the UK. Resident plants include purple saxifrage *Saxifraga oppositifolia*, green spleenwort *Asplenium viride*, brittle bladder-fern *Cystopteris fragilis* and several rare hawkweeds *Hieracium* spp. The cliffs also support siliceous rocky slopes with chasmophytic vegetation through a lower base status. Species found in this habitat include fir clubmoss *Huperzia selago*, serrated wintergreen *Orthilia secunda* and bryophytes, such as *Douinia ovata*, *Brachydontium trichodes* and *Rhabdoweisia crenulate*.

Some areas of dry heath are found on the steep slopes of the National Nature Reserve, which are largely dominated by stands of heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus* and crowberry *Empetrum nigrum*. Towards the lower slopes, where grazing levels are higher, heath species are less dominant and are replaced by acid grassland. Trees including endemic whitebeams *Sorbus* spp. and shrubs are important elements of the crag' vegetation. The SAC lies approximately 10km north of the County Borough.

Qualifying Features[28]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats that are a primary reason for selection of this site:

[27] https://naturalresources.wales/media/675014/cwm-cadlan-sac-plan-english.pdf. [Accessed on 21/08/2019]
[28] https://sac.jncc.gov.uk/site/UK0030096 [Accessed on 21/08/2019]

- Calcareous rocky slopes with chasmophytic vegetation
- Siliceous rocky slopes with chasmophytic vegetation

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- European dry heaths
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

Conservation Objectives[29]

The overarching conservation objectives are outlined in the Core Management Plan for the Sugar Loaf Woodlands SAC published by the Countryside Council for Wales.

Calcareous rocky slopes with chasmophytic vegetation

- The base-rich sandstone cliffs, including crevices, scree and associated patches of thin soil remains free from disturbance and support typical plants, including mosses and liverworts.
- A variety of rare and scarce plants thrive in these areas, including purple saxifrage, green spleenwort, Oeder's apple-moss, lesser rough earwort and several rare hawkweeds.
- Populations of these species are sufficiently large and widespread to be sustained into the future (currently some populations may be critically low).
- All factors affecting the achievement of the above conditions are under control.

Siliceous rocky slopes with chasmophytic vegetation

- The acidic sandstone rocks, including crevices and scree, remain free from disturbance to and support typical plants, including mosses, ferns and lichens.
- A variety of rare and scarce plants thrive in these areas, including fir clubmoss, dwarf willow, and greater streak-moss.
- Populations of these species are sufficiently large and widespread to be sustained into the future.
- All factors affecting the achievement of the above conditions are under control.

Threats and Pressures to Site Integrity[30]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Recreational pressure
- Atmospheric pollution
- Inappropriate grazing levels

[29] https://naturalresources.wales/media/671043/Brecon%20Beacons%20SAC%20plan%20_Eng_.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/08/2019]
[30] https://naturalresources.wales/media/671043/Brecon%20Beacons%20SAC%20plan%20_Eng_.pdf. [Accessed on 21/08/2019]

Llangorse Lake SAC

Introduction

The Llangorse Lake SAC comprises several habitats, including inland water bodies (56.8%), bogs and marshes (11.9%), humid grassland (8.9%), improved grassland (16%) and broad-leaved deciduous woodland (5.1%). Its main feature is a large shallow lake with a mean depth of 2-3 metres, lying in a natural depression of Devonian Old Red Sandstone. It is the largest natural lowland water in south Wales and one of the few natural eutrophic lakes in Britain.

The site's mineral-rich geology has encouraged growth of a wide range of aquatic and marginal plants, including several species that are rare in Wales. The SAC shows a gradation from open water with submerged and floating plant beds, to patches of willow scrub and wet woodland. The lake has a diverse plankton community supporting a wide variety of invertebrates, including many rare species. Its flora is dominated by pondweed, such as yellow water-lily *Potamogetonaceae – Nupharetum* associations. The shoreline flora is largely dominated by club-rush-common reed *Scirpo - Phragmitetum* associtaions. It is also rich in shining pondweed *Potamogeton lucens*. The SAC lies approximately 11km north of the County Borough.

Qualifying Features[31]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats that are a primary reason for selection of this site:

- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation

Conservation Objectives[32]

The overarching conservation objectives are outlined in the Core Management Plan for the Llangorse Lake SAC published by the Countryside Council for Wales.

Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation

- There is no loss of lake area, as defined in 2006 aerial photographs for summer levels.
- The aquatic plant community is typical of this lake type in terms of composition and structure, including species such as water-starworts, stoneworts, duckweeds, broad-leaved and fineleaved pondweeds, water lilies, amphibious bistort, water-crowfoots, rigid hornwort, spiked water-milfoil, mare's-tail and horned pondweed.
- Plants indicating very high nutrient levels and excessive silt loads are not dominant and invasive non-native water plants do not threaten to out-compete the native flora.
- The nutrient, pH and dissolved oxygen levels are typical for a lake of this type and there is no excessive growth of cyanobacteria or green algae.
- There is a natural hydrological regime.
- The natural shoreline is maintained.
- The natural and characteristic substrate is maintained.
- The natural sediment load maintained.
- All factors affecting the achievement of these conditions are under control.

[31] https://sac.jncc.gov.uk/site/UK0012985 [Accessed on 21/10/2019]
[32] https://naturalresources.wales/media/672671/Llangorse%20lake%20core%20management%20plan.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/10/2019]

Threats and Pressures to Site Integrity[33]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Water quality
- Sedimentation
- Non-native invasive species
- Loss of surrounding habitats

Coed y Cerrig SAC

Introduction

The Coed y Cerrig SAC is 8.99ha in size and comprises two main habitats, namely broad-leaved deciduous woodland (91.2%), and bogs and marshes (6.6%). The SAC is a good example of alluvial forest in southern Wales. It lies in the bottom of a valley and its canopy is dominated by alder *Alnus glutinosa* and ash *Fraxinus excelsior*, and a rich understorey with guelder-rose *Viburnum opulus* and bird cherry *Prunus padus*. Its ground flora includes large sedges *Carex* spp. and wet woodland species. There are gradations to ash-elm *Fraxinus-Ulmus* and oak *Quercus* spp. on the valley sides. The site includes a large area of species-rich fen meadow and some rush pasture.

Historically, the wet alder dominated woodland has been managed through a mixture of coppicing and grazing. Coppice management was traditionally undertaken to provide timber for the charcoal and clog making industries but seized before the Second World War. The dry woodland sections were managed for oak and beech timber. The SAC is approximately 11km north-east of the County Borough.

Qualifying Features[34]

The site has been designated as a SAC, a site of European importance, for several features.

Annex I habitats that are a primary reason for selection of this site:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

Conservation Objectives[35]

The overarching conservation objectives are outlined in the Core Management Plan for the Coed y Cerrig SAC published by the Countryside Council for Wales.

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

- Around a third of the site is covered by wet alder and willow woodland.
- This wet woodland grades into areas of permanent open swamp dominated by lesser pond-sedge or other typical wetland plants, where the hydrological conditions are suitable. Adjacent

[33] https://naturalresources.wales/media/672671/Llangorse%20lake%20core%20management%20plan.pdf. [Accessed on 21/10/2019]
[34] https://sac.jncc.gov.uk/site/UK0012766 [Accessed on 21/10/2019]
[35] https://naturalresources.wales/media/671319/Coed%20y%20Cerrig%20%20SAC%20%20Management%20Plan%20_English_.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/10/2019]

areas of marshy grassland and spring-fed mire are intimately linked to the wet woodland and swamp.

- The remainder of the site supports mainly dry semi-natural woodland.
- The wet woodland has a variable canopy structure, based on a small-scale patchwork, with alder of different ages and some standing as well as fallen dead wood. Ash does not make up more than 25% of the canopy.
- Young trees/saplings and/or vegetative re-growth of the above species are present.
- The understorey includes locally native shrubs typical of this habitat and the ground flora consists of a variety of typical wetland plants, such as lesser pond-sedge, common marsh-bedstraw, meadowsweet, yellow pimpernel, opposite-leaved golden-saxifrage, marsh-marigold, hemlock water-dropwort, water mint, lady fern and rushes.
- Plants associated with nutrient enrichment, such as stinging nettle and cleavers, are not dominant over large areas and invasive alien plants like Japanese knotweed and Indian balsam are absent.
- This wet woodland grades into areas of permanent open swamp dominated by lesser pond-sedge or other typical wetland plants, where the hydrological conditions are suitable. Adjacent areas of marshy grassland and spring-fed mire are intimately linked to the wet woodland and swamp.
- There is no significant input of nutrient-rich water from ditches and surrounding land.
- All factors affecting the achievement of these conditions are under control.

Threats and Pressures to Site Integrity[36]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site's Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Inadequate woodland management
- Inappropriate grazing levels
- Inappropriate hydrological regime
- Atmospheric pollution
- Recreational pressure

Blaen Cynon SAC

Introduction

The Blaen Cynon SAC is 66.52ha in size and comprises a diverse array of habitats, including humid grassland (41.3%), bogs and marshes (27.6%), dry grassland (11.7%), heath and scrub (8.3%), improved grassland (5.5%) and broad-leaved deciduous woodland (3.9%). Most importantly, the SAC contains an extensive complex of damp pastures and heaths, which support the largest metapopulation of marsh fritillary *Euphydryas aurinia* on the southern edge of the Brecon Beacons National Park. This species of butterfly is found in a range of habitats in which its larval food plant devil's-bit scabious *Succisa pratensis* is found. While the marsh fritillary may be found in wet heath, bog margins and woodland clearings, it is mostly associated with acidic and dry calcareous grassland.

36 https://naturalresources.wales/media/671319/Coed%20y%20Cerrig%20%20SAC%20%20Management%20Plan%20_English_.pdf. [Accessed on 21/10/2019]

Marsh fritillary populations vary greatly from year to year, forming numerous sub-populations that may die out and recolonise an area. The population of marsh fritillary in the Blaen Cynon SAC is likely to form a connected metapopulation with sub-populations in other European sites, such as the Aberbargoed Grasslands SAC. The SAC lies just under 15km west of the County Borough.

Qualifying Features[37]

The site has been designated as a SAC, a site of European importance, for several features.

Annex II species that are a primary reason for selection of this site:

- Marsh fritillary butterfly *Euphydryas aurinia*

Conservation Objectives[38]

The overarching conservation objectives are outlined in the Core Management Plan for the Blaen Cynon SAC published by the Countryside Council for Wales.

Marsh fritillary butterfly *Euphydryas aurinia*

- The site will contribute towards supporting a sustainable metapopulation of the marsh fritillary in the Penderyn/Hirwaun 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.
- A minimum of 30% of the total site area will be grassland suitable for supporting marsh fritillary. (As the total area of the SAC is 66.62 ha, 30% represents approximately 20 ha.)
- At least 40% of the suitable habitat (approximately 8 ha) must be in optimal condition for breeding marsh fritillary.
- 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. (Fowles 20042)

Threats and Pressures to Site Integrity[39]

While there is no Site Improvement Plan for the SAC, the main pressures and threats to site integrity can be inferred from the site’s Core Management Plan, which outlines the management techniques that are required to achieve the conservation objectives for the SAC.

The main threats and pressures to the site integrity of the SAC are the following:

- Inappropriate grazing levels
- Scrub invasion
- Inappropriate woodland management
- Input of agricultural fertilisers

[37] https://sac.jncc.gov.uk/site/UK0012766 [Accessed on 21/10/2019]
[38] https://naturalresources.wales/media/671013/Blaen%20Cynon%20core%20management%20plan.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 21/10/2019]
[39] https://naturalresources.wales/media/671013/Blaen%20Cynon%20core%20management%20plan.pdf. [Accessed on 21/10/2019]

4. Test of Likely Significant Effects (LSE)

Introduction

This chapter provides background to the relevant impact pathways linked to the Replacement Local Development Plan (RLDP), highlights the European sites that are sensitive to these pathways, and identifies the policies that could (prior to the consideration of mitigation) result in Likely Significant Effects (LSE) on European sites. The identified European sites and policies are then carried forward into the Appropriate Assessment that is undertaken in Chapter 5. A map of the European sites within 15km of Blaenau Gwent is shown in Appendix 1. For the full LSE assessment of the strategic policies outlined within the RLDP please see Appendix 2. The LSE screening of the four RLDP Spatial Growth Options is provided in Appendix 3.

Impact Pathways Considered

The following impact pathways are considered relevant to the Blaenau Gwent Replacement Local Development Plan:

- Atmospheric pollution (due to an increase in traffic generation);
- Recreational pressure (due to the local population growth);
- Loss of functionally linked land (due to the allocation of greenfield sites for development);
- Water quality (due to increases in sewage effluent and industrial pollutant input); and
- Water quantity, level and flow (due to an increased abstraction of water for dwellings and employment space).

Background to Atmospheric Pollution

Table 1: Main sources and effects of air pollutants on habitats and species[40]

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO_2)	The main sources of SO_2 are electricity generation, and industrial and domestic fuel combustion. However, total SO_2 emissions in the UK have decreased substantially since the 1980's. Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO_2 have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO_2 emissions in the UK.	Wet and dry deposition of SO_2 acidifies soils and freshwater and may alter the composition of plant and animal communities. The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species. However, SO_2 background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.
Acid deposition	Leads to acidification of soils and freshwater via atmospheric deposition of SO_2, NOx, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels. Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will	Gaseous precursors (e.g. SO_2) can cause direct damage to sensitive vegetation, such as lichen, upon deposition. Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and

[40] Information summarised from the Air Pollution Information System (http://www.apis.ac.uk/)

Pollutant	Source	Effects on habitats and species
	continue to decline, increased N emissions may cancel out any gains produced by reduced S levels.	compromised reproduction in birds / plants. Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.
Ammonia (NH_3)	Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock. Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_4+) - containing aerosol. Due to its significantly longer lifetime, NH_4+ may be transferred much longer distances (and can therefore be a significant trans-boundary issue). While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.	The negative effect of NH_4+ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation. Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen. As emissions mostly occur at ground level in the rural environment and NH_3 is rapidly deposited, some of the most acute problems of NH_3 deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides (NO_x)	Nitrogen oxides are mostly produced in combustion processes. Half of NO_X emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes. In contrast to the steep decline in Sulphur dioxide emissions, nitrogen oxides are falling slowly due to control strategies being offset by increasing numbers of vehicles.	Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NOx for all vegetation types has been set to 30 ug/m3. Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification. In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.
Nitrogen deposition	The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_X) or reduced (e.g. NH_3) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices. The N pollutants together are a large contributor to acidification (see above).	All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally. Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O_3)	A secondary pollutant generated by photochemical reactions involving NOx, volatile organic compounds (VOCs) and sunlight. These precursors are mainly	Concentrations of O_3 above 40 ppb can be toxic to both humans and wildlife, and can affect buildings.

Pollutant	Source	Effects on habitats and species
	released by the combustion of fossil fuels (as discussed above). Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	High O_3 concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.

The main pollutants of concern for European sites are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2) and are summarised in Table 1. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges[41]. NOx can also be toxic at very high concentrations (far above the annual average critical level). However, in particular, high levels of NOx and NH_3 are likely to increase the total N deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere is widely known to enhance soil fertility and to lead to eutrophication. This often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats.[42] [43]

Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping[44]. Ammonia emissions originate from agricultural practices[45], with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO_2 or NH_3 emissions will be associated with the available RLDP. NOx emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion to its overall NOx footprint (92%) through the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison[46]. Emissions of NOx could therefore be reasonably expected to increase because of a higher number of vehicles due to implementation of the RLDP.

According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 μgm^{-3}; the threshold for sulphur dioxide is 20 μgm^{-3}. In addition, ecological studies have determined 'critical loads'[47] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH_3).

