Habitats Regulations Assessment of the Monmouthshire Replacement Local Development Plan

Deposit Plan

Monmouthshire Council

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Quality information

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Introduction

AECOM was appointed by Monmouthshire County Council (MCC) to undertake a Habitats Regulations Assessment of its Replacement Local Development Plan (RLDP) Deposit Plan, which sets out the development in Monmouthshire between 2018 and 2033 that includes provision for approximately 6,210 net new homes and 38ha net new employment land. The objective of this assessment is to identify any aspects of the Plan that would cause an adverse effect on the integrity of internationally important wildlife 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 are identified. However, given its relatively early stage the RLDP does not yet set out the specific site allocations nor detailed policy wording.

Legislative Context

The need for an assessment of impacts on European sites is set out in the Conservation of Habitats and Species Regulations 2017 (as amended). 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 Monmouthshire and the impact pathways present, the HRA addresses the following European sites: Usk Bat Sites SAC, Cwm Clydach Woodlands SAC, Wye Valley Woodlands SAC, Wye Valley and Forest of Dean Bat Sites SAC, Severn Estuary SPA / Ramsar, Severn Estuary SAC, River Wye SAC, Avon Gorge Woodlands SAC, River Usk SAC, Aberbargoed Grasslands SAC, Sugar Loaf Woodlands SAC, Llangorse Lake SAC and Coed y Cerrig SAC.

Likely Significant Effects

Following initial evidence gathering, the first stage of any Habitats Regulations Assessment is a screening for Likely Significant Effects (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.

The HRA shows that LSEs can be excluded for the identified impact pathways in relation to most European sites. However, the following require investigation in appropriate assessment:

- Atmospheric pollution impacts on the Usk Bat Sites SAC, Cwm Clydach Woodlands SAC, Wye Valley Woodlands SAC and the Severn Estuary SAC / SPA / Ramsar
- Recreational pressure in the Severn Estuary SAC / SPA / Ramsar, Usk Bat Sites SAC, River Usk SAC, River Wye SAC, Sugar Loaf Woodlands SAC, and Wye Valley Woodlands SAC.

[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

- Functionally linked land relating to the Severn Estuary SPA / Ramsar, Usk Bat Sites SAC, and Wye Valley & Forest of Dean Bat Sites SAC
- Water quality in the River Usk SAC, River Wye SAC and Severn Estuary SAC
- Water quantity, level and flow in the River Usk SAC, River Wye SAC and Severn Estuary SAC

Appropriate Assessment

Atmospheric Pollution

All traffic growth on major roads within 200m of the relevant European sites was modelled. This included both traffic growth due to Monmouthshire Local Plan and wider traffic growth on the road network over the plan period to 2033. Oxides of nitrogen, ammonia and nitrogen deposition were modelled. Four scenarios were modelled. Three transects were modelled into Severn Estuary SAC/SPA/Ramsar site. Since the critical level for NOx or ammonia is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth. On the English side the nearest saltmarsh in the SAC is 20m from the road. At this point the modelled in combination nitrogen deposition effect from all traffic growth is well below 1% of the critical load and therefore adverse effects on integrity can be dismissed.

Two transects were modelled into Wye Valley Woodlands SAC. Since the critical level for NOx is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth. At the distances the SAC lies back from the road (100m and beyond), modelling shows that there is no impact of traffic growth (alone or in combination) on ammonia concentrations. The modelled in combination nitrogen deposition effect from all traffic growth is well below 1% of the critical load and therefore adverse effects on integrity can be dismissed. Cwm Clydach Woodlands and Usk Bat Sites SACs are considered together because they both lie adjacent to A465 Heads of the Valleys Road at Daren-felen, with Cwm Clydach Woodlands SAC lying immediately beyond the Usk Bat Sites SAC to the south of the road. Three transects were modelled. Since the critical level for NOx is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth.

For both ammonia and nitrogen deposition the in combination effect of Monmouthshire Replacement Local Development Plan in combination with other plans and projects does exceed 1% of the critical level and load and therefore cannot be dismissed on purely numerical grounds. However, the A465 is one of the major trunk roads in Wales and is a main east–west route in South Wales along with the M4 motorway. Moreover, large sections of the road are being converted to dual carriageway by 2025. As such, traffic-related changes in air quality on the A465 are not a local (Monmouthshire) issues but a Wales-wide issue and is the responsibility of the Welsh Government or South Wales Trunk Road Agent (SWTRA).

This is relevant because Joint Nature Conservation Committee (JNCC) guidance on the issue states (pages 20/21) that: ‘The trunk road network forms the core of the national transport system. Trunk roads are central to long distance travel and connectivity across the UK and traffic patterns on trunk roads are a consequence of predicted growth across the UK generally. The effects of development on traffic flows on truck roads are more appropriately taken into account as part of national and regional strategic plan level HRAs.’ As such, this is considered to be an issue to be address at a strategic national scale rather than through the Monmouthshire Local Plan.

Recreational Pressure

Severn Estuary SPA/SAC/Ramsar

To obtain visitor data for the Severn Estuary SPA / Ramsar (and also the SAC), a survey (comprising visitor counts and interviews) was undertaken at four key access locations along the estuary. The home postcodes of interviewees provide the key most important parameter that is used to identify recreational catchments. Typically, the 75th percentile of interviewees (i.e. the distance from the SPA / Ramsar from which 75% of interviewees originate) is used to denote the core recreational catchment. This cut-off point is used to remove the influence of outliers and to demark the catchment that forms the most likely visitor pool. Pooling the postcodes from all ‘local’ visitors (i.e. those on a day trip from home), 75% of visitors travelled a linear distance of 6.5km to the SPA / Ramsar.

However, Stroud Council (in England) and Forest of Dean Council (also in England) have both recently increased the recreational catchment in their area for Severn Estuary from 7km to 12.6km, based on

more recent visitor survey from 2022 . It is to be expected that different parts of the Severn Estuary have different recreational catchments, and the survey data for Monmouthshire clearly indicates a smaller core catchment. However, there is also value in authorities around the Severn Estuary adopting a consistent core catchment. Therefore, it may be advisable for Monmouthshire Council to adopt 12.6km as their core catchment, and thus the zone within which financial contributions to recreational pressure mitigation on the SAC/SPA/Ramsar site would be collected. Allocations within 7km and 12.6km of the SPA/Ramsar site were assessed. A 7km catchment would capture five residential and mixed used allocations (HA3, HA2/EA1m, HA9/EA1l, HA13 and HA18). increasing the catchment to 12.6km would capture one more residential development site (HA14).

Given the high sensitivity of the SPA / Ramsar to impacts resulting from recreational pressure, adverse effects on its site integrity due to additional residential development cannot be excluded. It is anticipated that mitigation measures will be required to avoid adverse effects on the SPA / Ramsar. These could be delivered in the form of Strategic Access Management and Monitoring (SAMM) in the estuary itself, and / or through access enhancements and improvements to appropriately sited, existing or newly developed greenspaces. In England, authorities within the recreational catchment of sites that are sensitive to recreational pressure have developed SAMM strategies to avoid adverse effects on the European sites, including Severn Estuary SPA/Ramsar where such strategies exist for both Stroud and Forest of Dean districts.

It is noted that relevant Deposit Site Allocation policies, with the exception of Site HA14 include reference to the site being within 7km of the Severn Estuary European Marine Site (site HA14 is within 12.6km) and that a financial contribution may be required as part of a mitigation strategy as well the SANG requirements to reduce recreational pressures on the features of the estuary. Policy NR2 – Severn Estuary Recreational Pressure also sets out requirements for proposals that would result in visitor pressure on the Severn Estuary SAC, SPA, Ramsar site, or Functionally Linked land will not be supported unless it can be demonstrated that no adverse impact on the integrity of the European Marine Site will occur. The supporting text links this requirement to a Core Recreational Catchment Zone of 7km identified by the HRA. AECOM recommends that the mixed use sites EA1m and EA1l are also included in this solution along with residential site HA14. As such AECOM recommends that the same policy requirement is included in those policies as has already been included in other relevant allocations.

It is generally considered that adverse effects on the site integrity of the Severn Estuary SAC could be avoided within the remit of a Strategic Access Management and Monitoring Strategy. There are also several policy mechanisms through which the Severn Estuary SAC could be protected, for example by introducing the following wording into a policy addressing the protection of European sites in Monmouthshire: ‘Any development proposals that would increase visitor access to sensitive habitat features in the Severn Estuary SAC, SPA and Ramsar site, especially on to saltmarsh and mudflat habitat, will not be supported unless no adverse effect on the integrity of the sites could be confirmed.’

Other European sites

Impacts on Usk Bat Sites SAC, River Usk SAC, River Wye SAC, Sugar Loaf Woodlands SAC, and Wye Valley Woodlands SAC were also investigated but it was concluded no adverse effect on integrity would arise, without the need for mitigation. For Wye Valley Woodlands SAC this assessment included undertaking a visitor survey in 2023. Using these data, the 75th percentile of all visitors that travelled to the SAC is 39.3km. In other words, three quarters of visitors live within 39.3km of the SAC boundary. This is a very large catchment and represents the importance of the SAC in drawing visitors from long distances. For example, visitors come from as far afield as Lincolnshire, Sheffield, Devon, Hampshire and Nottinghamshire, and visitors from outside Monmouthshire and Wales, make up a large proportion of the survey pool. Even excluding people on holiday to focus entirely on people ‘visiting from home’ still leaves a relatively large catchment of 24km.

This indicates that the Wye Valley Woodlands SAC has a regional, not to say national, draw rather than a local one. In contrast, during surveys of the Severn Estuary SPA/Ramsar/SAC, 75% of visitors lived within 6.5km of the site, indicating the much greater proportion of local residents in the visitor pool. The core recreational catchment for the Wye Valley Woodlands SAC for residents of Monmouthshire (i.e. the zone within which 75% of Monmouthshire-resident visitors are found) is 7km, but it is important to remember that Monmouthshire residents make up a minority of visitors, with 71% of visitors living in other local authorities.

Given these data it is considered that visitor pressure within the SAC is limited, is a regional or national issue, and will not be heavily affected by housing and population growth within Monmouthshire. As such, no mitigation strategy for the Local Plan is required and a conclusion of no adverse effect on integrity is reached. The foregoing assessment inherently takes account of growth in Monmouthshire in combination with growth elsewhere in the recreational catchment of the SAC.

Loss of Functionally Linked Land

The potential for loss of functionally linked land for bats associated with Usk Bat Sites SAC, Wye Valley & Forest of Dean Bat Sites SAC and birds associated with Severn Estuary SPA/Ramsar was assessed.

Usk Bat Sites SAC and Wye Valley & Forest of Dean Bat Sites SAC

No sites are allocated within the Core Sustenance Zone of Usk Bat Sites SAC. Five Local Plan allocations were identified within 3km (the Core Sustenance Zone) of Wye Valley & Forest of Dean Bat Sites SAC: HA8, EA1b, HA4, HA13 and HA18. It was recommended that the following text (or similar) is inserted into a suitable policy in the next iteration of the LP: 'To meet the requirements of the Habitats Directive regarding allocated greenfield sites within the Core Sustenance Zones (CSZs) of the Usk Bat Sites SAC and the Wye Valley and Forest of Dean Bat Sites SAC, the applicant is required to provide evidence that the development will not result in adverse effects on site integrity. To achieve this, a habitat assessment will have to be undertaken by a suitably qualified professional. Where habitats are suitable, a suite of bat surveys (e.g. bat activity surveys, roost emergence surveys) will need to be undertaken between April and September. Where a land parcel is demonstrably used by SAC bats, mitigation and avoidance measures might be required, and the planning application will likely need to be assessed through a project-level Habitats Regulations Assessment and will need to consider matters such as habitat connectivity, foraging value and minimised lighting'.

With regard to this recommendation Monmouthshire Council expressed concern as to whether the extent of the suggested wording is needed as it is too prescriptive. Instead, the Deposit Plan addresses these recommendations by providing less prescriptive form of wording in Policy NR1 – Nature Recovery and Geodiversity and its supporting text in paragraphs 11.10.2 – 11.10.8 under the heading International/National (Statutory) Sites and Protected Sites and Species with specific reference to Functionally Linked Land in paragraph 11.10.5, but without providing specific details of the need for bat surveys, survey seasons and the potential need for mitigation . Policy LC5 – Dark Skies and Lighting, offers further policy requirements in relation to external lighting and potential impacts on biodiversity and ecology. Strategic Policy S8 – Site Allocation Placemaking Principles also covers dark corridors as well as requirements in the site-specific allocation policies where relevant, for example Policy HA4 – Land at Leasbrook, Monmouth. Further specific requirements can be set out in Supplementary Planning Guidance.

Severn Estuary SPA/Ramsar

To aid consideration of functionally-linked land issues Natural England has produced unpublished guidance (there is no Natural Resources Wales equivalent). This guidance groups birds by their maximum foraging distance. According to this guidance most waterfowl and waders remain within 2km of their core roost areas (i.e. the SPA/Ramsar site) when foraging. Of those species for which Severn Estuary SPA/Ramsar is designated the exceptions are Bewick's swan and white-fronted goose which forage up to 10km from their core roost sites. The same Natural England guidance considers that residential development could have an adverse effect on these two species if it resulted in loss of functionally-linked land up to 5km from the core roost areas (the SPA/Ramsar). Therefore 5km was used as the zone to identify potential areas of functionally-linked land that might need further assessment and (if necessary) mitigation for planning applications.

The following sites were identified as being of sufficient size and proximity to the SPA and Ramsar to be utilised by SPA birds: HA3, HA2/EA1m. HA9. EA1l, EA1d/W3c, EA1f/W3d, EA1g, EA1h/W3e and EA1/W3f. These sites were all identified as greenfield sites, although without further survey the level of suitability is difficult to assess. These are generally the parameters that are used for the identification of potential functionally linked land. In addition to the size of the candidate sites and distance of the candidate sites from the Severn Estuary, the Monmouthshire Council ecologists reviewed Preliminary Environmental Appraisals where available and undertook a desk study to determine whether housing sites should be considered (during plan preparation / application preparation) for potential use by overwintering birds. This formed part of the proforma preparation for candidate sites. Of the allocation

sites listed above, many were determined to be unsuitable, with the exception of the Caldicot site HA2, due to habitats present, disturbance levels, agricultural practices. This assessment also applies to site EA1/W3f, which has been considered to have potential for overwintering birds. Other sites considered to be suitable are Gwent Europark and Quay Point.

It was recommended that the following text (or similar) was inserted into an appropriate policy of the Deposit Plan: 'To meet the requirements of the Habitats Directive, the applicant should be required to provide evidence that the development will not result in adverse effects on the integrity of the Severn Estuary SPA / Ramsar regarding its qualifying bird species. To demonstrate this, a survey will be required to determine the habitats and current site use to verify if the land parcel is indeed suitable for supporting a significant population of designated bird species. Where habitats are suitable, non-breeding bird surveys will be required to determine if the site and neighbouring land constitute a significant area of supporting habitat. Bird surveys will need to be undertaken during autumn, winter and spring. If habitat within the site or adjacent land are identified to support significant populations of designated bird species, avoidance measures and mitigation will be required, and the planning application will likely need to be assessed through a project specific Habitats Regulations Assessment to ensure that the development does not result in adverse effects on integrity.'

With regard to this recommendation, Monmouthshire Council expressed concern as to whether the extent of the suggested wording is needed as it is too prescriptive. Instead, the Deposit Plan addresses these recommendations by providing a less prescriptive form of wording in Policy NR1 – Nature Recovery and Geodiversity and its supporting text in paragraphs 11.10.2 – 11.10.8 under the heading International/National (Statutory) Sites and Protected Sites and Species. Site specific allocation policies also set out policy requirements, such as for Policy HA2 – Land to the East of Caldicot.

Water Quality

River Usk SAC and River Wye SAC

In the Preferred Strategy HRA no housing was allocated in Monmouth due to issues with nutrient neutrality. However, in response to that document the Welsh Government has advised Monmouthshire Council that new site allocations should be considered in Monmouth on the basis that sufficient certainty is provided by Dwr Cymru Welsh Water's (DCWW) planned improvements at the Monmouth Wastewater Treatment Works by 31st March 2025 . Monmouthshire Council produced a phosphate briefing note in July 2023 which updates developers and sets out how issues with nutrients in the River Usk and Wye catchments will be addressed. Given the clear commitment from DCWW to provide phosphate mitigation at the Llanfoist and Monmouth WwTWs by 31St March 2025, the Local Planning Authority is now able to issue planning permissions within the area served by these two WwTWs, subject to a suitably worded 'Grampian condition' preventing commencement of development until 31st March 2025. This will give confidence to the development industry and unlock stalled sites while ensuring new development proposals do not have an adverse impact on water quality within the river SACs.

Monmouthshire Council has confirmed that phosphate solutions have been agreed as part of a wider approach to the issue in partnership with Natural Resources Wales and Welsh Water. Natural Resources Wales has issued a new version of detailed planning guidance that has to be met satisfied in relation to both planning applications and allocations. This guidance will be considered as part of the HRA process. The RLDP allocations have been made in consultation with Welsh Water and Natural Resources Wales, having regard to headroom limits and phosphate solutions proposed Policy NR3 – Protection of Water Sources and the Water Environment sets out requirements for development which may impact upon the water environment and associated land. Given this, it is concluded that there would not be adverse effects on the site integrity of the River Usk SAC and the River Wye SAC regarding water quality.

Severn Estuary SAC/SPA/Ramsar

No water quality adverse effects on the integrity of the Severn Estuary SAC/SPA/Ramsar were identified during the appropriate assessment.

Water Quantity, Level and Flow

River Usk SAC and River Wye SAC

It was considered that no adverse effect on integrity would arise on River Usk SAC or River Wye SAC through this impact pathway due to Monmouthshire Replacement Local Development Plan. Moreover, the RLDP (see Policies S4 and S5) already contains some broad policy wording that protects European sites, which are reliant on water supply, from adverse effects. However, due to the sensitivity of these SACs to water abstraction, it is recommended that specific reference to the sites and the relevant flow targets established by Natural Resources Wales is made in the supporting text to either of these policies. The following text could be added to ensure greater protection of the rivers' flow regimes: 'Any development proposals have to ensure that there will be no adverse effects on the site integrity of the two riverine SACs, the River Usk SAC and the River Wye SAC, regarding water quantity, level and flow. In particular, development will not be permitted if it cannot be accommodated under the Review of Consents for flow in these rivers, including the maximum permissible percentage reduction from naturalised flow levels and hands-off flow conditions.'

Monmouthshire Council have commented that this has been considered as part of the plan making process in consultation with Welsh Water in relation to allocations. Proposals coming forward via planning applications are required to satisfy detailed planning guidance published by Natural Resources Wales so a specific DM policy is not considered necessary.

Severn Estuary SAC

No water quantity, level or flow adverse effects on the integrity of the Severn Estuary SAC/SPA/Ramsar were identified during the appropriate assessment.

Conclusion

With the changes made to the Local Plan in response to recommendations, it is considered that the Monmouthshire Local Plan contains a sufficient policy framework that no adverse effect would arise on Habitats sites either alone or in combination with other plans or projects.

1. Background

1.1 Introduction

AECOM was appointed by Monmouthshire County Council (MCC) to undertake a Habitats Regulations Assessment (HRA) of its Local Plan. The objective of this assessment is to identify any aspects of the Plan that would cause an adverse effect on the integrity of Habitats 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 are identified.

This Local Plan (LP) is a replacement for the adopted LDP that covered the period between 2011 and 2021. The new LP will cover the years 2018 to 2033, building upon the previous LDP. The emerging LP is the Council's statutory land use plan, supporting the delivery of sustainable and resilient communities within Monmouthshire. The LP will determine where and how much development will take place in the County, but it will also outline which areas are to be protected from development.

An initial assessment of the designated sites within and surrounding Monmouthshire, and the associated impact pathways linking them to the Monmouthshire LP was undertaken. This indicates that several European sites require consideration, most notably the Severn Estuary SPA / Ramsar, the Severn Estuary SAC, the River Usk SAC, the River Wye SAC and two sites designated for bat species, which all lie partly within the authority. 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.

An HRA was produced for the Preferred Strategy in 2022. This document is an updated HRA for the Deposit Plan.

1.2 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 UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). This established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within our domestic law, meaning that legislation relating to nature conservation continues to apply to and in the UK. The need for Appropriate Assessment is set out by the Conservation of Habitats and Species Regulations 2017 (as amended). The Habitats Directive applies the precautionary principle[3] to assessments of 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 that a mechanism is in place to ensure that no adverse effect on the integrity of the European Site(s) in question arises. Where an Appropriate Assessment has been carried out and results in a negative assessment, or if uncertainty remains over the significant effect, consent can 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.

[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***".

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.

1.3 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:

- All European sites within the boundary of the County of Monmouthshire; and,
- Other European sites within 15km shown to be linked to development within the County's 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***

[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

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, this HRA will discuss the following European sites:

- Usk Bat Sites SAC
- Cwm Clydach Woodlands SAC
- Wye Valley Woodlands SAC
- Severn Estuary SAC
- River Wye SAC
- Avon Gorge Woodlands SAC
- Severn Estuary SPA / Ramsar
- River Usk SAC
- Wye Valley and Forest of Dean Bat Sites SAC
- Aberbargoed Grasslands SAC
- Sugar Loaf Woodlands SAC
- Llangorse Lake SAC; and
- Coed y Cerrig 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 LP. These include:

- Future development proposed (and, where available, HRAs) for the adjoining authorities of Powys, Torfaen, Newport, Blaenau Gwent, Herefordshire, Forest of Dean, South Gloucestershire and Bristol;
- 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);
- Visitor surveys carried out in Lydney6 and Stroud District7, as they are both relevant to the Severn Estuary SPA / Ramsar;
- The HRA produced for the adopted Monmouthshire 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).
- Habitat mapping on the Wales Environmental Information Portal8; and

[6] Liley D., Panter C. & Hoskin R. 2017. Lydney Severn Estuary Visitor Survey and Recreation Strategy. Unpublished report by Footprint Ecology for the Forest of Dean District Council. 55pp. Available at: https://www.footprint-ecology.co.uk/reports/Liley%20et%20al%202017%20Lydney%20Severn%20Estuary%20Visitor%20Survey%20and%20Recreation%20Strategy.pdf

[7] Southgate J. & Colebourn K. 2016. Severn Estuary (Stroud District) Visitor Survey Report. Report for Stroud District Council. Ecological Planning & Research, Winchester. 68pp. Available at: https://www.stroud.gov.uk/media/2902/severnestuaryvs_report_15581c_final_060616.pdf

[8] Available online at: https://naturalresources.wales/evidence-and-data/accessing-our-data/beta-environmental-data/?lang=en [Accessed on the 11/06/2021]

- DTA Habitats Regulations Assessment Handbook[9].

1.4 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).

2. Methodology

2.1 Introduction

The HRA has been carried out with reference to the general EC guidance on HRA[10] 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.

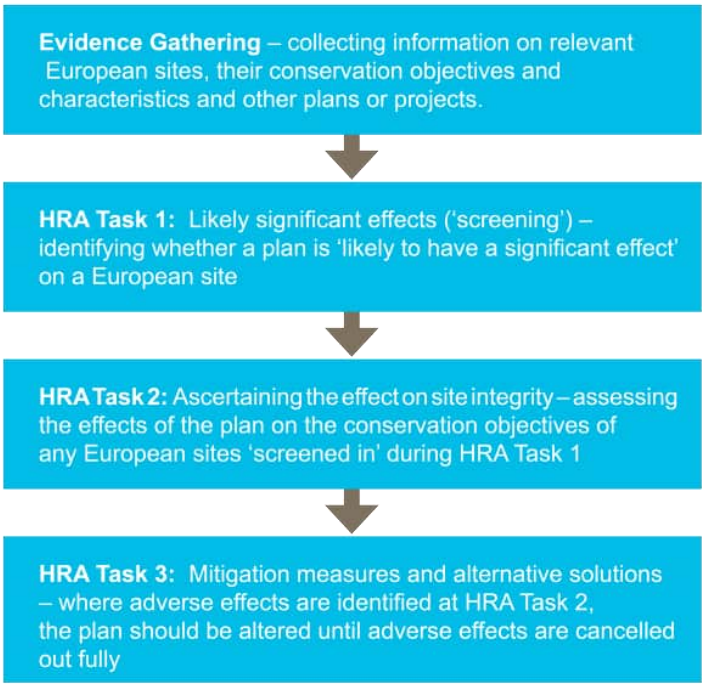

Figure 2. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001[1].

[9] Available online at: https://www.dtapublications.co.uk/ [Accessed on the 11/06/2021]
[10] 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.

2.2 Description of HRA Tasks

2.2.1 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.

2.2.2 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 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[11] 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[12] 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]. Due account of this decision has been taken in this HRA, particularly regarding habitat outside the Usk Bat Sites SAC, Wye Valley & Forest of Dean Bat Sites SAC and Severn Estuary SPA / Ramsar but which may be important for sustaining the SAC bat populations and SPA / Ramsar bird populations.

2.2.3 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.

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

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.

3. Designated Habitat Sites

3.1 Usk Bat Sites SAC

3.1.1 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. This SAC is located partly within the north-west corner of Monmouthshire near Gilwern.

3.1.2 Qualifying Features[13]

The site has been designated as a SAC for the following 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

[13] https://sac.jncc.gov.uk/site/UK0014784

3.1.3 Conservation Objectives[14]

The overarching conservation objectives are outlined in the Core Management Plan for the Usk Bat Sites published by Natural Resources 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.

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; and
- All factors affecting the achievement of the above conditions are under control.

3.1.4 Threats / 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 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

3.2 Cwm Clydach Woodlands SAC

3.2.1 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

[14] https://naturalresources.wales/media/674281/Usk%20Bat%20Sites%20Management%20Plan%20Feb%2008.pdf. As published by Natural Resources Wales
[15] https://naturalresources.wales/media/674281/Usk%20Bat%20Sites%20Management%20Plan%20Feb%2008.pdf

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 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***. This SAC lies in the north-west corner of the County near Gilwern.

3.2.2 Qualifying Features[16]

The site has been designated as a SAC for the following 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

3.2.3 Conservation Objectives[17]

The overarching conservation objectives are outlined in the Core Management Plan for the Cwm Clydach Woodland published by Natural Resources 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; and
- All factors affecting the achievement of the above conditions are under control.

3.2.4 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:

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

[16] https://sac.jncc.gov.uk/site/UK0030127
[17] https://naturalresources.wales/media/675017/cwm-clydach-sac-plan-english.pdf. As published by Natural Resources Wales
[18] https://naturalresources.wales/media/675017/cwm-clydach-sac-plan-english.pdf

- Invasive species

3.3 River Usk SAC

3.3.1 Introduction

The River Usk SAC originates in the west of the Bannau Brycheiniog National Park and flows south-east, joining the Severn Estuary at Newport. The overall form 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. This SAC river flows through Monmouthshire.

3.3.2 Qualifying Features[19]

The site has been designated as a SAC for the following 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***

3.3.3 Conservation Objectives[20]

The overarching conservation objectives are outlined in the Core Management Plan for the River Usk SAC published by Natural Resources Wales. While this document provides conservation vision

[19] https://sac.jncc.gov.uk/site/UK0013007
[20] https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf. As published by Natural Resources Wales

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 Natural Resources Wales 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 Natural Resources Wales 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;
- Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and Natural Resources Wales 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; and
- Levels of suspended solids will be agreed between EA and Natural Resources Wales 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.

3.3.4 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:

- 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

3.4 Aberbargoed Grasslands SAC

3.4.1 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 on a 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***. This SAC lies approximately 12km west of Monmouthshire.

3.4.2 Qualifying Features[22]

The site has been designated as a SAC for the following 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***

3.4.3 Conservation Objectives[23]

The overarching conservation objectives are outlined in the Core Management Plan for the Aberbagoed Grasslands SAC published by Natural Resources 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:

[21] https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf.
[22] https://sac.jncc.gov.uk/site/UK0030071
[23] https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf. As published by Natural Resources Wales

- 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; and
- All factors affecting the achievement of the foregoing conditions are under control.

3.4.4 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:

- Appropriate grazing levels
- Recreational pressure

3.5 Sugar Loaf Woodlands SAC

3.5.1 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. This SAC lies within Monmouthshire, close to Abergavenny.

3.5.2 Qualifying Features[25]

The site has been designated as a SAC for the following 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***

3.5.3 Conservation Objectives[26]

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

[24] https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf.
[25] https://sac.jncc.gov.uk/site/UK0030072
[26] https://naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf. As published by Natural Resources 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; and
- 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.

3.5.4 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

3.6 Llangorse Lake SAC

3.6.1 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***. This SAC lies approximately 11km north-west of Monmouthshire.

3.6.2 Qualifying Features[28]

The site has been designated as a SAC for the following features:

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

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

[27] https://naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf.
[28] https://sac.jncc.gov.uk/site/UK0012985

3.6.3 Conservation Objectives[29]

The overarching conservation objectives are outlined in the Core Management Plan for the Llangorse Lake SAC published by Natural Resources 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; and
- All factors affecting the achievement of these conditions are under control.

3.6.4 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:

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

3.7 Coed y Cerrig SAC

3.7.1 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 located within north Monmouthshire.

[29] https://naturalresources.wales/media/672671/Llangorse%20lake%20core%20management%20plan.pdf. As published by the Natural Resources Wales (2008).
[30] https://naturalresources.wales/media/672671/Llangorse%20lake%20core%20management%20plan.pdf.

3.7.2 Qualifying Features[31]

The site has been designated as a SAC for the following 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)

3.7.3 Conservation Objectives[32]

The overarching conservation objectives are outlined in the Core Management Plan for the Coed y Cerrig SAC published by Natural Resources 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 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; and
- All factors affecting the achievement of these conditions are under control.

3.7.4 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:

- Inadequate woodland management

[31] https://sac.jncc.gov.uk/site/UK0012766

[32] https://naturalresources.wales/media/671319/Coed%20y%20Cerrig%20%20SAC%20%20Management%20Plan%20_English_.pdf. As published by Natural Resources Wales

[33] https://naturalresources.wales/media/671319/Coed%20y%20Cerrig%20%20SAC%20%20Management%20Plan%20_English_.pdf.

- Inappropriate grazing levels
- Inappropriate hydrological regime
- Atmospheric pollution
- Recreational pressure

3.8 Severn Estuary SPA / Ramsar

3.8.1 Introduction

The Severn Estuary SPA / Ramsar is located between the borders of Wales and England in south-western Britain. It is a 24,700.91ha large estuary with extensive intertidal mudflats, sandflats, rocky platforms and small islands. The coastline is fringed by saltmarsh, grazing marsh, freshwater and brackish ditches. Its seabed is mainly rocky, gravelly and sub-tidal sandbanks. Due to the estuary's funnel shape, the Severn experiences the second highest tidal range in the world.

Because of this extreme tidal condition, the SPA / Ramsar is inhabited by plant and animal assemblages that tolerate the physical conditions in the tidal-swept liquid mud, sand and rock. The invertebrate community is species-poor and harbours high densities of ragworms and lugworms. These form important food sources for migrant and wintering waders. The SPA / Ramsar has particular importance as a stopover point for spring and autumn migrant waders, and overwintering swans, ducks and waders. The site also has an extensive intertidal zone, as a consequence of its tidal range. The SPA forms the southern boundary of Monmouthshire.

3.8.2 SPA Qualifying Features[34]

This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations (counts are all at time of designation and could have changed since) of European importance of the following species listed on Annex I of the Directive:

Over winter

- Bewick's swan ***Cygnus columbianus bewickii***, 280 individuals representing at least 4.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

On passage

- Ringed plover ***Charadrius hiaticula***, 655 individuals representing at least 1.3% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)

Over winter

- Curlew ***Numenius arquata***, 3,903 individuals representing at least 1.1% of the wintering Europe - breeding population (5 year peak mean 1991/2 - 1995/6)
- Dunlin ***Calidris alpina alpina***, 44,624 individuals representing at least 3.2% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)
- Pintail ***Anas acuta***, 599 individuals representing at least 1.0% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)
- Redshank ***Tringa totanus***, 2,330 individuals representing at least 1.6% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)
- Shelduck ***Tadorna tadorna***, 3,330 individuals representing at least 1.1% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Assemblage qualification: A wetland of international importance

[34] http://archive.jncc.gov.uk/default.aspx?page=2066

The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.

Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Gadwall ***Anas strepera***, shelduck ***Tadorna tadorna***, pintail ***Anas acuta***, dunlin ***Calidris alpina alpina***, curlew ***Numenius arquata***, redshank ***Tringa totanus***, Bewick's swan ***Cygnus columbianus bewickii***, wigeon ***Anas penelope***, lapwing ***Vanellus vanellus***, teal ***Anas crecca***, mallard ***Anas platyrhynchos***, shoveler ***Anas clypeata***, pochard ***Aythya ferina***, tufted duck ***Aythya fuligula***, grey plover ***Pluvialis squatarola***, white-fronted goose ***Anser albifrons albifrons***, whimbrel ***Numenius phaeopus***.

3.8.3 Ramsar Qualifying Features[35]

The Ribble & Alt Estuaries is designated as a Ramsar site under the following criteria:

Criterion 1

- Due to the immense tidal range (second-largest in world), which affects both the physical environment and biological communities
    - Habitats Directive Annex I features present include sandbanks which are slightly covered by sea water all the time, estuaries, mudflats and sandflats not covered by sweater at low tide and Atlantic salt meadows (***Glauco-Puccinellietalia maritimae***)

Criterion 3

- Due to unusual estuarine communities, reduced diversity and high productivity

Criterion 4

- This site is important for the run of migratory fish between sea and river via estuary. Species include salmon Salmo salar, sea trout S. trutta, sea lamprey Petromyzon marinus, river lamprey Lampetra fluviatilis, allis shad Alosa alosa, twaite shad A. fallax, and eel Anguilla anguilla. It is also of particular importance for migratory birds during spring and autumn.

Criterion 5: Assemblages of international importance

Species with peak counts in winter

70,919 waterfowl (5 year peak mean 1998/99-2002/2003).

Criterion 6: Species / populations occurring at levels of international importance

Species with peak counts in winter

- Tundra swan ***Cygnus columbianus bewickii***; 229 individuals representing an average of 2.8% of the GB population (5 year peak mean 1998/99-2002/03)
- Greater white-fronted goose ***Anser albifrons***; 2,076 individuals representing an average of 35.8% of the GB population (5 year peak mean 1996/97-2000/01)
- Common shelduck ***Tadorna tadorna***; 3,223 individuals representing an average of 1% of the NW Europe population (5 year peak mean 1998/99-2002/03)
- Gadwall ***Anas strepera strepera***; 241 individuals representing an average of 1.4% of the GB population (5 year peak mean 1998/99-2002/03)
- Dunlin ***Calidris alpina alpina***; 25,082 individuals representing an average of 1.8% of the W Siberia and W Europe population (5 year peak mean 1998/99-2002/03)
- Common redshank ***tringa totanus tetanus***; 2,616 individuals representing an average of 1% of the population (5 year peak mean 1998/99-2002/03)

Species / populations identified subsequent to designation for possible future consideration under criterion 6

[35] https://jncc.gov.uk/jncc-assets/RIS/UK11081.pdf

Species regularly supported during the breeding season

- Lesser black-backed gull ***Larus fuscus graellsii***; 4,167 apparently occupied nests, representing an average of 2.8% of the breeding population (Seabird 2000 Census)

Species with peak counts in spring / autumn

- Ringed plover ***Charadrius hiaticula***; 740 individuals representing an average of 1% of the Europe and NW Africa population (5 year peak mean 1998/99-2002/03)

Species with peak counts in winter

- Eurasian teal ***Anas crecca***; 4,456 individuals representing an average of 1.1% of the NW Europe population (5 year peak mean 1998/99-2002/03)
- Northern pintail ***Anas acuta***; 756 individuals representing an average of 1.2% of the NW Europe population (5 year peak mean 1998/99-2002/03)

Criterion 8

The fish of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded. Salmon ***Salmo salar***, sea trout ***S. trutta***, sea lamprey ***Petromyzon marinus***, river lamprey ***Lampetra fluviatilis***, allis shad ***Alosa alosa***, twaite shad ***A. fallax***, and eel ***Anguilla anguilla*** use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries that flow into the estuary. The site is important as a feeding and nursery ground for many fish species particularly allis shad ***Alosa alosa*** and twaite shad ***A. fallax*** which feed on mysid shrimps in the salt wedge.

3.8.4 Conservation Objectives[36]

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

3.8.5 Threats and Pressures to Site Integrity[37]

The following threats and pressures to the site integrity of the Severn Estuary SPA have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Physical modification
- Impacts of development
- Coastal squeeze
- Change in land management
- Changes in species distributions
- Water pollution
- Air pollution: Impact of atmospheric nitrogen deposition

[36] http://publications.naturalengland.org.uk/publication/5601088380076032
[37] http://publications.naturalengland.org.uk/publication/4590676519944192

- Marine consents and permits: Minerals and waste
- Fisheries: Recreational marine and estuarine
- Fisheries: Commercial marine and estuarine
- Invasive species
- Marine litter
- Marine pollution incidents

3.9 Severn Estuary SAC

3.9.1 Introduction

The Severn Estuary SAC was designated as a SAC in 2009, because it supports a significant number of habitats and species. It covers an area of 74,000ha and is designated partly for its estuary feature. Within this feature, subtidal sandbanks, intertidal mudflats and sandflats, Atlantic salt meadows and biogenic reefs are included. The SAC also harbours three migratory fish species, including river lamprey, sea lamprey and twaite shad. The Severn Estuary also comprises hard substrate habitats, an assemblage of 114 estuarine and marine fish species and various waterfowl species. The SAC forms the southern boundary of Monmouthshire.

3.9.2 Qualifying Features[38]

The site is classified as a SAC for various qualifying features.

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

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Atlantic salt meadows (***Glauco-Puccinellietalia maritimae***)

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

- Sandbanks which are slightly covered by sea water all the time
- Reefs

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

- Sea lamprey Petromyzon marinus
- River lamprey Lampetra fluviatilis
- Twaite shad Alosa fallax

3.9.3 Conservation Objectives[39]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species

[38] https://sac.jncc.gov.uk/site/UK0013030
[39] http://publications.naturalengland.org.uk/publication/6081105098702848

- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

3.9.4 Threats and Pressures to Site Integrity[40]

The following threats and pressures to the site integrity of the Severn Estuary SAC have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Physical modification
- Impacts of development
- Coastal squeeze
- Change in land management
- Changes in species distributions
- Water pollution
- Air pollution: Impact of atmospheric nitrogen deposition
- Marine consents and permits: Minerals and waste
- Fisheries: Recreational marine and estuarine
- Fisheries: Commercial marine and estuarine
- Invasive species
- Marine litter
- Marine pollution incidents

3.10 Wye Valley and Forest of Dean Bat Sites SAC

3.10.1Introduction

The Wye Valley and Forest of Dean Bat Sites SAC lies within the Forest of Dean and Lower Wye National Character Area, straddling the England-Wales border. It includes 13 individual component sites (9 in England and 4 in Wales), which are all individually notified as SSSIs and that total an area of 144.82ha. The sites include both maternity roosts and hibernation sites in old buildings and mines / caves.

The wider surrounding landscape of the SAC is heavily wooded and edged by predominantly grazed farmland. This mixed landscape with trees and grazed pastures provides good conditions for both lesser horseshoe bat ***Rhinolophus hipposideros*** and greater horseshoe bat ***Rhinolophus ferrumequinum***. The designated SAC components harbour the highest density of lesser horseshoe bats in the UK, making up about 26% of the national population. The complex of sites harbours approx. 6% of the national greater horseshoe bat population.

The qualifying bat populations are supported by numerous summer roosts and hibernation sites in the area that are not designated, but form part of the wider ecological network of the SAC. Flightlines, commuting routes and feeding grounds are also critical in maintaining the integrity of the Wye Valley and Forest of Dean Bat Sites SAC. Additionally, there is some evidence of connectivity between the populations in the SAC, the Cotswolds to the east, the Malvern Hills to the north and areas in Wales to the west. The SAC lies in various places along the eastern boundary of Monmouthshire.

[40] http://publications.naturalengland.org.uk/publication/4590676519944192

3.10.2 Qualifying Features[41]

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

- Lesser horseshoe bat ***Rhinolophus hipposideros***
- Greater horseshoe bat ***Rhinolophus ferrumequinum***

3.10.3 Conservation Objectives[42]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of qualifying species, and
- The distribution of qualifying species within the site.

3.10.4 Threats and Pressures to Site Integrity[43]

The following threats and pressures to the site integrity of the Wye Valley and Forest of Dean Bat Sites SAC have been identified in Natural England's Site Improvement Plan:

- Physical modification
- Public access / disturbance
- Habitat connectivity

3.11 Wye Valley Woodlands SAC

3.11.1 Introduction

The Wye Valley Woodlands SAC is a 913.32ha site that occupies the border between England and Wales. It comprises several habitats, most notably broad-leaved deciduous woodland (87%), and heath and scrub (10%). The SAC's components significantly contribute to a semi-natural woodland corridor connecting Chepstow and Monmouth. Much of the site is a gorge with a very steep topography, which dictates the available habitat types. In combination with woodlands in the Forest of Dean and Wentwood, this region is one of the most densely wooded areas in the UK. The SAC supports numerous wildlife species at the edge of their ecological range.

A total of 16 SSSI components make up the SAC, of which eight lie entirely in Wales and seven entirely in England. All SSSI components support the best examples of ***Tilio-Acerion*** forests, ***Asperulo-Fagetum*** beech forests and ***Taxus baccata*** woods of the British Isles. These woodlands also form important roosting and foraging habitat for the lesser horseshoe bat. A large proportion of the broadleaved woodland stands dates back to the Second World War and has developed a high forest structure due to the cessation of woodland management. The SAC lies in various places along the eastern boundary of Monmouthshire.

[41] https://sac.jncc.gov.uk/site/UK0014794
[42] http://publications.naturalengland.org.uk/publication/4907653293670400
[43] http://publications.naturalengland.org.uk/publication/6102625057505280

3.11.2 Qualifying Features[44]

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

- Asperulo-Fagetum beech forests
- Tilio-Acerion forests of slopes, screes and ravines
- Taxus baccata woods of the British Isles

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

- Lesser horseshoe bat Rhinolophus hipposideros

3.11.3 Conservation Objectives[45]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

3.11.4 Threats and Pressures to Site Integrity[46]

The following threats and pressures to the site integrity of the Wye Valley Woodlands SAC have been identified in Natural England's Site Improvement Plan:

- Deer
- Forestry and woodland management
- Invasive species
- Habitat connectivity
- Species decline
- Air pollution: Impact of atmospheric nitrogen deposition
- Disease
- Public access / disturbance

3.12 River Wye SAC

3.12.1 Introduction

The River Wye SAC is 25km in length and represents one of the longest near natural rivers in England and Wales, which drains a catchment of 4,136km^2. It is situated within the Forest of Dean and Lower Wye National Character Area, rising at 680m at Plynlimon in mountainous Wales before reaching the English border. The Wye flows through Hay-on-Wye, Hereford and Ross-on-Wye, then

[44] https://sac.jncc.gov.uk/site/UK0012727
[45] http://publications.naturalengland.org.uk/publication/6331090281168896
[46] http://publications.naturalengland.org.uk/publication/4735117343850496

past Monmouth and eventually meeting the Severn Estuary below Chepstow. The SAC shows a transition from bryophyte dominated upland areas to crowfoot dominated lower stretches. Notably, in contrast to many other river systems, the Wye has not been significantly straightened or modified by human activity. It is predominantly low-lying, meandering and only falling by 72m between Hay-on-Wye and the sea.

The SAC comprises a variety of substrate types ranging from silt to boulders, which form diverse habitats for a range of species. This substrate diversity has enabled a varied morphology with more active sections of river (with associated back channels and oxbow lakes) and gravel substrate, where pools and riffles are found. The SAC harbours a diverse submerged aquatic and riparian flora. Furthermore, the transitional zone in the lower reaches between freshwater and brackish water supports its own characteristic flora, particularly saltmarsh species. There is also a diverse invertebrate community with nationally rare river flies and dragonflies. All 6 species of unionid mussels are found here, which is unique in the UK.

A wide range of migratory and non-migratory fish is found in the Wye, including salmonids, such as Atlantic salmon, brown trout, sea trout and grayling, all of which are commercially exploited. All three species of lamprey are found as well as migratory eel. Also, allis shad and twaite shad enter the River Wye from the Severn Estuary to spawn further upstream. The riverine ecosystem is home to several other uncommon species, including otter, water vole and several bird species, such as dipper, grey wagtail and kingfisher. The SAC forms the eastern boundary of Monmouthshire.

3.12.2 Qualifying Features[47]

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

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

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

- Transition mires and quaking bogs

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

- White-clawed (or Atlantic stream) crayfish ***Austropotamobius pallipes***
- 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***

3.12.3 Conservation Objectives[48]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

[47] https://sac.jncc.gov.uk/site/UK0012642
[48] http://publications.naturalengland.org.uk/publication/6096799802589184

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

3.12.4 Threats and Pressures to Site Integrity[49]

The following threats and pressures to the site integrity of the River Wye SAC have been identified in Natural England's Site Improvement Plan:

- Water pollution
- Physical modification
- Invasive species
- Hydrological changes
- Forestry and woodland management
- Fisheries: Freshwater
- Fisheries: Fish stocking
- Water abstraction
- Public access / disturbance
- Air pollution: Impact of atmospheric nitrogen deposition
- Inappropriate scrub control
- Undergrazing
- Transportation and service corridors

3.13 Avon Gorge Woodlands SAC

3.13.1 Introduction

The Avon Gorge Woodlands SAC is a 151.07ha site that is a nationally important example of ***Tilio-Acerion*** forest in south-west England. The site includes ash ***Fraxinus excelsior***, wych elm ***Ulmus glabra*** and small-leaved lime ***Tilia cordata***. This habitat type is here found on calcareous substrates associated with the limestone cliffs and screes of a large river gorge with reduced human influence. It is a sub-community of W8 ***Fraxinus excelsior*** – ***Acer campestre*** – ***Mercurialis perennis*** woodland.

The site's ground flora typically includes Hart's-tongue ***Asplenium scolopendrium***, soft shield-fern ***Polystichum setiferum***, buckler-ferns ***Dryopteris*** spp., ramsons ***Allium ursinum***, dog's-mercury ***Mercurialis perennis*** and enchanter's nightshade ***Circaea lutetiana***. In some of the stonier locations, small groves of yew ***Taxus baccata*** occur. Part of the Leigh Woods is old wood pasture, managed for several hundreds of years, which contains large number of veteran pollards. The ***Tilio-Acerion*** woodland contains transitions to scrub, grassland and other woodland elements, including five whitebeam species. The Avon Gorge Woodlands SAC is important for both lesser and greater horseshoe bats ***Rhinolophus*** spp., breeding peregrine falcon ***Falco peregrinus*** and raven ***Corvus corax***. Rare invertebrates include the silky wave moth ***Idaea dilutaria***, Chalkhill blue ***Polyommatus coridon*** and small blue ***Cupido minimus***. Most of these species rely on SAC habitats and their future

[49] http://publications.naturalengland.org.uk/publication/5178575871279104

status therefore depends on the condition of the SAC. The SAC lies approximately 13km from Monmouthshire on the opposite side of the Severn Estuary in England.

3.13.2 Qualifying Features[50]

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

- ***Tilio-Acerion*** forests of slopes, screes and ravines

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

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (***Festuco-Brometalia***; important orchid sites)

3.13.3 Conservation Objectives[51]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely

3.13.4 Threats and Pressures to Site Integrity[52]

The following threats and pressures to the site integrity of the Avon Gorge Woodlands SAC have been identified in Natural England's Site Improvement Plan:

- Invasive species
- Undergrazing
- Public access / disturbance
- Disease
- Changes in species distributions
- Air pollution: Impact of atmospheric nitrogen deposition

4. Test of Likely Significant Effects (LSE)

4.1 Introduction

This chapter provides background to the relevant impact pathways linked to the Replacement Local Development Plan (LP), 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. For a map of the European sites relevant to the Monmouthshire LP please see Appendix A. For the full LSE assessment of the strategic policies outlined within the LP please see Appendix B.

[50] https://sac.jncc.gov.uk/site/UK0012734
[51] http://publications.naturalengland.org.uk/publication/6740736611450880
[52] http://publications.naturalengland.org.uk/publication/5021516609617920

4.2 Impact Pathways Considered

The following impact pathways are considered relevant to the Monmouthshire LP:

- 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).

4.3 Background to Atmospheric Pollution

Table 1: Main sources and effects of air pollutants on habitats and species[53]

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 continue to decline, increased N emissions may cancel out any gains produced by reduced S levels.	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 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	Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the

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

Pollutant	Source	Effects on habitats and species
	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.	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 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.	Concentrations of O_3 above 40 ppb can be toxic to both humans and wildlife, and can affect buildings. 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[54]. 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[55] [56].

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[57]. Ammonia emissions originate from agricultural practices[58], 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 LP. 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

[54] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.
[55] 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
[56] 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
[57] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[58] 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

of minor importance (8%) in comparison[59]. Emissions of NOx could therefore be reasonably expected to increase because of a higher number of vehicles due to implementation of the LP.

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'[60] 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 [61]). 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 LP. Exhaust emissions from vehicles are capable of adversely affecting heathland habitats.

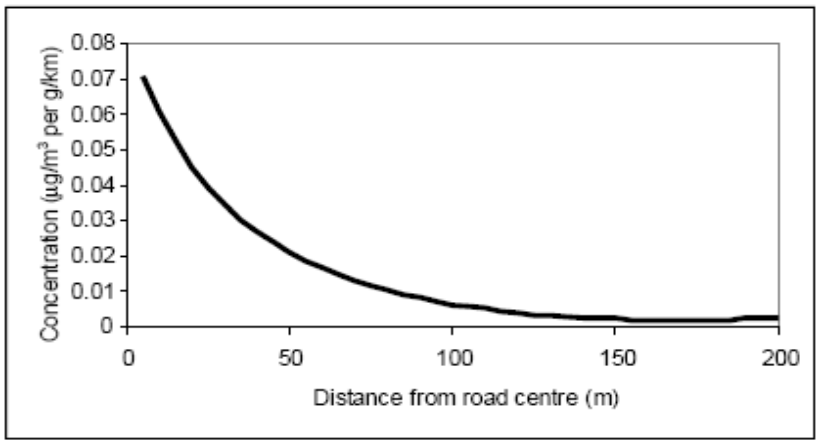

Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT[62])

Air quality assessments for Local Plans focus on traffic exhaust air quality impacts on SACs, SPAs and Ramsar sites. This is because the main source of impact is traffic growth from housing and employment allocations. Local Plans do not allocate land for agricultural development, nor do they allocate development that has industrial emissions permits required from Natural Resources Wales (i.e. development with stack emissions). While some sites are allocated in the Local Plan for waste, the allocations are not technology specific as that will be determined by the market. As such no air quality assessment of waste sites can be undertaken until planning applications come forward.

4.3.1 Screening for LSEs

The following European sites within 15km of Monmouthshire are 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**
- **Wye Valley Woodlands SAC**
- **Severn Estuary SAC**
- **Severn Estuary SPA / Ramsar**

[59] 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
[60] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur
[61] http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013 [Accessed on the 06/11/2019]
[62] http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf; accessed 13/07/2018

- **River Wye SAC**
- **Avon Gorge Woodlands SAC**
- River Usk SAC
- Wye Valley and Forest of Dean Bat Sites SAC
- Aberbargoed Grasslands SAC
- Sugar Loaf Woodlands 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. There are also several Annex I habitats, such as degraded raised bogs and blanket bogs that are also highly sensitive to excessive nitrogen input, although these are much further from potentially relevant roads. For both types of bog habitats, the empirical critical load for annual nitrogen deposition has been set at 5 – 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, particularly between Monmouthshire and Blaenau Gwent. 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/h/yr. Exceedance impacts would potentially be 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 Wye Valley Woodlands SAC comprises several qualifying woodland habitats. Its ***Asperulo-Fagetum*** woodland feature has a critical nitrogen load of 10-20 kg N/ha/yr. Its yew woodland feature is also sensitive to nitrogen deposition[63]. Exceedance of the critical load in the ***Taxus baccata*** woods feature would result in changes in soil processes, nutrient imbalance and an altered composition of plant and mycorrhiza communities. North of Chepstow, component parcels of the Wye Valley Woodlands SAC lie immediately adjacent to the A466. Given the sensitivity of the site's qualifying features and their proximity to the A466, this site is screened in for Appropriate Assessment.

The Severn Estuary SAC is designated for several habitats, including estuaries and Atlantic salt meadows, both of which are integral to the SPA's / Ramsar's bird assemblages and have a critical nitrogen load of 10-20 kg N/ha/yr, as identified on APIS. The critical load applies for most of the saltmarsh, but it is noted that the lower level of 10 kg N/ha/yr should be used for the more densely vegetated upper marsh and areas subjected to direct run-off from adjacent catchments. Exceedance impacts of the critical load would be an increase in late successional species, increased productivity and an increase in dominance of graminoid species. Several waterfowl species require a presence and suitable abundance of saltmarsh food plants for survival, such as saltmarsh grasses, herbs and their seeds, including ***Puccinella maritimae***, ***Salicornia*** and ***Agrostis***. The M4 motorway traverses the Severn Estuary SAC. As such, an increase in the number of car journeys associated with the Monmouthshire LP has the potential to result in LSEs on the Severn Estuary SAC through atmospheric pollution. The site is therefore screened in for Appropriate Assessment.

While the qualifying features of the Severn Estuary SPA / Ramsar are not directly susceptible to atmospheric nitrogen deposition, the prey species and habitats that these waterbirds rely on might be affected by significant changes in the concentrations of pollutants. Most of the birds feed on invertebrates in the littoral sediment and this habitat has a critical nitrogen load of 20 kg N/ha/yr. The littoral sediments also comprise the saltmarsh, which is one of the SAC's features that are sensitive to atmospheric pollution. It also needs to be considered that invertebrates, the birds' primary food

[63] APIS provides a coniferous woodland range of 5-15 kgN/ha/yr. However, this range is derived from research into northern pine and spruce forests and the lowest part of the load range (5 kgN/ha/yr) is driven by the lichen and bryophyte interest of those forests which are quite different from lichen poor yew woodland present at this SAC. A minimum critical load of 10kgN/ha/yr is considered most appropriate for this SAC.

source, are sensitive to acidification. However, acidification of the marine environment is primarily associated with shipping and air traffic, rather than car usage. In accordance with the Severn Estuary SAC, which is screened in for its sensitivity of many of the habitats that support the SPA / Ramsar bird assemblage, the Severn Estuary SPA / Ramsar is therefore screened in for Appropriate Assessment.

The River Wye SAC is a riverine system of plain to montane levels, which supports a range of fish, such as several lamprey species, migratory salmonids and otters. As for the River Usk SAC, the survival of these species is dependent on the integrity of the river. The freshwater habitat and associated riverine faunal interest features within the river are regarded as being primarily phosphate limited (not nitrogen limited). APIS therefore provides no nitrogen critical loads for these features. The SAC is also designated for its transition mires and quaking bogs and the River Wye SAC partially runs directly alongside several busy roads, including the A466 to the north of Chepstow and the A40 in Monmouth. However, there are no transition mires and quaking bogs within 200m of these roads as the only SAC unit which supports this feature is Colwyn Brook Marshes (North & South) SSSI, a relatively remote site in Powys. Therefore traffic-related air quality on the River Wye SAC can be screened out.

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 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[64] 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, the River Usk SAC is screened out from Appropriate Assessment regarding atmospheric pollution.

The ***Tilio-Acerion*** forest of slopes, screes and ravines in the Avon Gorge Woodlands SAC is identified as being sensitive to atmospheric pollution in APIS with a critical nitrogen load of 15-20 kg N/ha/yr. An increase of the nitrogen concentration beyond this limit is likely to lead to changes in ground vegetation. While the SAC lies adjacent to the A4, which is a fairly busy road, there is no obvious connection to commuter routes arising from Monmouthshire. Bristol, the most likely work destination for Monmouthshire residents in proximity to the SAC, can be more easily reached via alternative routes. As such, the Avon Gorge Woodlands SAC is screened out from Appropriate Assessment.

The qualifying features of the Wye Valley and Forest of Dean Bat Sites SAC, namely the lesser and greater horseshoe bat, are not directly sensitive to atmospheric nitrogen deposition. The species' broad habitat is broadleaved, mixed and yew woodland, which has an empirical critical nitrogen load of 10-20 kg N/ha/yr. However, exceeding the critical load primarily would lead to relatively nuanced changes in the habitat, such as changes in soil processes, nutrient levels and ground vegetation. Any atmospheric pollution impact would not be expected to result in a material effect on the viability of the bat population, the abundance of their invertebrate prey species or the availability of potential roost sites. The bats predominantly rely on trees with sufficient cracks and fissures that have a high potential as roosting or hibernation sites, and it is unlikely that atmospheric pollution would affect this potential. While the woodland at the site is sensitive to nitrogen deposition, increases in nitrogen deposition are very unlikely to materially affect either the woodland structure or its foraging value, as the impact on woodlands generally amounts to changes in botanical species distribution of the groundflora and epiphytes.

According to APIS nitrogen deposition is not believed to have a direct, major effect on tree growth in the UK. Therefore, the availability of roost resources is unlikely to be materially affected by changes in nitrogen deposition. Lesser horseshoe bats have a relatively broad diet feeding on flies (mainly midges), small moths, caddis flies, lacewings, beetles, small wasps and spiders, while greater horseshoe bats mainly eat chafers, dung beetles, noctuid moths, craneflies and caddis flies. Woodland moth abundance is mainly dependent on larval foodplant availability. In the UK the large number of woodland moth species collectively use a wide variety of larval foodplants including common and widespread species such as nettles, docks, bramble and ivy as well as most tree

[64] Page 12 of the document at https://naturalresources.wales/media/3214/usk-management-catchment.pdf. [Accessed on the 09/08/2024]

species such as birch, hazel and oak. Some rarer moths use specific foodplants that are themselves uncommon, but for lesser horseshoe foraging value it is the overall abundance (rather than species richness) of flying invertebrates that is the most important factor. Nitrogen deposition on woodlands particularly affects epiphytes, groundflora species richness and percentage grass cover, but the larval foodplants of lesser horseshoe prey are common and widespread species that are either unaffected by nitrogen deposition or would probably respond positively to nitrogen deposition (e.g. common grasses, brambles and nettles). It is therefore concluded that the Monmouthshire LP will not result in LSEs on the Wye Valley and Forest of Dean Bat Sites SAC regarding the impact pathway atmospheric pollution. The site is screened out from Appropriate Assessment.