The Department of Transport's Transport Analysis Guidance outlines that, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant (Figure 3 and [48]). This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development outlined in the RLDP. Exhaust emissions from vehicles are capable of adversely affecting heathland habitats.

[41] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.
[42] Wolseley, P. A.; James, P. W.; Theobald, M. R.; Sutton, M. A. **2006.** Detecting changes in epiphytic lichen communities at sites affected by atmospheric ammonia from agricultural sources. Lichenologist 38: 161-176
[43] Dijk, N. **2011.** Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation Global Change Biology 17: 3589-3607
[44] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[45] Pain, B.F.; Weerden, T.J.; Chambers, B.J.; Phillips, V.R.; Jarvis, S.C. 1998. A new inventory for ammonia emissions from U.K. agriculture. Atmospheric Environment 32: 309-313
[46] Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. http://www.airquality.co.uk/archive/index.php
[47] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur
[48] http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013; accessed 12/05/2016

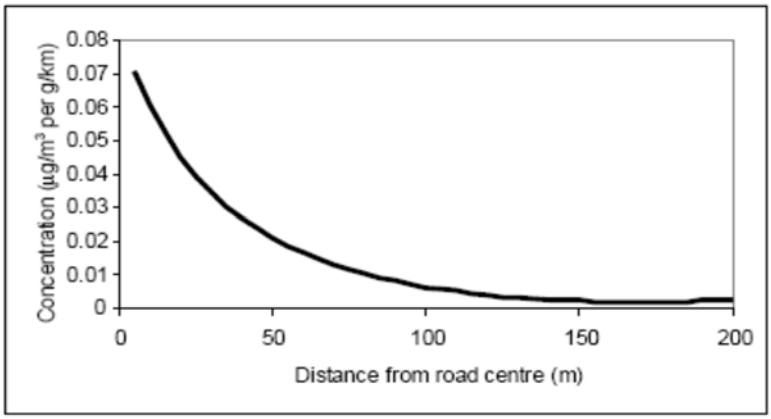

Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT[49])

Screening for LSEs

The following European sites within 15km of Blaenau Gwent are considered to be susceptible to atmospheric pollution (the sites that are screened in for Appropriate Assessment following discussion in the text are marked in **bold**):

- **Usk Bat Sites SAC**
- **Cwm Clydach Woodlands SAC**
- **Aberbargoed Grasslands SAC**
- River Usk SAC
- Sugar Loaf Woodlands SAC
- Cwm Cadlan SAC
- Brecon Beacons SAC
- Llangorse Lake SAC
- Coed y Cerrig SAC

The Usk Bat Sites SAC is primarily designated for its populations of lesser horseshoe bats *Rhinolophus hipposideros*. This species' main habitat is mixed broadleaved and yew woodland. According to APIS the habitat is sensitive to nitrogen deposition with a critical load set at 10 – 20 kg N/ha/yr. However, several Annex I habitats, such as degraded raised bogs and blanket bogs are also highly sensitive to excessive nitrogen input. Although these are not a primary reason for the designation of this site, they must be considered in the HRA process. For both types of bog habitats, the empirical critical load for annual nitrogen deposition has been set at 5 – 10 kg N/ha/yr. Meeting these critical load limits is particularly important because the 3 year average between 2013 and 2015 indicates that the maximum nitrogen deposition to bog habitats (20.6 kg N/ha/yr) was over twice the upper critical limit for these habitats (10 kg N/ha/yr). A preliminary assessment of the road infrastructure around the Usk Bat Sites SAC indicates that it lies directly adjacent to the A465, which is likely to be a main route for commuter traffic in and out of Blaenau Gwent. The Department for Transport's road traffic statistics indicate that at site number 50535, a traffic point count directly adjacent to the SAC, the annual average daily traffic (AADT) in 2018 comprised 18,274 cars, 4,280 light goods vehicles and 1,522 heavy goods vehicles. Given the proximity of the SAC to such major traffic infrastructure, the site is screened in for Appropriate Assessment.

The Cwm Clydach Woodlands is designated for its beech *Fagus* woodland habitats, which are generally considered to be susceptible to atmospheric nitrogen deposition. APIS reports a site relevant critical load for beech forests of 10 – 20 kg N/ha/yr. Exceedance impacts would potentially be

[49] http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf; accessed 13/07/2018

changes in ground vegetation and mycorrhiza, nutrient shifts and concomitant changes in the soil fauna. The SAC is situated similarly to the Usk Bat Sites SAC, directly adjacent to the A465 and therefore requires further consideration in an Appropriate Assessment.

The River Usk SAC is a riverine system of plain to montane levels, which supports a range of fish, such as several lamprey species, migratory salmon and otters. The survival of these species is therefore tightly linked to the maintenance of the integrity of the river. Freshwater habitats are typically regarded as being primarily phosphate limited, with lesser regard being given to nitrogen input. The River Usk Management Catchment Plan summarises a variety of measures implemented to preserve the integrity of the SAC[50] and explicitly refers to reducing the deposition of nitrogen deriving from atmospheric pollution. However, 'Delivering the Nutrient Management Plan' on the Wye-Usk Foundation website indicates the focus on nutrient control in these catchments remains phosphate, which does not come from the atmosphere. Moreover, there are no atmospheric nitrogen critical loads available to use in assessments for riverine European sites. As such, this SAC will not be taken forward to appropriate assessment regarding traffic-related air quality.

The Aberbargoed Grasslands SAC are designated for their *Molinia* meadows on calcareous, peaty or clayey-silt laden soils, which identified on APIS as being sensitive to atmospheric nitrogen deposition. Here, a critical load of 15 – 25 kg N/ha/yr for these meadows is listed. However, the Core Management Plan published by the Countryside Council for Wales does not identify atmospheric pollution as a key management measure for the SAC. The closest significant road within 200m of the SAC is the A4049. However, the AADT at the closest manual count point only amounts to 5,913. A closer investigation of data available on APIS highlights that, while the total nitrogen deposition to the site is very high, the NO_x concentrations are relatively low (12.41 ug/m^3). This indicates that the majority of the nitrogen input is likely to come from agricultural sources. However, as a precautionary measure, the site is screened in for Appropriate Assessment.

The Sugar Loaf Woodlands SAC is designated for its old sessile oak woods, which have an empirical critical load of 10 – 15 kg N/ha/yr as outlined on APIS. Exceedance of this threshold would result in a decrease in mycorrhiza, loss of epiphytic lichens and bryophytes, and more general changes to the ground vegetation. However, the site is located further than 200m away from the nearest major roads. For example, it lies approx. 885m from the A40 and 1.1km from the A465. As such this SAC can be screened out and will not require Appropriate Assessment.

APIS identifies that the Cwm Cadlan SAC's qualifying features *Molinia* meadows (critical load: 15 – 25 kg N/ha/yr) and alkaline fens (critical load: 15 – 30 kg N/ha/yr) are both susceptible to atmospheric nitrogen deposition. The Core Management Plan for the site indicates that an upper limit of 15 kg N/ha/yr for the site is desirable, highlighting the high sensitivity of alkaline fens to nitrogen deposition. However, the SAC is located relatively distant to Blaenau Gwent with two other authorities (Merthyr Tydfil and Caerphilly) in between. It is also located more than 200m away from any major road. As such the Cwm Cadlan SAC is screened out from Appropriate Assessment.

The Brecon Beacons SAC supports several habitats that are sensitive to atmospheric pollution, most notably calcareous rocky slopes and siliceous rocky slopes with chasmophytic vegetation. These habitats have a low critical nitrogen threshold of 5 – 15 kg N/ha/yr and exceedance of this critical load will lead to changes in species composition, most notably to declines in lichens and bryophytes. Overall, the Brecon Beacons SAC only makes up a small part of the Brecon Beacons National Park. However, as for the Cwm Cadlan SAC, the Brecon Beacons SAC lies relatively far from Blaenau Gwent and is located far more than 200m from any major road. As such the SAC is screened out from Appropriate Assessment.

APIS highlights that the Llangorse Lake SAC is vulnerable to atmospheric nitrogen deposition, although critical loads for comparable habitats have not previously been established[51]. While it is well known that meso- and eutrophic systems are often phosphate limited, nitrogen may be a co-limiting factor. However, despite the site's general sensitivity to atmospheric pollution, there is no major road within 200m of the SAC. The closest road that would provide a significant commuting corridor is the A40, which is located 1.9km to the south-west of Llangorse Lake SAC. This is beyond the screening

[50] Page 12 of the document at https://naturalresources.wales/media/3214/usk-management-catchment.pdf. [Accessed on the 22/08/2019]
[51] http://www.apis.ac.uk/srcl/select-a-feature?site=UK0012985&SiteType=SAC&submit=Next [Accessed on 22/10/2019]

distance for atmospheric pollution and the SAC is therefore screened out from Appropriate Assessment.

The Coed y Cerrig SAC is designated for its alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*, which are sensitive to some atmospheric pollutants. APIS highlights that the SAC is not sensitive to total atmospheric nitrogen deposition or nitrogen oxides. However, due to the presence of lichens and bryophytes, the site is sensitive to ammonia deposition at a critical level of 1 ug NH3/m3. While a significant portion of ammonia is likely to derive from agricultural sources, some of it could derive from traffic sources. However, the closest major road (the A465) lies approx. 2.8km to the east of the SAC and therefore lies well beyond the screening distance for atmospheric pollution. The Coed y Cerrig SAC is therefore screened out from Appropriate Assessment.

The following policies of the Local Development Plan have been screened in for Appropriate Assessment because they allocate residential or employment growth, likely leading to increased atmospheric pollution and therefore LSEs on several European sites, sensitive to atmospheric pollutants:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Background to Recreational Pressure

There is growing concern about the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfill conservation objectives while also providing recreational opportunities. HRAs of Local Plans tend to focus on recreational pressure arising from a net increase in residents[52]. Generally, recreational use of a European site has the potential to:

- Cause damage through direct trampling damage, erosion and habitat fragmentation;
- Cause eutrophication as a consequence of dog fouling; and
- Prevent appropriate management or exacerbate existing management difficulties;

The sensitivity of European sites to different types of recreational pressure varies. Studies across a range of species have shown that the effects from recreation can be complex. It should be emphasised that recreational use is not inevitably a problem. Many European sites also contain nature reserves managed for conservation and public appreciation of nature.

For example, in heathlands a certain level of physical disturbance (that is not continuous in nature) is considered beneficial, as this contributes to the maintenance of the overall habitat diversity and the maintenance of bare ground, the habitat feature that may harbour some of the rarest heathland species[53]. However, the optimum disturbance required has not been quantified and is likely to be confined within narrow limits. Once the optimum recreational pressure is exceeded, negative impacts of recreation are to be expected. Some of the most prominent examples of recreational pressure relevant to the European sites within or close to Blaenau Gwent, namely trampling damage, erosion and nutrient enrichment, are discussed below.

[52] The RTPI report 'Planning for an Ageing Population'(2004) which states that 'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.' It also states that 'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.
[53] Key R. 2000. Bare ground and the conservation of invertebrates. British Wildlife 11: 183-192.

Trampling damage, erosion and nutrient enrichment

Most terrestrial sites can be affected by trampling and other mechanical damage, which in turn causes soil compaction and erosion:

- Wilson & Seney)[54] examined the degree of track erosion caused by hikers, motorcycles, horses and cyclists from 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.

- Cole et al[55] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each tramped between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. The cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks, but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.

- Cole [56] conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampler weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier tramplers caused a greater reduction in vegetation height than lighter tramplers, but there was no difference in the effect on cover.

- Cole & Spildie[57] experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.

- In heathland sites, trampling damage can also affect the value of a site to wildlife. For example, heavy use of sandy tracks loosens and continuously disturbs sand particles, reducing the habitat's suitability for invertebrates[58]. Species that burrow into flat surfaces such as the centres of paths, are likely to be particularly vulnerable, as the loose sediment can no longer maintain their burrow. In some instances, nature conservation bodies and local authorities resort to hardening paths to prevent further erosion. However, this is concomitant with the loss of habitat used by wildlife, such as sand lizards and burrowing invertebrates.

Some of the European sites relevant to Blaenau Gwent County Borough are likely to be affected by more specialized recreational activities, which are carried out less frequently than more popular

[54] Wilson, J.P. & J.P. Seney. 1994. Erosional impact of hikers, horses, motorcycles and off road bicycles on mountain trails in Montana. Mountain Research and Development 14:77-88
[55] Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. Journal of Applied Ecology 32: 203-214
Cole, D.N. 1995b. Experimental trampling of vegetation. II. Predictors of resistance and resilience. Journal of Applied Ecology 32: 215-224
[56] Cole, D.N. 1995c. Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.
[57] Cole, D.N., Spildie, D.R. 1998. Hiker, horse and llama trampling effects on native vegetation in Montana, USA. Journal of Environmental Management 53: 61-71
[58] Taylor K., Anderson P., Liley D. & Underhill-Day J.C. 2006. Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.

activities (e.g. walking, dog walking, exercising). These niche activities relevant to the European sites around Blaenau Gwent are climbing, caving and angling. However, due to their disproportionate impact these activities nevertheless require consideration. For example, research studies have demonstrated that recreational climbing has significant impacts on ecosystems of rocky slopes and cliff ledges. Adams & Zaniewski (2012) found that plots subjected to frequent climbing had significantly lower lichen richness and cover than unclimbed sections of rock[59]. A study on rock climbing in the limestone cliffs of the Swiss Jura mountains found that climbing reduced plant cover and species density, but also resulted in a shift in plant species composition[60]. Recreational fishing, not a mainstream recreational activity, is known to have contributed to the global fish stock crisis. It is estimated that recreational fishing around the world contributes approx. 12% to the global annual fish harvest[61]. Furthermore, a global meta-analysis showed that fishing, both recreational and commercial, affects not only the population abundance of the target species but also leads to knock-on effects in the wider food web.[62]

A major concern for nutrient-poor habitats (e.g. heathlands, bogs and fens) is nutrient enrichment associated with dog fouling, which has been addressed in various reviews (e.g.[63]). It is estimated that dogs will defecate within 10 minutes of starting a walk and therefore most nutrient enrichment arising from dog faeces will occur within 400m of a site entrance. In contrast, dogs will urinate at frequent intervals during a walk, resulting in a more spread out distribution of urine. For example, in Burnham Beeches National Nature Reserve it is estimated that 30,000 litres of urine and 60 tonnes of dog faeces are deposited annually[64]. While there is little information on the chemical constituents of dog faeces, nitrogen is one of the main components[65]. Nutrient levels are the major determinant of plant community composition and the effect of dog defecation in sensitive habitats (e.g. heathland) is comparable to a high-level application of fertiliser, potentially resulting in the shift to plant communities that are more typical for improved grasslands.

Overall, the key qualifying features of some habitats are more vulnerable to human disturbance than others. For example, heathlands are known to be sensitive to a range of human-related impacts. An English Nature Research Report summarizes the key urban effects on heathland as habitat fragmentation, human disturbance, disturbance by animals linked to human presence (i.e. dogs and cats), increased risk of fires and trampling damage[66]. Various research reports have provided compelling links between changes in housing and access levels and impacts on different habitats in European protected sites.[67] [68]

Screening for LSEs

The following European sites within 15km of the Blaenau Gwent authority are considered susceptible to recreational pressure (the sites that are screened in for Appropriate Assessment following discussion in the text are marked in **bold**):

- **Usk Bat Sites SAC**
- **Brecon Beacons SAC**
- Cwm Clydach Woodlands SAC

[59] Adams M.D. & Zaniewski K. 2011. Effects of recreational rock climbing and environmental variation on a sandstone cliff-face lichen community. Botany 90: 253-259.
[60] Rusterholz H.-P., Miiller S.W. & Baur B. 2004. Effects of rock climbing on plant communities on exposed limestone cliffs in the Swiss Jura mountains. Applied Vegetation Science 7: 35-40.
[61] Cooke S.J. & Cowx I.G. 2004. The role of recreational fishing in global fish crises. BioScience 54: 857-859.
[62] Blaber S.J.M., Cyrus D.P., Albaret J.-J., Ching C.V., Day J.W., Elliott M., Fonseca M.S., Hoss D.E., Orensanz J., Potter I.C., Silvert W. 2000. Effects of fishing on the structure and functioning of estuarine and nearshore ecosystems. ICES Journal of Marine Science 57: 590-602.
[63] Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. 2005. Dogs, access and nature conservation. English Nature Research Report, Peterborough.
[64] Barnard A. 2003. Getting the facts – Dog walking and visitor number surveys at Burnham Beeches and their implications for the management process. Countryside Recreation 11:16-19.
[65] Taylor K., Anderson P., Liley D. & Underhill-Day J.C. 2006. Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.
[66] Underhill-Day, J. 2005. A literature review of urban effects on lowland heaths and their wildlife. English Nature. Research Reports 623. 56pp.
[67] Liley D, Clarke R.T., Mallord J.W., Bullock J.M. 2006a. The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.
[68] Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. 2006b. Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.

- River Usk SAC
- Aberbargoed Grasslands SAC
- Coed y Cerrig SAC

The Lesser Horseshoe bat population in the Usk Bat Sites SAC are likely to be highly susceptible to recreational disturbance. As identified in the Core Management Plan for the site, internal disturbance to the maternity roost and the hibernation sites is likely to be a major stressor for the bats. However, the habitat features that the bats are associated with are classified as 'Caves not open to the public'. This means that human disturbance to bats is kept to a minimum by restricting public access to their roost sites. However, while some caves (e.g. Agen Allwedd) are gated to prevent public access, this is not the case for all caves.

The Usk Bat Sites SAC also supports other habitats that are sensitive to recreational impacts, including its calcareous slopes with chasmophytic vegetation and its dry heathland elements. For example, rock climbing is an identified recreational activity causing disturbance to the plants and substrate of slopes. Heavy trampling damage might lead to erosion and bare ground, damaging the heathland habitats. While both caving and climbing are relatively rare recreational activities (in comparison to e.g. dog walking), the impact of individuals engaging in these activities might be disproportionately high. As a precautionary measure, the Usk Bat Sites SAC is therefore screened in for Appropriate Assessment.

The Cwm Clydach Woodlands SAC is not considered to be particularly sensitive to recreational pressure. The ground vegetation beneath the beech woodland canopy is relatively sparse and the negative impacts of trampling are therefore likely to be limited. However, other disturbance effects have been identified, particularly fly-tipping of domestic and recreational waste along roadsides leading through the SAC. However, the barriers that have been installed have been successful in reducing the incidence of fly-tipping. Provided that these barriers are maintained, it is considered that the Blaenau Gwent Local Development Plan will not result in LSEs on the Cwm Clydach Woodlands SAC. The site therefore can be screened out and requires no further consideration in an Appropriate Assessment.

The River Usk SAC is primarily designated for its anadromous fish species, including Atlantic salmon *Salmo salar*, twaite shad *Alosa fallax* and allis shad *Alosa alosa*. Generally, it is the adults travelling up the river to the spawning grounds, which are susceptible to the impacts of fishing. The Core Management Plan for the SAC[69] identifies that both recreational and commercial fishing are threatening shad populations. These species are fished in large numbers and recreational fishing has been identified as one of the main reasons for their population declines. Relating to Atlantic salmon a seasonal catch restriction is already imposed by Natural Resources Wales, which require that all salmon caught before the 16th of June is released back to the water to protect fish stocks[70]. Exploitation of shad is currently unregulated; however, fishing is a specialist activity that is undertaken by a relatively small percentage of the population[71] and a direct link cannot be drawn between the delivery of new housing in an area and a significant increase in recreational fishing. As a result, the River Usk SAC is screened out from Appropriate Assessment.

The Aberbargoed Grasslands SAC, designated for its *Molinia* meadows, are not considered vulnerable to recreational pressure due to their robust tussock structure; this same structure also makes such grasslands difficult to walk through such that they are not generally popular for recreation. In the past anti-social behaviours such as off-roading and burning have occurred on the grasslands. However, in 2005 Caerphilly Council were successful in obtaining Heritage Lottery funding to establish a conservation officer role for the site. In combination with a programme for education and establishing a newsletter for ongoing conservation activities within the site, this has improved the anti-social behaviours. Furthermore, given the distance of the Aberbargoed Grasslands SAC to Blaenau Gwent, it is considered that the Local Development Plan will not result in LSEs on the SAC.

[69] https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on the 22/08/2019]
[70] https://naturalresources.wales/days-out/things-to-do/fishing/?lang=en [Accessed on the 22/08/2019]
[71] approximately 1 million fishing licences are sold annually in the UK, equating to approximately 1.5% of the UK population; even assuming that an equal number of people regularly fish without licences that still equates to only 3% of the population

The Brecon Beacons SAC habitats calcareous and siliceous rocky slopes with chasmophytic vegetation are sensitive to erosion from heavy trampling and rock climbing. These short plant species mainly inhabit fissures and cracks of rocks and may be directly damaged or dislodged by recreational activities. The Brecon Beacons National Park is the most iconic tourist destination in that part of Wales, attracting about 4.15 million visitors per annum[72]. The National Park and the Brecon Beacons SAC specifically, which only comprises a small part of the NP area, are almost 10km away from Blaenau Gwent. However, given that this is a so-called 'honeypot' site which is likely to exert a strong recreational pull, the SAC is screened in for Appropriate Assessment.

The Coed y Cerrig SAC comprises alluvial forests in a valley bottom and is likely to be fairly popular for recreation. For example, the Coed-y-Cerrig National Nature Reserve is advertised as a place to visit on the Brecon Beacons National Park website[73]. The Core Management Plan for the SAC highlights that recreational access has the potential to result in significant trampling damage to the site. However, the SAC has a circular boardwalk in place. Due to the ground being so wet, most visitors stick to the boardwalks provided. The SAC is also located approx. 11km to the north-east of Blaenau Gwent, which would place it beyond the core recreational catchments for woodland sites. Given this, the Coed y Cerrig SAC is screened out from Appropriate Assessment.

The following policies of the Local Development Plan have been screened in for Appropriate Assessment because they allocate residential dwellings and encourage tourism, likely leading to increased recreational pressure and therefore LSEs on several European sites:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Background to Loss of Functionally Linked Land

While most European sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not always the case. A diverse array of qualifying species including birds, bats and amphibians are not confined to the boundary of designated sites.

For example, the highly mobile nature of both wildfowl and heathland birds implies that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of European sites. Despite not being designated, this area is still integral to the maintenance of the structure and function of the interest feature on the designated site and, therefore, land use plans that may affect such areas should be subject to further assessment. Examples of other mobile qualifying species are great-crested newts and bats. The latter animal group is known to travel considerable distances from their roots to feeding sites. For example, in a 2001 study, female adult Bechstein's bats regularly undertook commuting distances of up to 1km[74]. However, it is known that bat home ranges can be between 1-1.5km, with some individuals ranging up to 2.5km distance. Both spring migrations or regular foraging trips might take these species beyond the designated site boundary.

There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land[75]. For example, bird surveys in relation to a previous HRA established that approximately 25% of the golden plover population in the Somerset Levels and Moors SPA were affected while on functionally linked land, and this required the inclusion of mitigation measures in the relevant plan policy wording.

[72] https://nationalparks.uk/students/whatisanationalpark/factsandfigures [Accessed on the 23/08/2019]
[73] http://www.breconbeacons.org/coed-y-cerrig [Accessed on 22/10/2019]
[74] Kerth G., Wagner M. & Koenig B. 2001. Roosting together, foraging apart: Information transfer about food is unlikely to explain sociality in female Bechstein's bats (*Myotis bechsteinii*). Behavioral Ecology and Sociobiology 50: 283-291.
[75] Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. Natural England Commissioned Reports 207: 73pp.

Another important case study originates from the Mersey Estuary SPA / Ramsar, where adjacently located functionally linked land had a peak survey count of 108% of the 5 year mean peak population of golden plover. Similar to the above example, this led to considerable amendments in the planning proposal to ensure that the site integrity was not adversely affected.

Generally, the identification of an area as functionally linked land is now a relatively straightforward process. However, the importance of non-designated land parcels may not be apparent and require the analysis of existing data sources to be firmly established. In some instances, data may not be available at all, requiring further survey work.

Screening for LSEs

The following European sites within 15km of the Blaenau Gwent authority are considered to be susceptible to the loss of functionally linked land (the site that is screened in for Appropriate Assessment following discussion in the text is marked in **bold**):

- **Usk Bat Sites SAC**
- Aberbargoed Grasslands SAC
- Blaen Cynon SAC

The Lesser Horseshoe bats in the Usk Bat Sites SAC are not only dependent on their roosts and foraging habitat in the SAC, but potentially also on habitat that lies outside the designated site boundary. Feeding areas and commuting routes (flightlines) outside the designation may therefore be integral to sustaining the bat population. Generally, lesser horseshoe bats forage between 2 and 3km from their roost but have been observed to range up to 4km in their nightly foraging trips[76]. It is therefore recognised that linear features (required to navigate) and permanent pasture / unimproved grassland (favoured feeding areas) and woodlands outside the SAC boundary needs to be maintained. Given that the Usk Bat Sites SAC is partially located within Blaenau Gwent and lies 500m from one of its major settlements (Brynmawr), residential and employment site allocations might lead to LSEs on this SAC through the loss of supporting habitat. The site is therefore screened in for Appropriate Assessment.

The marsh fritillary butterfly population in the Aberbargoed Grasslands SAC is a species that is known to require relatively large areas of suitable habitat for a population to remain functional. It is generally considered that 50ha of suitable habitat will suffice to maintain a sustainable population[77]. The SAC itself is 39.6ha in size and not all of it comprises the butterfly's preferred habitat of wet grassland and devil's-bit scabious, the caterpillars' only foodplant. As such it is likely that the butterfly population from the Aberbargoed Grasslands SAC will also depend on using habitat patches outside the European site that contain significant areas of devils bit scabious. However, given that the boundary of Blaenau Gwent is 3.6km away, it is considered unlikely that the Plan's implementation would result in the loss of functionally linked land for the marsh fritillary butterfly. The site is screened out from Appropriate Assessment.

The Blaen Cynon SAC is designated for its marsh fritillary population that, as detailed in the above paragraph, requires a large area of suitable habitat. Generally, 50ha of suitable habitat will be required to sustain a population and the SAC itself is 66.5ha in size. Despite this sufficient size not all of the SAC will comprise suitable habitat for the butterfly, which is therefore likely to use functionally linked habitat patches outside the European site. However, Blaenau Gwent is 14.9km away, which is considered too far for the regular use of SAC butterflies. The Blaen Cynon SAC is therefore screened out from Appropriate Assessment.

The following policies of the Local Development Plan have been screened in for Appropriate Assessment because they allocate residential or employment growth, potentially leading to the loss of functionally linked land and LSEs on the Usk Bat Sites SAC:

- Strategic Policy 1: Sustainable Economic Growth

[76] Schofield H.W. 2008. The Lesser Horseshoe Bat Conservation Handbook.
[77] Butterfly Conservation, Dorset. 2009. Available at: https://butterfly-conservation.org/sites/default/files/ni-marsh-frit-leaflet-july-2010.pdf [Accessed on the 23/08/2019]

- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Background to Water Quality

The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
- Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

The most significant issue in relation to the Blaenau Gwent RLDP is the discharge of treated sewage effluent into surface watercourses, which is likely to increase the nutrient concentration, most importantly the phosphate levels, in the River Usk SAC. The RLDP assessed in this HRA provides for development in the Dwr Cymru Welsh Water catchment, responsible for the public water supply and waste water treatment for large parts of Wales.

Screening for LSEs

The following European sites within 15km of the Blaenau Gwent authority are sensitive to changes in water quality:

- **River Usk SAC**
- Llangorse Lake SAC

The River Usk SAC is a riverine freshwater system of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. While this is a non-primary feature of the SAC it is essential in supporting the primary Annex II species, such as the qualifying fish and the otter. The Core Management Plan[78] published by Natural Resources Wales highlights the water quality in the system as a primary determinant of its ecological status, which is currently classified as unfavourable. While the main water quality impact in this catchment originates from agriculture, pollutants from sewage effluent, particularly increases in phosphorus concentrations, have the potential to increase the amount of filamentous algae and to decrease the aquatic flowering plants. Eutrophication can lead to reduced dissolved oxygen concentrations, resulting the viability of fish populations. The River Usk SAC is therefore screened in for Appropriate Assessment.

The Llangorse Lake SAC is a natural eutrophic lake, and its plants and animals are highly sensitive to changes in water quality. Furthermore, given that the Afon Llynfi is its only water outlet, any pollutants also remain within the lake for long periods. A significant portion of the current water pollutants derive from nearby agricultural practices and septic tanks. However, the lake is located in a lowland catchment and receives its hydrological input from a very small geographic area. Blaenau Gwent lies approx. 10.6km to the south of the Llangorse Lake SAC and is therefore considered to be beyond its

[78] https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on the 23/08/2019]

hydrological catchment. Furthermore, the SAC is upstream of any watercourses that would be expected to receive wastewater or industrial run-off from development in Blaenau Gwent. As such it is considered that there is no hydrological connectivity between the RLDP area and the SAC. The Llangorse Lake SAC is screened out from Appropriate Assessment.

The following policies of the Replacement Local Development Plan have been screened in for Appropriate Assessment because they allocate residential or employment growth, and might lead to LSEs on the River Usk SAC through increased sewage effluent:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Background to Water Level and Flow

In addition to water quality, both the water level and flow (and its natural diurnal and annual variation) are important determinants of the ecological status of European sites. Hydrological processes are critical in influencing habitat characteristics, including current velocity, water depth, wetted area, dissolved oxygen levels and water temperature. In turn these habitat features determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition.

A highly cited review papers summarised the ecological effects of reduced flow in rivers[79]. Droughts (ranging in their magnitude from flow reduction to a complete loss of surface water) have both direct and indirect effects on stream communities. For example, a marked direct effect is the loss of water and habitat for aquatic organisms. Indirect effects include a deterioration in water quality, changes to the food resources and alterations in interspecific interactions. An increased stability of baseflow and a reduction in the natural flow variability of rivers has been linked to the excessive growth of macrophytes and a reduction in fish populations[80].

The variability in hydrological discharge does not only have ecosystem-level effects, but also affects particular functional groups and species more directly. Anadromous fish, the qualifying features of the River Usk SAC, are especially sensitive to water fluctuations and flow variability. This is primarily because their life stages critically depend on specific flow levels. For example, a recent modelling study demonstrated that low-flow conditions in summer, a critical time when adult anadromous fish must reach their upstream spawning grounds, significantly reduces production in salmonids[81].

Screening for LSEs

The following European sites within 15km of the Blaenau Gwent authority are sensitive to changes in their water level and / or flow (the site that is screened in for Appropriate Assessment following discussion in the text is marked in **bold**):

- **River Usk SAC**
- Aberbargoed Grasslands SAC
- Cwm Cadlan SAC
- Llangorse Lake SAC
- Coed y Cerrig SAC

[79]Lake P.S. 2003. Ecological effects of perturbation by drought in flowing waters. Freshwater Biology 48: 1161-1172.
[80]Bunn S.E. & Arthington A.H. 2002. Basic principles and ecological consequences of altered flow regimes for aquatic biodiversity. Environmental Management 30: 492-507.
[81] Ohlberger J., Buehrens T.W., Brenkman S.J., Crain P., Quinn T.P. & Hilborn R. 2018. Effects of past and projected river discharge variability on freshwater production in an anadromous fish. Freshwater Biology 63: 331-340.