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 Natural Resources 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 SAC is remote from locations of housing or employment growth in Monmouthshire being over 16km from the nearest development site allocation (HA12, Land west of Trem yr Ysgol, Penperlleni). The site is screened out from 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 highlights that the Llangorse Lake SAC is vulnerable to atmospheric nitrogen deposition, although critical loads for comparable habitats have not previously been established. 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 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 NH_3/m^3. 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 Replacement 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 S1 – Growth Strategy
- Strategic Policy S2 – Spatial Distribution of Development – Settlement Hierarchy
- Policy H1 – Residential Development in Primary and Secondary Settlements
- Policy H2 – Residential Development in Main Rural Settlements
- Policy H3 – Residential Development in Minor Rural Settlements
- Policy HA1 - Land to the East of Abergavenny
- Policy HA2 – Land to the East of Caldicot
- Policy HA3 - Land at Mounton Road, Chepstow

- Policy HA4 – Land at Leasbrook, Monmouth
- Policy HA5 – Land at Penlanlas Farm, Abergavenny
- Policy HA6 – Land at Rockfield Road, Monmouth
- Policy HA7 – Land at Drewen Farm, Monmouth
- Policy HA8 – Land at Tudor Road, Wyesham, Monmouth
- Policy HA9 – Land at former MOD Land, Caerwent
- Policy HA10 – Land South of Monmouth Road, Raglan
- Policy HA11 – Land-east of Burrium Gate, Usk
- Policy HA12 – Land west of Trem yr Ysgol, Penperlleni
- Policy HA13 – Land adjacent to Piercefield Public House, St Arvans
- Policy HA14 – Land at Churchfields, Devauden
- Policy HA15 – Land east of Little Mill
- Policy HA16 – Land North of Little Mill
- Policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen
- Policy HA18 – Land West of Redd Landes, Shirenewton
- Strategic Policy S9 – Gypsy and Travellers
- Strategic Policy S10 – Employment Sites Provision
- Policy EA1 – Employment Allocations
- Policy EA2 – Protected Employment Sites
- Strategic Policy S12 – Visitor Economy
- Policy W3 – Identified Waste Management Sites

There are two minerals policies (Policy M2 – Minerals Safeguarding Areas and Policy M3 – Mineral Site Buffer Zones) but these do not allocate or promote minerals development. Rather they are safeguarding policies that prevent incompatible development from sterilising mineral resources. Proposals to exploit those resources would be assessed when applications were submitted and the safeguarding policies does not presume consent will be granted.

4.4 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 opportunity. HRAs of Local Plans tend to focus on recreational pressure arising from a net increase in residents[65]. Generally, recreational use of a European site has the potential to:

- Cause disturbance to wildlife species, particularly overwintering waterfowl and wader species
- Cause damage through direct trampling damage, erosion and habitat fragmentation;
- Cause eutrophication through recreation, such as through dog fouling; and
- Prevent appropriate management or exacerbate existing management difficulties;

[65] 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'.

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 also should be emphasised that recreational use is not necessarily damaging. 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[66]. However, in practice, a benign level of disturbance is not quantifiable and is likely to be confined to 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 Monmouthshire, namely disturbance to sensitive species of birds, trampling damage, erosion and nutrient enrichment, are discussed below.

4.4.1 Disturbance of overwintering waterfowl and waders (September – March)

Human activity can affect birds either directly (e.g. by causing them to flee) or indirectly (e.g. by damaging their habitat or reducing their fitness in less obvious ways e.g. stress). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to much more subtle behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub optimal areas etc.) and physiological changes (e.g. an increase in heart rate). While these are less noticeable, they might result in major population-level changes by altering the balance between immigration/birth and emigration/death[67].

Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding[68]. Disturbance therefore risks increasing energetic expenditure of birds while reducing their energetic intake, which can adversely affect the 'condition' and ultimately survival of the birds. Additionally, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they then must sustain a greater number of birds[69]. Moreover, the more time a breeding bird spends disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators. Multiple research reports have provided compelling links between changes in housing and access levels and impacts on different bird species in European protected sites[70] [71].

Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance than hiking[72]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[73]. A UK meta-analysis suggests that important spatial (e.g. the area of a site potentially influenced) and temporal (e.g. how often or long an activity is carried out) parameters differ between recreational activities, suggesting that activity type is a factor that should be taken into account by HRAs[74].

There is also likely to be a temporal element to disturbance, creating different disturbance patterns in summer and winter. It can be generally assumed that there are fewer recreational users in winter and that disturbance at a population level may be reduced, because birds are not breeding. However, recreational disturbance in winter may still have negative impacts, because birds face seasonal food

[66] Key R. 2000. Bare ground and the conservation of invertebrates. British Wildlife 11: 183-192.
[67] Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[68] Riddington, R. ***et al***. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. ***Bird Study*** 43:269-279
[69] Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. ***RSPB Conservation Review*** 12: 67-72
[70] 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.
[71] 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.
[72] Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. Biology Letters 3: 14pp.
[73] Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.
[74] Weitowitz D., Panter C., Hoskin R., Liley D. The spatio-temporal footprint of key recreation activities in European protected sites. Manuscript in preparation.

shortages and are likely to be susceptible to any nutritional loss. Therefore, the abandonment of suitable feeding areas due to disturbance can have serious consequences for their ability to find suitable alternative feeding sites.

Scientific evidence of disturbance to waterfowl and waders is now widely available. For example, Tuite et al[75] used a large (379 sites), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They determined that the shoveler was one of the most sensitive species to recreational activities, such as sailing/windsurfing and rowing. Studies on recreation in the Solent have established that human leisure activities cause direct disturbance to wintering waterfowl populations[76] [77].

A recent study on recreational disturbance on the Humber[78] assesses different types of noise disturbance on waterfowl referring to studies relating to aircraft (see Drewitt 1999[79]), traffic (Reijnen, Foppen, & Veenbaas 1997)[80], dogs (Lord, Waas, & Innes 1997[81]; Banks & Bryant 2007[82]) and machinery (Delaney et al. 1999; Tempel & Gutierrez 2003). These studies identified that there is still relatively little work on the effects of different types of water-based craft and the impacts from jet skis, kite surfers, windsurfers etc. (see Kirby et al. 2004[83] for a review). Some types of disturbance are clearly likely to invoke different responses. In very general terms, both distance from the source of disturbance and the scale of the disturbance (noise level, group size) will both influence the response (Delaney et al. 1999[84]; Beale & Monaghan 2005[85]). On UK estuaries and coastal sites, a review of WeBS data showed that, among the volunteer WeBS surveyors, driving of motor vehicles and shooting were the two activities most perceived to cause disturbance (Robinson & Pollitt 2002)[86].

A study in the Solent monitored bird disturbance across 20 different locations between December 2009 and February 2010[87]. This involved recording all recreational activities and relating these to behavioural responses of birds in pre-defined focal areas of intertidal habitat. The study recorded a total of 2,507 potential disturbance events, generating 4,064 species-specific behaviours. Roughly 20% of recorded events resulted in disturbance of waterfowl, including behaviours such as becoming alert, walking / swimming away, short flights (< 50m) or major flights. Generally, the likelihood of disturbance decreased with increasing distance to the disturbance stimulus (i.e. the recreational activity being undertaken). Importantly, the study also illustrated that recreational activities in the intertidal zone have the highest disturbance potential (41% of recorded events resulted in disturbance), followed by water-based activities (25%) and shore-based activities (12%).

The specific distance at which a species takes flight when disturbed is known as the ‘tolerance distance’ (also called the ‘escape distance’) and greatly differs between species. The tolerance distances of the study carried out for the Bird Aware project are summarised in Table 2. It is reasonable to assume from this evidence that disturbance is unlikely to be relevant at distances of beyond 200m. The data show that the sensitivity to disturbance differs between species, but that the intra-specific variation in response to disturbance is equally important. It was also examined how disturbance to different recreational activities varies between species, but for most species the number of recorded events was not enough for comparison (except for brent goose, oystercatcher

[75] Tuite, C.H., Hanson, P.R. & Owen, M. 1984. Some ecological factors affecting winter wildfowl distribution on inland waters in England and Wales and the influence of water-based recreation. ***Journal of Applied Ecology*** 21: 41-62
[76] Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary
[77] Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent disturbance and mitigation project – various reports.
[78] Helen Fearnley Durwyn Liley and Katie Cruickshanks (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology
[79] Drewitt, A. (1999) Disturbance effects of aircraft on birds. English Nature, Peterborough.
[80] Reijnen, R., Foppen, R. & Veenbaas, G. (1997) Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. Biodiversity and Conservation, 6, 567-581.
[81] Lord, A., Waas, J.R. & Innes, J. (1997) Effects of human activity on the behaviour of northern New Zealand dotterel Charadrius obscurus aquilonius chicks. Biological Conservation, 82,15-20.
[82] Banks, P.B. & Bryant, J.V. (2007) Four-legged friend of foe? Dog-walking displaces native birds from natural areas. Biology Letters, 3, 611-613.
[83] Kirby, J.S., Clee, C. & Seager, V. (1993) Impact and extent of recreational disturbance to wader roosts on the Dee estuary: some preliminary results. Wader Study Group Bulletin, 68, 53-58.
[84] Delaney, D.K., Grubb, T.G., Beier, P., Pater, L.L.M. & Reiser, H. (1999) Effects of Helicopter Noise on Mexican Spotted Owls. The Journal of Wildlife Management, 63, 60-76.
[85] Beale, C.M. & Monaghan, P. (2005) Modeling the Effects of Limiting the Number of Visitors on Failure Rates of Seabird Nests. Conservation Biology, 19, 2015-2019.
[86] Robinson, J.A. & Pollitt, M.S. (2002) Sources and extent of human disturbance to waterbirds in the UK: an analysis of Wetland Bird Survey data, 1995/96 to 1998/99: Less than 32% of counters record disturbance at their site, with differences in causes between coastal and inland sites. Bird Study, 49, 205.
[87] Liley D., Stillman R. & Fearnley H. 2011. The Solent Disturbance and Mitigation Project Phase 2: Results of Bird Disturbance Fieldwork 2009/10. Report by Footprint Ecology for the Solent Forum.

and redshank). The results suggest that species might respond to recreational activities differently. For example, brent geese responded to dog walkers much further away than oystercatcher and redshank. It is noted that while these data have been collected in relation to the Solent, similar tolerance distances might apply to species in the Severn Estuary SPA / Ramsar.

Table 2: Tolerance distances in metres of 16 species of waterfowl to various forms of recreational disturbance, as found in recent disturbance fieldwork[88]. The distances are provided both as a median and a range.

Species	Disturbance Distance (metres from stimulus)		Activity			
	Median	Range	Cycling	Dog walking	Jogging	Walking
Brent goose	51.5	5 - 178	100	95	30	50
Oystercatcher	46	10 - 200	150	45		50
Redshank	44.5	75 - 150	125	50	40	58
Curlew	75	25 - 200				
Turnstone	50	5 - 100				
Coot	12	10 - 20				
Mute swan	12	8 - 50				
Grey plover	75	30 - 125				
Little egret	75	30 - 200				
Wigeon	75.5	20 - 125				
Dunlin	75	25 - 300				
Shelduck	77.5	50 - 140				
Great-crested grebe	100	50 - 100				
Lapwing	75	18 - 125				
Teal	60	35 - 200				
Mallard	25	10 - 50				

4.4.2 Trampling damage, erosion and nutrient enrichment

Most terrestrial habitats, especially grassland, heathland and woodland, can be affected by trampling and other mechanical damage, which in turn causes soil compaction and erosion. Some of the following studies have investigated the negative impacts of trampling, associated with different recreational activities:

- Wilson & Seney)[89] 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[90] 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

[88] Ibid.
[89] 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
[90] 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

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 [91] 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[92] 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[93]. 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 the Monmouthshire LP are likely to be affected by more specialized recreational activities, which are carried out less frequently than more popular activities (e.g. walking, dog walking, exercising). These niche activities might include canoeing, fishing and caving. However, due to their disproportionate impact these activities nevertheless require consideration. For example, canoeists might affect wildlife and their habitats throughout long stretches of rivers, including disturbance to gravel bars, the macrophyte community and species that live along the rivers, such as otter. 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[94]. 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.[95]

A major concern for nutrient-poor terrestrial habitats (e.g. heathlands, bogs and fens) is nutrient enrichment associated through dog fouling, which has been addressed in various reviews (e.g.[96]). 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[97]. While there is little information on the chemical constituents of dog faeces, nitrogen is one of the main components[98]. Nutrient levels are the major determinant of plant community composition and the effect of dog defecation in sensitive habitats (e.g.

[91] 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.
[92] 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
[93] 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.
[94] Cooke S.J. & Cowx I.G. 2004. The role of recreational fishing in global fish crises. BioScience 54: 857-859.
[95] 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.
[96] Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. 2005. Dogs, access and nature conservation. English Nature Research Report, Peterborough.
[97] 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.
[98] 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.

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.

4.4.3 Screening for LSEs

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

- Severn Estuary SPA / Ramsar
- Severn Estuary SAC
- Usk Bat Sites SAC
- River Wye SAC
- River Usk SAC
- Avon Gorge Woodlands SAC
- Wye Valley and Forest of Dean Bat Sites SAC
- Wye Valley Woodlands SAC
- Sugar Loaf Woodlands SAC
- Cwm Clydach Woodlands SAC
- Aberbargoed Grasslands SAC
- Coed y Cerrig SAC

The qualifying waterfowl and wader assemblage in the Severn Estuary SPA / Ramsar is highly sensitive to recreational disturbance through activities on land (e.g. dog walking), in the intertidal zone and on the water (e.g. different forms of watersports). Disturbance of birds in feeding and roosting areas is likely to result in the displacement of birds and, potentially, in the decline of the SPA's / Ramsar's qualifying population. As highlighted in the site's Core Management Plan, human disturbance might result in reduced food intake and / or increased energy expenditure by the birds, with the potential for reducing the long-term viability of the population. LSEs of the Monmouthshire LP on the Severn Estuary SPA / Ramsar therefore cannot be excluded and the site is screened in for Appropriate Assessment.

The Severn Estuary SAC is designated for several habitats, which provide the basal support for qualifying species of the SPA / Ramsar. As such, the impact pathways of these European sites should not be viewed in isolation. Several habitats are especially sensitive to trampling damage and abrasion associated with recreational activities, such as the Atlantic salt meadows. Saltmarsh is highly vulnerable to terrestrial and water-based activities, such as through increased erosion rates associated with tyres of off-road vehicles and the wash resulting from boating / shipping. Similarly, sandflat and mudflat habitat is highly susceptible to both land- and water-based activities, such as boating, anchoring, bait digging and trampling. Overall, the Monmouthshire LP may result in LSEs on the Severn Estuary SAC regarding recreational pressure and the site is therefore screened in for Appropriate Assessment.

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 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 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[99]. However, given that exploitation of shad is currently unregulated, the River Usk SAC is screened in for Appropriate Assessment.

The River Wye SAC is designated for its water course of plain to montane reaches, its salmonid species, white-clawed crayfish and otter. Principally, all its fish species are potentially sensitive to fisheries exploitation. Natural England's Site Conservation Objectives Supplementary Advice Note highlights that any rod fishing should be undertaken sustainably without adversely affecting the ability of fish species for natural regeneration[100]. Like the River Usk SAC, shad in the River Wye SAC are potentially fished in great numbers with uncertain effects on the SAC's population. Exploitation of shad is currently unregulated, but management controls are being considered by the review of freshwater fisheries legislation to identify sustainable levels of angling. Furthermore, Natural England's Site Improvement Plan for the English parts of the SAC also highlights recreational disturbance as a threat to the site, particularly the disturbance of otters by dog walkers and the disturbance of gravel bars and beds, which form important spawning grounds for the SAC's fish species, by canoeists[101]. Given the current evidence relating to recreational pressure in the SAC, LSEs cannot be excluded, and the site is screened in for Appropriate Assessment.

The Avon Gorge Woodlands SAC, designated for its ***Tilio-Acerion*** forests of slopes, screes and ravines, and semi-natural dry grasslands, is highly sensitive to recreational impacts, particularly from illegal mountain biking access to the steep sides of the gorge. Natural England's Site Improvement Plan highlights that the site suffers major pressures from public access and that there is a need for close monitoring and visitor engagement to ensure that current visitation rates are sustainable[102]. However, the SAC lies at a distance of approx. 9.5km from the boundary of Monmouthshire, and several kilometres further from the nearest settlement within Monmouthshire. Core Visitor Catchments (CVC's) are based on the distances that people are willing to travel to visit recreational destinations. This approach originates from the Thames Basin Heath Delivery Framework, which identified a precautionary CVC of 7km around the Thames Basin Heaths SPA. While no such visitor data is specifically available for the Avon Gorge Woodlands SAC, Monmouthshire is located beyond a precautionary 7km core visitor catchment from the SAC. In addition, the River Severn will act as a barrier and, in practice, it is unlikely that many Monmouthshire residents will use the M4 to cross the river to drive up the Avon Gorge. Therefore, it is concluded that there will be no LSEs of the Monmouthshire LP on the SAC and the site is screened out from Appropriate Assessment.

The lesser and greater horseshoe bat populations in the Wye Valley and Forest of Dean Bat Sites SAC are very vulnerable to recreational disturbance, especially during hibernation when human presence might cause the bats to wake up and burn valuable fat reserves. Natural England's Supplementary Conservation Objectives Advice Note highlights that hibernation sites, where possible, should be secured against unauthorised access using grilles. The upkeep and repair of grilles is being delivered by Natural England and Natural Resources Wales. Caving in the wider area of the SAC falls under the remit of the Royal Forest of Dean Caving Club (RFDCG), which provides background on the geology and ecology of selected caves. A permit system is operated for cavers by the Forest of Dean Cave Conservation and Access Group. Furthermore, detailed access guidelines for both caves and mines in the Forest of Dean area have been released by members of the access group. In contrast to the Usk Bat Sites SAC, which is located in the Bannau Brycheiniog National Park, the Wye Valley and Forest of Dean Bat Sites SAC is not considered to have a similarly strong recreational draw and it is therefore unlikely that the relatively small individual component sites of the SAC receive a high number of recreational visits. Given this and that access is tightly regulated by grilles and the RFDCG, it is

[99] https://naturalresources.wales/days-out/things-to-do/fishing/?lang=en [Accessed on the 09/08/2024]
[100] http://publications.naturalengland.org.uk/publication/6096799802589184 [Accessed on the 09/08/2024]
[101] p17 of the Site Improvement Plan; http://publications.naturalengland.org.uk/publication/5178575871279104 [Accessed on the 09/08/2024]
[102] http://publications.naturalengland.org.uk/publication/5021516609617920 [Accessed on the 09/08/2024]

concluded that there will be no LSEs of the Monmouthshire LP on the SAC regarding recreational pressure. The site is therefore screened out from Appropriate Assessment.

The Wye Valley Woodlands SAC is designated for several woodland habitats, including ***Asperulo-Fagetum*** beech forest, ***Tilio-Acerion*** forest of slopes, screes and ravines and ***Taxus baccata*** woods. The SAC is heavily used for walking, mountain biking and rock climbing. Areas of ancient forest within the SAC are likely to be more sensitive to negative recreational impacts including from trampling abrasion, soil compaction around root zones (results in less space available for water and air) and potential changes to ground flora due to nutrient enrichment (primarily from dog walkers). Natural Resources Wales have highlighted damage from recreational activities (particularly off-track mountain biking and climbing) to SAC features. Furthermore, the number of visitors engaging in climbing activities is increasing. Therefore, LSEs of the Monmouthshire RLDP on the Wye Valley Woodlands SAC regarding recreational pressure cannot be excluded and the site is screened in for Appropriate Assessment as a precautionary measure. It is noted that lesser horseshoe bats, Annex II qualifying species of the SAC, are highly sensitive to recreation, but access to the component sites of the SAC that act as maternity roosts or hibernacula is regulated by grills. Bats are, therefore, excluded from further assessment.

The Sugar Loaf Woodlands SAC, particularly its veteran trees within the old sessile oak woods with ***Ilex*** and ***Blechnum*** habitat component, is potentially sensitive to recreation. The SAC lies approx. 1km from development in Abergavenny, indicating that it is likely to be within walking distance for new local residents. While Natural Resources Wales' Core Management Plan[103] does not refer to low recreational pressure as a potential management requirement for the site, it is considered that the extension of Abergavenny may lead to recreational pressure effects in-combination with growth in the Bannau Brycheiniog National Park Local Development Plan (LDP). Therefore it cannot be excluded, and the site is 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 Monmouthshire LP 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 Aberbargoed Grasslands SAC, designated for its ***Molinia*** meadows, are not considered vulnerable to recreational pressure due to their robust tussock structure. Said structure also makes such grasslands difficult to walk through such that they are not generally popular for recreation. However, 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 Monmouthshire, it is considered that the Replacement Local Development Plan will not result in LSEs on the SAC.

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 Bannau Brycheiniog National Park website[104]. 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. Given this, the Coed y Cerrig 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 dwellings or encourage tourism, likely leading to increased recreational pressure and therefore LSEs on several European sites:

- Strategic Policy S1 – Growth Strategy

[103] https://naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf [Accessed on the 09/08/2024]
[104] http://www.breconbeacons.org/coed-y-cerrig [Accessed on 09/08/2024]

- Strategic Policy S2 – Spatial Distribution of Development – Settlement Hierarchy
- Policy H1 – Residential Development in Primary and Secondary Settlements
- Policy H2 – Residential Development in Main Rural Settlements
- Policy H3 – Residential Development in Minor Rural Settlements
- Policy HA1 - Land to the East of Abergavenny
- Policy HA2 – Land to the East of Caldicot
- Policy HA3 - Land at Mounton Road, Chepstow
- Policy HA4 – Land at Leasbrook, Monmouth
- Policy HA5 – Land at Penlanlas Farm, Abergavenny
- Policy HA6 – Land at Rockfield Road, Monmouth
- Policy HA7 – Land at Drewen Farm, Monmouth
- Policy HA8 – Land at Tudor Road, Wyesham, Monmouth
- Policy HA9 – Land at former MOD Land, Caerwent
- Policy HA10 – Land South of Monmouth Road, Raglan
- Policy HA11 – Land-east of Burrium Gate, Usk
- Policy HA12 – Land west of Trem yr Ysgol, Penperlleni
- Policy HA13 – Land adjacent to Piercefield Public House, St Arvans
- Policy HA14 – Land at Churchfields, Devauden
- Policy HA15 – Land east of Little Mill
- Policy HA16 – Land North of Little Mill
- Policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen
- Policy HA18 – Land West of Redd Landes, Shirenewton
- Strategic Policy S12 – Visitor Economy

4.5 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 roosts to feeding sites. For example, in a 2001 study, female adult Bechstein's bats regularly undertook commuting distances of up to 1km[105]. 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.

[105] 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.

There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where the potential importance of functionally linked land is recognised[106]. 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. 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.

4.5.1 Screening for LSEs

The following European sites within 15km of Monmouthshire are susceptible to the loss of functionally linked land because they are designated for mobile qualifying species (the site that is screened in for Appropriate Assessment following discussion in the text is marked in **bold**):

- **Usk Bat Sites SAC**
- **Wye Valley and Forest of Dean Bat Sites SAC**
- **Severn Estuary SPA / Ramsar**
- Aberbargoed Grasslands 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. The area of greatest bat activity surrounding a roost is defined as the Core Sustenance Zone (CSZ)[107], however this is not available for all sites and / or bat species. Generally, lesser horseshoe bats forage between 2 and 3km from their roost but they have been observed to range up to 4km in their nightly foraging trips[108]. The Bat Conservation Trust identifies a weighted average CSZ of 2km for lesser horseshoe bats. It is therefore recognised that linear features (required to navigate) and permanent pasture / unimproved grassland (favoured feeding areas) and woodlands within this distance outside the SAC boundary need to be maintained. Given that the Usk Bat Sites SAC is partially located within Monmouthshire and lies close to several settlements such as Gilwern, 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 Wye Valley and Forest of Dean Bat Sites SAC lies partly within Monmouthshire and is designated for both its lesser and greater horseshoe bat populations. Relating to its lesser horseshoe bat population a CSZ of 2km therefore applies as for the Usk Bat Sites SAC above. Radio-tracking research on greater horseshoe bats has shown that they make longer foraging trips foraging from their roost sites than lesser horseshoe bats, up to 9-10km from their roost[109] [110]. This bat species uses commuting corridors along linear landscape features and forages in permanent pasture and woodland. The Bat Conservation Trust identifies a weighted average CSZ of 3km for greater horseshoe bats. Any linear features (required for navigation) and permanent pasture / unimproved grassland (favoured feeding areas) within this distance outside of the SAC's boundary need to be maintained. The Wye Valley and Forest of Dean Bat Sites SAC is partly located within Monmouthshire and the allocation of residential and employment sites

[106] 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.
[107] https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135 [Accessed on the 28/10/2019]
[108] Schofield H.W. 2008. The Lesser Horseshoe Bat Conservation Handbook.
[109] Billington G. 2008. Radio-tracking Study of Greater Horseshoe Bats at Dean Hall, Littledean, Cinderford. Natural England Commissioned Report NERR012..
[110] Billington G. 2009. Radio Tracking Study of Greater Horseshoe Bats at Dean Hall, Littledean, Cinderford. Natural England Commissioned Report. NECR021.

in the Monmouthshire LP might therefore lead to LSEs on this SAC through the loss of supporting habitat. The site is therefore screened in for Appropriate Assessment.

The Severn Estuary SPA / Ramsar, designated for several species of waterfowl and its overall waterbird assemblage, supports several bird species that might regularly move beyond the designated site boundary. Above all, functionally linked land is relevant to Bewick's swans, which graze on a range of soft meadow grasses beyond the SPA's / Ramsar's site boundary, including wet meadows comprising ***Agrostis stolonifera*** and ***Alopecurus geniculatus***. The qualifying waterfowl assemblage also includes European white-fronted geese, which commute up to 10km to their daytime foraging sites, which might include functionally linked farmland and wetland. It is considered that the functional integrity of the Severn Estuary SPA / Ramsar partly depends on land beyond its site boundary. LSEs of the Monmouthshire LP on the SPA / Ramsar cannot be excluded and the site is 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[111]. 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 Monmouthshire is approx. 12.5km 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 following policies of the Replacement 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 above identified European sites:

- Strategic Policy S1 – Growth Strategy
- Strategic Policy S2 – Spatial Distribution of Development – Settlement Hierarchy
- Policy H1 – Residential Development in Primary and Secondary Settlements
- Policy H2 – Residential Development in Main Rural Settlements
- Policy H3 – Residential Development in Minor Rural Settlements
- Policy HA1 - Land to the East of Abergavenny
- Policy HA2 – Land to the East of Caldicot
- Policy HA3 - Land at Mounton Road, Chepstow
- Policy HA4 – Land at Leasbrook, Monmouth
- Policy HA5 – Land at Penlanlas Farm, Abergavenny
- Policy HA6 – Land at Rockfield Road, Monmouth
- Policy HA7 – Land at Drewen Farm, Monmouth
- Policy HA8 – Land at Tudor Road, Wyesham, Monmouth
- Policy HA9 – Land at former MOD Land, Caerwent
- Policy HA10 – Land South of Monmouth Road, Raglan
- Policy HA11 – Land-east of Burrium Gate, Usk
- Policy HA12 – Land west of Trem yr Ysgol, Penperlleni
- Policy HA13 – Land adjacent to Piercefield Public House, St Arvans
- Policy HA14 – Land at Churchfields, Devauden

[111] 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]

- Policy HA15 – Land east of Little Mill
- Policy HA16 – Land North of Little Mill
- Policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen
- Policy HA18 – Land West of Redd Landes, Shirenewton
- Strategic Policy S10 – Employment Sites Provision
- Policy EA1 – Employment Allocations
- Policy EA2 – Protected Employment Sites
- Strategic Policy S12 – Visitor Economy
- Policy W3 – Identified Waste Management Sites

4.6 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 Monmouthshire LP is the discharge of treated sewage effluent into surface watercourses, which is likely to increase the nutrient concentration, most importantly phosphate levels, in European sites that are hydrologically linked to these watercourses. The LP 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.

4.6.1 Screening for LSEs

The following European sites within 15km of Monmouthshire are sensitive to changes in water quality:

- **River Usk SAC**
- **River Wye SAC**
- **Severn Estuary SAC**
- **Severn Estuary SPA / Ramsar**
- 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[112] 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 abundance of filamentous algae and to decrease the aquatic flowering plants. Eutrophication can lead to reduced dissolved

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

oxygen concentrations, which in turn reduces the viability of fish populations. The River Usk SAC is therefore screened in for Appropriate Assessment.