- Blaen Cynon SAC

The integrity of the River Usk SAC is dependent on both the volume and the stability of water flow. The Conservation Objectives for the SAC state that the quantity of water, including the natural flow variability, is to be maintained or restored to maintain the site's qualifying features in the future[82]. Hydrological processes, most importantly river flow level and variability, are critical in determining various habitat properties, such as current velocity, water depth and dissolved oxygen levels. Furthermore, the water depth and flow velocity influence the ability of adult anadromous fish of reaching their upstream spawning grounds. Species of shad are particularly sensitive to variations in flow levels. An ideal flow regime is to encourage high flows in March-May to stimulate upstream migration and maximise the upstream penetration of adult fish. In June-September low flows should be encouraged to ensure that juveniles are not washed into saline water prematurely. The development outlined in the Blaenau Gwent Development Plan will require the abstraction of water for households and industry, and therefore could result in LSEs on the River Usk SAC. This site is therefore screened in for Appropriate Assessment.

The Aberbargoed Grasslands SAC is an area comprising 48% of humid grassland with impeded drainage. This grassland and its characteristic plant community is sustained by both groundwater and surface water flow, depending on the variable water table. While the hydrological regime is not explicitly mentioned in the site's Core Management Plan, the integrity of the site is clearly partly dependent on the continued supply of sufficient water. However, due to the site's relatively long distance of 3.6km to Blaenau Gwent and the fact that it only requires a limited amount of water, which will be associated with superficial deposits with poor drainage rather than underlying aquifers, it is considered unlikely that the Local Development Plan will result in LSEs on the SAC through changes in the water level. The site is therefore screened out from Appropriate Assessment.

The Cwm Cadlan SAC is designated for its *Molinia* meadows and alkaline fen habitats. Both these qualifying features are strongly influenced by the water level. Reductions in the groundwater and surface watercourses feeding the SAC might result in the loss of marshy grassland and alkaline fen or lead to changes in the community composition of the site. The implementation of the Blaenau Gwent Local Development Plan will result in the increased abstraction of water for new development. However, the authority is located 8.9km away from the SAC. Given this distance and the fact that abstraction activities for public water supply are likely to focus on the River Usk catchment, which is located on the opposite side of the authority, it is considered very unlikely that the Plan will result in a reduced water supply to the SAC. It is therefore concluded that there are no LSEs of the Plan on the water level in the SAC. The site is screened out from Appropriate Assessment.

The Core Management Plan for the Llangorse Lake SAC highlights that the site is sensitive to the hydrological input into the lake, which should follow a natural seasonal cycle. The lake only has a mean depth of 2-3m (with a maximum depth of 7.5m), which will be further reduced through the gradual infilling of the lake with sediment from its banks. Any changes to the water supply of the SAC, especially a reduction in inflow, is therefore likely to threaten the integrity of the site. However, Welsh Water produced a final Water Resource Management Plan in 2019. This identifies that there will be no adverse effects on Llangorse Lake SAC from public water supply up to 2050. The Core Management Plan highlights that no new structures that will reduce inflow should be established in the vicinity of the Llangorse Lake SAC. However, as discussed in the previous section, the SAC lies approx. 10.6km to the north of Blaenau Gwent, which is considered to be beyond its hydrological catchment. There is no realistic way in which the abstraction of water for new development in Blaenau Gwent would change the water quantity, level or flow in the SAC. The site is screened out from Appropriate Assessment.

The Coed Y Cerrig SAC comprises alluvial forest in a valley bottom, which is dependent on a constant supply of water to maintain its waterlogged conditions. A significant alteration in the water quantity supplied might cause a drying out of the site and might potentially affect the qualifying feature of the SAC. The Coed y Cerrig SAC is only 294m from the River Usk and is therefore likely to be supplied with water from this river. Drinking water for the north-eastern part of Blaenau Gwent could be extracted from the River Usk; however, this is likely to occur a long distance downstream from the Coed y Cerrig SAC. Welsh Water produced a final Water Resource Management Plan in 2019. This identifies that there will be no adverse effects on this SAC from public water supply up to 2050. It is

[82] Ibid.

therefore concluded that there is no hydrological connectivity between Blaenau Gwent and the SAC. The site is screened out from Appropriate Assessment.

The marsh fritillary population in the Blaen Cynon SAC is generally associated with damp grassland. The butterflies may also be found in marshy grassland habitat within the site boundary. As such, the butterflies clearly indirectly depend on sufficient hydrological flow into the site. However, Blaenau Gwent lies 14.9km to the east of the Blaen Cynon SAC and the locally perched water table at the site is likely to be associated with poorly draining superficial deposits rather than underlying aquifers. It is therefore concluded that there will be no LSEs of the Plan on the SAC regarding water quantity, level and flow. The site is screened out from Appropriate Assessment.

The following policies of the Local Development Plan have been screened in for Appropriate Assessment because they allocate residential or employment growth, leading to increased water abstraction from local water resources and potentially LSEs on the River Usk SAC through changes to the water level and flow:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Local Development Plans to be considered 'in-combination'

It is obligatory to not only assess LSEs of a proposed plan alone, but also to investigate whether there might be 'in-combination' effects with plans proposing development in other authorities surrounding a European protected site. In practice, such an 'in-combination' assessment is of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential. For the purposes of this HRA, we have identified several other County Boroughs that have developed their own Local Development Plans (LDPs), outlining residential and / or employment growth within their own boundary. These include Powys, Monmouthshire, Torfaen and Caerphilly. Table 2 summarises the residential and / or employment growth allocated within the respective LDPs for these authorities. It is to be noted that several LDPs are nearing the end of their plan period and the authorities of Monmouthshire, Torfaen and Caerphilly are currently working on Replacement Local Development Plans. However, Table 2 summarises the currently adopted, and therefore legally effective, LDPs.

Table 2: Number of residential dwellings and employment space that is to be delivered in adjacent authorities of Blaenau Gwent, according to the adopted Local Development Plans.

Local Authority	Total housing provided	Total employment space provided
Powys (Adopted April 2018)	4,600 (2011-2026)[83]	45ha
Monmouthshire (Adopted February 2014)	4,500 (2011-2026)[84]	43ha
Torfaen (Adopted December 2013)	4,700 (2006-2021)[85]	75.3ha
Caerphilly (Adopted November 2010)	8,625 (2006-2021)[86]	101.9ha

[83] https://en.powys.gov.uk/article/4898/Adopted-LDP-2018 [Accessed on the 29/08/2019]
[84] https://www.monmouthshire.gov.uk/app/uploads/2017/05/Adopted-Local-Development-Plan-with-PDF-tags.pdf [Accessed on the 29/08/2019]. Note that Monmouthshire is currently working on their Replacement Development Plan.
[85] https://www.torfaen.gov.uk/en/Related-Documents/Forward-Planning/Adopted-Torfaen-LDP-Writen-Statement.pdf [Accessed on the 29/08/2019]
[86] https://www.caerphilly.gov.uk/CaerphillyDocs/LDP/written-statement.aspx [Accessed on the 29/08/2019]

Other plans and projects to be considered 'in-combination'

Other ongoing projects within Blaenau Gwent County Borough, surrounding authorities and Wales must also be considered, as these might have in-combination effects with the proposed Blaenau Gwent RLDP. For example, a project to enhance the scope for tourism throughout Wales might lead to higher recreational pressure in the wider area and some of the SACs potentially affected by the Blaenau Gwent RLDP, thereby acting in-combination. The following further projects (in addition to the LDPs in adjoining authorities outlined in the previous section) are considered in this HRA:

- **Cardiff Capital Region City Deal**: This deal aims to develop and promote South East Wales as a great place to live and work, investing £1.2 billion to increase the economic potential across ten local authorities, including Blaenau Gwent, Caerphilly, Monmouthshire and Torfaen
- **Prosperity for All: A Low Carbon Wales (2019)**: From an HRA perspective this is a positive plan, setting the target for Wales to transition to a low carbon nation. A target is to cut the emission of greenhouse gases by at least 80% by 2050.
- **Blaenau Gwent Corporate Plan (2018-2022)**: This plan sets out the vision and priorities for Blaenau Gwent, detailing what can be expected from the Council and what is being asked by Blaenau Gwent's citizens. The key priority in the plan is to support economic development and regeneration.
- **Blaenau Gwent Well-being Plan (2018-2023)**: The plan outlines the objectives for improving well-being within the authority, a key requirement of the Well-being and Future Generations Act (2015). The main objectives are to create safe and friendly communities, protect the natural environment and encourage healthy lifestyles.
- **South East Wales Valleys Local Transport Plan (January 2015)**: The five South East Wales Valley local authorities (Blaenau Gwent, Caerphilly, Merthyr Tydfil, Rhondda Cynon Taf and Torfaen) have developed a joint Local Transport Plan (LTP). The LTP focuses investment on supporting economic growth in the City regions, Enterprise Zones and local growth zones. It also provides for affordable access to employment sites across Wales and encourages more sustainable travel.

5. Appropriate Assessment

Atmospheric Pollution

The following policies in the Local Development Plan provide for new development within the authority, which needs to be considered further in relation to the atmospheric pollution impact pathway:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Usk Bat Sites SAC

The Usk Bat Sites SAC harbours several habitat types that are highly sensitive to atmospheric pollution (particularly nitrogen deposition) due to their nutrient-poor conditions, including bogs, dry heathland, Alpine / sub-alpine grassland and broad-leaved deciduous woodland. Increased nutrient inputs have been observed to result in changes of the community structure, such as an increased dominance of grasses[87] and reduced abundance in bryophyte and lichens[88]. The following section will investigate the current evidence base available for the Usk Bat Sites SAC and provide AECOM's recommendations for the Deposit Plan stage of the Local Development Plan.

Commuter traffic

Generally, the impact of air pollution from traffic is only relevant within 200m of roads as the contribution of roads to pollution has declined to background concentrations by this distance. Due the early stage of the Plan, there are currently no individual site allocations available and it is not possible to judge the implications of the spatial distribution of development for the atmospheric pollution level. However, given the level of planned residential development within the Blaenau Gwent RLDP (allocating an additional 2,115 net new dwellings between 2018 and 2033) and the number of dwellings to be delivered by the surrounding authorities over this timescale; the Blaenau Gwent RLDP might have significant air quality impacts alone and 'in-combination' with other Plans. This is because the residential and employment development may be associated with an increase the local population and thus the amount of motorised travel within the authority.

According to Journey to Work data from the 2011 census[89], a total of 9,641 residents of Blaenau Gwent commute out of the authority in a car or van on a daily basis. The most common destination for journeys to work arising from Blaenau Gwent is Monmouthshire with 1,880 daily outflows, accounting for 19.5% of all outward commuter traffic. The A465, a major A road in terms of traffic volume, provides for the fastest, most direct connection to Monmouthshire, and is therefore likely to be taken by the majority of commuters. It is to be noted that the Plan specifically aims to reduce out-commuting from Blaenau Gwent by providing more jobs within the authority. The authority also has a daily inflow of 4,686 commuters, 680 (14.5%) of which originate from Monmouthshire. Given that the Plan allocates 46ha of new employment space, this is likely to increase the number of commuters travelling into Blaenau Gwent along the A465.

The A465 runs directly adjacent, and at times through, the Usk Bat Sites SAC for about 2km in the north-eastern part of Blaenau Gwent and the western section of Monmouthshire. Given the current business and strategic positioning of this stretch of the A465, there is the clear potential for the

[87] Bobbink R., Roelofs J.G.M. 1995. Nitrogen critical loads for natural and semi-natural ecosystems: The empirical approach. Water, Air and Soil Pollution 85: 2413-2418.
[88] Pescott O.L., Simkin J.M., August T.A. Randle Z., Dore A.J., Botham M.S. 2015. Air pollution and its effects on lichens, bryophytes, and lichen-feeding Lepidoptera: Review and evidence from biological records. Biological Journal of the Linnean Society 115: 611-635.
[89] Available at https://www.nomisweb.co.uk/census/2011/wu03uk [accessed 12/04/2019]

increased car traffic arising from the Blaenau Gwent RLDP to result in adverse effects on the site integrity of the Usk Bat Sites SAC through increased nitrogen deposition to roadside areas of heathland.

In-Combination Air Quality Modelling for the Deposit Plan

Assessing the impacts of an increase in vehicular traffic on atmospheric pollution is an exercise that requires detailed air quality modelling, calculating the deposition rates of the three main traffic-related atmospheric pollutants, namely ammonia (NO_3), oxides of nitrogen (NO_X) and total nitrogen deposition. The deposition of these pollutants to sensitive habitats within 200m of major roads will determine adverse effects, if any, on European sites. This is an in-combination exercise that considers the residential and employment development in adjoining authorities, satisfying the Natural England requirement that any Plan must be assessed in the context of growth outlined in other Plans. The surrounding authorities that are developing their own Local Development Plans with potential in-combination implications for atmospheric pollution in the Usk Bat Sites SAC are Powys, Monmouthshire, Torfaen, Caerphilly and Rhondda Cynon Taf. The contribution of this growth to Average Annual Daily Traffic (AADT), the average vehicle speeds and Heavy Duty Vehicle (HDV) traffic volume is incorporated into the traffic modelling exercise.

Air quality modelling is only required if there are sensitive habitats within 200m of the A465. For example, heath and scrub only make up 32.2% of the SAC and therefore there might not be any heathland habitat in the 200m band adjacent to the A465. However, a preliminary investigation of online images indicates that there are sensitive habitats in the Usk Bat Sites SAC within the 200m screening distance of the A465. It appears that there are both heathland elements and calcareous rocky slopes with chasmophytic vegetation around Ogof Craig a Ffynnon and Main Road, within 200m of the A465. It is therefore recommended that at least one air quality transect is modelled running north into the SAC along this road link. Due to the length of the A465 that runs adjacent to the Usk Bat Sites SAC, it may be advisable to model a second transect intercepting sensitive habitat along this road.

Cwm Clydach Woodlands SAC

The Cwm Clydach Woodlands SAC is primarily designated for its *Asperulo-Fagetum* beech forest, which is identified as sensitive to atmospheric pollution on APIS. The critical load for the site is 10 – 20 kg N/ha/yr, which is currently exceeded considerably (average total nitrogen deposition between the years 2013 and 2015 was 30.5 kg N/ha/yr). A total nitrogen critical load of 10 – 20 kg N/ha/yr is also established for the site's Atlantic acidophilous beech forest with *Ilex* and *Taxus* in the shrublayer. As such, an increase in the traffic volume due to the implementation of the Blaenau Gwent Local Development Plan has the potential to result in adverse effects on the site integrity of the Cwm Clydach Woodlands SAC. The following section will investigate the current evidence base available for this SAC and provide AECOM's recommendations for the Deposit Plan stage of the Local Development Plan.

Commuter traffic

Like the Usk Bat Sites SAC, the Cwm Clydach Woodlands SAC runs alongside the A465 for approx. 2km, lying to the south of this major commuting route. Due to its similar geographic setting to the Usk Bat Sites SAC, the commuter traffic pattern for the woodlands will be the same. 19.5% of the additional commuter outflow and 14.5% of the additional commuter inflow arising from the Blaenau Gwent Development Plan is likely to lead directly past the Cwm Clydach Woodlands SAC. Since the closest stretch of the A465 is within 200m of the SAC, this additional motorised travel has the potential for negative impacts on sensitive habitats within the site.

In-Combination Air Quality Modelling for the Deposit Plan

Given that there currently is no air quality modelling available for the site, it is not possible to exclude adverse effects on the integrity of the Cwm Clydach Woodlands SAC until modelling is undertaken. An air quality modelling exercise accounting for the in-combination growth in Blaenau Gwent and adjoining authorities will be required to determine whether atmospheric pollution over the Plan period is likely to have a negative impact on the site. However, as highlighted in the context of the Usk Bat

Sites SAC above, such modelling will only be necessary if sensitive habitat elements of the SAC occur within 200m of the A465. Overall, 88.9% of the SAC comprise broad-leaved deciduous woodland and a review of online mapping shows that the designated woodland elements straddle the A465 almost along the entire length of the SAC. It is therefore recommended that at least one air quality transect running south into the SAC is modelled along this road link. Due to the length of the A465 that runs along the Cwm Clydach Woodlands SAC, it may be advisable to model a second transect intercepting sensitive habitat along this road.

Recreational Pressure

We have identified the following policies in the Local Development Plan to provide for new development within the authority, which need to be considered further in relation to the atmospheric pollution impact pathway:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Existing Evidence Base

In December 2015, Strategic Research and Insight Ltd. was commissioned by the Brecon Beacons National Park Authority (BBNPA) to undertake a visitor survey in the Brecon Beacons National Park (BBNP). The key objectives of the survey were to understand the characteristics, behaviour and attitudes of BBNP visitors, to collect data for a comprehensive list of locations in the NP and to establish a repeatable method for future visitor surveys. To achieve these targets, a yearlong survey was carried out, consisting mainly of face-to-face interviews (74%) augmented with online questionnaires (26%). The visitor interviews were carried out in various locations, extending beyond a few destination hotspots. Overall, 1,707 responses were obtained, providing a relatively extensive dataset.

For the purposes of the Blaenau Gwent Local Development Plan HRA, the BBNP visitor survey is highly relevant, because it represents the single piece of evidence for the recreational pressure impact pathway investigated here. However, it is important to note that this visitor survey was not specifically tailored to investigate recreational pressure in the Usk Bat Sites SAC, the Usk River SAC and the Brecon Beacons SAC rather than the National Park more broadly. The BBNP visitor survey covers the entire NP boundary, a much larger area than any of the SACs considered here, and it therefore is not guaranteed that the main access points of SAC habitat are covered by this survey. However, the survey does provide a starting point for establishing the broad recreational trends in the geographic areas in question.

For example, one of the survey's interview locations was Storey Arms / Pen Y Fan in the heart of the BBNP (210, 12% of all interviews). This interview location is within the Brecon Beacons SAC and as such can be used as a starting point for investigating the recreational pattern in the SAC. Another interview location was 'Keeper's Pond' to the south-east of Pwll Du Adventure Site. While not within any of the SACs, this location lies close to the Usk Bat Sites SAC and therefore might act a useful starting point for investigating recreational pressure in this SAC.

Overview of visitor survey results

The visitor survey ran between February 2016 and March 2017, collecting 1,707 responses. Of the participants, 19% were locals, 36% were day visitors and 45% were staying visitors. A total of 55% of visitors travel relatively short distances to reach the NP and are therefore likely to visit the NP more regularly (i.e. monthly or weekly), and, in the case of locals, probably daily. Conversely, staying visitors are likely to travel significantly longer distances, and the high proportion of this visitor type (45%) indicates that the BBNP is likely to have a relatively large catchment area.

The results indicate that visitors choose the BBNP for a variety of reasons, including enjoyment of the beautiful scenery and countryside (59%), upland walking (33%), previous visits (28%), a sense of peace (25%), lowland walking (23%) and health / exercise (21%). While many of these response categories are relatively vague, they do indicate that BBNP visitors are relatively active and are likely to engage in recreational activities that could cause trampling damage to some of the sensitive habitats for which European sites are designated. This is highlighted by the main activities undertaken by interviewees, which included high-level walking (33%), low-level walking (up to 2 hours, 31%), low-level walking (over two hours, 27%). However, frequent activities also included relatively passive activities or destinations that would not involve a visit to a SAC, such as eating out (26%), visiting a town or village (24%), photography (18%) and visiting a historic or heritage site (12%). It is to be noted that interviewees could give multiple responses to this question.

Of all interviewees visiting the BBNP, 52% originate from Wales, 40% from England and 7% from overseas. However, when considering only the day visitors (i.e. those that are likely to visit the NP more often and to have a higher contribution to recreational pressure), 77% originate from Wales, 23% from England and none from overseas.

In-Combination Results as Relevant to Blaenau Gwent

Overall, of the 1,707 visitors surveyed, a total of 51 visitors had travelled from Blaenau Gwent authority, accounting for 3% of the visitors interviewed. While this highlights there is a recreational flux from Blaenau Gwent to the BBNP, this is clearly considerably lower than for other authorities. Unsurprisingly, most visitors to the NP come from Powys (307 visitors, 18%), the authority in which the park is located. The next largest BBNP visitor pools are derived from Cardiff (222 visitors, 13%) and Swansea (171 visitors, 10%), which contribute more visitors than immediately adjoining authorities to the park, such as Merthyr Tydfil (68 visitors, 4%), Torfaen (68 visitors, 4%), Caerphilly (51 visitors, 3%) and the aforementioned Blaenau Gwent authority (3%). This is presumably due to the comparatively small populations of these County Boroughs compared to the major cities of Cardiff and Swansea and large population of Powys; the population of Blaenau Gwent is a relatively modest c. 70,000 people, compared to c 130,000 residents of Powys, 350,000 residents of Cardiff and 246,000 residents of Swansea. These data suggest that relatively few residents from Blaenau Gwent visit the NP. The authority's contribution to the overall recreational visitor pressure in the park is relatively small with the core of National Park visitors being residents of Powys, Cardiff and Swansea (41% of all visitors).

The very low overall contribution of Blaenau Gwent residents to the recreational footprint in the National Park is likely to be for the following reasons:

- As shown in several previous studies, distance is a predictor of both the likelihood and frequency of visits. People from further away are less likely to visit and, if visiting, tend to visit infrequently. Residents of the County Borough would have to travel considerable distances between their homes and Brecon Beacons SAC (c. 14km to the nearest settlement).
- Blaenau Gwent has a relatively small population and a large amount of greenspace for its population (a population density of 6.4 people per hectare[90]

Usk Bat Sites SAC

Primarily, the Usk Bat Sites SAC is designated for its lesser horseshoe bat population of European significance. Both the maternity roost and the numerous hibernation sites (e.g. in Agen Allwedd Cave and Clydach Gorge Cave) are highly sensitive to recreational disturbance due to potential changes to a variety of conditions, such as ventilation, temperature, light level and noise level.

Given the high sensitivity of this bat species to disturbance, the most important caves have been gated for conservation reasons, including Agen Allwedd, Craig a Ffynnon and Daren Cilau. Access to these caves requires prior application for a permit to the Mynydd Llangatwg cave Management Advisory Committee[91]. However, numerous other roost and hibernation sites are not gated and as such potentially sensitive to higher visitor footfall. That said, the BBNP website identifies caving as a potentially dangerous activity that requires prior consent of a local caving club and the assistance of a

[90] https://www.blaenau-gwent.gov.uk/en/council/statistics-data/statistics-data/
[91] http://mlcmac.org/llangtwg.htm [Accessed on the 27/08/2019]

qualified expedition leader[92]. Furthermore, the Caves of South Wales website outlines the Cave Conservation Code, which aims at minimising impacts on cave biota as well as geological formations[93].

In the BBNP visitor survey, Brecon Canal was identified by 154 interviewees (9%) as one of the destinations during their visit. The Brecon Canal was the closest destination to the Usk Bat Sites SAC (1.7km) given by interviewees, which may also involve a visit to the SAC. Assuming the same proportion of Blaenau Gwent visitors than that obtained for the whole visitor survey dataset (i.e. 3%), this would imply that the area of NP in proximity to the Bat Sites SAC was only visited by 5 visitors travelling from Blaenau Gwent. It should also be highlighted that caving was not among the most popular recreational activities mentioned by interviewees and as such is likely to be carried out by few people and given its specialised nature cannot be assumed to be directly linked to a general increase in the local population, in the way that dog-walking can be.

Given the small number of Blaenau Gwent visitors to the area around the SAC, the existing access controls (e.g. locked gates) of the most important roost and hibernation caves and the wider regulation of caving activities, it is considered that the implementation of the Blaenau Gwent Local Development Plan would not result in adverse effects on the integrity of the caves in the Usk Bat Sites SAC, both alone and in-combination.

The residential growth outlined in the Blaenau Gwent Local Development Plan might also result in additional recreational pressure on various sensitive habitat elements of the Usk Bat Sites SAC. Notably, European dry heath elements are likely to be negatively impacted by off-trail trampling damage. Undoubtedly, any potential negative effects of recreation related to the physical modification of habitats, are likely to be linked to the amount of visitor footfall but also the maintenance of the available path network. However, various investigations into the habits of recreational visitors to nationally and internationally important wildlife sites have found that the majority of dog walkers and casual walkers are generally disinclined to walk far from home to visit sites for recreation. For example, in one of the most thorough studies, dating from 2012, visitor surveys were conducted at the Thames Basin Heaths Special Protection Area in south-east England. The study found that the average distance between the visitor's home postcode and Thames Basin Heaths SPA when arriving by foot was 0.8 km, with 75% of foot-based visitors living within a 0.9 km straight line distance from the visitor survey point[94]. Other surveys show a similarly broad pattern, since there is a natural limit as to how far most people are prepared to walk to visit a particular countryside site, even when it is large and appealing. The Usk Bat Sites SAC only lies within 1km of a small number of dwellings in the County Borough. Car-based visitors will of course visit sites further afield but scrutiny of the small number of public roads that provide access into the SAC indicates that the roads are generally narrow and parking is very limited, which will inherently control the number of casual visitors. The site will therefore not be a destination for mass recreational visits arising from the County Borough.

Consulting the results of the previous BBNP visitor survey, most visitors find that the NP is well managed (92% agree) and that information about the NP is easy to find before a visit (81% agree). This is important because it demonstrates the general accessibility conditions in the NP and how easy it is for people to plan their visits, which crucially includes the planning of hiking or exercising routes. Furthermore, 'conditions of upland paths' (rated highly by 52%), 'conditions of lowland paths' (49%) and 'signage' (36%) were all features that were rated highly by interviewees. These results appear to indicate that the path network in the NP is well managed / maintained. This is important, having a variety of well maintained paths to choose from, encourages visitors to stay on paths and thereby reducing off-path trampling damage.

The potential adverse effects of recreational climbing in the SAC are appropriately addressed in the Core Management Plan of the site. This highlights that climbing in the management units 1 and 2 of the Mynydd Llangatwg SSSI, a component of the Usk Bat Sites SAC, requires the issue of a permit. Therefore, the number of climbers affecting the sensitive rocky slopes can be relatively easily

[92] http://www.breconbeacons.org/caves [Accessed on the 27/08/2019]
[93] http://www.ogof.org.uk/ [Accessed on the 27/08/2019]
[94] https://www.footprint-ecology.co.uk/reports/Fearnley%20and%20Liley%20-%202013%20-%20Visitor%20access%20patterns%20on%20the%20Thames%20Basin%20Heaths.pdf [Accessed 06/11/2019]. The Thames Basin Heaths is also extensively visited by people travelling by car, who typically live 5km from the SPA. However, that site has an abundance of parking whereas parking in the vicinity of Castor Hanglands is very restricted and accessing the site by car from the Great Kyne development will be much more difficult than is currently the case due to the intention to close Helpston Road to vehicular traffic from the development site.

controlled. Like caving, rock climbing is a niche activity undertaken by relatively few people (compared to mainstream activities such as walking and dog walking). This is reflected in the BBNP visitor questionnaire, where rock climbing was not among the reported recreational activities. The overall increase in the number of climbers as a result of the Blaenau Gwent Local Development Plan is therefore expected to be limited and is adequately addressed through the permit system that already operates in the SAC.

Given the small number of Blaenau Gwent visitors to the area around the SAC, the well maintained network of paths in the NP and the issue of climbing permits, it is considered that the implementation of the Blaenau Gwent Local Development Plan would not result in adverse effects on the integrity of habitats in the Usk Bat Sites SAC, both alone and in-combination. Moreover, the Preferred Strategy RLDP already contains policy wording that protects SACs from adverse effects on site integrity. Strategic Policy 14 (Protection and enhancement of the Natural Environment) protects the natural environment through '*Ensuring that development does not have a significant effect on neighbouring Special Areas of Conservation (SACs)*.'

Brecon Beacons SAC

Both the calcareous and the siliceous rocky slopes with chasmophytic vegetation, primary qualifying features of the Brecon Beacons SAC, are sensitive to erosion from heavy trampling and rock climbing. Erosion and resulting bare ground is also a recognised pressure on the European dry heathland habitats in the SAC. Recreational activities such as walking, exercising and climbing may dislodge the characteristic plant species in these European sites, slowly changing their plant community composition. The Core Management Plan for the site indicates 'that footpath erosion causes rock and soil to wash down over the sensitive plant communities below'. While climbing is highlighted as an activity causing damage, it is not permitted in the National Nature Reserve (NNR) part of the site and the cliffs at Craig y Fro, areas of calcareous rocky slopes that are most susceptible to erosion arising from climbing.

Based on the results of the 2016 / 2017 BBNP visitor survey, the general area around the Brecon Beacons SAC is one of the honeypot destinations, attracting a large proportion of visitors frequenting the NP. A total of 358 of 1,707 interviewees (21%) named Storey Arms / Pen Y Fan / Corn Du as one of the sites they would visit. This does not necessarily mean that they will visit the Brecon Beacons SAC, as this site was not explicitly included in the visitor survey. However, the Storey Arms site lies in the middle of the SAC, which is therefore likely to be visited as well. Based on the proportion of the overall number of visitors to the NP deriving from Blaenau Gwent (3%), it can be extrapolated that approx. 11 visitors to the broad area within which the Brecon Beacons SAC is situated are likely to have travelled from Blaenau Gwent. Overall, this authority therefore appears to contribute a very small proportion to the overall visitor pressure to this area and the SAC itself is small, relatively remote (13km from the nearest settlement in the County Borough) and on very steep terrain, inherently limiting casual mass recreational use.

In contrast to the results in the BBNP visitor survey, where the majority of interviewees indicated that the NP and the path network were well maintained, the Core Management Plan highlights that path erosion caused by walkers / hikers causes damage to the sensitive plant communities. It highlights that stabilisation of official paths and persuading visitors to stick to the paths will help reduce erosion. The completion of path maintenance and the installation of information boards at key access points along the A470 are highlighted as priority management actions to mitigate the impacts of climbing and erosion.

While the impact of climbing is disproportionately large, i.e. a climber may have a much larger individual recreational footprint than a walker, it needs to be considered that only a very small number of visitors will pursue climbing as a recreational activity. In the visitor survey, climbing was not one of the 20 most frequently mentioned activities. Of the small total number of visitors from Blaenau Gwent (3% of the visitor total), only an exceedingly small proportion will undertake climbing activities in the SAC. Furthermore, given that appropriate mitigation measures are in place (e.g. completion of path maintenance, climbing permits), it is considered that the Blaenau Gwent Local Development Plan will not lead to adverse effects on the site integrity of the Brecon Beacons SAC regarding the impact pathway recreational pressure, both alone and in-combination. Moreover, the Preferred Strategy RLDP already contains policy wording that protects SACs from adverse effects on site integrity. Strategic Policy 14 (Protection and enhancement of the Natural Environment) protects the natural

environment through '*Ensuring that development does not have a significant effect on neighbouring Special Areas of Conservation (SACs)*.'

Loss of Functionally Linked Land

The following policies of the Local Development Plan have been screened in for Appropriate Assessment because they allocate residential or employment growth, potentially leading to the loss of functionally linked land and LSEs on the Usk Bat Sites SAC:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

Usk Bat Sites SAC

The concept of functionally linked land addresses that mobile qualifying species, such as the lesser horseshoe bat in the Usk Bat Sites SAC, are not only dependent on the designated European sites, but also on habitat features (e.g. commuting corridors, foraging sites) that are not part of the formal site designation. As highlighted in the LSEs screening section, lesser horseshoe bats generally travel and forage between 2 to 3km from their daytime roosts (and on occasion range as far as 4km), which often includes habitat that lies outside European sites. Such functionally linked land is considered to be important for maintaining the integrity of the SAC's bat population. Given that the Usk Bat Sites SAC is located partly within the north-eastern section of Blaenau Gwent, the allocation of residential and employment development might result in the loss of functionally linked land of the SAC.