Given the similar qualifying features to the River Usk SAC, the River Wye SAC is also sensitive to aquatic pollutants. Natural England's Site Conservation Objectives Supplementary Advice Note highlights that elevated nutrient levels in the SAC, especially the concentration of phosphorus, are likely to lead to eutrophication. This might change plant growth and community composition of the 'water courses of plain to montane levels' qualifying feature, as well as having knock-on effects (e.g. loss of substrate for spawning and early life stages, reduced dissolved oxygen (DO) concentrations, increased turbidity) on fish species, such as Atlantic salmon and shad, which generally require high DO and clear water. The Monmouthshire LP makes a provision for 6,210 new dwellings and up to 6,240 new jobs (57ha of employment space), which will increase the production of sewage effluent and therefore input of phosphorus into the River Wye SAC. There is also the potential for industrial pollutants to be affecting the SAC, including pollutants such as zinc, cadmium and copper. Overall, LSEs of the Monmouthshire LP on the River Wye SAC cannot be excluded, and the site is therefore screened in for Appropriate Assessment.

The Severn SAC is designated for several habitats (e.g. estuaries, mud- and sandflats, Atlantic salt meadows) and species (lampreys, twaite shad) that are highly sensitive to changes in water quality. The document jointly published by Natural England and Natural Resources Wales highlights physico-chemical parameters, such as oxygen, nutrients and turbidity in the water column as a primary attribute for protecting the integrity of the SAC. Significant changes to any of these parameters could trigger an increase in phytoplankton or macroalgal biomass, leading to changes in the distribution (including recruitment and spawning processes) of the qualifying fish species. Changes to water quality, such as reduced dissolved oxygen concentrations, are also known to act as barriers to migration for river lamprey, brook lamprey and twaite shad. Overall, LSEs of the Monmouthshire LP on the Severn Estuary SAC cannot be excluded, and the site is therefore screened in for Appropriate Assessment.

The Severn Estuary SPA / Ramsar, designated for individual waterbirds as well as its composite waterfowl assemblage, is considered to be sensitive to water quality issues. The Severn River Basin Management Plan states that only 17% of the estuarine water bodies currently achieve good ecological status, with the remainder being at moderate status. On page 13, Natural England's Site Improvement Plan specifically highlights water pollution as a threat to the SPA / Ramsar[113]. This high nutrient loading may lead to an increase in benthic macroalgae, which have been identified in several locations in the Severn Estuary SPA / Ramsar, which is likely to have negative knock-on impacts on resident invertebrate communities. In turn, eutrophication effects could cascade up the food chain affecting the qualifying bird species. For example, increased nutrient input might change the sward composition of the saltmarsh, affect the Bewick's swans' ability to forage and ultimately impact the availability of adequate feeding habitat within the SPA / Ramsar. Ultimately, it is to be noted that any negative impacts of nutrient loading on the qualifying features in the SPA / Ramsar will occur as indirect effects on the birds' preferred foraging habitat and prey species. The Appropriate Assessment section of this report will therefore focus on discussing the Severn Estuary SAC, as this provides the essential supporting habitats for the SPA's / Ramsar's waterfowl species. Therefore, while LSEs of the Monmouthshire LP on the Severn Estuary SPA / Ramsar cannot be excluded, the site is screened out from 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. Monmouthshire lies approx. 11.4km to the south-east of the Llangorse Lake SAC and is therefore considered to be beyond its hydrological catchment. Furthermore, the SAC is upstream of any watercourses that would be expected to receive wastewater or industrial run-off from development in Monmouthshire. As such it is considered that there is no hydrological connectivity between the LP 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, which might lead to

[113] http://publications.naturalengland.org.uk/publication/4590676519944192 [Accessed on the 28/10/2019]

LSEs on designated freshwater and marine sites through increased sewage effluent and the release of toxic pollutants:

- Strategic Policy S1 – Growth Strategy
- Strategic Policy S2 – Spatial Distribution of Development – Settlement Hierarchy
- Policy H1 – Residential Development in Primary and Secondary Settlements
- Policy H2 – Residential Development in Main Rural Settlements
- Policy H3 – Residential Development in Minor Rural Settlements
- Policy HA1 - Land to the East of Abergavenny
- Policy HA2 – Land to the East of Caldicot
- Policy HA3 - Land at Mounton Road, Chepstow
- Policy HA4 – Land at Leasbrook, Monmouth
- Policy HA5 – Land at Penlanlas Farm, Abergavenny
- Policy HA6 – Land at Rockfield Road, Monmouth
- Policy HA7 – Land at Drewen Farm, Monmouth
- Policy HA8 – Land at Tudor Road, Wyesham, Monmouth
- Policy HA9 – Land at former MOD Land, Caerwent
- Policy HA10 – Land South of Monmouth Road, Raglan
- Policy HA11 – Land-east of Burrium Gate, Usk
- Policy HA12 – Land west of Trem yr Ysgol, Penperlleni
- Policy HA13 – Land adjacent to Piercefield Public House, St Arvans
- Policy HA14 – Land at Churchfields, Devauden
- Policy HA15 – Land east of Little Mill
- Policy HA16 – Land North of Little Mill
- Policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen
- Policy HA18 – Land West of Redd Landes, Shirenewton
- Strategic Policy S10 – Employment Sites Provision
- Policy EA1 – Employment Allocations
- Policy EA2 – Protected Employment Sites
- Strategic Policy S12 – Visitor Economy
- Policy W3 – Identified Waste Management Sites

4.7 Background to Water Quantity, 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 paper summarised the ecological effects of reduced flow in rivers[114]. 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

[114]Lake P.S. 2003. Ecological effects of perturbation by drought in flowing waters. Freshwater Biology 48: 1161-1172.

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[115].

The variability in hydrological discharge does not only have ecosystem-level effects, but also affects specific functional groups and species more directly. Anadromous fish, the qualifying features of several of Monmouthshire's European sites, 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[116].

4.7.1 Screening for LSEs

The following European sites within 15km of Monmouthshire are sensitive to changes in their water quantity, level and flow (the sites that are screened in for Appropriate Assessment following discussion in the text are marked in **bold**):

- River Usk SAC
- River Wye SAC
- Severn Estuary SAC
- Severn Estuary SPA / Ramsar
- Aberbargoed Grasslands SAC
- Llangorse Lake SAC
- Coed y Cerrig 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[117]. 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 Monmouthshire LP 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 River Wye SAC is designated for the same anadromous fish species as the River Usk SAC. As for the Usk, the natural flow regime is therefore also critical to all its qualifying fish species, particularly the shad. Since development allocated in the Monmouthshire LP could also be supplied with water abstracted from the River Wye SAC, LSEs cannot be excluded and the site is screened in for Appropriate Assessment.

Being hydrologically connected with, and therefore also being dependent on, both the River Usk SAC and the River Wye SAC, the Severn Estuary SAC is highly vulnerable to changes in water flow rates for several reasons. Firstly, changes in the water flow rate are likely to lead to increases in sediment erosion or accretion respectively, to which the seagrass in the estuary is highly sensitive. Furthermore, the SAC's biotopes are also considered to be sensitive to changes in salinity, such as a long-term increase in salinity. Water abstraction for the public water supply in Monmouthshire from the main rivers supplying the Severn Estuary SAC, might lead to decreased freshwater input and could, ultimately,

[115]Bunn S.E. & Arthington A.H. 2002. Basic principles and ecological consequences of altered flow regimes for aquatic biodiversity. Environmental Management 30: 492-507.
[116] 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.
[117] Ibid.

increase salinity levels in the estuary. As such, LSEs of the Monmouthshire LP cannot be excluded, and the site is screened in for Appropriate Assessment.

The Severn Estuary SPA / Ramsar, which harbours several species of qualifying waterfowl and waders, is considered to have an indirect sensitivity to changes in the hydrological regime. It is unlikely that changes in the water flow rate would affect any of the qualifying species (e.g. Bewick's swans) directly, because there is no linking impact pathway. However, an altered hydrological regime would likely affect their supporting habitats, including the Atlantic salt meadows, and the mud- and sandflats. For example, this could occur through changes in the species composition of the saltmarsh and a subsequent impact on the suitability of the saltmarsh for the birds or changes to the pattern of habitat use. However, since this impact pathway is already screened in for the Seven Estuary SAC, which addresses impacts on the birds' supporting habitats, the Severn Estuary SPA / Ramsar is screened out from Appropriate Assessment regarding the impact pathway water quantity, level and flow.

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 12.7km to Monmouthshire 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 Monmouthshire LP will result in LSEs on the SAC through changes in the water level. The site is therefore 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. 11.4km to the north-west of Monmouthshire, which is considered to be beyond its hydrological catchment. There is no realistic way in which the abstraction of water for new development in Monmouthshire 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 approx. 294m from the River Usk and is therefore likely to be hydrologically connected with this river. Drinking water for the western part of Monmouthshire might be extracted from the River Usk, however an abstraction effect is likely to affect the river a relatively 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 therefore concluded that there is no linking hydrological impact pathway between Monmouthshire and the SAC. The site 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, leading to increased water abstraction from local water resources and potentially LSEs on European sites through changes to the water quantity, level and flow:

- Strategic Policy S1 – Growth Strategy
- Strategic Policy S2 – Spatial Distribution of Development – Settlement Hierarchy
- Policy H1 – Residential Development in Primary and Secondary Settlements
- Policy H2 – Residential Development in Main Rural Settlements
- Policy H3 – Residential Development in Minor Rural Settlements

- Policy HA1 - Land to the East of Abergavenny
- Policy HA2 – Land to the East of Caldicot
- Policy HA3 - Land at Mounton Road, Chepstow
- Policy HA4 – Land at Leasbrook, Monmouth
- Policy HA5 – Land at Penlanlas Farm, Abergavenny
- Policy HA6 – Land at Rockfield Road, Monmouth
- Policy HA7 – Land at Drewen Farm, Monmouth
- Policy HA8 – Land at Tudor Road, Wyesham, Monmouth
- Policy HA9 – Land at former MOD Land, Caerwent
- Policy HA10 – Land South of Monmouth Road, Raglan
- Policy HA11 – Land-east of Burrium Gate, Usk
- Policy HA12 – Land west of Trem yr Ysgol, Penperlleni
- Policy HA13 – Land adjacent to Piercefield Public House, St Arvans
- Policy HA14 – Land at Churchfields, Devauden
- Policy HA15 – Land east of Little Mill
- Policy HA16 – Land North of Little Mill
- Policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen
- Policy HA18 – Land West of Redd Landes, Shirenewton
- Strategic Policy S10 – Employment Sites Provision
- Policy EA1 – Employment Allocations
- Policy EA2 – Protected Employment Sites
- Strategic Policy S12 – Visitor Economy

5. Appropriate Assessment

5.1 Atmospheric Pollution

All traffic growth on major roads within 200m of the relevant European sites was modelled. This included both traffic growth due to Monmouthshire Local Plan and wider traffic growth on the road network over the plan period to 2033. The assessment is therefore inherently in combination with other plans and projects. All modelling results are presented in Appendix C. Oxides of nitrogen, ammonia and nitrogen deposition were modelled. Four scenarios were modelled:

- Baseline – the current situation based on traffic counts for the relevant roads.
- Future baseline – the situation in 2033 in the hypothetical situation of no traffic growth.
- Do minimum – the situation in 2033 allowing for traffic growth on the road network, including from other authorities (e.g. Blaenau Gwent) but excluding Monmouthshire Local Plan; and
- Do something – identical to the Do minimum scenario but including Monmouthshire Local Plan.

The difference between the Do something and Do minimum scenarios identifies the contribution of Monmouthshire Local Plan, while the difference between the Do something and Future baseline scenarios identifies the 'in combination' effect of all traffic growth. The air quality modelling is therefore inherently in combination with other plans or projects.

Paragraph 5.26 of Natural England guidance (the only detailed guidance on the issue)[118] states that '***An exceedance*** [of a critical level or load] ***alone is insufficient to determine the acceptability (or otherwise) of a project'***. Where an exceedance of the Critical Load is expected, it is also necessary to consider whether the forecast dose will be imperceptible. As per paragraph 4.25 of same guidance '… ***1% of critical load/level are considered by Natural England's air quality specialists (and by industry, regulators and other statutory nature conservation bodies) to be suitably precautionary, as any emissions below this level are widely considered to be imperceptible…There can therefore be a high degree of confidence in its application to screen for risks of an effect'***. However, the 1% threshold is not a damage threshold. Guidance goes on to state that Paragraph 5.28 of that guidance states '***In practice, where a site is already exceeding a relevant benchmark, the extent to which additional increments from plans and projects would undermine a conservation objective to 'restore' will involve further consideration of whether there is credible evidence that the emissions represent a real risk that the ability of other national or local measures and initiatives to otherwise reduce background levels will be compromised in a meaningful manner'*** [emphasis added].

5.1.1 Severn Estuary SAC/SPA/Ramsar

Three transects were modelled into this SAC/SPA/Ramsar site. These are transects E01a, E01b and E02b, all on the M48 road bridge as it traverses the site. The most sensitive designated habitat to atmospheric pollution is the saltmarsh habitat. Saltmarsh does not support significant lichen or bryophyte populations such that the appropriate critical level is 3 μgm^{-3}. For nitrogen deposition saltmarsh has a critical load range of 10-20 kgN/ha/yr. The lower part of the critical load range is appropriate to be used for upper saltmarsh (rarely inundated) while the upper part of the critical load range is appropriate for lower saltmarsh (frequently inundated).

All available critical loads (and levels) are based on research into impacts on 'rooted macrophytes' (i.e. conventional plants) or (for ammonia) lichens & bryophytes. In other words, they have all been based on impacts on plant communities which obtain their nutrients either through their roots or directly from atmosphere. Unvegetated intertidal mudflat has no such vegetation communities and therefore it is not considered sensitive to atmospheric nitrogen deposition.

5.1.1.1 NOx

Oxides of nitrogen (NOx) are not identified as a concern on any modelled transect as at no point on any transect will it exceed the critical level for all vegetation of 30 μgm^{-3}. Since the critical level is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth.

[118] http://publications.naturalengland.org.uk/publication/4720542048845824

5.1.1.2 Ammonia

The relevant critical level of 3 μgm^{-3} is not exceeded on any transect under any scenario for ammonia. Since the critical level is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth.

5.1.1.3 Nitrogen deposition

On the English side the nearest saltmarsh in the SAC (Transect E01b) is 20m from the road. At this point the modelled in combination effect from all traffic growth is 0.01 kgN/ha/yr, while on the Welsh side at 10m from the road it is 0.02 kgN/ha/yr. This is well below 1% of the critical load (10 kgN/ha/yr as a minimum) and therefore adverse effects on integrity can be dismissed. The forecast impact is very low despite the forecast in combination increase in traffic on the M48 because the modelled road is a bridge situated high above the SAC/SPA meaning the dispersion and deposition patterns are very different than if the road was at grade.

5.1.2 Wye Valley Woodlands SAC

Two transects were modelled into this SAC, transects E03 (A466) and E05 (A40), representing the two major roads within 200m of the SAC likely to be used by Monmouthshire traffic. Since the woodland for which the SAC is designated may support significant lichen or bryophyte populations the appropriate ammonia critical level is 1 μgm^{-3}. For nitrogen deposition the SAC woodlands have a critical load range of 10-20 kgN/ha/yr.

5.1.2.1 NOx

Oxides of nitrogen (NOx) are not identified as a concern on any modelled transect as at no point on any transect will it exceed the critical level for all vegetation of 30 μgm^{-3}. Since the critical level is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth.

5.1.2.2 Ammonia

The relevant critical level of 1 μgm^{-3} is exceeded throughout both transects under all scenarios due to background concentrations from existing sources such as agriculture. However, at the distances the SAC lies back from the road (100m and beyond), modelling shows that there is no impact of traffic growth (alone or in combination) on ammonia concentrations.

5.1.2.3 Nitrogen

At the closest point of the SAC to the road, the ‘in combination’ nitrogen impact is a maximum of 0.06 kgN/ha/yr or 0.6% of the lowest part of the critical load range. The contribution of the Monmouthshire Local Plan is also very small being 0.01 kgN/ha/yr on transect E03 and 0.02 kgN/ha/yr on transect E05. As a result a conclusion of no adverse effect on integrity alone or in combination can be reached.

5.1.3 Cwm Clydach Woodlands SAC/ Usk Bat Sites SAC

These two SACs are considered together because they both lie adjacent to A465 Heads of the Valleys Road at Daren-felen, with Cwm Clydach Woodlands SAC lying immediately beyond the Usk Bat Sites SAC to the south of the road. Three transects were modelled: E06, E07a and E07b. Transect E7a covers Cwm Clydach Woodlands SAC as well as Usk Bat Sites SAC. Cwm Clydach Woodlands is typically c. 50m from the road. Usk Bat Sites SAC is either side of the road, right up to roadside. Despite its name Usk Bat Sites SAC is designated for its habitats as well as its bat populations.

The part of Usk Bat Sites SAC relevant to this assessment (i.e. within 200m of the A465) is Management Unit 5 of Mynydd Llangatwg SSSI. That Management Unit contains the SAC interest feature ‘Tilio-Acerion forests of slopes, screes and ravines’. This habitat is of relatively low sensitivity to nitrogen deposition (with a critical load range of 15-20 kgN/ha/yr) but of high sensitivity to atmospheric ammonia due to the presence of lichens and bryophytes (critical level of 1 μgm^{-3}). The habitat within the relevant section of Cwm Clydach Woodlands SAC is W15a and W12a Fagus Sylvatica woodland, or scrub[119], which is an SAC interest feature (beech woodland) with a critical load range for nitrogen of 10-15 kgN/ha/yr.

[119] https://datamap.gov.wales/search/?title__icontains=Phase%202&abstract__icontains=Phase%202&keywords__name__icontai

5.1.3.1 NOx

Oxides of nitrogen (NOx) are not identified as a concern on any modelled transect as at no point on any transect will it exceed the critical level for all vegetation of 30 μgm^{-3}. Since the critical level is not forecast to be breached no adverse effect on integrity will arise notwithstanding traffic growth.

5.1.3.2 Ammonia

The relevant critical level of 1 μgm^{-3} is not exceeded on transect E06, or on E07a beyond 90m from the road. However, it is exceeded throughout the rest of E07a and throughout the entirety of transect E07b under all scenarios. This is due to background concentrations from existing sources such as agriculture. The in combination impact on ammonia concentrations does not exceed 1% of the critical level on transect E06 but does exceed 1% of the critical level within 70m of the road on transect E07a and within 50m of the road on transect E07b, although the contribution of Monmouthshire Local Plan is imperceptible in the modelling by 40m from the road, and 20m from the road, respectively. Adverse in combination effects cannot therefore be dismissed on purely numerical grounds.

5.1.3.3 Nitrogen

In combination nitrogen deposition rates exceed 1% of the critical load up to 50m from the road along transect E07a and 40m from the road on transect E07b, although the contribution of Monmouthshire Local Plan is imperceptible in the modelling beyond 10m from the road, and 5m from the road, respectively. As with ammonia, therefore, adverse in combination effects cannot therefore be dismissed on purely numerical grounds.

5.1.3.4 Interpretation

'In combination' effects on the two SACs from ammonia and nitrogen deposition from traffic growth on the A465 to 2033 cannot be dismissed. However, the A465 is one of the major trunk roads in Wales and is a main east–west route in South Wales along with the M4 motorway. Moreover, large sections of the road are being converted to dual carriageway by 2025. As such, traffic-related changes in air quality on the A465 are not a local (Monmouthshire) issues but a Wales-wide issue and is the responsibility of the Welsh Government or South Wales Trunk Road Agent (SWTRA). This is relevant because Joint Nature Conservation Committee (JNCC) guidance on the issue[120] states (pages 20/21) that: '***The trunk road network forms the core of the national transport system. Trunk roads are central to long distance travel and connectivity across the UK and traffic patterns on trunk roads are a consequence of predicted growth across the UK generally. The effects of development on traffic flows on truck roads are more appropriately taken into account as part of national and regional strategic plan level HRAs.'*** As such, this is considered to be an issue to be address at a strategic national scale rather than through the Monmouthshire Local Plan.

5.2 Recreational Pressure

5.2.1 Severn Estuary SPA / Ramsar

5.2.1.1 Existing Evidence Base

The Severn Estuary SPA / Ramsar is a destination with a unique funnel shape, meaning that it runs diagonally through several authorities, including Forest of Dean, Stroud and Monmouthshire. The site is likely to have a unique recreational draw on residents in these adjacent authorities and, given that the likelihood of visits decreases with distance from a destination, residents are likely to visit the stretches of the Severn Estuary SAC with suitable access points that are closest to home. However, Footprint Ecology undertook a visitor survey in Lydney (Forest of Dean) in 2017 to inform a recreation strategy for that part of the estuary[121]. A visitor survey was also undertaken by EPR in 2016 for the part of the SPA / Ramsar within Stroud District[122]. These surveys were undertaken to establish a

ns=Phase%202&purpose__icontains=Phase%202&f_method=or&limit=20&offset=0, and New map | DataMapWales (gov.wales)

[120] Main Report: Guidance on Decision-making Thresholds for Air Pollution (jncc.gov.uk)

[121] Liley D., Panter C. & Hoskin R. 2017. Lydney Severn Estuary Visitor Survey and Recreation Strategy. Unpublished report by Footprint Ecology for the Forest of Dean District Council. 55pp. Available at: https://www.footprint-ecology.co.uk/reports/Liley%20et%20al%202017%20Lydney%20Severn%20Estuary%20Visitor%20Survey%20and%20Recreation%20Strategy.pdf [Accessed on the 13/08/2024]

[122] Southgate J. & Colebourn K. 2016. Severn Estuary (Stroud District) Visitor Survey Report. Report for Stroud District Council. Ecological Planning & Research, Winchester. 68pp.

baseline of visitor pressure in the relevant parts of the SAC to these Councils, and to assess the potential impacts of residential growth in the respective authorities, similar to the development proposed in the Monmouthshire LP. The results of these surveys are not directly relevant to Monmouthshire, illustrated by the fact that the surveys did not capture visitors from Monmouthshire (likely due to the presence of stretches of the SAC much closer to home). Nevertheless, some of the patterns of visitor use highlighted in these surveys are likely to be similar in Monmouthshire (for example, the proportion of dog walkers), and are therefore discussed in the following.

5.2.1.2 Visitor survey

To obtain visitor data for the Severn Estuary SPA / Ramsar (and also the SAC), a survey (comprising visitor counts and interviews) was undertaken at four key access locations along the estuary. The survey followed a similar methodology to surveys carried out by Footprint Ecology in other European sites, which have provided the evidence base for numerous Habitats Regulations Assessments. To summarise, the key features of the survey methodology were:

- Interviewer roams survey location and approaches first adult seen (alone or part of a larger group) for interview – the interview involves a set of questions to obtain key information such as activity undertaken and home postcode; upon completion of the interview the next adult is approached
- Interviewer counts the number of adults, minors and dog walkers to get an overview of the 'busyness' of the site at a given location
- Survey day is divided into a morning (07:30 to 12:30) and an afternoon shift (12:30 to 17:30)
- Each location is to be surveyed on two days, a weekday (Monday to Friday) and a weekend day (Saturday and Sunday), avoiding public holidays and special events resulting in high footfall

Using satellite imagery and in collaboration with Monmouthshire's Countryside Team, AECOM identified four key access locations to the Severn Estuary SPA / Ramsar / SAC based on their proximity to existing conurbations, the presence of parking opportunities and dedicated foot access points. The following locations from east to west along the estuary were identified for surveying:

- Caldicot Coast Path (ST 48103 87124)
- Black Rock Car Park (ST 51308 88083)
- RSPB Newport Wetlands (ST 32771 82905)
- Lighthouse Inn Car Park (ST 30030 81596)

5.2.1.3 Key Results

The data summarised in Table 3 below provide the key results of the visitor survey. A fuller note on the survey is presented in Appendix D.

Table 3: Visitor counts (including adults and minors) at access points to the Severn Estuary SPA / Ramsar / SAC provided as totals and split by weekday / weekend.

Survey Location	Visitor Count Weekday	Visitor Count Weekend	Total Visitor Count
Caldicot Coast Path	73	54	127
Black Rock Car Park	58	212	268
RSPB Newport Wetlands	135	478	613
Lighthouse Inn Car Park	50	97	147

The total number of visitors varied significantly between survey locations. The RSPB Newport Wetlands was by far the busiest survey point (613 visitors over two survey days), followed by the Black Rock Car Park (268 visitors), Lighthouse Inn Car Park (147 visitors) and Caldicot Coast Path

(127 visitors). The relatively low visitor count at Caldicot is most likely due to it providing foot access only, whereas all other survey locations adjoin car parks. This increases accessibility and is expected to draw visitors from further afield, resulting in higher overall busyness.

In context, it appears that the stretch of the Severn Estuary SPA / Ramsar / SAC in southern Wales is busier than parts in other authorities, such as the Forest of Dean in England. For example, a visitor survey in Lydney showed that the busiest location had 98 people entering over two days[123]. That is a similar count to the one obtained for Lighthouse Inn Car Park in a single day of surveying. Visitor numbers ranged between 8 and 153 people across 20 survey locations in a survey conducted in the Humber Estuary[124]. Overall, these data indicate that the Severn Estuary SPA / Ramsar / SAC in Monmouthshire is already a key recreation destination for people (even in winter) and would be highly attractive to new residents moving to the wider area around the site. It also implies that recreational pressure is an impact pathway requiring thorough assessment in relation to future housing growth.

The geographic source of visitors was also assessed. Of the 188 interviewees, 80 (44.4%) visitors derive from Monmouthshire, the authority within which the surveyed stretch of the Severn Estuary SPA / Ramsar / SAC lies (Table 4). The second biggest contribution is made by Newport, where 40 (22.2%) of the interviewees live. Together, Monmouthshire and Newport account for 66.6% of the recreational burden in the estuary. Notable origins of visitors were also Cardiff (12 interviewees, 6.7%), Caerphilly (10 interviewees, 5.6%) and Torfaen (5 interviewees, 2.8%).

Table 4: Local Authorities from which visitors to the Severn Estuary SPA / Ramsar / SAC derived. Only authorities contributing over 1% to the recreational burden are shown.

Source of Visitors (Local Authority)	Number of Visitors	Percentage of Visitors (%)
Monmouthshire	80	44.4
Newport	40	22.2
Cardiff	12	6.7
Caerphilly	10	5.6
Torfaen	5	2.8
Forest of Dean	3	1.7
Bristol	2	1.1
Wiltshire	2	1.1
Total	**188**	**100**

The home postcodes of interviewees provide the key most important parameter that is used to identify recreational catchments. Typically, the 75th percentile of interviewees (i.e. the distance from the SPA / Ramsar from which 75% of interviewees originate) is used to denote the core recreational catchment. This cut-off point is used to remove the influence of outliers and to demark the catchment that forms the most likely visitor pool. Pooling the postcodes from all 'local' visitors (i.e. those on a day trip from home; n = 158), 75% of visitors travelled a linear Euclidean distance of 6.5km to the SPA / Ramsar. This core recreational catchment is broadly similar to those identified for stretches of the estuary in other geographic areas.

For example, a visitor survey carried out in the estuary in Stroud District in 2017 established a core catchment of 7.7km for that authority (though this has since been updated, see below). Survey work undertaken for the West of England authorities delineated a core catchment of 7.36km for survey

[123] Liley D, Panter C & Hoskin R. (2017). Lydney Severn Estuary Visitor Survey and Recreation Strategy. Unpublished report by Footprint Ecology for the Forest of Dean District Council.
[124] Fearnley H, Liley D & Cruickshanks K. (2012). Results of the recreational visitor surveys across the Humber Estuary. Unpublished report by Footprint Ecology for the Humber Management Scheme.

points in North Somerset and South Gloucestershire. One notable aspect of the various surveys undertaken in the Severn Estuary SPA / Ramsar / SAC is that the core recreational catchments, even though the surveys have been undertaken for different authorities, have a broad consistency of approx. 7km regarding the core catchment identified. This is useful since it is standard practice when European sites are involved for the affected authorities to agree on a standardized core catchment. For the Severn Estuary SPA / Ramsar / SAC it appears that 7km is a reasonable precautionary recreational buffer for all European sites.

Core recreational catchments were also drawn up for dog walkers and frequent visitors (ranging from daily visits to several visits per week). This was done to delineate the geographic zone that user groups with the highest ecological impacts on overwintering birds derive from. For dog walkers the core recreational catchment is approx. 3.1km, whereas for frequent visitors the core catchment is approx. 1.9km. This is notable because it highlights that the visitors with the highest impact potential come from a relatively small zone around the European sites.

Stroud Council (in England) and Forest of Dean Council (also in England) have both recently increased the recreational catchment in their area for Severn Estuary from 7km to 12.6km, based on more recent visitor survey from 2022[125]. It is to be expected that different parts of the Severn Estuary have different recreational catchments, and the survey data for Monmouthshire clearly indicates a smaller core catchment. However, there is also value in authorities around the Severn Estuary adopting a consistent core catchment. Therefore, it may be advisable for Monmouthshire Council to adopt 12.6km as their core catchment, and thus the zone within which financial contributions to recreational pressure mitigation on the SAC/SPA/Ramsar site would be collected.

5.2.1.4 Implications of the Visitor Survey for Monmouthshire

The data from the visitor survey presented here, which suggest that Monmouthshire contributes by far the highest proportion of visitor pressure in the stretch of the Severn Estuary SPA / Ramsar / SAC that was surveyed, have implications for the Monmouthshire RLDP. The catchment zones for dog walkers and frequent visitors, the user groups with the highest disturbance impacts, include both these Strategic Growth Areas. Furthermore, of the 188 interviewees, 19 (23.8%) live in Caldicot, further underlining the importance of this part of Monmouthshire to the SPA's / Ramsar's / SAC's visitor pool. Allocations within 7km and 12.6km of the SPA/Ramsar site are identified in Tables 5 and 6 below. It can be seen that increasing the catchment to 12.6km would only capture one more residential development site.

Table 5. Residential and Mixed Use Sites with 7km Severn Estuary SPA/Ramsar

Policy	Settlement	Site Name	Units	Area (ha)
HA3	Chepstow	Land at Mounton Road, Chepstow	146	12.8
HA2/ EA1m	Severnside	Land to the East of Caldicot	770	64
HA9/E A1l	Severnside	Land at Former MOD land, Caerwent	40	4.2
HA13	St Arvans	Land adjacent to Piercefield Public House, St Arvans	16	1.1
HA18	Shirenewton	Land west of Redd Landes, Shirenewton	26	1.76

Table 6. Residential Sites within 7km to 12.6km Severn Estuary SPA/Ramsar

Policy	Settlement	Site Name	Units	Area (ha)
HA14	Devauden	Land at Churchfields, Devauden	20	1

[125] Agenda Item 9 - Appendix A - Severn Estuary Mitigation Strategy.pdf (moderngov.co.uk)
https://www.stroud.gov.uk/environment/planning-and-building-control/conservation-biodiversity-listed-buildings-trees-and-hedgerows/habitats-regulations-assessment-hra/
https://www.stroud.gov.uk/environment/planning-and-building-control/conservation-biodiversity-listed-buildings-trees-and-hedgerows/habitats-regulations-assessment-hra/severn-estuary-special-area-of-conservation-sac/

Given the high sensitivity of the SPA / Ramsar to impacts resulting from recreational pressure, adverse effects on its site integrity due to additional residential development cannot be excluded. It is anticipated that mitigation measures will be required to avoid adverse effects on the SPA / Ramsar. These could be delivered in the form of Strategic Access Management and Monitoring (SAMM) in the estuary itself, and / or through access enhancements and improvements to appropriately sited, existing or newly developed greenspaces. This section does not advocate or propose a full mitigation strategy, but rather scopes out the options that are available to the Council to address the issue of recreational pressure.

In England, authorities within the recreational catchment of sites that are sensitive to recreational pressure have developed SAMM strategies to avoid adverse effects on the European sites; the most prominent examples being the Thames Basin Heaths SPA and the Dorset Heaths SPA. For example, to protect the Dorset Heaths, the authorities proposing residential development within the SPA catchment zones have set out the Dorset Heathlands Planning Framework Supplementary Planning Document (SPD)[126]. For example, in the case of the Dorset Heaths, the SPD proposes a series of SAMM projects, including undertaking of educational activities and employing wardens to manage visitor pressure. The funding for these measures is collected through a combination of Community Infrastructure Levy (CIL) and Section 106 agreements (planning obligations) payable by the developer. It is considered that similar measures (and funding mechanisms) could be deployed in the Severn Estuary SPA / Ramsar, to help manage recreational pressure. Such measures would have to be identified and developed in collaboration with all key stakeholders (i.e. authorities, private landowners) and in consultation with Natural Resources Wales.

The visitor survey data indicate that there are ample opportunities for SAMM projects in Monmouthshire's section of the Severn Estuary SPA / Ramsar / SAC. Most visitors are not aware of (125 interviewees, 66.5%) or unsure (21 interviewees, 11.2%) whether any conservation designations apply to the site. Furthermore, only one interviewee (0.5%) indicated that they knew about the site's SPA / Ramsar status and its international importance to overwintering birds. Regarding active conservation measures, a total of 87 interviewees (46.3%) had come across information boards along the estuary. Only 18 interviewees (9.6%) indicated that they were aware of any signage (e.g. dog-on-lead signs) along the estuary. Furthermore, only 3 interviewees (1.6%) had noticed a ranger presence along the estuary. These were all recorded at the RSPB Newport Wetlands, indicating that these are likely to have been RSPB employees rather than rangers specifically managing recreation in the estuary. Overall, 82 interviewees (43.6%) are not aware of any measures that are in place to deliver conservation in the SPA / Ramsar / SAC.

Therefore, various SAMM measures along the estuary could be deployed to decrease the likely impact of future housing growth delivered under the RLDP. For example, enhanced signage (e.g. dog-on-lead signs covering the overwintering period) along the estuary is likely to increase public awareness and reduce disturbance to sensitive bird species. Changes in how the estuary is managed may also be beneficial to the Severn Estuary SPA / Ramsar / SAC, provided they support the site Conservation Objectives. While 155 interviewees (82.5%) did not provide any changes they would like to see in how the area is managed, 23 interviewees (12.2%) highlighted footpath improvements (particularly in Caldicot) and 5 interviewees (2.7%) wanted more dog bins (Appendix D). Improvements to footpaths along the estuary could be a key tool in discouraging off-track walking and reducing the number of major bird disturbance events.

Opening new areas of greenspace to the public or enhancing existing greenspaces is the second pillar of mitigating recreational pressure. Importantly, these alternative greenspaces should be less sensitive to disturbance, while aiming to recreate as best as possible a feeling of expanse and wilderness. Regarding the Monmouthshire LP, growth around Caldicot and Chepstow is of primary concern. Therefore, it is considered that enhanced greenspace provision should be a priority for the Caldicot area. The most obvious candidate for improvements would be the Caldicot Castle Country Park (CCCP), which is approx. equidistant from existing residential development in Caldicot than the Severn Estuary SPA / Ramsar and therefore represents a realistic destination alternative. The CCCP is also owned and operated by Monmouthshire County Council, which facilitates the delivery of

[126] The consultation draft of the Dorset Heathlands Planning Framework 2020-2025 can be found at: https://www.bournemouth.gov.uk/planningbuilding/PlanningPolicy/PlanningPolicyFiles/dorset-heathlands-planning-framework/dorset-heathlands-spd-2019-consultation.pdf [Accessed on the 30/06/2020].

mitigation measures compared to sites under multiple ownership. It is noted that the CCCP is already an attractive destination for visitors[127] and any mitigation measures deemed acceptable are likely to have to improve the capacity of the park to attract further visitors. A list of potential enhancements may include[128]:

- Provision of a variety of routes (ideally at least one circular route) leading out from the castle into the woodland
- Enhancements to the existing main car park off Church Road (e.g. increasing capacity, renewing surfacing, etc.)
- Provision of enhanced information boards along the key walking routes, which may address the cultural / historical heritage of the CCCP and ecological features of interest in the site
- Incorporation of Nedern Brook as a main feature into the walking routes starting at the Castle

Notwithstanding the provision of enhanced local greenspaces, it is noted that these cannot fully alleviate the increase in recreational pressure on European sites. Estuarine and costal sites in particular, such as the Severn Estuary SPA / Ramsar, have a unique recreational draw (illustrated by their large core catchments) and will continue to attract visitors regardless of other destination alternatives. The enhancement of non-designated greenspaces most likely fulfils its most important role in attracting local residents that have frequent and relatively short outings, including dog walkers, walkers and people exercising. Therefore, such an approach is considered to be particularly effective for residential development in Caldicot, for which future residential development is expected to follow a similar access pattern to that established in the visitor survey.

It is concluded that, providing an appropriate set of mitigation measures in and / or the wider area around the Severn Estuary SPA / Ramsar is delivered (in agreement with the Natural Resources Wales), the Monmouthshire LP will not result in adverse effects on the designated site regarding recreational pressure. Furthermore, AECOM recommends that appropriate reference to these mitigation measures is made in the relevant policies, such as policies providing for housing growth or addressing ecological features that present (and require protection) in Monmouthshire.

It is noted that relevant Deposit Site Allocation policies, with the exception of Site HA14 include reference to the site being within 7km of the Severn Estuary European Marine Site (site HA14 is within 12.6km) and that a financial contribution may be required as part of a mitigation strategy as well the SANG requirements to reduce recreational pressures on the features of the estuary. These requirements are set out in the following site-specific policies:

- HA2 – Land to the East of Caldicot
- HA3 – Land at Mounton Road, Chepstow
- HA9 – Land at Former MoD, Caerwent
- HA13 – Land adjacent to Piercefield Pub House, St Arvans
- HA18 – Land West of Redd Landes, Shirenewton

Policy NR2 – Severn Estuary Recreational Pressure also sets out requirements for proposals that would result in visitor pressure on the Severn Estuary SAC, SPA, Ramsar site, or Functionally Linked land will not be supported unless it can be demonstrated that no adverse impact on the integrity of the European Marine Site will occur.

The supporting text links this requirement to a Core Recreational Catchment Zone of 7km identified by the HRA.

AECOM recommends that the mixed use sites EA1m and EA1l are also included in this solution along with residential site HA14. As such AECOM recommends that the same policy

[127] The Caldicot Castle Country Park is widely advertised as an attractive destination for outings, for example on the Monmouthshire tourism website available at: https://www.visitmonmouthshire.com/Caldicot-Caldicot-Castle-and-Country-Park/details/?dms=3&venue=1000670 [Accessed on the 30/06/2020].

[128] Note that rather than focussing on a specific site, greenspace enhancements may also be delivered as a series of small-scale projects designed to improve access to multiple greenspaces or to encourage responsible recreation in the estuary. This would be analogous to the Heathland Infrastructure Projects (HIPs) delivered in the Dorset Heaths.

requirement is included in those policies as has already been included in other relevant allocations.

5.2.1.1 In-Combination Assessment

In addition to growth within Monmouthshire, new dwellings are currently planned within 7-12.6km of the SAC, SPA and Ramsar site in Cardiff, Torfaen, North Somerset, South Gloucestershire, Bristol, Stroud District, Forest of Dean District, and the Somerset Council area (previously including Sedgemoor, Somerset West & Taunton, and other districts). At least 50,000 dwellings are therefore likely to have been delivered within 12.6km of the SPA and Ramsar site to 2040 and probably more as the Local Plans of several local councils in the vicinity are in the process of being updated. However, the mitigation strategy identified above would address Monmouthshire's contribution to any such in combination effect.

5.2.2 Severn Estuary SAC

As identified in the screening section for LSEs, the Monmouthshire LP might also result in negative impacts on sensitive habitat features of the Severn Estuary SAC, including the estuary feature, the subtidal sandbanks, the sand- and mudflats, and the Atlantic salt meadows. In contrast to the SPA / Ramsar features which would mostly be subject to direct disturbance, the SAC features are likely to be affected by trampling, erosion, pollution and abrasion associated with boating activities. The estuaries feature of the SAC is defined as highly vulnerable to physical disturbance and abrasion, which could result from anchoring, power boats, jet skis, bait digging, littering and walking on sensitive habitat features. In the intertidal sand- and mudflats, boating, anchoring, trampling and the use of off-road vehicles are most likely to cause physical disturbance, such as the compaction of substratum. For example, trampling and the use of vehicles results in the collapse of burrows of clam species, heart urchin and razor shell. Due to the longevity of these species, these habitats have long recovery rates of up to five years following disturbance events. Physical disturbance and abrasion are also key issues for saltmarsh communities, where they can cause damage to individual plants and change the ecological structure of the sward. Furthermore, wash arising from boating increases saltmarsh erosion. The assessment and mitigation strategy relevant to Severn Estuary SPA/Ramsar would also serve to protect the SAC features.

It is generally considered that adverse effects on the site integrity of the Severn Estuary SAC could be avoided within the remit of a Strategic Access Management and Monitoring Strategy. While this would be primarily designed to mitigate recreational pressure on the SPA / Ramsar features, any suite of measures could be extended to include the SAC features. For example, information boards for the general public could be enhanced to provide background information on the negative impacts of boating or bait-digging, thereby helping to raise awareness. Furthermore, detailed information about the distribution of the most important SAC habitats could be provided to encourage that boating visitors avoid such areas. A Code of Conduct for boaters could be published online, via leaflets and on information boards.

There are also several policy mechanisms through which the Severn Estuary SAC could be protected, for example by introducing the following wording into a policy addressing the protection of European sites in Monmouthshire: **'Any development proposals that would increase visitor access to sensitive habitat features in the Severn Estuary SAC, SPA and Ramsar site, especially on to saltmarsh and mudflat habitat, will not be supported unless no adverse effect on the integrity of the sites could be confirmed.'**

5.2.2.1 In-Combination Assessment

The in combination assessment for Severn Estuary SPA/Ramsar site also applies to Severn Estuary SAC.

5.2.3 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 habitat 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[129]. However, numerous other roost and hibernation sites are not gated and as such potentially sensitive to higher visitor footfall. However, the Bannau Brycheiniog National Park (BBNP) website identifies caving as a potentially dangerous activity that requires prior consent of a local caving club and the assistance of a qualified expedition leader[130]. 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[131].

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 Monmouthshire visitors than that obtained for the whole visitor survey dataset (i.e. 8%), this would imply that the area of NP in proximity to the Bat Sites SAC is visited by roughly 12 visitors travelling from Monmouthshire per every two days (the survey effort in the BBNP). 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 very few people. Given its specialised nature, it cannot be assumed that this activity is directly linked to a general increase in the local population, in the same way as dog-walking.

Given the relatively small number of Monmouthshire residents that visit the approximate 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 Monmouthshire RLDP 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 Monmouthshire RLDP 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 and the maintenance of the available path network. The Usk Bat Sites SAC lies within easy walking distance (c.1km) of only a small number of dwellings in Monmouthshire. 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's component sites indicates that they 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 Monmouthshire.

Consulting the results of the 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 access 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 because having a variety of well-maintained paths to choose from, encourages visitors to stay on paths and reduces 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 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 Monmouthshire RLDP is therefore

[129] http://mlcmac.org/llangtwg.htm [Accessed on the 27/08/2019]
[130] http://www.breconbeacons.org/caves [Accessed on the 27/08/2019]
[131] http://www.ogof.org.uk/ [Accessed on the 27/08/2019]

expected to be limited and is adequately addressed through the permit system that already operates in the SAC.

5.2.3.1 In-Combination Assessment

Authorities adjacent to Monmouthshire, including Powys and Blaenau Gwent (both authorities that encompass components of the Usk Bat Sites SAC), would have also had to undertake HRA of their proposed Plans prior to adoption. For example, the Powys Deposit Plan HRA Screening Report concludes that there is no linking impact pathway between development in the Plan and the SAC, and the site therefore can be screened out. Furthermore, the HRA of the previous Blaenau Gwent LDP did not conclude adverse impacts on the Usk Bat Sites SAC regarding recreational pressure. Given the relatively small additional number of visitors likely arising from the Monmouthshire RLDP, it is considered that the implementation of the Monmouthshire RLDP would not result in adverse effects on the integrity of habitats in the Usk Bat Sites SAC, in-combination with development Plans in surrounding authorities.

5.2.4 River Usk SAC

The River Usk SAC is a freshwater system that is designated for its plain to montane water course, several anadromous fish species and otter. The source of the River Usk SAC lies in upland Wales and it then flows in a south-easterly direction, entering Monmouthshire to the west of Abergavenny. The SAC then runs south through the authority before entering the Severn Estuary.

As highlighted in the LSEs screening section, the Core Management Plan for the SAC highlights that recreational pressure is a potential threat to the interest features of the site. For example, both twaite and allis shad are under pressure from recreational anglers, which sometimes take large numbers of these species. Rod fishing is also a potential concern for some of the other qualifying fish species, such as Atlantic salmon. There are several other mechanisms through which SAC features might be impacted, including disturbance of otters by dog walkers, the cutting of water crowfoot beds for boat navigation and effects on the riverine system by canoeists (e.g. disturbance of gravel beds that are used for spawning by the qualifying fish). Given that the Monmouthshire RLDP allocates additional residential housing, there is a clear impact pathway potentially linking to this riverine SAC.

The Monmouthshire RLDP allocates new residential housing within three PSSAs not all of which will be equally relevant to the River Usk SAC. In relation to the River Usk SAC, the PSSA in Abergavenny is most relevant, the outskirts of the town lying only approx. 100m from the SAC. Further individual sites in the vicinity of the SAC may be allocated in the Deposit Plan. Overall, this increase in the local population might lead to more people visiting local greenspaces, including the river. Therefore, this HRA assesses suitable access points to and paths adjoining the SAC, which might facilitate an increase in visitor numbers.

The Ordnance Survey Map on ViewRanger was consulted to investigate the path access network to the Usk around Abergavenny. The map indicates that there are Public Right of Ways (PRoWs) on both sides of the river leading from the Llanfoist bridge approx. 2.8 miles upstream to Glangrwyney. South of Abergavenny, there is no PRoW along the river for several kilometres until Llanellen. Notably, near Llanellen, the Usk Valley Walk (an advertised long-distance hiking route) tracks the river until Llantrisant in southern Monmouthshire. The Usk Valley Walk is an 80km long-distance hiking trail from Brecon to Caerleon (Newport), which is widely advertised online and social media platforms (e.g. [132]). Regarding canoeing, the primary river access point is the Brecon Promenade a long distance upstream from Abergavenny where recreationists can launch their own canoes or rent one. However, in practice canoes can be launched from various other points along the bank of the SAC. Overall, given that the site is easily accessible to various forms of recreation, including hiking, canoeing and fishing, it is likely that the Monmouthshire RLDP would result in an increase in recreational pressure within the SAC. However, it is to be noted that several mechanisms are already in place, which buffer adverse recreational impacts within the site.

Overall, it is considered that adverse disturbance impacts on otter from dog walkers and other recreational activities are very unlikely to arise. Otter are nocturnal animals and therefore predominantly active when recreational activities typically are not taking place. Furthermore, otter show high adaptive resilience towards disturbance, illustrated by the presence of breeding sites in

[132] https://www.ldwa.org.uk/ldp/members/show_path.php?path_name=Usk+Valley+Walk [Accessed on the 01/11/2019]

highly disturbed conurbations (e.g. Glasgow)[133]. They are likely to be most sensitive when being disturbed in their holts or resting on couches. A typical response of radio-tracked otters to anglers and dog walkers is to move to a position where they can see the disturbance stimulus, followed by a 50m dive and resting on a riverbank for 30 minutes[134]. Overall, it is concluded that the overall health of otter populations is not adversely impacted by human disturbance. In the context of disturbance to otter, it should also be noted that for adverse impacts to arise, pathways should be 'real' rather than 'hypothetical'. There is no hard evidence that recreation in the River Usk SAC is negatively impacting its qualifying otter population.

For example, canoeing access in specific stretches of the River Usk SAC is subject to voluntary access arrangements by the Wye and Usk Foundation[135]. The advice set out by this organisation stipulates that canoeing and kayaking should only be undertaken freely in winter, when the rivers are in spate flow. The Foundation gives clear guidance on where paddling is permitted and has live webcams that show the rivers' water levels. Restricting boating activities to the winter ensures that damage to the qualifying species and habitat is minimised. For example, it is less likely that canoeists will disturb gravel bars in high water flows and paddling in winter also protects the spawning period, when the anadromous fish are most sensitive. The Bannau Brycheiniog National Park website, which promotes canoeing in the River Usk SAC, advises all users to follow both the Countryside Code[136] and the Waterways Code[137]. These Codes of Conduct are designed to raise public awareness to reduce disturbance and pollution of the countryside.

Regarding recreational fishing, catch and release is now promoted by Natural Resources Wales as an angling technique to aid the conservation of fish stocks. Furthermore, any Atlantic salmon that is caught before the 16th of June must be returned to the river[138]. There are also rod fishing byelaws in place for Wales, detailing the open seasons for a range of fish species, which are designed to protect the integrity of qualifying fish populations.

While canoeing and fishing are popular in the River Usk SAC, these activities should be set into context of the number of people undertaking other recreational activities. While canoeing and fishing can result in damaging effects, they are undertaken by a small percentage of the population. For example, only approx. 1.5% of the UK population engage in recreational fishing[139], which is exceedingly small compared to more popular recreational activities such as dog walking. Therefore, of the new residents arising from the RLDP, only a small fraction would add to the number of canoeists and fishers along the river corridor. Consequently, a direct link between the delivery of new housing in an area and a significant increase in the number of people that will engage in fishing or canoeing cannot be drawn. Furthermore, the qualifying species are considered to be at relatively low risk of negative impacts from a general increase in the surrounding population. While an increase in river recreation infrastructure (e.g. further boat moorings) may pose a threat to the ***Ranunculus*** vegetation, this is not an automatic consequence of the Monmouthshire RLDP.

Overall, given that only a very small portion of new residents are expected to undertake activities that would threaten the integrity of the riverine SAC, and the fact there are current regulatory measures of these activities in place, it is concluded that there will be no adverse effects of the Monmouthshire RLDP alone on the site integrity of the River Usk SAC. Moreover, there is currently a motion towards introducing new, more protective catch controls for some of the qualifying fish species in these SACs. For example, the River Usk SAC's Core Management Plan highlights that exploitation of shad is currently unregulated and that a cessation of fishing activity might become necessary near known spawning grounds. Controls on shad catches are currently being considered in the review of freshwater fisheries legislation. Furthermore, Natural Resources Wales is applying for more protective catch controls on Atlantic salmon, which are being reviewed by the Welsh Government.

[133] Chanin P. (2003). Ecology of the European otter. ***Conserving Natura 2000 Rivers Ecology Series No.10.*** English Nature, Peterborough. 68pp.
[134] Durbin L.S. (1993). ***Food and habitat utilisation of otters (Lutra lutra) in a riparian habitat – the River Don in north-east Scotland.*** Unpublished PhD thesis, University of Aberdeen.
[135] https://www.wyeuskfoundation.org/ [Accessed on the 01/11/2019]
[136] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701188/countryside-code.pdf [Accessed on the 01/11/2019]
[137] http://www.britishwaterways.co.uk/media/documents/publications/Waterways_Code_Leaflet.pdf [Accessed on the 01/11/2019]
[138] https://naturalresources.wales/days-out/things-to-do/fishing/?lang=en [Accessed on the 01/11/2019]
[139] 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

5.2.4.1 In-Combination Assessment

Authorities adjacent to Monmouthshire, including the Bannau Brycheiniog National Park, Newport (closest to the River Usk SAC), Forest of Dean, Hereford, South Gloucestershire and Bristol, also undertook HRAs of their proposed Plans prior to adoption. Given the relatively small additional number of residents undertaking canoeing and fishing that are likely to arise from the Monmouthshire RLDP, it is considered that the implementation of the plan is unlikely to result in adverse effects on the integrity of the River Usk SAC in-combination.

5.2.5 River Wye SAC

The River Wye SAC is a freshwater system that is designated for its plain to montane water course, various anadromous fish species and otter. It rises in the Welsh mountains (at Plynlimon), from where it runs in an easterly direction, before turning in a southerly direction, straddling the English-Welsh border and entering the Severn Estuary near Chepstow.

The Core Management Plan for the River Wye SAC indicates that some qualifying features of the site are sensitive to recreational impacts. For example, it states that '***anglers occasionally fish for shad, and they are sometimes taken in quite large numbers. Further research is necessary to define sustainable levels of angling. If this shows there is cause for concern a temporary cessation of fishing activity in the vicinity of known spawning grounds during the spawning period should be considered, particularly where shad are known to be taken regularly. Exploitation of shad is currently unregulated…***' Rod fisheries are a potential concern for Atlantic salmon, but this is regulated by EA licensing and byelaws by defining the fishing season and permissible methods of catching. As highlighted in the section on the River Usk SAC, the designated features may be impacted by a range of other pathways, such as the cutting of aquatic vegetation for navigational purposes, disturbance of spawning gravels by canoeists and disturbance to otter by dog walkers.

The Monmouthshire RLDP allocates new residential housing in three PSSAs, not all of which will be equally relevant to the River Wye SAC. For example, potential new residents in the PSSA of Chepstow, which are interested in visiting a river for recreation, are likely to visit the River Wye SAC, which is only a short travel distance from home. Further individual sites in proximity of the River Wye SAC may be allocated in the Deposit Plan. Overall, this increase in the local population might lead to more people visiting local greenspaces, including the river. Therefore, this HRA assesses suitable access points to and paths adjoining the SAC, which might facilitate an increase in visitor numbers.

Ordnance Survey Maps show that the River Wye SAC is very accessible to recreationists. There is a PRoW, the Wye Valley Walk, straddling both sides of the banks of the River Wye in the area of Monmouth. Upstream of central Monmouth, the path lies on the western side of the river with no footpath on its eastern side. At the Wye Bridge, the Wye Valley Walk traverses to the eastern side of the river, from where it follows the meandering river downstream all the way to Chepstow. Access to the River Wye SAC by Chepstow residents is likely to be less of an issue, because the SAC is less accessible near its confluence with the Severn Estuary. The available evidence indicates that canoeing is a highly popular activity on the River Wye. For example, a google search for 'canoeing the Wye Valley' brings up 279,000 results and five different companies that offer canoeing activities. In Monmouth there is a facility for canoe hiring just north of the Wye Bridge, which is accessible to new Monmouthshire residents that are interested in canoeing. As is the case for the River Usk SAC, while most canoeists might launch from the main canoeing hubs, canoes can be launched from many other locations on the banks of the Wye. Overall, there is clearly a potential of the Monmouthshire RLDP to result in disturbance to the qualifying features of the River Wye SAC.

Regarding the River Wye SAC otter population, it is concluded that there will be no adverse disturbance impacts of the RLDP. This is because otters are relatively tolerant of human presence (see discussion of this in the section on the River Usk SAC) and there is no current evidence that recreation along the River Wye is negatively impacting its qualifying otter population.

There are several existing mechanisms in place that will reduce the potential impacts of recreational pressure on the SAC features. As highlighted previously, the Wye and Usk Foundation oversees voluntary access codes along the R. Wye, including advice on when paddling activities are advised (e.g. in winter under spate flows). The R. Wye is navigable, with the Environment Agency (EA) or Natural Resources Wales being responsible for non-tidal navigation (mainly canoeing and rowing) to

Bigweir Bridge. Gloucester Harbour Trustees are the navigation authority for the tidal section of the river south of Bigweir Bridge, although this section is less relevant for recreation. The EA has published a River Wye Code of Conduct[140], which stipulates that waterweed and gravel beds should not be disturbed. Furthermore, '***it is an offence to willfully disturb breeding fish or spawning beds.***' The guidance also identifies that trampling and launching on spawning gravels used by salmon and trout between October and April should be avoided. Furthermore, the EA canoeists' guide to the River Wye[141] provides detailed information on the nature conservation features of the site and sets out good practice guidelines to follow. It addresses qualifying features of the SAC, such as migratory allis and twaite shad. For example, disturbance of fast-flowing gravel areas of the river must be avoided. Ignoring the advice set out in the guide could lead to a criminal offence being committed and enforcement action to be taken. The Forest of Dean and Wye Valley tourism website also promotes a Code of Conduct for canoeists[142], which includes avoiding damage to beds of waterweed and disturbance of nesting birds along the riverbanks.

Measures are also in place to protect the qualifying fish populations from recreational angling. For example, catch and release is now promoted by Natural Resources Wales as an angling technique to aid the conservation of fish stocks. Furthermore, any Atlantic salmon that is caught before the 16th of June must be returned to the river[143]. There are also rod fishing byelaws in place for Wales, detailing the open seasons for a range of fish species, which are designed to protect the integrity of qualifying fish populations.

Canoeing and fishing in the River Wye SAC are certainly popular activities, drawing visitors from across the country. However, these activities are only undertaken by a small percentage of the population (e.g. only 1.5% of the UK population engages in recreational fishing). Furthermore, these activities are much less relatable to Local Plan growth than more frequently undertaken activities such as dog walking, walking and cycling (which often have very small core recreational catchments). A direct link between residential growth proposed in the RLDP and a significant increase in the number of canoeists and anglers cannot be drawn.

Overall, given that only a very small portion of new residents are expected to undertake activities that would threaten the integrity of the River Wye SAC and there are current regulatory measures of these activities in place through the Environment Agency and Natural Resources Wales, it is concluded that there will be no adverse effects of the Monmouthshire RLDP alone on the site integrity of the SAC.

5.2.5.1 In-Combination Assessment

Authorities adjacent to Monmouthshire, including the Bannau Brycheiniog National Park, Newport, Forest of Dean, Hereford, South Gloucestershire and Bristol, also undertook HRAs of their proposed Plans prior to adoption. For example, the HRA of the adopted Herefordshire Core Strategy concluded that there would be no adverse effects of the plan on the River Wye SAC in relation to recreational pressure. Given the relatively small additional number of residents undertaking canoeing and fishing that are likely to arise from the Monmouthshire RLDP, it is considered that the implementation of the plan is unlikely to result in adverse effects on the integrity of the River Wye SAC in-combination.