Generally, bats use linear landscape features to navigate, including natural features such as woodland edges, treelines and hedges as well as human-made features such as vegetation-lined roads and fences. Bats forage in open habitat with abundant insect life, and particularly unimproved or semi-improved grassland. Review of online satellite imagery indicates that there are various areas in Blaenau Gwent that are likely to support suitable off-site supporting habitat to the lesser horseshoe bat. For example, the area north of Pontygof comprises open habitat with streams and semi-improved grassland, which might be used as foraging habitat by bats stemming from the SAC. Clydach Terrace, an area comprising a few isolated dwellings, there are linear features

Generally, it is the potential allocation of greenfield sites for development, which would be expected to have the largest impact on the lesser horseshoe bats. These bats are likely to use natural linear landscape features (e.g. hedges and treelines) to navigate and open areas of grassland for foraging on functionally linked land. Developing greenfield sites is likely to mean that such features are lost, resulting in the loss of functionally linked land parcels. Conversely, redeveloping existing brownfield sites is likely to be less damaging, as these are generally presumed to have a lower ecological value to the bats. However, it is to be noted that bats also use man-made habitat features to roost and / or navigate. Therefore, even the conversion of a brownfield site could mean that functionally linked land is lost. The Preferred Strategy RLDP does not include individual site allocations and therefore a detailed site-specific analysis will have to be undertaken as part of the Deposit Plan version of the Plan.

The Bat Conservation Trust has published scientific evidence on the Core Sustenance Zones (CSZs) for different bat species surrounding European sites[95], within which development can be assumed to impact the commuting and foraging behaviour of the bats. To derive the CSZs the mean-maximum foraging radius is averaged for all radio-tracked individuals across all available studies. The CSZ for lesser horseshoe bats (derived from 83 individuals and four tracking studies), the qualifying species of the Usk Bat Sites SAC, is 2km. According to the Trust there is good confidence in this data because it

[95] Bat Conservation Trust. 2016. Core Sustenance Zones: Determining zone size. 7pp. Available at: https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135 [Accessed on the 06/11/2019]

is based on a reasonable sample size and multiple colonies. Therefore, considering this CSZ, this impact pathway will only have to be assessed further if development allocations within 2km of the Usk Bat Sites SAC come forward.

It is noted that the Preferred Strategy RLDP already contains policy wording that protects SACs from adverse effects on site integrity. Strategic Policy 14 (Protection and enhancement of the Natural Environment) protects the natural environment through '*Ensuring that development does not have a significant effect on neighbouring Special Areas of Conservation (SACs)*.' However, any development sites allocated within 2km of the SAC will require further assessment regarding their suitability for and usage by the lesser horseshoe bat. In this case it is recommended that the following text (or similar) is inserted into Strategic Policy 13 (Protection and Enhancement of the Natural Environment), or another appropriate policy, in the next iteration of RLDP: '**To meet the requirements of the Habitats Directive regarding allocated greenfield sites within the Core Sustenance Zone of 2km from the Usk Bat Sites SAC, the applicant should be required to provide evidence that the development will not result in adverse effects on site integrity. To prove this, bat surveys will be required to determine if any habitat features within the allocation are used by lesser horseshoe bats. Where habitats are suitable, a suite of bat surveys will need to be undertaken between April and September. This would include bat activity surveys and dusk-dawn (roost emergence-re-entry) surveys to establish whether the proposed allocation is used by bats. If habitat within the site or adjacent land are identified to support a significant population of the bat species, avoidance measures and mitigation will be required, and the planning application will likely need to be assessed through a project-level Habitats Regulations Assessment to ensure that the development does not result in adverse effects on the integrity of the SAC.**'

Water Quality

The Local Development Plan provides for new residential and employment development within Blaenau Gwent, which will result in increases of the volumes of wastewater treatment and sewage effluent. The following policies require Appropriate Assessment in relation to the water quality impact pathway:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism
- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

River Usk SAC

This SAC is designated for a variety of features that are dependent on water quality. For example, the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation elements are highly dependent on good water quality status. Under high nutrient conditions, the growth of algae and the risk of eutrophication increases. In turn the excessive growth of epiphytic algae is likely to suppress the flowering of aquatic plants. However, unfavourable water quality status will also affect the fish species that the River Usk SAC is designated for. For example, both sea and brook lampreys require clear, well-oxygenated water for spawning and eutrophication fuelled by domestic sewage effluent will reduce their spawning success. Atlantic salmon need high water quality, particularly high dissolved oxygen levels, for survival and maintaining the chemical status of the River Usk is therefore integral to their survival.

The River Usk rises on the northern slopes of the Black Mountain and flows 125km in a south-easterly direction through the towns of Brecon, Crickhowell, Abergavenny and Usk, before discharging into the Usk estuary at Newbridge. The SAC comprises a long narrow catchment, partly owed to the surrounding rugged terrain, but nevertheless receives inflow from tributaries arising in Blaenau Gwent. The Environment Agency (EA) river catchment data explorer highlights that the north-eastern part of Blaenau Gwent lies in the River Usk catchment[96]. Depending on where development will be

[96] https://environment.data.gov.uk/catchment-planning/ManagementCatchment/3107 [Accessed on the 28/08/2019]

allocated as part of the Plan and in which Wastewater Treatment Works (WwTWs) sewage will be treated, there is therefore a potential for a hydrological linkage with the River Usk SAC.

The Core Management Plan indicates that the most significant source of water pollution is agriculture, including from processes such as fertiliser run-off, livestock manure, silage effluent and soil erosion from ploughed land. However, discharges from sewage treatment works, urban drainage systems and other urban sources are also significant sources aquatic pollution and require addressing. This is supported by the fact that four of the five water bodies in the Llwyd operational catchment, a sub-catchment of the River Usk, do not achieve good ecological status.

In Wales, the water quality of rivers is protected through the Review of Consents process agreed upon by Natural Resources Wales. This sets out the volume of sewage effluent that can be discharged into local watercourses by WwTWs, including thresholds for the discharge of phosphate, dissolved oxygen, biological oxygen demand and ammonia. WwWTs have a permitted headroom, based on their ability to process additional sewage effluent while remaining within the consented volume of discharge. These discharge consents are developed in consideration of the SAC's qualifying feature and therefore remaining within the permitted headroom would mean that there will be no adverse effects on site integrity of the River Usk SAC.

The Preferred Strategy RLDP already contains policy wording that protects the River Usk SAC from adverse effects on site integrity. Strategic Policy 14 (Protection and enhancement of the Natural Environment) protects the natural environment through '*Ensuring that development does not have a significant effect on neighbouring Special Areas of Conservation (SACs)*.' Furthermore, Strategic Policy 15 (Environmental Protection) outlines that development must '*protect and where appropriate improve the water environment and water resources, including quantity and quality*.'

It is understood that very little development in the north-eastern part of Blaenau Gwent, particularly Brynmawr, will be coming forward, particularly as most of this area is within the planning control of Brecon Beacons National Park Authority rather than Blaenau Gwent County Borough Council. This is important because parts of Brynmawr are the only area that are served by WwTWs that would be feeding east into tributaries of the River Usk SAC. Notably, the strategic allocation in this area would be served by a WwTW that discharges south into an area that is not hydrologically connected to the River Usk SAC. A complete Appropriate Assessment of the water quality impact pathway will be undertaken for the Deposit Plan, when the spatial distribution of the development will be available.

Should the situation change, and significant development allocations in the north-eastern section of Blaenau Gwent occur, most notably in Brynmawr, that might involve the discharge of treated sewage effluent into watercourses feeding the River Usk SAC, a Water Cycle Study (WCS) for Blaenau Gwent may be informative. This would establish the hydrological linkages with the SAC more clearly and identify whether allocated growth can be accommodated by the relevant WwTWs. Even if little to no development is likely to come forward in this area, it is recommended as a precautionary measure, that the following text (or similar) is inserted into an appropriate policy of the Plan: '***Regarding new residential and employment development it will be ensured that new growth can be accommodated within the current wastewater treatment infrastructure network. Where allocated development exceeds the permitted headroom of any Wastewater Treatment Works (WwTW), the development will be delivered in phases to ensure that the consented discharge is not exceeded.***' With the above recommended text is inserted into the next stage of the Blaenau Gwent RLDP, it is concluded that there would not be adverse effects on the site integrity of the River Usk SAC.

Water Level and Flow

The Local Development Plan provides for new residential and employment development within Blaenau Gwent, which will result in an increased water abstraction from groundwater or surface water bodies. The following policies require Appropriate Assessment in relation to the water level and flow impact pathway:

- Strategic Policy 1: Sustainable Economic Growth
- Strategic Policy 4: Employment and Skills
- Strategic Policy 5: Growing Tourism

- Strategic Policy 8: Delivery of Homes
- Strategic Policy 9: Gypsy and Travellers

River Usk SAC

As highlighted in the screening section for LSEs, the River Usk SAC is dependent on a naturally fluctuating hydrological regime with annual fluctuations in water volume and current velocity. While a certain degree of variability is desirable, the changes in water flow and level need to remain within natural limits and in accordance with the life cycle of the SAC's qualifying features. For example, Atlantic salmon requires changing water depth depending on its life stage. During the spawning and incubation periods, the water depth should be 15 – 75 cm, suitable fry habitat should be below 20 cm in depth and parr habitat between 20 – 40 cm. Major water abstractions are also likely to reduce the maximum river flows in the migratory period and on a diurnal timescale, resulting in the exposure of lamprey nests and nursey areas above the water level. The flow conditions are highly important in enabling anadromous fish to reach their spawning grounds and ensuring that juveniles are not washed into marine water prematurely.

An investigation into water resources, level and flow requires, in the first instance, the consideration of the available water resources in area. The available resources then need to be set into the context of the current and future exploitation rates. Based on the Environment Agency's and Natural Resources Wales' jointly undertaken water stress classification system, the River Usk SAC is located in an area of low water stress[97]. Irrespective of this, water abstraction for domestic water supply is the most important pressure on the water volume in the Usk catchment, accounting for 94% of the catchment's total annual abstraction[98]. This abstraction accounts for a large proportion of the potable water supply across south-east Wales and is transported across the region through an intensive system of water transport infrastructure. This water abstraction system is augmented by six public water supply impoundment reservoirs within the catchment. At low flow conditions, potentially prohibitive of abstraction, these reservoirs discharge water into the 'low flow' Usk for abstraction further downstream.

In 2019, Dwr Cymru Welsh Water, the company responsible for the potable water supply in Wales, published its final Water Resources Management Plan (WRMP) for the period between 2010 and 2050[99]. This strategic report primarily exists to ensure that there is sufficient potable water to supply future housing growth in Wales (considering factors such as climate change) and that water abstraction is undertaken sustainably, particularly during dry periods when the impact of water abstraction is likely to be greatest. The water supply area of Dwr Cymru Welsh Water is divided into three regions (North Wales, South West Wales, South East Wales), which are further subdivided into Water Resource Zones (WRZs). The authority of Blaenau Gwent lies within the South East Wales Conjunctive Use System (SEWCUS), the largest of the WRZs with approx. 40% of the total demand in Wales. A portion of the potable water supply in the SEWCUS is abstracted from the downstream reaches of the River Usk catchment, indicating that some of the water supplying development allocated in the Blaenau Gwent RLDP could derive from the SAC. However, the WRMP demonstrates that the supply demand balance for the zone is in surplus for its planning period between 2020 and 2050. The reported baseline deployable output is 422 Ml/d, which is higher than the maximum demand (approx. 395 Ml/d) modelled for any of the years covered by the WRMP. Since the WRMP covers the Blaenau Gwent RLDP period, and growth allocated therein, it is considered that implementation of the Plan would not negatively impact on the water level and flow within the River Usk SAC.

[97] Environment Agency. 2013. Water stressed areas – Final classification. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf [Accessed on the 28/08/2019]
[98] Natural resources Wales. 2017. River Usk Abstraction Licensing Strategy. Available at: https://naturalresources.wales/media/682209/river-usk-abstraction-licensing-strategy-july-2017.pdf [Accessed on the 28/08/2019]
[99] Dwr Cymru Welsh Water. 2019. Final Water Resources Management Plan 2019. Available at: https://www.dwrcymru.com/en/My-Water/Water-Resources/Final-Water-Resources-Management-Plan-2019.aspx [Accessed on the 28/08/2019]

Furthermore, the Core Management Plan for the River Usk SAC[100] highlights that as a result of the Review of Consents process, flow targets for the River Usk SAC have been set (detailed in Annex 1), in order to remove effects of this impact pathway on the qualifying fish species. This process uses recent daily mean flow data to set abstraction license conditions and hourly maximum abstraction rates to reduce human-induced diurnal flow variations. Of particular significance for the SAC features is the inclusion of hands-off flow conditions. Hands-off flow conditions mark the water threshold that is required to maintain the ecological integrity of the SAC, below which any abstraction activities must be stopped. Overall, due to the projected headroom in Blaenau Gwent's WRZ and the principle of Hands-off Flow, it is concluded that the Blaenau Gwent RLDP will not result in adverse effects on the integrity of the River SAC regarding the impact pathway water level and flow. It will therefore not be necessary to incorporate specific mitigation measures into the next stage of the Plan.

[100] Countryside Council for Wales. 2008. Core Management Plan (including conservation objectives) for River Usk Special Area of Conservation. Available at: https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on the 28/08/2019]

6. Assessment of the Growth and Spatial Strategy Options

The screening table in Appendix 3 of this HRA summarises the 5 different Growth and Spatial Strategy Options detailed in the Blaenau Gwent RLDP. Generally, all options detail some residential growth (although this is relatively little compared to some other nearby authorities) and would therefore be screened in for Appropriate Assessment in relation to the impact pathways identified in this HRA. The delivery of new housing in Blaenau Gwent is relevant to this HRA, because it will determine the magnitude of impact pathways, such as atmospheric pollution, water quality, water quantity, level and flow, recreational pressure and loss of functionally linked land. Since the geographic scope of the different strategies is only broad, all options must be screened in based on the precautionary principle, due to not being able to rule out LSEs with any degree of certainty. However, at the same time, the extent of residential and employment growth (e.g. in some options an employment loss is expected) differs considerably between the different strategies, which will therefore be considered individually in the following.

The main difference between the growth options is the varying amount of housing and employment growth that is proposed. Housing growth ranges from 1,485 (Option 1), 810 (Option 2), 3,390 (Options 3 and 4) to 2,115 (Option 5). The growth options currently do not specify the amount of employment space to be allocated. However, they do outline an anticipated increase or loss of people in the working age range. The number of people in the working age ranges from a minimum net loss of 720 (Option 1), a loss of 1,065 (Option 2), a gain of 915 (Options 3 and 4) to a loss of 240 (Option 5). It is to be noted that the overall intention of the RLDP is to increase economic activity rates within Blaenau Gwent by enhancing local employment. Furthermore, the distribution of growth also differs, with Options 2, 4 and 5 proposing an equal distribution of growth across Blaenau Gwent, while Options 1 and 3 suggest a north-south split of growth with growth primarily focussed in Ebbw Vale (Option 1) or along the Heads of the Valleys (Option 3).