5.2.6 Sugar Loaf Woodlands SAC

The Sugar Loaf Woodlands SAC is a composite site that encompasses three distinct areas, The Park, St Mary's Vale and The Deri. Approx. 70% of the site is covered by woodland with mature sessile oaks dominating the canopy layer. The underlying ground flora comprises native plants such as hazel, holly, common bent, wavy-hair grass, creeping soft-grass, wood sorrel, heath bedstraw and bracken. As highlighted in the background chapter, an increase in recreational pressure (particularly when people venture off-path) may lead to increased soil compaction around the sensitive root systems of ancient trees. Furthermore, trampling could lead to direct damage to tree roots and the surrounding ground flora. The emerging Monmouthshire RLDP makes provision for approximately 5,400 – 6,210 new homes, of which at least some will be delivered in the Abergavenny PSSA within potential walking distance of the SAC. Recreational pressure could especially arise in-combination with the

[140] Available at: https://www.gov.uk/guidance/river-wye-conditions-closures-and-restrictions [Accessed on the 28/10/2022]
[141] Environment Agency. (2011). Why canoe? Canoeists' guide to the River Wye. 63pp. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/301603/gemi1011bujd-e-e.pdf [Accessed on the 28/10/2022]
[142] http://www.wyedeantourism.co.uk/canoe_conduct [Accessed on the 05/11/2019]
[143] https://naturalresources.wales/days-out/things-to-do/fishing/?lang=en [Accessed on the 01/11/2019]

adopted Bannau Brycheiniog National Park (BBNP) LDP, which allocates 1,990 dwellings. The area covered by the BBNP LDP adjoins Monmouthshire and the provision of housing in Crickhowell would place new residents within easy travel distance of the SAC.

The area encompassing the Sugar Loaf Woodlands SAC is managed by the National Trust. The Sugar Loaf mountain is a very popular recreation destination. The community app outdooractive shows that 40 visitor routes (varying in length from 0.9 to 32.5 miles) have been mapped within and near the SAC woodland parcels. Furthermore, the National Trust (NT) website advertises the Sugar Loaf circuit walking trail, which starts in the town centre of Abergavenny, leads through SAC woodland, Sugar Loaf summit and back to Abergavenny. The NT describes the mountain as an '***iconic peak***', offering wildlife adventures and '***glorious panoramic views'*** over the surrounding countryside.

Despite being a highly rated recreation area, the integrity of the Sugar Loaf Woodlands SAC is unlikely to be at significant risk from housing proposed in the Monmouthshire RLDP. Several well-established tracks cut through the three component parts of the SAC. These paths would avoid the most sensitive parts of the site (e.g. roots of mature trees) and are maintained in good condition by the NT. Given that a suitable path network is in place, there is little incentive for visitors to walk off-track. The steep terrain of the woodland also discourages off-track activities (which are most damaging to sensitive habitat features) and the creation of new desire lines. Overall, given that the steep gradient of the SAC restricts visitor activities to the main paths and the site is under appropriate management by the NT, it is concluded that the Monmouthshire RLDP will not lead to adverse effects on site integrity regarding recreational pressure in-combination. No policy recommendations are made in relation to this impact pathway.

5.2.6.1 In-Combination Assessment

Authorities adjacent to Monmouthshire, including the Bannau Brycheiniog National Park (most relevant to the Sugar Loaf Woodlands SAC), Powys (most relevant to the River Usk SAC), Herefordshire and Forest of Dean (the latter two being most relevant to the River Wye SAC), have undertaken their own HRAs in relation to European sites, both alone and in-combination. For example, the Powys Deposit Plan HRA Screening Report concludes that there is no linking impact pathway between development in the Plan and the River Usk SAC, the site therefore being screened out from Appropriate Assessment. The HRA of the previous Blaenau Gwent LDP determined that there were no adverse impacts on the River Wye SAC regarding recreational pressure. It is therefore concluded that the implementation of the Monmouthshire RLDP would not result in adverse effects on the integrity of these SACs, in-combination with development Plans in surrounding authorities.

5.2.7 Wye Valley Woodlands SAC

The Wye Valley Woodlands SAC is designated for several woodland habitats, including ***Asperulo-Fagetum*** beech forest, ***Tilio-Acerion*** forest of slopes, screes and ravines and ***Taxus baccata*** woods. These habitats are not generally considered to be highly sensitive to recreational pressure due to the difficult topography, but the segments of ancient forest within the SAC are potentially more vulnerable. It is well known that the condition in the soil surrounding mature trees affects their roots, mycorrhizal fungi, nutrient uptake and growth rate. Recreational activities might lead to compacted soil with less space for air and water, both essential for plant growth, and could negatively impact trees in the SAC. However, walking routes in the general area of the Wye Valley Woodlands SAC appear to be well publicised, waymarked and used by the public (e.g. near Beacon View, Monmouth[144]).

The woodland walks maintained by Natural Resources Wales (or by Natural England within SAC components in England) would have considered ecological interest features (e.g. ancient trees) and their use by the public is not considered to negatively impact the qualifying habitats of the SAC. It was, however, anecdotally noted by Natural Resources Wales in comments on the Preferred Strategy HRA that damage had been caused to the SAC by walking, mountain biking and rock climbing activities. A review of the contours on Ordnance Survey Maps indicates that most of the SAC's woodland components are very steep and that visitors are therefore likely to stick to the paths provided, which would further protect the site's interest features. The lesser horseshoe bats, Annex II qualifying species

[144] https://naturalresources.wales/days-out/places-to-visit/south-east-wales/beacon-view/?lang=en [Accessed on the 09/08/2024]

of the SAC, are highly sensitive to recreation, but access to the component sites of the SAC that act as maternity roosts or hibernacula is regulated by grills.

To further investigate potential impacts on Wye Valley Woodlands SAC a visitor survey was undertaken for the Monmouthshire Replacement Local Plan in 2023. The results are discussed in detail in Appendix E. The home postcodes of interviewees provide the key parameter that is used to identify recreational catchments. Typically, the 75th percentile of interviewees (i.e. the distance from the SAC from which 75% of interviewees originate) is used to denote the core recreational catchment. This cut-off point is used to remove the influence of outliers and to demark the catchment that forms the most likely visitor pool.

Using these data, the 75th percentile of all visitors that travelled to the SAC is 39.3km. In other words, three quarters of visitors live within 39.3km of the SAC boundary. This is a very large catchment and represents the importance of the SAC in drawing visitors from long distances. For example, visitors come from as far afield as Lincolnshire, Sheffield, Devon, Hampshire and Nottinghamshire, and visitors from outside Monmouthshire and Wales, make up a large proportion of the survey pool. Even excluding people on holiday to focus entirely on people 'visiting from home' still leaves a relatively large catchment of 24km. This indicates that the Wye Valley Woodlands SAC has a regional, not to say national, draw rather than a local one. In contrast, during surveys of the Severn Estuary SPA/Ramsar/SAC, 75% of visitors lived within 6.5km of the site, indicating the much greater proportion of local residents in the visitor pool. The core recreational catchment for the Wye Valley Woodlands SAC for residents of Monmouthshire (i.e. the zone within which 75% of Monmouthshire-resident visitors are found) is 7km, but it is important to remember that Monmouthshire residents make up a minority of visitors, with 71% of visitors living in other local authorities.

The data from the visitor survey strongly suggest that:

- The visitor pressure in the Wye Valley Woodlands SAC is relatively low compared to other European sites. This is relevant given that, like most sites designated for their habitats, the SAC is more resilient to recreational pressure than a site harbouring easily disturbed/displaced interest features such as Severn Estuary SPA/Ramsar.
- The visitor profile is dominated by residents of other local authorities, some very far afield, who visit site infrequently (51% of survey respondents), possibly even just once given the high percentage who are on their first visit, but who stay on site for a considerable time (3-4 hours or more).
- A total of 71% of visitors derive from local authorities other than Monmouthshire, with only 29% of visitors being Monmouthshire residents.
- This visitor profile influences the core recreational catchment, yielding a very large core catchment of 39km. Even excluding holidaymakers, the SAC still has a large core catchment of 25km, indicating that some people travel a considerable distance from home to visit Wye Valley Woodlands SAC. For example, five visitors had travelled over 30km from home to visit the SAC, including one person from Swindon, located more than 60km away.
- The large distances travelled to visit the SAC do not apply to residents of Monmouthshire, who travel an average distance of 3km to visit the SAC, with 75% of Monmouthshire-based visitors living within 7km.

Given these data it is considered that visitor pressure within the SAC is limited, is a regional or national issue, and will not be heavily affected by housing and population growth within Monmouthshire. As such, no mitigation strategy for the Local Plan is required and a conclusion of no adverse effect on integrity is reached. The foregoing assessment inherently takes account of growth in Monmouthshire in combination with growth elsewhere in the recreational catchment of the SAC.

5.3 Loss of Functionally Linked Land

5.3.1 Usk Bat Sites SAC & Wye Valley and Forest of Dean Bat Sites SAC

Given that both SACs are designated for similar species and that the impact mechanisms relating to the Monmouthshire LP are the same, the Appropriate Assessment of the two sites is combined in the following. The concept of functionally linked land addresses that mobile qualifying species, such as the lesser horseshoe bat (qualifying species of both the Usk Bat Sites SAC and the Wye Valley and Forest of Dean SAC) and the greater horseshoe bat (qualifying species of the latter SAC only), 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. The highly mobile nature of bats implies that areas of habitat of crucial importance to the maintenance of their populations, for example linear features such as hedgerows that are used as flightlines, are located outside the physical limits of Habitats Sites.

The same also applies to suitable foraging habitat and loss of seasonal roosts. These can be affected directly by removal, or effectively rendered unsuitable by inappropriate lighting. Such functionally linked land is considered to be important for maintaining the integrity of bat populations within SACs. Both SACs lie partly within Monmouthshire and the LP might therefore result in land parcels that are functionally linked to these European sites. The Usk Bat Sites SAC is located partly within the north-western section of Monmouthshire and The Wye Valley and Forest of Dean Bat Sites SAC comprises several component parts in the eastern section of Monmouthshire.

To assess the impact pathway loss of functionally linked land, an assessment of the behaviour and habitat requirements of bats is required in the first instance. Most bats are likely to use natural linear landscape features (e.g. hedges and treelines) to navigate and open areas of grassland for foraging. Therefore, it is generally the allocation of greenfield sites for development, which is expected to have the largest impact on lesser and greater horseshoe bat populations. Developing greenfield sites is likely to mean that such features are lost, (or effectively loss such as through inappropriate lighting) resulting in the loss of functionally linked land parcels. Conversely, redeveloping existing brownfield sites is likely to be less damaging because 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 Monmouthshire LP currently allocates primarily greenfield sites, which are likely to be most suitable as functionally linked land.

The linear landscape features and grassland used by bats for navigating, commuting and foraging provide an adequate starting point for an assessment of functionally linked land. Review of online satellite imagery indicates that there are various areas with suitable bat off-site supporting habitat in the vicinity of new development. The following provides a brief overview of some of these. For example, the area to the north of the A465 (Heads of the Valley Road) and the south of the settlement of Clydach, comprises open habitat with streams, treelines and semi-improved grassland; and this habitat might be used by lesser horseshoe bats stemming from the nearby Usk Bat Sites SAC. Furthermore, two component parcels of the Wye Valley and Forest of Dean Bat Sites SAC lie relatively close to the development around Monmouth. The Newton Court Stable Block, SSSI component of the SAC, is in an area of tree- and hedge-lined fields, adjacent to Mally Brook and the River Wye. Given that the designation here only covers the stables, it is certain that the bats will be using some of these habitat features, which are not part of the designation. Equally, the Wye Valley Lesser Horseshoe Bat Site (another SSSI component) also lies adjacent to fields with linear habitat features and the River Wye. The lesser horseshoe bats are likely to utilise some of these features for commuting and / or foraging.

Further scientific evidence relating to the use of functionally linked land is provided by the Bat Conservation Trust's Core Sustenance Zones (CSZs)[145], within which habitat preservation will have a significant influence on the conservation status of a bat species. The CSZs are calculated by

[145] Research published by the Bat Conservation Trust. 2016. Core Sustenance Zones: Determining zone size. Available at: https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135 [Accessed on the 04/11/2019]

averaging the mean-maximum foraging radii across all studies reporting this metric, weighted by the number of bats tracked in the study. The weighted average is then rounded to the nearest kilometre to reflect the level of precision in the bat tracking. According to the Trust, lesser horseshoe bats have a CSZ of 2km, while greater horseshoe bats have a CSZ of 3km. Given the scientific knowledge on CSZs, this impact pathway will only have to be reassessed further, if development is allocated within a 2km buffer zone of the Usk Bat Sites SAC and / or within a 3km buffer zone of the Wye Valley and Forest of Dean Bat Sites SAC. Any development sites within these buffers will require further assessment regarding their suitability for and usage by the lesser and greater horseshoe bat.

Note that the use of a 2km and 3km CSZ for the bat SACs in this assessment does not mean that bats from these SACs will not travel more widely across the countryside. Rather, it is intended to identify those allocations where the risk of an adverse effect on SAC bats is particularly high (in the absence of detailed mitigation) given the presence of suitable habitat. Since lesser and greater horseshoe bats are legally protected species wherever they roost, and thus material considerations in the planning process, any site identified to be used by these species of bat will require further assessment and potentially mitigation for any planning application, irrespective of distance from these SACs.

No sites have been allocated by the local plan within the CSZ of Usk Bat Sites SAC. Table 7 details the sites that have been allocated within the CSZ of the Wye Valley and Forest of Dean Bat Sites SAC.

Table 7. Local Plan Allocations within 3km of Wye Valley and Forest of Dean Bat Sites SAC

Policy	Settlement	Site_Name	Units	areaha
HA8	Monmouth	Land at Tudor Road, Wyesham, Monmouth	50	2.1
EA1b	Monmouth	Poultry Units, Rockfield Road, Monmouth	N/A	1.3
HA4	Monmouth	Land at Leasbrook, Monmouth	270	11
HA13	St Arvans	Land adjacent to Piercefield Public House, St Arvans	16	1.1
HA18	Shirenewton	Land west of Redd Landes, Shirenewton	26	1.76

With the exception of the existing poultry units at Monmouth, which are industrial agricultural, and the existing industrial/employment sites in Chepstow, these appear to be greenfield sites and potentially of use to SAC bats. Moreover, there was a lesser horseshoe roost at the poultry units identified during surveys for a planning application (DM/2018/02026) for the site confirming that this site is used by bats potentially linked to the SAC.

It is recommended that the following text (or similar) is inserted into a suitable policy in the next iteration of the LP: ***'To meet the requirements of the Habitats Directive regarding allocated greenfield sites within the Core Sustenance Zones (CSZs) of the Usk Bat Sites SAC and the Wye Valley and Forest of Dean Bat Sites SAC, the applicant is required to provide evidence that the development will not result in adverse effects on site integrity. To achieve this, a habitat assessment will have to be undertaken by a suitably qualified professional. Where habitats are suitable, a suite of bat surveys (e.g. bat activity surveys, roost emergence surveys) will need to be undertaken between April and September. Where a land parcel is demonstrably used by SAC bats, mitigation and avoidance measures might be required, and the planning application will likely need to be assessed through a project-level Habitats Regulations Assessment and will need to consider matters such as habitat connectivity, foraging value and minimised lighting'***.

This would not only apply to development that is specifically allocated within the Local Plan but would also apply to development that would come forward for planning consent (including the potential solar

farm identified in Policy CC2) but is not specifically allocated, such as renewable energy development (wind turbines if such were to come forward in response to Policy CC3).

With regard to this recommendation Monmouthshire Council expressed concern as to whether the extent of the suggested wording is needed as it is too prescriptive. Instead, the Deposit Plan addresses these recommendations by providing less prescriptive form of wording in Policy NR1 – Nature Recovery and Geodiversity and its supporting text in paragraphs 11.10.2 – 11.10.8 under the heading International/National (Statutory) Sites and Protected Sites and Species with specific reference to Functionally Linked Land in paragraph 11.10.5, but without providing specific details of the need for bat surveys, survey seasons and the potential need for mitigation . Policy LC5 – Dark Skies and Lighting, offers further policy requirements in relation to external lighting and potential impacts on biodiversity and ecology. Strategic Policy S8 – Site Allocation Placemaking Principles also covers dark corridors as well as requirements in the site-specific allocation policies where relevant, for example Policy HA4 – Land at Leasbrook, Monmouth. Further specific requirements can be set out in Supplementary Planning Guidance.

The recommendation was made to provide guidance to developers over the specific issue and investigations that would need to undertake. However, it is recognised that the inclusion of further details in guidance such as Supplementary Planning Guidance or by reference to this HRA report would provide advice to developers regarding the steps needed to investigate this specific issue of functionally-linked land for bats, without being too specific in policy, given that functionally linked land is a consideration for other European sites such as Severn Estuary SPA/Ramsar, and bat surveys at periods other than April to September may sometimes be required. It is therefore considered that the policy in the Local Plan does provide a sufficient policy framework to ensure no adverse effects on the integrity of European sites will arise.

5.3.1.1 In-Combination Assessment

Authorities adjacent to Monmouthshire, including Powys and Blaenau Gwent (both authorities that encompass components of the Usk Bat Sites SAC) and Forest of Dean (containing components of Wye Valley & Forest of Dean Bat Sites SAC) also have potential to impact functionally linked land associated with the SAC using the same Core Sustenance Zones as in this HRA. However, given the implementation of the recommendations in the preceding section it is considered that the implementation of the Monmouthshire RLDP would not result in adverse effects on the integrity of the Usk Bat Sites SAC or Wye Valley & Forest of Dean Bat Sites SAC, in-combination with development Plans in surrounding authorities.

5.3.2 Severn Estuary SPA / Ramsar

Generally, it is to be noted that the Severn Estuary SPA / Ramsar covers most of the habitat that is used by its qualifying bird species, including the wet coastal grazing marsh, improved grassland and open standing water. However, some of its more mobile waterfowl and wader species, most notably the Bewick's swan and the white-fronted goose, might be expected to move the longest distance beyond the site boundary. The Natural England Advice Note[146] identifies that '***some species will also use areas of land and coastal waters outside the boundaries of both the European Marine Site, SPA and Ramsar site. Relevant authorities need to have regard to such adjacent interests, as they might be affected by activities taking place within, or adjacent to the European Marine Site.***' Effectively, this statement highlights that regarding the Severn Estuary SPA / Ramsar, due consideration must be given to the loss of functionally linked land.

Bewick's swans feed on several species of soft meadow grasses, including ***Agrostis stolonifera*** and ***Alopecurus geniculatus*** that are component species of wet meadows. Some of such habitat features might be located outside the European site. The distance travelled to foraging grounds beyond the boundary of the SPA / Ramsar is likely to depend on the time of year, resource conditions within the SPA / Ramsar and interspecific competition. Due to a combination of these factors, Bewick's swans

[146] Published by Natural Resources Wales and Natural England. Available at: https://naturalresources.wales/media/673887/severn-estuary-sac-spa-and-ramsar-reg-33-advice-from-ne-and-ccw-june-09.pdf [Accessed on the 05/11/2019]

partially forage in fields at relatively great distances from their roosting locations. A study in the Netherlands determined that Bewick's swans foraged in arable fields 7.1km away from their roosts[147].

A review of satellite imagery of the growth area of Severnside, shows an extensive network of drainage ditches to the north of the SPA / Ramsar, in proximity to the M4 motorway. The land around Chepstow also comprises a combination of wet grassland and arable fields, with the potential to act as supporting habitat to the SPA / Ramsar. However, given that the distance to the SPA / Ramsar is further, a potential for the M48 to act as a barrier and the more built-up nature of the wider area, its general suitability is considered to be slightly lower than the Severnside area. It is less likely that birds from the SPA's / Ramsar's intertidal zones would traverse the motorways and the River Wye to settle on fields around Chepstow. In other areas (e.g. Merseyside) SPA birds travel considerable distances inland to roost or feed, but that is most likely because the immediate coastal zone is heavily urbanised. Given that southern Monmouthshire is less built up, it is expected that the birds will fly the shortest possible distance to find suitable feeding grounds. However, in the absence of bird monitoring data for the arable fields in question, it remains a possibility that the birds are using greenfield sites in the vicinity of Chepstow.

The Severn Estuary SPA/Ramsar is designated for its large population of waterfowl and waders generally, and for its specific populations of non-breeding Bewick's swan, white-fronted goose, dunlin, redshank, shelduck, gadwall, ringed plover, curlew and pintail. To aid consideration of functionally-linked land issues Natural England has produced unpublished guidance (there is no Natural Resources Wales equivalent). This guidance groups birds by their maximum foraging distance. According to this guidance most waterfowl and waders remain within 2km of their core roost areas (i.e. the SPA/Ramsar site) when foraging. Of those species for which Severn Estuary SPA/Ramsar is designated the exceptions are Bewick's swan and white-fronted goose which forage up to 10km from their core roost sites. The same Natural England guidance considers that residential development could have an adverse effect on these two species if it resulted in loss of functionally-linked land up to 5km from the core roost areas (the SPA/Ramsar).

The following sites in Table 9 were identified as being of sufficient size and proximity to the SPA and Ramsar to be utilised by SPA birds.

Table 8. Local Plan sites over 2ha and within 5km of Severn Estuary SPA/Ramsar

Policy	Settlement	Site Name	Units	Area ha
HA3	Chepstow	Land at Mounton Road, Chepstow	146	12.8
HA2/EA1m	Severnside	Land to the East of Caldicot	770	64
HA9/EA1l	Severnside	Land at Former MOD land, Caerwent	40	4.2
EA1d/W3c	Chepstow	Newhouse Farm, Chepstow	N/A	2
EA1f/W3d	Magor	Quay Point, Magor	N/A	14
EA1g	Undy	Rockfield Farm, Undy	N/A	3.2
EA1h/W3e	Magor	Gwent Euro Park, Magor	N/A	7
EA1/W3f	Caldicot	Land adjoining Oak Grove Farm, Caldicot	N/A	6

These sites were all identified as greenfield sites, although without further survey the level of suitability is difficult to assess. These are generally the parameters that are used for the identification of potential functionally linked land.

[147] Nolet B.A., Bevan R.M., Klaassen M., Langevoord O. & van der Heijden Y.G.J.T. 2002. Habitat switching by Bewick's swans: Maximisation of average long-term energy gain? Journal of Animal Ecology 71: 979-993.

In addition to the size of the candidate sites and distance of the candidate sites from the Severn Estuary, the Monmouthshire Council ecologists reviewed Preliminary Environmental Appraisals where available and undertook a desk study to determine whether housing sites should be considered (during plan preparation / application preparation) for potential use by overwintering birds. This formed part of the proforma preparation for candidate sites. Of the sites listed in Table 9 many were determined to be unsuitable with the exception of the Caldicot site HA2 due to habitats present, disturbance levels, agricultural practices. This assessment also applies to site EA1/W3f, which has been considered to have potential for overwintering birds. Other sites considered to be suitable are Gwent Europark and Quay Point.

Given that the area north of the SPA / Ramsar contains habitat of sufficient size and several parcels were deemed suitable as functionally-linked land, it was recommended as part of the Preferred Strategy HRA that the following text (or similar) was inserted into an appropriate policy of the Deposit Plan: '***To meet the requirements of the Habitats Directive, the applicant should be required to provide evidence that the development will not result in adverse effects on the integrity of the Severn Estuary SPA / Ramsar regarding its qualifying bird species. To demonstrate this, a survey will be required to determine the habitats and current site use to verify if the land parcel is indeed suitable for supporting a significant population[148] of designated bird species. Where habitats are suitable, non-breeding bird surveys will be required to determine if the site and neighbouring land constitute a significant area of supporting habitat. Bird surveys will need to be undertaken during autumn, winter and spring. If habitat within the site or adjacent land are identified to support significant populations of designated bird species, avoidance measures and mitigation will be required, and the planning application will likely need to be assessed through a project specific Habitats Regulations Assessment to ensure that the development does not result in adverse effects on integrity.***'

With regard to this recommendation, Monmouthshire Council expressed concern as to whether the extent of the suggested wording is needed as it is too prescriptive. Instead, the Deposit Plan addresses these recommendations by providing a less prescriptive form of wording in Policy NR1 – Nature Recovery and Geodiversity and its supporting text in paragraphs 11.10.2 – 11.10.8 under the heading International/National (Statutory) Sites and Protected Sites and Species. Site specific allocation policies also set out policy requirements, such as for Policy HA2 – Land to the East of Caldicot.

The recommendation was made to provide guidance to developers over the specific issue and investigations that would need to undertake. However, it is recognised that the inclusion of further details in development application specific consultations, or by reference to this HRA report, would provide advice to developers regarding the steps needed to investigate this specific issue of functionally-linked land for birds, without being too specific in policy, given that functionally linked land is a consideration for other European sites such as Usk Bat Sites SAC. It is therefore considered that the policy in the Local Plan does provide a sufficient policy framework to ensure no adverse effects on the integrity of European sites will arise.

5.3.2.1 In-Combination Assessment

In addition to growth within Monmouthshire, new dwellings are currently planned within 5km of the SPA and Ramsar site in Cardiff, Torfaen, North Somerset, South Gloucestershire, Bristol, Stroud District, Forest of Dean District, and the Somerset Council area (previously including Sedgemoor, Somerset West & Taunton, and other districts). However, the implementation of the recommendations in the preceding section would address Monmouthshire LDPs contribution to any in combination effect.

5.4 Water Quality

5.4.1 River Usk SAC & River Wye SAC

Due to the similar ecological nature and qualifying features of the River Usk SAC and the River Wye SAC, this section combines the Appropriate Assessment for both sites.

[148] A significant population is classified as a site that regularly used by 1% or more of the population of qualifying bird species

Both SACs are 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 sites are designated for. For example, both sea and brook lampreys require clear, well-oxygenated water for spawning, and eutrophication associated with domestic sewage effluent will reduce their spawning success. Atlantic salmon also need high water quality, particularly high dissolved oxygen levels, for survival. Maintaining the good chemical status within the rivers is therefore integral to protecting their integrity.

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 Severn estuary at Newbridge. The SAC comprises a long narrow catchment, partly owed to the surrounding rugged terrain that receives inflow from various tributaries. The Environment Agency (EA) river catchment data explorer highlights that the north-western part of Monmouthshire (for example the area surrounding Abergavenny) lies in the River Usk catchment[149]. The developments allocated in the Monmouthshire LP will result in the increased production of wastewater in this part of Monmouthshire. It is expected that new housing in the western part of Monmouthshire will be served by local Wastewater Treatment Works, such as the one just south of Abergavenny. Any WwTWs in this area of Monmouthshire will discharge treated sewage effluent directly into the River Usk SAC, or in tributaries feeding it. As such, there is a clear linking impact pathway between the new development in Abergavenny and the SAC.

The Lower Wye flows from Glasbury in Wales south through Herefordshire, Monmouthshire, Gloucestershire and then joins the Severn Estuary near Chepstow. The surrounding area is primarily rural with mixed agricultural land use, including livestock, arable and horticulture. As identified in the EA catchment explorer development within the vicinity of Monmouth and Chepstow may lie within the operational catchment of the River Wye. Therefore, it is likely that sewage treated near these settlements will be discharged into the River Wye SAC. As for the River Usk SAC, there is therefore a clear linking impact pathway between Monmouth and Chepstow, and the River Wye SAC.

The Core Management Plans for both SACs indicate that the most significant source of water pollution is agriculture, including the input of fertiliser run-off, livestock manure, silage effluent and soil erosion from ploughed land. However, they also highlight that discharges from sewage treatment works, urban drainage systems and other urban sources are also significant sources of aquatic pollution and require consideration. To assess the likely impacts of sewage discharge on the SAC, it is important in establishing the rivers' current performance in relation to the Environment Agency's current water quality standards. For example, targets of 0.06 mg/l for phosphorus and 80% saturation for dissolved oxygen have been set for the River Usk SAC, to protect the integrity of the site. For the River Wye SAC, the site's Conservation Objectives Supplementary Advice Note states that dissolved oxygen should be at 85% saturation, the mean biological oxygen demand at 1.5 mg/l and the total ammonia 0.25 NH_3-N mg/l[150]. The Usk catchment management summary[151] highlights that out of 45 river water bodies, eight fail to achieve good chemical status due to pollution from sewage and waste water. A particular cause of concern is the Llwyd operational catchment, a sub-catchment of the Usk, where four of the five water bodies fail to reach their water quality target. In the River Wye SAC, the water industry (including wastewater) is cited as being responsible in 11 instances for water bodies in the Wye catchment not achieving good chemical status[152].

In Wales, the water quality of rivers is protected through the Review of Consents process agreed upon by the Environment Agency Wales (now 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, nitrogen, dissolved oxygen, biological oxygen demand and ammonia. WwWTs have a permitted headroom, based on their ability to process additional sewage effluent whilst remaining within the consented volume of discharge and water chemistry thresholds. While

[149] https://environment.data.gov.uk/catchment-planning/ManagementCatchment/3107
[150] http://publications.naturalengland.org.uk/publication/6096799802589184
[151] Published by Natural Resources Wales. Available at: https://naturalresources.wales/media/3214/usk-management-catchment.pdf
[152] Published by the Environment Agency Wales. Available at: https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3549/Summary

these discharge consents typically consider the requirements of designated SAC features (implying that remaining within the permitted headroom would not lead to adverse effects on site integrity), there is new evidence that the existing WwTWs technology, sewer infrastructure and discharge consents are insufficient to protect SAC water quality.