Generally, it can be assumed that harmful impact pathways scale with the quantity of growth proposed in development plans. For example, a higher number of new residential dwellings equates to more new residents, which in turn would mean that more wastewater is produced, more recreational visits are undertaken, and more greenfield sites are potentially lost. In turn this means that the magnitude of negative impact pathways on European sites is likely to be higher. From the perspective of growth, Option 2 is likely to be the least impactful development option as it allocates only 810 net new dwellings and would entail the loss of 1,065 jobs during the RLDP period. Conversely, Options 3 and 4 are likely to be associated with a much larger potential for adverse effects because they propose the largest number of net new residential dwellings (3,390) and employment opportunities (915 jobs). The Blaenau Gwent RLDP needs to balance its need for growth with its requirement to minimise environmental impacts. The (currently preferred) Option 5 illustrates this as it proposes an intermediate level of residential growth (2,115 net new dwellings), while actually detailing a loss of employment development of 240 jobs.

The spatial distribution proposed in the Growth and Spatial Strategy Options is another important factor to consider in assessing the options' potential impacts on European sites. Both Options 1 and 3 propose to concentrate growth in the north-eastern section of Blaenau Gwent, in Ebbw Vale and along the A465 corridor respectively. This is also where the European sites most sensitive to impact pathways arising from the RLDP are located, including the Usk Bat Sites SAC, the Cwm Clydach Woodland Sac, the River Usk SAC and the Brecon Beacons SAC. Especially for Option 3 this would mean that growth would geographically focus in proximity to the Usk Bat Sites SAC and the Cwm Clydach Woodlands SAC, and to a lesser extent the River Usk SAC and the Brecon Beacons SAC. In turn, this could mean for example that potentially allocated land parcels are more likely to represent functionally linked land to the Usk Bat Sites SAC or that drinking water serving new housing would be derived from the River Usk SAC, thereby affecting its water quantity, level and flow. It is considered that Options 2, 4 and 5, which propose an equal distribution of growth across Blaenau Gwent, are preferable due to having a lower potential for adverse effects on European sites, compared to growth that is concentrated geographically near sensitive sites.

Overall, compared to the other options, the Preferred Growth and Spatial Strategy (Option 5) proposes more dwellings than Options 1 and 2, but it also outlines that this growth would be spread unevenly over Blaenau Gwent. It is considered that with the suggested policy wording (detailed in the

Appropriate Assessment section) in place, the preferred strategy could be delivered without adverse effects on European sites. However, this interim assessment would have to be reviewed when the Deposit Plan and further evidence (e.g. the Air Quality Impact Assessment) is available.

7. Conclusions and Recommendations

Due to the relatively limited detail available in this Preferred Strategy RLDP (e.g. no site allocations and only limited policy wording is available) and the lack of key evidence (e.g. no air quality assessment), it was not possible to undertake a fully conclusive Appropriate Assessment at this stage. For example, the Deposit Plan HRA will require an Air Quality Impact Assessment and the specific location of the growth allocated in the Plan. This will provide conclusive evidence on how the changed traffic volume / flow might affect European sites or whether specific site allocations might lead to the loss of functionally linked land.

However, given that some detailed policy wording is already available, this HRA undertook preliminary Appropriate Assessment of some impact pathways and provides initial recommendations on how to mitigate potential adverse effects of the RLDP on European sites through additional policy wording. This HRA confirms no adverse effects of the Blaenau Gwent RLDP on European sites, except for the impact pathways described below, which need further assessment at the Deposit Plan stage.

Impact pathway: Atmospheric pollution

Regarding atmospheric pollution adverse effects on the site integrity of the Usk Bat Sites SAC and the Cwm Clydach Woodlands SAC cannot be excluded. This is because air quality modelling for sensitive habitat components within these sites is not available. For the Deposit Plan it is therefore recommended to model a minimum of one road transect in each of these SACs. A definitive Appropriate Assessment of the impact pathway atmospheric pollution is therefore deferred to the Deposit Plan HRA.

Impact pathway: Loss of functionally linked land

The Usk Bat Sites SAC is the only European site for which functionally linked land is an issue in relation to the Blaenau Gwent RLDP. As discussed, a 2km Core Sustenance Zone around the SAC is essential for maintaining the integrity of the SAC. As the site allocations for the RLDP are not yet available, a definitive Appropriate Assessment of this impact pathway is deferred to the Deposit Plan HRA.

Notwithstanding this, it is recommended that specific policy wording addressing the functionally linked land requirements of the bats is incorporated into the Deposit Plan. The following wording would ensure that the integrity of the Usk Bat Sites SAC is protected: '**To meet the requirements of the Habitats Directive regarding allocated greenfield sites within the Core Sustenance Zone of 2km from the Usk Bat Sites SAC, the applicant should be required to provide evidence that the development will not result in adverse effects on site integrity. To prove this, bat surveys will be required to determine if any habitat features within the allocation are used by lesser horseshoe bats. Where habitats are suitable, a suite of bat surveys will need to be undertaken between April and September. This would include bat activity surveys and dusk-dawn (roost emergence-re-entry) surveys to establish whether the proposed allocation is used by bats. If habitat within the site or adjacent land are identified to support a significant population of the bat species, avoidance measures and mitigation will be required, and the planning application will likely need to be assessed through a project-level Habitats Regulations Assessment to ensure that the development does not result in adverse effects on the integrity of the SAC.**'

Impact pathway: Water quality

A complete Appropriate Assessment of the water quality impact pathway will be undertaken for the Deposit Plan, when the spatial distribution of the development and the WwTWs infrastructure serving it will be confirmed. If development in the north-eastern section of Blaenau Gwent is coming forward and is served by WwTWs that discharge into the catchment of the River Usk SAC, there is a potential for adverse effects on the water quality in the river. As a precautionary measure, it is recommended to insert the following text (or similar) into an appropriate policy of the Plan: '***Regarding new residential and employment development it will be ensured that new growth can be accommodated within the current wastewater treatment infrastructure network. Where allocated development exceeds the permitted headroom of any Wastewater Treatment Works (WwTW), the***

development will be delivered in phases to ensure that the consented discharge is not exceeded.'

8. Appendices

Appendix 1: Relevant European sites within 15km of the boundary of Blaenau Gwent County Borough.

Appendix 2: Screening of the Plan's Strategic Policies

The table presents an HRA screening assessment of all the Strategic Policies within the draft Local Plan. Where policies have been coloured green in the 'Test of Likely Significant Effect' column, this indicates that the policy does not contain potential impact pathways linking to European sites and therefore has been screened out from further consideration. Where a policy has been coloured orange in the 'Test of Likely Significant Effect' column, this indicates that the policy provides for potential impact pathways linking to European designated sites and has been screened in for Appropriate Assessment.

Policy number/ name	Policy detail	Test of Likely Significant Effect
The Preferred Growth and Spatial Strategy		
Strategic Policy 1: Sustainable Economic Growth	In order to deliver sustainable economic growth: 1. Provision will be made for the delivery of at least 1,500 jobs with an aspiration to deliver 3,375. To enable this 46 ha of employment land will be allocated. 2. Provision will be made for the delivery of 2,115 homes to deliver a housing requirement of 1,755 of which at least 478 will be affordable. 3. The new homes will be distributed across the borough in line with the settlement hierarchy with 45% all of the homes being directed to the Primary Settlement, 50% to Main Settlements and 5% to Secondary Settlements, Villages and Hamlets.	Likely Significant Effects on European sites cannot be excluded. This policy identifies the quantum and the location of 2,115 new homes and 46ha of employment land to be provided during the Plan period of 2013-2036. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.

Settlement Tier	Name	Number (Share %)
Tier 1 Primary	Ebbw Vale (Ebbw Fawr)	952 (45%)
Tier 2: Main	Tredegar (Sirhowy)	423 (20%)
Tier 2 Main	Brynmawr / Nantyglo / Blaina (Upper Ebbw Fach)	423 (20%)
Tier 2 Main	Abertillery (including Cwmtillery and Six Bells) (Lower Ebbw Fach)	211 (10%)
Tier 3 Secondary Settlements, Tier 4: Villages & Tier 5: Hamlets	Tier 3: Cwm and Aberbeeg / Brynithel / Llanhileth Tier 4: Swfrydd Tier 5: Trefil, Pochin and Bedwellty Pits	106 (5%)

4. Strategic Mixed-Use Sites are identified at:

a. The Works, Business Hub, Ebbw Vale (3.5 ha of employment land) and 220 homes
b. Ebbw Vale Northern Corridor - Rhyd y Blew (13.2 ha of employment land) and Bryn Serth (10 ha of employment land) and 805 homes
c. Former Nantyglo Comprehensive School Site (220 homes) and other uses

5. Sustainable growth will be achieved through delivering the following outcomes:
Outcome 1: Create a Network of Sustainable Vibrant Valley Communities (Placemaking)
Outcome 2: Create Opportunities for a Prosperous Low Carbon Economy and Promote

	Learning and Skills Outcome 3: Create Well-Connected, Active and Healthy Communities Outcome 4: Protect and Enhance the Distinctive Natural and Built Environment	
Outcome 1: Deliver a Network of Vibrant Valley Communities (Placemaking)		
Strategic Policy 2: Sustainable Placemaking and Design	To deliver a Network of Vibrant Valley Communities we need to create sustainable places where people want to live, work and socialise thus the design of new developments needs to deliver: 1. Inclusive design that offers choice and ease of access for all; 2. Environmental Sustainability in terms of maximising energy efficiency, making efficient use of resources, preventing the generation of waste and pollution, and consideration of ecosystems services; 3. Sustaining or enhancing local character in terms of the layout, form, scale and visual appearance of development; 4. The reduction of crime and disorder, where appropriate; and 5. Reduce reliance on the car by integrating the development with the wider public transport routes and active travel routes.	There are no LSEs of this policy on European sites. This is a development management policy detailing the design criteria for new development, such as a requirement for sustainability. There are no impact pathways present and this policy can thus be screened out.
Strategic Policy 3: Climate Change	All development proposals will be required to make a positive contribution towards addressing the causes of, and adapting to the impacts of climate change. Means of achieving this may include: 1. Having low/zero carbon energy requirements by reducing energy demand, and promoting energy efficiency; 2. Supporting the development of renewable and low/zero carbon energy generation; 3. Supporting development proposals that incorporate district energy network development	There are no LSEs of this policy on European sites. This is a development management policy detailing that al proposals must contribute towards mitigating climate changes. This includes the positive provision of Sustainable Urban Drainage Systems, which will contribute to stable water levels / flows in European sites that are dependent on water

	and expansion of The Works district heating network; 4. Promoting efficient use of land through giving preference to brownfield land and development at higher densities on sites located close to transport corridors or town centres, thereby reducing the overall need to travel; 5. Utilising local materials and supplies (adopting circular economy principles); and 6. Avoid, or where appropriate, minimise the risk of flooding including the incorporation of measures such as Sustainable Urban Drainage Systems and flood resilient design.	supply. There are no linking impact pathways present and this policy can thus be screened out.
Outcome 2: Deliver opportunities for a Prosperous Low Carbon Economy and Promote Learning and Skills		
Strategic Policy 4: Employment and Skills	Opportunities for sustainable economic growth will be delivered by directing employment generating development to the most appropriate and sustainable locations, supporting expansion of existing businesses and ensuring spatial alignment between housing and employment growth. The Employment Land Review identifies 46 ha hectares of land for employment and business purposes should be retained to accommodate at least 1,500 new jobs over the plan period. This will be delivered by: 1. Allocating 46 ha of land for employment purposes (The proposed employment site allocations required will be confirmed at the RLDP Deposit stage). 2. Retaining and safeguarding the following strategic sites for employment purposes: a. The Works, Business Hub, Ebbw Vale (3.5 ha); and b. Ebbw Vale Northern Corridor, Ebbw Vale (Rhyd-y-Blew (13.2 ha) and Bryn Serth (10 ha)). 3. Supporting the development of land close to the proposed Metro station at Abertillery. 4. Capitalising on the key economic drivers and allocated funding in place for Blaenau Gwent in the form of the Enterprise Zone designation, Tech Valleys, Valleys Task Force and the Cardiff Capital Region. 5. The employment roles of major industrial areas will be identified to assist in the diversification of employment and support the growth in good growth sectors such as new technologies and advanced manufacturing, IT and cyber security, tourism, low carbon sustainable technologies and the foundation economy.	Likely Significant Effects on European sites cannot be excluded. This policy identifies 46ha of employment land, equating to 1,500 new jobs, to be provided during the Plan period of 2013-2036. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.

	6. A first class learning infrastructure being put in place to ensure that residents gain the skills they require to match the economic growth sectors. 7. Local labour market agreements being negotiated with developers to enable local employment to secure employment and skills development.	
Strategic Policy 5: Growing Tourism	To deliver a growing tourism economy the Plan will support: 1. Major destination attractions that would draw large numbers of people to the area and provide a significant number of jobs; 2. High quality accommodation, venues, businesses, events, attractions, cultural tourism, rural enterprise, activity tourism and a diverse and attractive food and drink sector; and 3. The establishment of the Valleys Regional Park. Providing developments avoid unacceptable, adverse environmental or amenity impacts and are supported by adequate existing or new infrastructure provision.	Likely Significant Effects on European sites cannot be excluded. This is a development management policy providing for the support of tourism proposals, including 'major destination attractions that would draw large numbers of people to the area'. The policy does not provide for a quantum and / or location of residential and employment development. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.
Strategic Policy 6: Sustainable Minerals Management	Blaenau Gwent will sustainably manage its mineral resources by: 1. Maintaining a minimum 10 year land bank of permitted aggregate reserves throughout the plan period and meeting the apportionment identified in the most up to date Regional Technical Statement. This will require the identification of preferred areas for future working in relation to a potential lateral extension at Trefil Quarry (Limestone) and/or a new quarry at	There are no LSEs of this policy on European sites. This is a development management policy providing for the sustainable use of minerals in Blaenau Gwent. It includes the positive

	Land South East of Cwm (Pennant Sandstone); 2. Encouraging the efficient and appropriate use of high quality minerals and maximising the potential for the use of secondary and recycled aggregates as an alternative to primary land won resources; 3. Safeguarding areas underlain by non-energy minerals of economic importance where they could be worked in the future to ensure that such resources are not unnecessarily sterilised by other forms of development; 4. The use of buffer zones to reduce the conflict between mineral development and sensitive forms of development; 5. Ensuring that minerals proposals do not have an unacceptable adverse impact on the environment and amenity; and 6. Securing appropriate restoration and after uses for mineral sites which can deliver specific environmental and community benefits.	policy wording of using minerals in a way that does not have an 'unacceptable adverse impact on the environment'. Therefore, there are no impact pathways present and this policy can thus be screened out.
Strategic Policy 7: Sustainable Waste Management	To deliver sustainable waste management the Plan will: 1. Ensure that all proposals conform to the principles of the waste hierarchy supporting those that move waste up the hierarchy; 2. Create an integrated and adequate network of waste recovery and disposal installations that has regard to the nearest appropriate installation concept and selfsufficiency principles; 3. Encourage the provision of in-building treatment facilities on B2 employment sites with sufficient amounts of available vacant buildings and land, subject to there being no unacceptable adverse effect on the environment or the amenity of adjacent users and communities that cannot be mitigated; 4. Support the co-location of facilities to enable the development of heat networks 38 where appropriate; and 5. Support the circular economy by encouraging the minimisation of the generation of waste and the use of reused and recycled waste materials in the design, construction and demolition stages of development.	There are no LSEs of this policy on European sites. This is a policy providing for the sustainable management of waste. It ensures that all development proposals conform to the waste hierarchy and minimize the generation of waste. Therefore, there are no impact pathways present and this policy can thus be screened out.

Outcome 3: Deliver Well-Connected, Active and Healthy Communities

Strategic Policy 8: Delivery of Homes

To ensure local housing need is met and sustainable communities are created:

1. The Plan makes provision for 2,115 homes to deliver a housing requirement of 1,755 homes of which at least 478 will be affordable.