For example, data on the Environment Agency Catchment Data Explorer indicate that various stretches of the River Wye SAC are failing the Water Framework Directive (WFD) target of good ecological status, partially fuelled by elevated phosphorus concentrations. Furthermore, the sewerage network feeding relevant WwTWs have not been upgraded to accommodate further growth. Combined sewers are designed to collect rainwater runoff, domestic sewage and industrial wastewater in the same pipe. In periods of heavy rainfall, their capacity can be exceeded, and these systems are designed to discharge untreated sewage directly to the environment (a process known as Combined Sewer Overflows; CSOs). CSOs are an existing issue in several waterbodies, including the Gavenny (in Abergavenny), Clydach and Llwyd. Other sources (e.g. agriculture, private Package Treatment Plants; PTPs) contribute additional phosphorus to the hydrological catchments of the two SACs. Elevated phosphorus concentrations within the River Usk SAC and River Wye SAC have been directly linked to negative changes in their ecosystems. High levels of algae have been recorded in both SAC rivers in summer 2021, coinciding with peak phosphorus concentrations (due to the combined input from agricultural and domestic sources).

Due to the increasing concern about high phosphorus concentrations in both riverine systems, Natural Resources Wales and Natural England have recently advised that development plans should not result in a net increase in phosphorus levels, a concept known as nutrient neutrality. Where developments do not achieve nutrient neutrality, mitigation measures are required to offset any increased phosphorus input. Natural Resources Wales provides detailed guidance on nutrient neutrality on their website[153]. Specifically, all new housing or development that leads to a temporary increase in the local population (e.g. self-service and serviced tourism accommodation) within the identified nutrient-sensitive areas is likely to increase phosphorus concentrations within the SAC rivers. While agricultural businesses (e.g. pig, poultry farms and organic manure developments / slurries) are a major source of nutrients, they are not typically allocated in Local Development Plans (LDPs) and, therefore, are excluded from further consideration on this HRA. Private sewage treatment systems (or PTPs) are deployed where it is unfeasible to connect new housing to the sewerage network and fall within the remit of LDPs.

Natural Resources Wales is currently undertaking a review of existing phosphorus discharge permits against the revised phosphorus targets, which is likely to result in lowered permits for some WwTWs. For residential developments that will connect to WwTWs which have been reviewed in context of the revised Conservation Objectives and where headroom is available to accommodate this additional wastewater, a conclusion of no adverse effects on site integrity can be drawn. Development proposals for which this is the case should be supported by a formal response from the sewerage undertaker, confirming the following:

- Headroom is available to treat additional wastewater from the development within the revised environmental permits (where applicable); and
- Headroom availability is guaranteed to be delivered in the agreed Asset Management Plan (AMP) period.

There is also additional information on the Council website[154]. A proposed development within a Phosphate sensitive area will need to ensure that it complies with the Planning Guidance from Natural Resources Wales (Version 3) referenced earlier. Head of planning on the SAC River Planning all Wales working group is reviewing the implications of NRW planning guidance and to try and work collaboratively to find solutions to the issue and allow development proposals. This working group is attended by NRW, Dwr Cymru Welsh Water, Welsh Government (Planning) and Local Planning Authorities that are impacted by the development. Monmouthshire Council has been meeting with DCWW and NRW to try and enable the installation and upgrading of their sewerage treatment plans to allow phosphate stripping capability in most sustainable settlements north of the county i.e. Llanfoist and Monmouth. In order to deliver growth and support sustainable forms of development

[153] Available at: https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/our-role-in-planning-and-development/advice-to-planning-authorities-for-planning-applications-affecting-phosphorus-sensitive-river-special-areas-of-conservation/?lang=en [Accessed on the 31/10/2022]
[154] https://www.monmouthshire.gov.uk/planning/water-quality/

within the north of the county it will be necessary to upgrade the drainage infrastructure or determine ways to mitigate for the impact of development.

In the Preferred Strategy HRA no housing was allocated in Monmouth due to issues with nutrient neutrality. However, in response to that document the Welsh Government has advised Monmouthshire Council that new site allocations should be considered in Monmouth on the basis that sufficient certainty is provided by Dwr Cymru Welsh Water's (DCWW) planned improvements at the Monmouth Wastewater Treatment Works by 31st March 2025[155]. Monmouthshire Council produced a phosphate briefing note in July 2023[156] which updates developers and sets out how issues with nutrients in the River Usk and Wye catchments will be addressed. Given the clear commitment from DCWW to provide phosphate mitigation at the Llanfoist and Monmouth WwTWs by 31St March 2025, the Local Planning Authority is now able to issue planning permissions within the area served by these two WwTWs, subject to a suitably worded 'Grampian condition' preventing commencement of development until 31st March 2025. This will give confidence to the development industry and unlock stalled sites while ensuring new development proposals do not have an adverse impact on water quality within the river SACs.

In relation to the other WwTWs within Monmouthshire, NRW is currently conducting a review of larger discharges (20m^3 per day or above) permits and water quality to review what capacity (if any) exists to enable development proposals to come forward while ensuring betterment or neutrality of phosphate levels. This pan-Wales approach is supported by the Welsh Government. Source apportionment data shows that the majority of phosphates entering the rivers come from agricultural activity. Some of these activities, such as new intensive poultry units, require planning permission and are therefore subject to the requirement to demonstrate phosphate neutrality or betterment. There are no such proposals currently within the Monmouthshire LPA area, however there are several proposals upstream in Powys and Herefordshire. Other agricultural activity such as fertiliser spreading and muck spreading fall outside of the Council's control and are in part regulated by Natural Resources Wales (or the Environment Agency in England) and are in part unregulated. The Welsh Government is currently considering the introduction of additional controls over such activities.

In addition to recent human activity, the soil naturally contains phosphates. Together with historic fertiliser application, the river catchments contain elevated levels of 'legacy phosphates' which will take many years to reduce. These phosphates enter the rivers via both normal land drainage and, most notably, via flood events. The Welsh Government and the Council may also seek to work with farmers and other bodies to explore the potential for natural flood management solutions, which would have the combined benefits of reducing surface water flooding and reducing phosphate levels entering the rivers from surface water runoff.

5.4.1.1 Wye Nutrient Management Board, Wye Cabinet Commission, Wye Catchment Partnership and Usk Catchment Partnership

Monmouthshire County Council is a member of the Wye Nutrient Management Board, the Wye Cabinet Commission, the Wye Catchment Partnership and the Usk Catchment Partnership. These groups seek to achieve the long-term ecological sustainability within the river catchments.

The Wye Nutrient Management Board is the body responsible for ensuring the delivery of the Conservation Objectives for the River Wye Special Area of Conservation. It provides an oversight and direction to all involved in delivering the Nutrient Management Plan, with the aim of reducing phosphorus in the river. Members of the Board include Local Planning Authorities, NRW, DCWW, Natural England, Environment Agency, Construction Industry Lobby Group, representatives of the farming industry, The Wye and Usk Foundation and members of the public. The Board works together to review contributions across all organisations, working collaboratively to achieve the objectives and ensuring all members understand the issues and work together to resolve them. A technical group supports the Board to inform decision making. The Nutrient Management Action Plan is reviewed every four years to ensure it is fit for purpose.

[155] Latest News - Monmouthshire.
[156] Phosphate Briefing Note July 2023 (monmouthshire.gov.uk)

Monmouthshire County Council has recently joined the Wye Cabinet Commission, which comprises of local government political and officer leads from Herefordshire, Powys and Monmouthshire County Councils and Bannau Brycheiniog National Park Authority.

The Usk Catchment Partnership's aim is to develop an action-focused partnership to build back ecological resilience to the River Usk. The main contributors are Local Planning Authorities, Wye and Usk Foundation, Gwent Wildlife Trust, NRW, DCWW, farming representatives, community representatives and Cardiff Water School. The long-term aim of the partnership is to develop a Catchment Action Plan that can be adopted by all partners to deliver its actions and ensure the ecological health of the wider river catchment improves over time.

It is noted that the Monmouthshire LP already contains some broad policy wording that protects the water quality within the authority from adverse effects. Strategic Policy S4 (Climate Change) stipulates that new development should be '***Incorporating water efficiency measures and minimising adverse impacts on water resources and quality***'. Furthermore, Strategic Policy S5 (Green Infrastructure, Landscape and Nature Conservation) outlines that development proposals must '***maintain, protect and enhance the integrity and connectivity of Monmouthshire's green infrastructure, landscape and biodiversity assets through the following key functions:… iii)Biodiversity and resilient ecosystems by protecting, assessing, positively managing and enhancing biodiversity and geological interests, including designated and non-designated sites, protected and priority species and their habitats, and the ecological connectivity between them***'.

One of the key concerns whether new development can be delivered without adverse effects on European sites with aquatic habitats, is whether the appropriate WwTW infrastructure is in place. Strategic Policy S6 (Infrastructure Provision) states that ***'the infrastructure needed to service and deliver sustainable development must be in place or provided in phase with proposed development. Where existing infrastructure is inadequate to serve the development, new or improved infrastructure and facilities to remedy deficiencies must be provided.***' While this would include the sewage infrastructure, this is currently not specifically mentioned.

Monmouthshire Council has confirmed that phosphate solutions have been agreed as part of a wider approach to the issue in partnership with Natural Resources Wales and Welsh Water. Natural Resources Wales has issued a new version of detailed planning guidance that has to be met satisfied in relation to both planning applications and allocations. This guidance will be considered as part of the HRA process. The RLDP allocations have been made in consultation with Welsh Water and Natural Resources Wales, having regard to headroom limits and phosphate solutions proposed Policy NR3 – Protection of Water Sources and the Water Environment sets out requirements for development which may impact upon the water environment and associated land. Given this, it is concluded that there would not be adverse effects on the site integrity of the River Usk SAC and the River Wye SAC regarding water quality.

5.4.1.2 In-Combination Assessment

It is to be noted that the evidence used to set the thresholds for aquatic parameters (e.g. dissolved oxygen, nitrogen) is derived from an in-combination approach that aims at protecting the integrity of the riverine SACs. The Natural Resources Wales (formerly Environment Agency) Review of Consents process sets wastewater discharge limits for WwTWs within Monmouthshire, while accounting for discharged effluent arising from development allocated within the Plans of adjacent authorities. The same also applies to the concept of nutrient neutrality, which emerges from the cumulative growth in all hydrologically linked authorities contributing phosphorus to the River Wye SAC and River Usk SAC. As such, the impact pathway water quality, including the phosphate neutrality issue, is by definition assessed in-combination with growth in other authorities. Furthermore, the HRAs of development plans of surrounding authorities (e.g. those of Powys, Herefordshire and Blaenau Gwent) concluded there were no adverse impacts of Plans on the river SACs (although it is noted that some of these assessments will require updating in line with the emerging nutrient neutral approach adopted for the SACs). The HRA for the Forest of Dean Local Plan[157] states that the River Wye is close to its phosphate targets at some monitoring points but levels are stable, with concerns being for the River Lugg upstream of the Forest of Dean Local Plan area. However, it also identifies that a precautionary approach should be taken to incombination effects with the emerging Monmouthshire

[157] https://www.fdean.gov.uk/media/pd4llk1n/habitats-regulations-assessment-screening-and-appropriate-assessment-report-june-2024.pdf

LDP at Chepstow. It is therefore concluded that, provided adequate phosphate mitigation is identified and secured, there would be no adverse effects on the site integrity of the River Usk SAC and the River Wye SAC regarding water quality, in-combination with other Plans.

5.4.2 Severn Estuary SAC

The Severn Estuary SAC is designated for several habitats and species, which are potentially sensitive to a deterioration in water quality. The estuary and the subtidal sandbanks habitats are both considered sensitive to changes in nutrient loading in principle, however due to the high turbidity of water in the SAC, algal productivity is generally low except for very localised hotspots. However, the sand- and mudflats present in the SAC are highly vulnerable to increasing nutrient loading. One consequence of increased nutrient input is the growth of green seaweeds and reduced oxygenation on the mudflats. Importantly, at high nutrient enrichment levels, species diversity declines with a modal shift to fewer, but pollution tolerant species. The Atlantic salt meadows habitat component is also highly vulnerable to nutrient enrichment. Elevated concentrations of phosphorus and, particularly, nitrogen lead to the dominance of some seaweed species with an adverse effect on glasswort and the overall structure of the sward. All additional treated sewage effluent discharge arising from development allocated in the Monmouthshire LP is likely to enter the Severn Estuary SAC, either because it is directly discharged into the SAC or because it enters indirectly, via the Rivers Usk and Wye (see previous section on the Appropriate Assessment).

The underlying mechanism through which water quality impacts of development may be ameliorated, is the process of pollutant attenuation. Importantly, catchment-scale modelling has shown that the total nitrogen and total phosphorus load within watercourses is generally attenuated within a few tens of kilometres[158]. Another study demonstrated that 100% of the nitrogen and phosphorus loads was attenuated within a 5km section of a coastal watershed[159]. It is to be noted that pollutant attenuation is a complex process and dependent on various site-specific conditions, but these attenuation distances nevertheless serve as a useful starting point for an Appropriate Assessment of the impact pathway water quality.

Assuming that the net new residential dwellings in Monmouth would be treated and discharged locally, the wastewater effluent would enter the River Wye approx. 32km flow distance to the north of the Severn Estuary SAC. Given the above cited distances for nutrient attenuation, it is assumed that phosphorus and nitrogen in wastewater discharge from Monmouth would effectively be inconsequential for the SAC. Similarly, development in Abergavenny is located far beyond 30km of flow distance to the north of the Severn Estuary SAC, rendering any water quality impacts immaterial for the estuary. In contrast, both Severnside and Chepstow are located within 1km flow distance of the Severn Estuary SAC. Additional development in these areas therefore has the potential to result in significant nutrient enrichment in the SAC.

However, it is considered that any adverse effects on the Severn Estuary SAC regarding water quality are addressed through the Environment Agency's (now Natural Resources Wales) Review of Consents process (see previous Appropriate Assessment on the River Usk SAC and the River Wye SAC). Given that this process considers the qualifying features of European sites, it also ensures that the permitted headroom of WwTWs does not damage the integrity of the Severn Estuary SAC. It is concluded that there would be no adverse effects of the LP on the site integrity of the Severn Estuary SAC regarding the impact pathway water quality.

5.4.2.1 In-Combination Assessment

Numerous authorities border the Severn Estuary SAC, including Newport, Forest of Dean and South Gloucestershire. Development allocated within the Plans of these authorities therefore has the potential to affect the water quality in the Severn Estuary SAC in-combination. However, as a legal requirement, HRAs have been undertaken on all these Plans, assessing in-combination effects on European sites. The HRAs have concluded that there will be no in-combination effects on the water quality in the Severn Estuary SAC. For example, the HRA of the Newport LDP concluded that the proposed schemes would have no in-combination effects on the Severn Estuary SAC due to there

[158] Bray E.N., Chen X. & Keller A.A. 2010. Instream attenuation of nitrogen and phosphorus in non-point source dominated streams: Hydrologic and biogeochemical controls. AGU Fall Meeting Abstracts.
[159] Ensign S.H., McMillan S.K., Thompson S.P. & Piehler M.F. 2006. Nitrogen and phosphorus attenuation within the stream network of a coastal, agricultural watershed. Journal of Environmental Quality 35: 1237-1247.

being no local waterways connecting to the SAC. Given the evidence in the relevant HRAs, it is concluded that there would be no adverse effects of the Monmouthshire LP on the site integrity of the Severn Estuary SAC regarding the impact pathway water quality in-combination with other Plans.

5.5 Water Quantity, Level and Flow

5.5.1 River Usk SAC & River Wye SAC

Due to the similar ecological nature and qualifying features of the River Usk SAC and the River Wye SAC, this section combines the Appropriate Assessment for both sites.

As highlighted in the screening section for LSEs, both SACs depend on naturally fluctuating hydrological regimes 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 require 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. Furthermore, 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. Overall, the natural flow regime within the SACs maintains the characteristic biotope mosaic that is necessary to maintain the biological integrity of the site. The main target for the rivers is to maintain 90% of the naturalised daily mean flow throughout the year.

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 water stress classification system, the rivers are located within a wider area of low water stress[160]. Irrespective of this, water abstraction for domestic water supply is the most important pressure on the water volumes in both the Usk and the Wye catchments. For example, in the River Usk the public water supply accounts for 94% of the catchment's total annual abstraction[161]. 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, 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[162]. This was updated in 2024[163]. 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). Development allocated in the Monmouthshire LP would be spread between the South East Wales Conjunctive Use System (SEWCUS), the largest of the WRZs with approx. 40% of the total demand in Wales, and the Monmouth WRZ, which supplies the market town of Monmouth and the surrounding villages.

[160] 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]
[161] 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]
[162] 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]
[163] Revised Draft Water Resources Management Plan 2024 | Dŵr Cymru Welsh Water (dwrcymru.com) [Accessed on 16/08/2024]

The potable water supply in the SEWCUS WRZ is abstracted from the downstream reaches of both the River Usk and the River Wye catchments, indicating that water supplying development in Chepstow and Abergavenny will be derived from a combination of the two SACs. The WRMP notes that there is an anticipated deficit in water resources over the local plan period and details preferred actions to be taken in order to ensure sufficient drought resilience within the system. An HRA of the works required under this plan has been conducted and has concluded that there will be no significant impacts of the WRMP on either of the SACs.

The Monmouth WRZ primarily sources its potable water from the Mayhill abstraction from the River Wye at Monmouth. Furthermore, a small spring abstraction is at Ffynnon Gaer, which supplies an area south of Monmouth. The supply-demand balance projected in the 2019 plan for the zone indicates that the reported deployable output is approx. 4.1 Ml/d throughout the planning period, which exceeds the maximum demand of approx. 3.6 Ml/d in 2020/21. As such, the water resources that are available exceed the demand for water supply throughout the entire LP period. The 2024 update did not highlight any deficit and highlighted that the existing system is resilient to both 1 in 200-year and 1 in 500-year droughts throughout the plan period. Overall, the WRMP covers the entire Monmouthshire LP period, and the growth allocated therein. It is therefore considered that implementation of the Plan would not negatively impact the water quantity, level and flow within the River Usk SAC and the River Wye SAC.

The Core Management Plans for the SACs, published by Natural Resources Wales, highlight the potential impact that a few major abstractions (if fully utilised) might have on flow conditions within these rivers. Due to this, the Review of Consents process has set flow targets to remove effects of this impact pathway on the qualifying fish species (for example as detailed in Annex 1 of the Core Management Plan for the River Usk SAC). 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 Monmouthshire's WRZs and the principle of Hands-off Flow, it is concluded that the Monmouthshire LP will not result in adverse effects on the integrity of the River Usk SAC and the River Wye SAC regarding the impact pathway water quantity, level and flow.

As outlined in the previous section, the Monmouthshire LP (see Policies S4 and S5) already contains some broad policy wording that protects European sites, which are reliant on water supply, from adverse effects. It is acknowledged that these policies provide some basic protection to the River Usk SAC and the River Wye SAC regarding adverse effects from the impact pathway water quantity, level and flow. However, due to the sensitivity of these SACs to water abstraction, it is recommended that specific reference to the sites and the relevant flow targets established by Natural Resources Wales is made in the supporting text to either of these policies. **The following text could be added to ensure greater protection of the rivers' flow regimes: *'Any development proposals have to ensure that there will be no adverse effects on the site integrity of the two riverine SACs, the River Usk SAC and the River Wye SAC, regarding water quantity, level and flow. In particular, development will not be permitted if it cannot be accommodated under the Review of Consents for flow in these rivers, including the maximum permissible percentage reduction from naturalised flow levels and hands-off flow conditions.'***

Monmouthshire Council have commented that this has been considered as part of the plan making process in consultation with Welsh Water in relation to allocations. Proposals coming forward via planning applications are required to satisfy detailed planning guidance published by Natural Resources Wales so a specific DM policy is not considered necessary.

5.5.1.1 In-Combination Assessment

Similar to the evidence base for the water quality impact pathway, the thresholds for abstraction licenses and hand-off flows are set according to an in-combination approach, such that the integrity of the riverine SACs is protected. As such, the impact pathway water quantity, level and flow, is by definition assessed in-combination with growth in other authorities. Abiding by these thresholds, which account for the most accurate available scientific evidence, therefore implies that there will be no adverse impacts in-combination with the growth in surrounding authorities. Furthermore, the HRAs of development plans of surrounding authorities (e.g. those of Powys and Blaenau Gwent) concluded

there were no adverse impacts of Plans on the river SACs. It is therefore concluded that there would be no adverse effects on the site integrity of the River Usk SAC and the River Wye SAC regarding water quantity, level and flow in-combination with other Plans.

5.5.2 Severn Estuary SAC

The Severn Estuary SAC includes habitats and species that are likely to be sensitive to changes in the water quantity and flow rate. The primary mechanism by which the Monmouthshire LP could affect this would be a change in the water quantity supplied by the Rivers Usk and Wye, most likely a reduction in freshwater input due to water abstraction for the public water supply of new development. For example, the estuary, and the sand- and mudflat habitats are sensitive to changes in water flow rates, which might potentially lead to sediment accretion or erosion in certain locations. Similarly, the Atlantic salt meadow components might be sensitive to a reduction in water flow rates because of the increased deposition rates of sediments in the habitat. The sensitivity of the Severn Estuary SAC also extends to its animal species, which will depend on sufficient hydrological input to migrate up the Rivers Usk and Wye. While many of the qualifying features of the SAC are sensitive to changes in salinity, this mainly relates to reduced salinity within the estuary, for example as a consequence of heavy rainfall events. There is no mechanism by which the Monmouthshire LP could trigger a reduction in the salinity of the SAC, and this is therefore not discussed further in this HRA. Changes to the water flow rate within an estuary can be associated with a multitude of further impact pathways, including substratum loss, smothering and changes in wave exposure, and often interact with coastal squeeze. However, in its current form, the Monmouthshire LP does not propose for development that might directly affect these processes in the SAC. The remainder of this section therefore addresses whether the LP might affect the water flow rate within the Severn Estuary SAC.

As discussed in detail in the Appropriate Assessment section on the River Usk and the River Wye SACs, the Monmouthshire LP will increase the water abstraction from both riverine SACs, which may affect the water flow rates in the rivers. However, Dwr Cymru's WRMP (see previous section) concludes that the water supply for Monmouthshire is in surplus for the entire planning period, indicating that the water can be supplied without an adverse effect on relevant European sites. Furthermore, the Review of Consents process undertaken in relation to the River Usk and the River Wye SACs, ensures that the flow will not deviate significantly from natural conditions. While the Review of Consents process was carried out to protect the integrity of the riverine SACs, maintaining the natural flow conditions within the Usk and the Wye will also maintain an appropriate freshwater input into the Severn Estuary SAC. In turn, this ensures that the water flow rate and the hydrological connectivity within the SAC will not adversely affect qualifying habitats (e.g. Atlantic salt meadows) or species (e.g. twaite shad, lampreys). For example, the maintenance of freshwater flow into the SAC will provide hydrological connectivity for anadromous fish species to migrate from the estuary to their upstream spawning grounds. Therefore, given that the policy wording recommended in the previous section (impact pathway water quantity, level and flow in relation to the Rivers Usk and Wye SACs), it is concluded that the Monmouthshire LP will not result in adverse effects on the integrity of the Severn Estuary SAC regarding the impact pathway water quantity, level and flow.

5.5.2.1 In-Combination Assessment

Numerous authorities border the Severn Estuary SAC, including Newport, Forest of Dean and South Gloucestershire. Development allocated within the Plans of these authorities therefore has the potential to affect the water quantity, level and flow in the Severn Estuary SAC in-combination. However, as a legal requirement, HRAs have been undertaken on all these Plans, assessing in-combination effects on European sites. The HRAs have concluded that there will be no in-combination effects on the water quantity, level and flow in the Severn Estuary SAC. For example, the HRA of the Newport LDP concluded that the proposed schemes would have no in-combination effects on the Severn Estuary SAC due to there being no waterways connecting to the SAC. Given the evidence in the relevant HRAs, it is concluded that there would be no adverse effects of the Monmouthshire LP on the site integrity of the Severn Estuary SAC regarding the impact pathway water quantity, level and flow in-combination with other Plans.

6. Conclusion

With the changes made to the Local Plan in response to recommendations, it is considered that the Monmouthshire Local Plan contains a sufficient policy framework that no adverse effect would arise on Habitats sites either alone or in combination with other plans or projects.

Appendix A Map of Habitats sites

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

LEGEND

- Monmouthshire Authority Boundary
- Study Area Buffer -15km

Special Area of Conservation (SAC)

- Aberbargoed Grasslands
- Avon Gorge Woodlands
- Coed y Cerrig
- Cwm Clydach Woodlands
- Llangorse Lake
- River Usk
- River Wye
- Usk Bat Sites
- Wye Valley Woodlands
- Wye Valley and Forest of Dean Bat Sites

SAC / SPA / Ramsar

- Severn Estuary

Purpose of Issue

DRAFT

Client

MONMOUTHSHIRE COUNTY COUNCIL

Project Title

HRA OF THE MONMOUTHSHIRE LOCAL DEVELOPMENT PLAN PREFERRED STRATEGY

Drawing Title

EUROPEAN SITES WITHIN 15KM OF THE BOUNDARY OF MONMOUTHSHIRE

Drawn	Checked	Approved	Date
AM	DW	DW	16/09/2024

AECOM Internal Project No.	Scale @ A3
60609986	1:300,000

AECOM
Midpoint
Alençon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

Drawing Number

FIGURE A

Rev

01

5 0 5 10 15 20 25 km

File Name:\\eu.aecomnet.com\euprojects\UKGLG3\EIGeneralGIS\01 - Jobs\#2019\191108_Monmouthshire HRA.mxp\02_Maps\Figure 1v1_ Location of European Designated Sites.mxd

Appendix B Policy Screening Table

Policy	Text	Assessment
LP Strategic Framework		
LP Sustainable and Resilient Communities Strategy		
Strategic Policy S1 – Growth Strategy	In order to meet Monmouthshire's core purpose of building sustainable and resilient communities for all, between 2018 and 2033 the Plan will make provision for: • 6,210* homes to meet a housing requirement of 5,400 homes. • A minimum of 38ha of employment land (Use Classes B1, B2, B8). The focus of this growth will be on the County's most sustainable settlements, as outlined in the sustainable settlement hierarchy set out in Policy S2.	Likely Significant Effects on European sites cannot be excluded. This policy identifies that a quantum of 6,210 net new homes and 38ha net new employment land will be delivered in Monmouthshire during the LP period to 2033. The growth will be focused in the county's most sustainable settlements. **Potential impact pathways are present:** • **Atmospheric pollution** • **Recreational pressure** • **Loss of functionally linked land** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways Strategic Policy S1 is screened in for Appropriate Assessment.

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Strategic Policy S2 – Spatial Distribution of Development – Settlement Hierarchy</td>
<td>In order to deliver sustainable and resilient communities for all, the main focus for new development will be distributed based on the following settlement hierarchy:
<table>
<tr><th colspan="2"></th><th colspan="2">Distribution of Residential Growth*</th><th colspan="2">Distribution of Employment Growth</th></tr>
<tr><th colspan="2">Settlement Hierarchy</th><th>Indicative % of distribution</th><th>Indicative No. of homes</th><th>% of distribution</th><th>Hectares</th></tr>
<tr><td>Tier 1</td><td>Primary Settlements:
Abergavenny
(inc. Llanfoist)
Chepstow

Monmouth
(inc. Wyesham)
Caldicot
(inc. Severnside Area comprising of: Caerwent, Crick, Magor Undy, Portskewett, Rogiet and Sudbrook)</td><td>22%

13%

15%

35% across Severnside Area</td><td>1,362

829

923

2,190 across Severnside Area</td><td>3%

11%

11%

66%</td><td>1.7ha**

6.4ha

5.84ha

37.86ha</td></tr>
<tr><td>Tier 2</td><td>Secondary Settlements:
Penperlleni
Raglan
Usk</td><td>6% across Secondary Settlements</td><td>350 across Secondary Settlements</td><td>10%</td><td>6.05ha</td></tr>
<tr><td>Tier 3</td><td>Main Rural Settlements:
Devauden
Dingestow
Little Mill
Llandogo
Llanellen
Llangybi
Llanover
Llanvair Discoed</td><td></td><td></td><td></td><td></td></tr>
</table>
</td>
<td>Likely Significant Effects on European sites cannot be excluded.

This policy identifies the settlements in which development will occur in Monmouthshire during the Plan period of 2018-2033. It also provides the quantum of residential and employment development to be delivered in each of the settlements across the county. The largest amount of residential growth is predicted for the Primary Settlements Abergavenny (22%), Chepstow (13%), Monmouth (15%) and Caldicot (35%, which includes the Severnside Area). The largest overall quantum of employment development is also forecast in the Primary Settlements.