2. In order to meet this an allowance for completions to date, existing commitments, windfall contributions from small and large sites totalling 1,282 homes is made leaving 833 homes to be allocated in the Plan.

Settlement Tier	Total from completions, commitments, small and large windfall	Strategic Mixed use Allocations (Identified)	Number of homes to be allocated	Total
Tier 1: Ebbw Vale	677	675 (320*)	0	952 (+45)
Tier 2: Tredegar	206	0	217	423
Tier 2: Brynmawr / Nantyglo / Blaina	231	220	0	423 (+28)
Tier 2: Abertillery (including Cwmtillery and Six Bells)	62	0	149	211
Tiers 3, 4 and 5	106			106
	1,282	540*	366	2,115 (+73)

*denotes number to be delivered in the Plan period

(a further breakdown of this table is provided at Appendix 6 and further explanation is provided in the Housing Supply Supporting Document)

3. In allocating housing sites priority will be given to previously developed (brownfield) land within existing settlements, then previously developed land on the edge of existing settlements and then greenfield sites within or on the edge of settlements;

Likely Significant Effects on European sites cannot be excluded.

This policy provides for the delivery of 2,115 homes during the Plan period of 2013-2036. It also identifies how these dwellings will be partitioned across the different settlements of Blaenau Gwent.

Potential impact pathways are present:

- **Loss of functionally linked land**
- **Recreational pressure**
- **Atmospheric pollution**
- **Water quality**
- **Water level / flow**
- **Water quantity, level and flow**

Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.

	4. A range of sizes of sites will be made available to support self-build, and the small and medium house builders; and 5. Proposals to bring empty properties back into use will be supported.	
Strategic Policy 9: Gypsy and Travellers	Land will be made available to accommodate any future unmet gypsy and traveler accommodation needs.	Likely Significant Effects on European sites cannot be excluded. This policy accommodates the need for any future unmet gypsy and traveler sites. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.
Strategic Policy 10: Retail Centres and Development	1. To sustain and enhance a network of town centres, the current retail hierarchy will be reviewed and a new hierarchy will be identified in the deposit plan based on evidence from a Retail Study. 2. To support and sustain the town centres new roles will be explored as follows: a. Abertillery will explore complimentary roles around culture, leisure and tourism; b. Brynmawr will explore opportunities to develop complementary roles around tourism and leisure; c. Ebbw Vale will expand its role as the main administrative and service centre for the Borough; and	There are no LSEs of this policy on European sites. This is a development management policy identifying the retail hierarchy of Blaenau Gwent. However, the policy does not identify a quantum and location of residential and employment development. Therefore, there are no impact pathways present and this policy can be screened out.

	d. Tredegar will expand its tourism offer through maximising the benefits of local heritage. 3. In order to maintain or enhance the vibrancy, vitality and attractiveness of the town centres: a. Shops, offices and other commercial premises where appropriate, will be upgraded by means of refurbishment and redevelopment; b. Appropriate comparison and convenience retail office, leisure, entertainment and cultural facilities will be supported; c. Opportunities will be sought to improve access to, and within, retail and commercial centres by all modes of transport, prioritising walking, cycling (Active Travel) and public transport. 4. Given the evolving role of town centres, the town centre and primary retail area boundaries will be reviewed and drawn in recognition of the need for a degree of flexibility in maintaining occupancy and footfall, and to enable a tailored approach to be taken for each centre having regard to health checks and masterplans. 5. If appropriate, land will be made available to accommodate future local retailing need.	
Strategic Policy 11: Sustainable Transport and Accessibility	1. To deliver sustainable transport and accessibility the Council will work with partner organisations to: a. Deliver the Metro Improvements including the proposed extension of the rail service to Abertillery, the increase in frequency of rail services on the Ebbw Valley Railway and integration of public transport services and active travel routes across the South East Wales Region. b. Deliver the key transport measures and schemes identified in the Local Transport Plan. 2. To improve sustainability, developments should be located and designed to minimise travel, reduce dependency on the private car and enable sustainable access to employment, local services and community facilities. Depending on the nature, scale and siting of the proposal the development will be required to:	There are no LSEs of this policy on European sites. This is a transport management policy outlining the delivery of sustainable transport infrastructure with a focus on active travel modes. The policy does not identify a quantum and location of residential and employment development. Therefore, there are no impact pathways present and this policy can be screened out.

	a. Accord with the Sustainable Transport Hierarchy; b. Safeguard, enhance and expand on the active travel networks identified in the Council's Existing Routes Map and Integrated Network Map, including links to the networks as a means of improving connectivity; c. Be designed to provide safe and efficient access to the transport network, which includes active travel routes, public transport routes and the strategic highway network; and d. Provide vehicle charging infrastructure.	
Strategic Policy 12: Social and Community Infrastructure	In order to maintain and improve the quality of life and health and well-being of residents the RLDP will: 1. Protect community facilities; 2. Allocate land for new schools, where required and support the development of the Welsh Language; 3. Allocate land for new health facilities, where required. 4. Allocate land for burial grounds to meet identified need; 5. Protect outdoor recreation space and open space; 6. Protect allotments from development; and 7. Support improved mobile phone coverage.	There are no LSEs of this policy on European sites. This is a policy detailing the protection of existing and the provision of new community facilities. The policy does not identify a quantum and location of residential and employment development. Therefore, there are no impact pathways present and this policy can be screened out.
Outcome 4: Protect and Enhance the Distinctive Natural and Built Environment		
Strategic Policy 13: Protection and Enhancement of the Natural Environment	Blaenau Gwent's distinctive natural environment and landscape will be protected and where possible enhanced through: 1. Protecting the countryside from inappropriate development; 2. Protecting and enhancing important landscapes such as the nationally designated Brecon Beacons National Park and locally designated Special Landscape Areas; 3. Ensuring that development does not have a significant effect on neighbouring Special	There are no LSEs of this policy on European sites. This is a development management policy providing for the protection and the enhancement of the natural environment. Importantly, the policy explicitly protects SACs near Blaenau Gwent from adverse

	Areas of Conservation (SAC's); 4. Protecting nationally identified Sites of Special Scientific Interest (SSSI's); 5. Ensuring that the network of locally identified Sites of Importance for Nature Conservation (SINC's) and Local Nature Reserves (LNR's) are protected from inappropriate development and enhanced; 6. Protecting those attributes and features which make a significant contribution to the character, quality and amenity of the landscape; 7. Building resilience into the existing ecosystems through creating a network of green infrastructure and local wildlife sites linked by wildlife corridors and stepping stones; 8. Ensuring development seeks to produce a net gain for biodiversity ecosystem resilience by following the 'Step-Wise' approach and ensuring links are created to the green infrastructure network; and 9. Supporting woodland planting.	effects of new development proposals. The policy does not identify a quantum and location of residential and employment development. Therefore, there are no impact pathways present and this policy can be screened out.
Strategic Policy 14: Preservation and Enhancement of the Historic Environment	Blaenau Gwent's distinctive built environment will be protected, preserved and where appropriate enhanced through: 1. The protection and sustainable management of the Blaenavon World Heritage Site setting and buffer zone; 2. Preservation and enhancement of Scheduled Ancient Monuments and Archaeological Remains; 3. Preserving Listed Buildings and their settings or any features of special architectural or historic interest; 4. Preserving and enhancing the Tredegar Conservations Areas; 5. Protection and conservation of the Bedwellty House Historic Park and Garden and its setting; 6. Protection of the Historic Landscapes at Brynmawr/Clydach Gorge and Blaenavon;	There are no LSEs of this policy on European sites. This is a development management policy providing for the preservation and enhancement of Blaenau Gwent's historic environment, such as Scheduled Ancient Monuments. The policy does not identify a quantum and location of residential and employment development. Therefore, there are no impact pathways present and this policy can be screened out.

	7. Preservation and enhancement of Historic Assets of Special Local Interest; and 8. The promotion of heritage tourism.	
Strategic Policy 15: Environmental Protection	Environmental Protection will be achieved through requiring development to: 1. Protect and where appropriate improve the water environment and water resources, including quantity and quality; 2. Reduce exposure to air and noise pollution; 3. Balance the need for lighting with: the protection of the natural and historic environment; preventing glare to neighbouring uses and the need to reduce carbon emissions; and 4. Take a precautionary approach to the location of potentially polluting development.	There are no LSEs of this policy on European sites. This is a development management policy protecting the environment by minimizing water pollution, air pollution and light pollution. The policy is therefore linked to Strategic Policy 13, which provides explicit protection for the SACs. The policy does not identify a quantum and location of residential and employment development. Therefore, there are no impact pathways present and this policy can be screened out.

Appendix 3: Screening of the Plan's Strategic Growth Options

HRA screening assessment of the strategic growth options detailed within the draft Local Development Plan. Where an Option has been coloured green in the 'Screening Outcome' column, this indicates that the policy does not contain potential impact pathways linking to European sites and would be screened out from further consideration. Where an Option has been coloured orange in the 'Screening Outcome' column, this indicates that the policy provides for potential impact pathways linking to European sites and would be screened in for Appropriate Assessment.

Strategic Growth Option	Growth Level	Spatial Distribution	Settlement Hierarchy	Screening Outcome
Option 1 (Growth and Regeneration)	Medium Growth Population: 162 to 846 gain (0.2 to 1%) Housing: 79-99 per annum (Total 1,185 – 1,485) Employment: Loss of 48 to 64 per annum from the working age population (Total loss of between 720 to 960) With UR reducing & EA adjusted+ CR Reducing total gain of 2,550-2,790.	North / South split with most growth in the north, especially in Ebbw Vale	Principal Hub: Ebbw Vale District Hubs: Tredegar, Brynmawr, Abertillery Local Hub: Blaina	Likely Significant Effects on European sites cannot be excluded. This option assumes medium growth in Blaenau Gwent, including the provision of up to 1,485 dwellings, but a net loss of the working age population across Blaenau Gwent during the Plan period of 2018-2033. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.
Option 2 (Balanced and Interconnected	Low Growth Population: Loss of between 587	Balanced Growth equally distributed across the borough	Sustainable Settlement Assessment Tier 1 Principal Settlements:	Likely Significant Effects on European sites cannot be excluded. This option assumes low growth in

Communities)	to 1,815 (Loss of 0.8 to 2.6%) Housing: 19-54 per annum (Total 285 – 810) Employment: Loss of 106 to 71 per annum from the working age population (Total loss of 1,065 to 1,590) With Unemployment Rate reducing, Employment Activity Rate adjusted and the Commuting Ratio Reducing there will be a Total gain of 1,800-2,380.		Ebbw Vale, Tredegar, Brynmawr, Nantyglo, Blaina, Abertillery, Cwmtillery, Six Bells, Brynithel, Llanhilleth, Aberbeeg Tier 2 Secondary Settlements: Cwm Tier 3 Hamlets: Trefil, Pochin, Bedwellty Pits, Swfrydd	Blaenau Gwent, including the provision of up to 810 dwellings, but a net loss of the working age population across Blaenau Gwent during the Plan period of 2018-2033. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.
Option 3 (Economic Growth Strategy)	High Growth Population: 1,996 to 5,009 gain (2.9 to 7.2% growth) Housing: 141 – 226 per annum (Total 2,115 – 3,390) Employment: Loss of 16 to a gain of 61 per annum from the working age population (Total loss of 240 to a total gain of 915) With UR reducing & EA adjusted+ CR Reducing Total gain of 3,375-4,710.	North / South split based on opportunities for growth along the Heads of the Valleys	Sustainable Settlement Assessment Tier 1 Principal Settlements: Ebbw Vale, Tredegar, Brynmawr, Nantyglo, Blaina, Abertillery, Cwmtillery, Six Bells, Brynithel, Llanhilleth, Aberbeeg Tier 2 Secondary Settlements: Cwm Tier 3 Hamlets: Trefil, Pochin, Bedwellty Pits, Swfrydd	Likely Significant Effects on European sites cannot be excluded. This option assumes high growth in Blaenau Gwent, including the provision of up to 5,009 dwellings and an increase of 915 people in the working age population across Blaenau Gwent during the Plan period of 2018-2033. The growth is to be delivered primarily in the north and south of the authority. **Potential impact pathways are present:** • **Loss of functionally linked land**

				• **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.
Option 4 (Sustainable Economic Growth)	High Growth Population: 1,996 to 5,009 gain (2.9 to 7.2% growth) Housing: 141 – 226 per annum (Total 2,115 – 3,390) Employment: Loss of 16 to a gain of 61 per annum from the working age population (Total loss of 240 to a total gain of 915) With UR reducing & EA adjusted+ CR Reducing Total gain of 3,375-4,710.	Balanced Growth distributed equally across the borough	Sustainable Settlement Assessment Tier 1 Primary Settlement: Ebbw Vale Tier 2 Main Settlements: Tredegar, Brynmawr, Nantyglo, Blaina, Abertillery, Cwmtillery, Six Bells, Tier 3 Secondary Settlements: Cwm, Aberbeeg, Brynithel, Llanhileth Tier 4 Villages: Swfrydd Tier 5 Hamlets: Trefil, Pochin, Bedwellty Pits	Likely Significant Effects on European sites cannot be excluded. This option assumes medium growth in Blaenau Gwent, including the provision of up to 5,009 dwellings and an increase of 915 people in the working age population across Blaenau Gwent during the Plan period of 2018-2033. The growth is to be delivered in a balanced fashion across the authority. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for

				Appropriate Assessment.
Option 5 (Sustainable Economic Growth)	High Growth Population: 1,471 to 1,996 gain (2 to 2.9% growth) Housing: 117 – 141 per annum (Total 1,755 – 2,115) Employment: Loss of 28 to 16 per annum from the working age population (Total loss of 420 to 240) With UR reducing & EA adjusted + CR Reducing 210 to 225 per annum (Total of 3,150-3,375)	Balanced growth distributed equally across the borough based on a sustainable settlement assessment		Likely Significant Effects on European sites cannot be excluded. This is the Preferred Growth and Spatial Strategy option currently explored by Blaenau Gwent County Borough Council. This option assumes a slightly lower growth in Blaenau Gwent than originally identified due to delivery and viability factors. It includes the provision of up to 2,115 dwellings, but a potential decrease of 240 people in the working age population during the Plan period of 2018-2033. The growth is to be delivered in a balanced fashion across the authority, but with growth focussed in Ebbw Vale and the Main Settlements of Brynmawr, Nantyglo, Blaina and Abertillery. **Potential impact pathways are present:** • **Loss of functionally linked land** • **Recreational pressure** • **Atmospheric pollution** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways the policy is screened in for Appropriate Assessment.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Blaenau Gwent Local Planning Authority Boundary
- Blaenau Gwent County Borough Boundary
- Study Area Buffer -15km

Special Area of Conservation (SAC)

- Aberbargoed Grasslands
- Blaen Cynon
- Brecon Beacons
- Coed y Cerrig
- Cwm Cadlan
- Cwm Clydach Woodlands
- Llangorse Lake
- River Usk
- Sugar Loaf Woodlands
- Usk Bat Sites

Purpose of Issue: DRAFT

Client: BLAENAU GWENT COUNTY BOROUGH COUNCIL

Project Title: HRA OF THE BLAENAU GWENT LOCAL DEVELOPMENT PLAN PREFERRED STRATEGY

Drawing Title: EUROPEAN SITES WITHIN 15KM OF THE BOUNDARY OF BLAENAU GWENT

Drawn	Checked	Approved	Date
AM	DW	DW	17/12/2019

AECOM Internal Project No.	Scale @ A3
60609986	1:200,000

AECOM
Midpoint
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Drawing Number: FIGURE A

Rev: 02

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5 0 5 10 15 20 25 km

File Name:F:\General\GIS\01 - Jobs\#2019\191108_Blaenau Gwent HRA Map\02_Maps\Figure_ Location of European Designated Sites_v2.mxd