The quantum and location of development are key factors in determining the magnitude of negative impact pathways linking to European sites.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Strategic Policy S2 is screened in for Appropriate Assessment.</td>
</tr>
</table>

Policy	Text						Assessment
		Mathern Pwllmeyric Shirenewton/ Mynyddbach St Arvans Tintern Trellech Werngifford/Pandy	9% across Main Rural and Minor Rural Settlements (Tiers 3 and 4)	556 across Main Rural and Minor Rural Settlements (Tiers 3 and 4)	0%	0ha	
	Tier 4	**Minor Rural Settlements:** Bettws Newydd Broadstone /Catbrook Brynygwenin Coed y Paen Cross Ash Cuckoo's Row Great Oak Grosmont Gwehelog Llanarth Llanddewi Rhydderch Llandegveth Llandenny Llangwm Llanishen Llansoy Llantilio Crossenny Llantrisant Llanvair Kilgeddin Llanvapley Mitchel Troy Penallt Penpergwm The Bryn The Narth Tredunnock					

Policy	Text	Assessment
	Settlement boundaries will be defined for Settlement Tiers 1 – 3, within which the principle of development is considered to be acceptable, subject to detailed policy considerations set out in the RLDP. Within Tier 4 – Minor Rural Settlements, minor infilling between existing buildings will be considered acceptable, subject to detailed policy considerations set out in the RLDP. Outside of Tiers 1 – 4, open countryside policies will apply where planning permission will only be allowed for the following types of development, subject to satisfying detailed planning criteria: • Acceptable conversions of rural buildings • Sub-division of existing dwellings • Rural Enterprise Dwellings • One Planet Development • Rural diversification and rural enterprise uses • Affordable housing exception sites adjoining settlement boundaries to meet local needs • Gypsy and Traveller Sites	
Managing Settlement Form		
Policy OC1 – New Built Development in the Open Countryside	There is a presumption against new built development in the open countryside, unless justified under national planning policy. Proposals for new built development in the open countryside will only be permitted where justified under national planning policy and all the following criteria are met: a) The proposal is satisfactorily assimilated into the landscape and complies with Policies LC1, GI1, T1, RE3, RE4 and NR1; New buildings are wherever possible located within or close to existing groups of buildings; The development design is of a form, bulk, size, layout and scale that respects the character of the surrounding countryside; and The development will have no unacceptable adverse impact on landscape, historic / cultural or geological heritage, biodiversity, dark skies and local amenity value.	There are no LSEs of this policy on European sites. This is a development management policy that protects the open countryside from new development, unless a range of criteria are met (such as having no adverse impacts on biodiversity and dark skies). The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy OC1 is screened out from AA.

Policy	Text	Assessment
Policy GW1 – Green Wedge Designations	Green Wedges have been designated in the land between the following areas, as shown on the Proposals Map. a) Abergavenny, Llanfoist and the BBNP boundary; Chepstow, Pwllmeyric and Mathern; Portskewett and Sudbrook; Rogiet and Caldicot; Shirenewton and Mynyddbach Undy, Llanfihangel Rogiet and Rogiet. There is a presumption against new built development within green wedge designations unless exceptionally justified under national planning policy.	There are no LSEs of this policy on European sites. This is a development management policy that designates green wedges across Monmouthshire in which no new development will be permitted. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy GW1 is screened out from AA.
Placemaking and Design		

Policy	Text	Assessment
Strategic Policy S3 – Sustainable Placemaking and High Quality Design	Development will contribute to creating high quality, attractive and sustainable places that support the health and well-being of the community and respond to climate change. In order to achieve this, development must: i. Incorporate high quality, sustainable, safe and inclusive design that offers ease of access for all and provides connectivity between uses; ii. Incorporate an appropriate mix of uses, where applicable, to minimise the need to travel and to maximise opportunities for sustainable travel; iii. Incorporate a green infrastructure-led approach that respects local distinctiveness and the character of the site and its surroundings; and iv. Protect and enhance the natural, historic and built environments and show an understanding of how these function together to contribute towards the quality of places.	There are no LSEs of this policy on European sites. This is a development management policy that promotes high quality, attractive and sustainable places across Monmouthshire. It specifies that green infrastructure should be incorporated in new developments and the natural environment should be protected / enhanced. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy S3 is screened out from AA.

Policy	Text	Assessment
Policy PM1 – Creating Well-Designed Places	All development should be of a high-quality sustainable design and respect the local character and distinctiveness of Monmouthshire's built, historic and natural environment. Development proposals will be required to: a) Respect the existing form, scale, siting, height, massing, materials (including colour) and layout of its setting; Ensure a safe, secure, pleasant and accessible environment for all members of the community supporting the principles of community safety and maximising opportunities for connectivity to the wider environment; Contribute towards a sense of place and identity whilst ensuring that the location, scale, amount, mix of use and density of development, including cumulative impact, is compatible with existing uses and its local context; Respect and enhance local distinctiveness and landscape character as defined through the LANDMAP process, particularly where built and natural views, panoramas or historical features are present; Maintain reasonable levels of privacy and amenity of occupiers of neighbouring properties, where applicable; Ensure that existing residential areas are protected from overdevelopment and insensitive or inappropriate infilling; Integrate multifunctional green and blue infrastructure and public open space within site boundaries, providing connectivity to wider networks as appropriate.	There are no LSEs of this policy on European sites. This is a development management policy that delivers high-quality sustainable design across Monmouthshire, respecting its local character and distinctiveness. Importantly, multifunctional green and blue infrastructure with connectivity to the wider network will be integrated. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy PM1 is screened out from AA.

Policy	Text	Assessment
Policy PM2 – Environmental Amenity	Development proposals that would cause or result in a significant risk/harm to local amenity, health, the character/quality of the countryside or interests of nature conservation, landscape or built heritage importance, due to the following, will not be permitted unless it can be demonstrated that measures can be taken to overcome any significant risk: Air pollution; Light pollution; Noise pollution; Water pollution; Contamination.	There are no LSEs of this policy on European sites. This is a development management policy that protects Monmouthshire's environmental amenity (including interests of nature conservation) from various pollution sources. This is positive for European sites, which are sensitive to a wide range of pollution issues listed here, including air, light, noise and water pollution. For example, protection from air pollution is essential for nitrogen-sensitive habitats / species, such as those present in the Cwm Clydach SAC. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy PM2 is screened out from AA.

Policy	Text	Assessment
Policy PM3 – Advertisements	Proposals for advertisements will only be permitted where: a) Having regard to the existing number and siting of advertisements in the locality the proposal would not result in an unacceptable clutter of advertisements; Existing means of support are used for signs, wherever possible; If located within the open countryside they would not unacceptably detract from the rural setting of the locality; If located in a Conservation Area, they would not unacceptably detract from the character or appearance of the area; If located within the open countryside or a Conservation Area, externally lit signs are only appropriate to enable signposting to uses trading outside of daylight hours; There would no adverse impact on public or highway safety. Proposals for bilingual signs and advertisements will be supported in principle, subject to detailed planning considerations.	There are no LSEs of this policy on European sites. This is a development management policy that relates to the provision of advertisements across Monmouthshire. However, this has no relevance to the integrity of European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy PM3 is screened out from AA.
Policy HE1 – Conservation Areas	Development including proposals for alterations, extensions or conversions of existing buildings within Conservation Areas or their settings must preserve or enhance the character or appearance[164] of the Conservation Area. They must also have regard to the Conservation Area Appraisal for that area. Development proposals within Conservation Areas will be permitted if they meet all of the following criteria: a) Have no adverse effect on important views into and out of the Conservation Area; Have no adverse effect on important vistas within and out of the area and the character and appearance of the street scene and roofscape, townscape or landscape setting; Pay special attention to complementing or reflecting the special architectural qualities and distinctiveness of the Conservation Area including development pattern, profile, form, scale, mass, detailing and materials; Pay special attention to the setting of the development and its open areas; Retain, restore or reinstate historic features and details of buildings, including garden or forecourt features, boundary walls, paving etc. as appropriate.	There are no LSEs of this policy on European sites. This is a development management policy that protects Conservation Areas from changes in their character and / or appearance. However, preserving Conservation Areas has no bearing on European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy HE1 is screened out from AA.

[164] Section 72 of the Planning (Listed Buildings and Conservation Area) Act 1990 test refers to preserve or enhance character or appearance.

Policy	Text	Assessment
	Parking and servicing arrangements associated with new uses must not detract from the character or appearance of the Conservation Area. High quality modern design may be acceptable, particularly where new compositions and points of interest are created. Permission will be refused where proposals are unsympathetic to an existing building and/or detract from the character or appearance of the Conservation Area. Specialist recording, archiving and publishing may be required prior to the demolition of any historic building within a Conservation Area and may be required in other cases of alteration.	
Policy HE2 – Design of Shop Fronts in Conservation Areas	In Conservation Areas the removal of traditional shop fronts will not be permitted. Improvements to non-traditional shop fronts will be permitted where they retain historic features and the proposed improvements are in character with the area. Proposals to replace modern shop fronts will be permitted where they meet the following criteria: a) Reinstate or restore lost details which will enhance the Conservation Area; Use traditional arrangement, materials and paint colours; Integrate positively with the surrounding area, and where it replaces two or more units, respects the character of individual units; Have fascia boards and signage in keeping with the design, materials and scale of the character of the building in which they are set; and Use unobtrusive security measures such as internal shutters, toughened glass or traditional timber shutters. Do not incorporate internal illumination and any external illumination where necessary for night time trading is externally mounted and is of a scale, design and lux level appropriate to the building and shop front.	There are no LSEs of this policy on European sites. This is a development management policy that protects the design of traditional shop fronts across Monmouthshire. However, preserving shop fronts has no relevance for European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy HE2 is screened out from AA.

Policy	Text	Assessment
Policy HE3 – Roman Town of Caerwent	Development within or adjacent to the walls and ditches of the Roman Town at Caerwent will only be permitted where it can be demonstrated: a) That the archaeological remains are left undisturbed; and b) That the special character and openness of the Caerwent Conservation Area is preserved or enhanced in accordance with the Caerwent Conservation Area Appraisal.	There are no LSEs of this policy on European sites. This is a development management policy that safeguards the Roman Town at Caerwent from development. However, this is of no relevance to European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy HE3 is screened out from AA.

Policy	Text	Assessment
Climate Change		
Strategic Policy S4 – Climate Change	All development proposals will be required to address the causes of, and adapt to the impacts of, climate change. Means of achieving this will include: i. Avoiding locating development in areas at risk of flooding, or where appropriate, minimising the risk of flooding including the incorporation of measures such as Sustainable Drainage Systems (SuDs) and flood resilient design; ii. Incorporating low/zero carbon energy requirements by reducing energy demand and promoting energy efficiency through the design of buildings by prioritising fabric first and orientation design principles; iii. Supporting the development of renewable and low/zero carbon energy generation and storage and a presumption against energy generation utilising fossil fuels, fracking and methods that are not low/zero carbon; iv. Utilising sustainable construction techniques and local supplies through the adoption of the circular economy principles, where possible; v. Incorporating water efficiency measures and minimising adverse impacts on water resources and quality; vi. Using land efficiently and co-locating uses to minimise the overall need to travel and maximise opportunities for sustainable travel; vii. Providing ultra-low emission vehicles charging infrastructure to reduce emissions and improve air quality; and viii. Supporting the resilience of development through green infrastructure solutions, including opportunities for biodiversity and resilient ecosystems, greenspace provision and connectivity, and water resource management.	There are no LSEs of this policy on European sites. This is a development management policy that requires all development proposals to address the causes of and adapt to climate change. This includes a wide range of adaptations, such as avoiding areas at risk of flooding, incorporating SuDS and water efficiency measures, providing electric vehicle charging infrastructure and others. Some of these measures will be beneficial to European sites that are sensitive to water quality changes, water resources and atmospheric pollution. For example, avoiding areas of flood risk and incorporating SuDS will reduce the input of pollutants to aquatic environments, as well as help limit runoff to pre-development greenfield rates. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy 4 is screened out from AA.

Policy	Text	Assessment
Policy NZ1 – Monmouthshire Net Zero Carbon Homes	All new build residential development will be required to demonstrate that the standards outlined below are met through the submission of an appropriate energy assessment with any planning application for a new home. Development proposals for new homes must demonstrate that the new home/s meets the following: • Space heating demand less than 25KWh/m2/annum; • Evidence and achieve an energy performance rating of 'A' EPC; • Energy consumption generated by heating, hot water and lighting (regulated energy) must be generated by renewables on the dwelling or via the overall development (generated energy balance – net zero); • New homes should not connect to the gas grid and all heating should be provided through low carbon heating systems. No fossil fuels are to be used onsite; • Each home will have electric car charging infrastructure. All developments must submit an as built performance survey following construction and prior to occupation of the home/s to demonstrate that they have been built to the standards outlined above.	There are no LSEs of this policy on European sites. This is a development management policy that delivers net zero carbon homes across Monmouthshire. Development proposals will need to submit an appropriate energy assessment to demonstrate a range of criteria are met. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy NZ1 is screened out from AA.

Policy	Text	Assessment
Policy CC1 – Sustainable Drainage Systems	Development proposals will be expected to incorporate water management measures, including Sustainable Drainage Systems (SuDS), to reduce surface water run-off and minimise its contribution to flood risk elsewhere. The distribution of SuDS features across the site should be prioritised, reducing the size of any single SuDS feature.	[illegible] sites. This is a development management policy that requires all development proposals to incorporate water management measures, such as SuDS. This policy will have positive impacts on European sites that are sensitive to changes in water quality and water resources. For example, incorporating SuDS will help reduce the input of pollutants to aquatic environments. Furthermore, run-off will be reduced to greenfield rates, which will limit excessive input of water to hydrologically connected European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy CC1 is screened out from AA.

Policy	Text	Assessment
Policy CC2 – Renewable Energy Allocation	Approximately 16 ha of Land at Raglan Enterprise Park, Raglan is identified as having potential for a ground mounted solar development, subject to detailed planning considerations. Opportunities for direct-access use should be fully explored and utilised as part of the proposal.	There are no LSEs of this policy on European sites. This policy identifies approx. 16ha of Land at Raglan Enterprise Park as having potential suitability for ground-mounted solar development. While the delivery of solar development at this site is potentially associated with impact pathways to European sites (e.g. loss of functionally linked habitat, visual / noise disturbance, water quality and others), this site is not formally allocated in the Deposit Plan. The policy only identifies potential suitability of the site for solar development. Any detailed planning proposal for the site would need to be subject to a project-level HRA to ensure that there are no LSEs and, where present, adverse effects on the integrity of any European sites. However, at the LP level, there are no impact pathways present and Policy CC2 is screened out from AA.

Policy	Text	Assessment
Policy CC3 – Renewable Energy Generation	Renewable and low carbon development proposals, inclusive of associated infrastructure, which contribute to meeting national and local renewable and low carbon energy efficiency targets will be permitted where: a) A sequential approach to site selection has been followed to demonstrate that any reasonable alternatives have been considered; Off-grid connection opportunities have been fully explored in addition to grid connection; There are no unacceptable cumulative impacts in combination with existing or consented development; There are no unacceptable adverse impacts upon the landscape, townscape and historic features and there is compliance with Policy LC1, with regard to protection and enhancement of landscape character; There are no unacceptable adverse impacts on biodiversity; There are no unacceptable adverse impacts on the amenities of nearby residents by way of noise, dust, odour or increases in traffic including construction and decommissioning stages; When the technology is no longer operational there is a requirement to decommission, remove the facility and complete a restoration of the site through an agreed restoration strategy; The wider environmental, economic, social and community benefits directly related to the scheme outweigh any potentially adverse impacts; and The distinct identity of Monmouthshire will not be compromised.	There are no LSEs of this policy on European sites. This policy identifies support in principle for renewable and low carbon development proposals across Monmouthshire, provided that a range of criteria are met. However, a general support of such proposals has no direct bearing on European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy CC1 is screened out from AA.

Policy	Text	Assessment
Green Infrastructure, Landscape & Nature Recovery		
Strategic Policy S5 – Green Infrastructure, Landscape and Nature Recovery	Development proposals will adopt a strategic and proactive placemaking approach. An evidence based Green Infrastructure Assessment and step wise approach will inform design and long-term delivery of a multifunctional landscape; capable of delivering a wide range of social, economic, environmental, health and well-being benefits for local communities and the County as a whole, including climate change action, net benefit for biodiversity and ecosystem resilience. Development proposals must: Maintain, protect and enhance the integrity and connectivity of Monmouthshire's green infrastructure, landscape, biodiversity, access and heritage assets through the following key functions: i. Greenspace provision, connectivity and enjoyment by ensuring the creation of accessible multifunctional interconnected spaces and routes that offer opportunities for recreation and health and well-being; ii. Landscape setting and quality of place, by identifying, assessing, protecting and enhancing the natural and distinctive landscape, historical, cultural, ecological and geological heritage, including natural and man-made elements associated with existing landscape character; iii. Biodiversity and resilient ecosystems by protecting, assessing, positively managing and enhancing biodiversity and geological interests, including designated and non-designated sites, protected and priority species and their habitats, and the ecological connectivity between them; iv. Sustainable energy use; v. Local food production; and vi. Flood attenuation and water resource management.	There are no LSEs of this policy on European sites. This is a development management policy that requires all proposals to adopt a proactive placemaking approach, such as by undertaking a Green Infrastructure Assessment. For example, accessible multifunctional interconnected greenspaces will need to be created to offer opportunities for recreation. The provision of greenspace resources is positive for European sites that are sensitive to recreational pressure, as these constitute alternative recreation destinations and absorb some of the recreational demand created by new housing locally. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy S5 is screened out from AA.

Policy	Text	Assessment
Policy GI1 – Green Infrastructure	Development proposals will be expected to maintain, protect and enhance the integrity and connectivity of Monmouthshire's diverse GI network by: a) Undertaking an appropriate GI asset and opportunities assessment and step wise approach based on the scale and complexity of development to inform development proposals. All major development proposals will be required to submit a GI Assessment. a) Ensuring that existing GI assets are protected, retained and integrated into new development. Where loss of GI is unavoidable, in order to secure sustainable development, appropriate mitigation and/or compensation of the lost assets will be required. b) Incorporating new and /or enhanced GI of an appropriate type, standard and size. Where on-site provision of GI is not possible, contributions will be sought to make appropriate provision for GI off-site. A GI Statement must be provided with all planning applications. The statement will be proportionate to the scale, nature and complexity of the development proposed and will describe how GI has been incorporated into the proposal. The GI Statement will need to demonstrate how a step wise approach as outlined in chapter 6 of PPW12 has been applied.	There are no LSEs of this policy on European sites. This is a development management policy which ensures that planning proposals will enhance the integrity and connectivity of Monmouthshire's green infrastructure network. For example, developments will need to incorporate new or enhanced green infrastructure, as well as provide a Green Infrastructure Statement. The provision of greenspace resources is positive for European sites that are sensitive to recreational pressure, as these constitute alternative recreation destinations and absorb some of the recreational demand created by new housing locally. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy GI1 is screened out from AA.

Policy	Text	Assessment
Policy GI2 – Trees, Woodland and Hedgerows	Development proposals that would adversely impact on trees, woodland and hedgerows that are either a public amenity, of cultural heritage, provide important ecosystem services, are protected, or significantly contribute to GI connectivity will not be permitted. Where trees, woodland and hedgerows are present, development will only be permitted where they are informed by appropriate surveys, assessment and plans to identify and inform biodiversity, GI and landscape value, methods for retention, integration, protective mitigation and long-term protection through maintenance and management. If removal and/or damage is necessary, a scheme for replacement trees, woodland or hedgerows must be agreed as part of the development proposal design and will be subject to the minimum planning ratios as set out in National Policy.	There are no LSEs of this policy on European sites. This is a development management policy that protects trees, woodland and hedgerows from adverse impacts. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy GI2 is screened out from AA.
Policy LC1 – Landscape Character	Development proposals that would impact upon landscape character, as defined by LANDMAP, must demonstrate through a landscape assessment how landscape character has influenced their design, scale, nature and site selection. Development will be permitted provided it would not have an unacceptable adverse effect on the special character or quality of Monmouthshire's landscape in terms of its visual, historic, geological, ecological or cultural aspects by: a) Causing significant visual intrusion; b) Causing significant adverse change in the character of the built or natural landscape; c) Being insensitively and unsympathetically sited within the landscape; d) Introducing or intensifying a use which is incompatible with its location; e) Failing to harmonise with, or enhance the landform and landscape; f) Losing or failing to incorporate important traditional features, patterns, structures and layout of settlements and landscapes of both the built and natural environment; and /or g) Respecting dark skies. Particular emphasis will be given to those landscapes identified through the LANDMAP Landscape Character Assessment as being of high and outstanding quality because of a certain landscape quality or combination of qualities.	There are no LSEs of this policy on European sites. This is a development management policy that safeguards the special character and quality of Monmouthshire's landscape. A range of criteria that proposals should satisfy are specified. While positive from a visual perspective, maintaining the wider landscape character has no direct relevance to European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy LC1 is screened out from AA.

Policy	Text	Assessment
Policy LC2 – Blaenavon Industrial Landscape World Heritage Site	Development within or, in the vicinity of, the Blaenavon Industrial Landscape World Heritage Site (BILWHS) will only be permitted where it would: a) Preserve or enhance the landscape setting and character as defined through the LANDMAP process; Have no serious adverse effect on significant views into and out of the World Heritage site; Promote the standards of design in terms of distinctiveness, siting, mass, scale and materials that are sympathetic to, preserve or enhance the character of the local area. Development that would cause unacceptable harm to the outstanding universal values and unique character as set out in the BILWHS Management Plan that justify the designation of the World Heritage Site, or its setting, will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that protects the Blaenavon Industrial Landscape World Heritage Site. However, maintaining this site has no bearing on European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy LC2 is screened out from AA.
Policy LC3 – Bannau Brycheiniog National Park	Development in the vicinity of the Bannau Brycheiniog National Park will only be permitted where it would: a) Preserve or enhance the landscape setting, as defined through the LANDMAP process; Have no serious adverse effect on significant views into and out of the National Park. Have no adverse impact on the International Dark Skies Reserve designation. Development that would cause unacceptable harm to the qualities that justify the designation of the Bannau Brycheiniog National Park or its setting will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that prevents development in the vicinity of the Bannau Brycheiniog National Park, unless certain criteria are fulfilled. However, protecting this National Park has no direct bearing on European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy LC3 is screened out from AA.

Policy	Text	Assessment
Policy LC4 – Wye Valley National Landscape (AONB)	Within the Wye Valley National Landscape (AONB), any development must be subservient to the primary purpose to conserve and enhance the natural beauty of the area. In considering development proposals regard will be given to: a) The long term effect of the proposal, and the degree to which its nature and intensity is compatible with the character, purpose and overall management of the National Landscape (AONB); The degree to which design, quality and use of appropriate materials harmonise with the surrounding landscape and built heritage; The extent of the landscaping proposed; The need to protect features in the landscape identified as important through LANDMAP; The extent to which a proposed new building or use will generate additional traffic and the requirement for improvement of existing roads and lanes, including the surfacing of green lanes; The impact of the proposed development upon nature conservation interests. Development proposals that are outside the National Landscape (AONB) but would detract unacceptably from its character and setting will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that secures the natural beauty of the Wye Valley National Landscape AONB. Regard should be given to a range of factors, such as sensitive design and additional traffic. However, while protection of this AONB is generally positive, it has no direct relevance for European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy LC4 is screened out from AA.

Policy	Text	Assessment
Policy LC5 – Dark Skies and Lighting	Development proposals involving external lighting must include appropriate lighting details and where proportionate a strategy to ensure: a) Lighting is necessary for the development; The proposed lighting and associated infrastructure is the minimum required; Light spillage is minimised; The prevention of glare and respect for the amenity of neighbouring land uses; The visual and landscape character of the built and natural environment is not unacceptably affected; In open countryside locations dark skies are retained; Potential adverse impacts on biodiversity and ecological connectivity are minimised; and Cumulative and in-combination lighting impacts are avoided.	There are no LSEs of this policy on European sites. This is a development management policy that requires planning proposals to consider lighting, such as installing a minimum of external lighting and minimising light spillage. It also specifies that adverse impacts on biodiversity should be minimised. This policy is particularly positive for qualifying bats from the Usk Bat Sites SAC and the Wye Valley and Forest of Dean Bat Sites SAC. Minimising potential light spillage is important for ensuring that bats can successfully move along commuting routes between roosts and foraging areas. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy LC5 is screened out from AA.

Policy	Text	Assessment
Policy NR1 – Nature Recovery and Geodiversity	Where biodiversity or ecosystem resilience could be impacted by a development proposal, applications must be accompanied by an ecological survey and assessment of the likely impact of the proposal on locally designated site(s) and functionally linked land, species or habitat(s) and shall make appropriate provision for their safeguarding and delivery of net benefit for biodiversity. Development proposals in sites containing protected species or habitats which are defined as irreplaceable by PPW12 are unacceptable. Development proposals that are likely to damage a locally designated site of biodiversity and / or geological importance, or a site that satisfies the relevant designation criteria, or the continued viability of priority habitats and species, or Section 7 list of species and habitats, will only be permitted where: a) The need for the development clearly outweighs the biodiversity, ecosystem resilience or geological importance of the site; and It can be demonstrated that the development cannot reasonably be located elsewhere. Where development addresses criteria a) and b), it will be expected that any unavoidable harm is minimised by effective avoidance measures and mitigation. Where this is not feasible, appropriate provision for compensatory habitats and features of equal or greater quality and quantity must be provided on-site and where not possible, off-site. Where appropriate, long-term management and maintenance of biodiversity must be secured. Development proposals must deliver net benefit for biodiversity and ecosystem resilience and will be expected to: Maintain, incorporate, and enhance existing semi-natural habitats, linear habitat features, the ecological connectivity between them, other features of nature conservation interest and geological features. These must be safeguarded during construction work. Incorporate locally appropriate, climate resilient, native, and local provenance vegetation in any landscaping or planting scheme, except where special requirements in terms of purpose or location may dictate otherwise. Ensure the protection and enhancement of biodiversity and landscape resources through appropriate building design, site layouts, retention of dark corridors, landscaping techniques and choice of plant species. Where appropriate, make provision for on-going maintenance of retained or created nature conservation interests.	There are no LSEs of this policy on European sites. This is a development management policy that protects biodiversity and ecosystem resilience across Monmouthshire. It requires applications to undertake ecological surveys both in relation to locally designated sites and functionally linked land. Furthermore, where impacts on biodiversity are likely to occur, avoidance or mitigation measures will be needed to address unavoidable harm. It also specifies that a need benefit for biodiversity must be delivered, such as by maintaining, incorporating and enhancing semi-natural habitats, linear habitat features and ecological connectivity between them. While the policy does not explicitly refer to European sites, it is considered that it provides a positive framework for their protection. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy NR1 is screened out from AA.

Policy	Text	Assessment
Policy NR2 – Severn Estuary Recreational Pressure	Development proposals that would result in an increase in visitor pressure on features of the Severn Estuary SAC, SPA, Ramsar site, or Functionally Linked Land will not be supported unless it can be demonstrated that no adverse impact on the integrity of the European Marine Site will occur.	There are no LSEs of this policy on European sites. This is a development management policy that explicitly protects the integrity of the Severn Estuary SAC / SPA / Ramsar from adverse impacts associated with recreational pressure. Recreational pressure is identified as one of the key pressures on the SAC / SPA / Ramsar in Natural England's SIP. Ensuring that the integrity of the site is protected, such as through delivery of adequate mitigation measures, is one of the key HRA-relevant policy mechanisms in the LP. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy NR2 is screened out from AA.

Policy	Text	Assessment
Policy NR3 – Protection of Water Sources and the Water Environment	Development, which may impact upon the water environment and associated land, will only be permitted where it: a) Would not harm or pose an unacceptable risk to the capacity or flow of groundwater, surface water or coastal water systems; Would not harm or pose an unacceptable risk to the quality and quantity of ground waters, surface waters, wetlands or coastal water systems including, where appropriate, their ecological and amenity value; and Where practicable and reasonable, improves water quality,	There are no LSEs of this policy on European sites. This is a development management policy that prevents planning proposals from negatively impacting the water environment. The policy extends protection to the quality and quantity of groundwater and surfaces water. This is a key policy that protects the integrity of the River Wye SAC, River Usk SAC and Severn Estuary SAC / SPA / Ramsar, all of which are directly or indirectly to a deterioration in water quality and reduced hydrological flows. Of particular importance in this context is the phosphorus neutrality requirement in parts of the catchment of the River Wye and River Usk, which will need to be adhered to as a result of this policy. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy NR3 is screened out from AA.

Policy	Text	Assessment
Policy PROW1 – Public Rights of Way	Any Public Rights of Way (PROW) affected by a development proposal will require retention or a successful Path Order to either move the PROW on to a suitable alternative or to extinguish the PROW. Any predicted adverse impacts on the character, safety, enjoyment and convenient use of a PROW must be mitigated. Provision of additional routes where appropriate, will be sought in new developments with linkages to the existing network.	There are no LSEs of this policy on European sites. This is a development management policy that requires PRoWs to be retained by development proposals or a Path Order to be obtained for their rerouting / removal. Furthermore, additional routes will be sought in new developments. Generally, the retention of or provision of new PRoWs is positive because it will ensure that Monmouthshire continues to be served by a suite of recreational assets. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy PROW1 is screened out from AA.

Policy	Text	Assessment
Infrastructure		
Strategic Policy S6 – Infrastructure	Where existing infrastructure is inadequate to serve the proposed development, new or improved infrastructure and facilities must be provided as part of the proposed development to mitigate any likely adverse impacts. Where possible, infrastructure improvements should be provided prior to occupation. Where provision on-site is not appropriate, off-site provision, or a financial contribution towards it, will be sought. Arrangements will be required towards the future management and maintenance of facilities provided, either in the form of initial support or in perpetuity, including the use of management companies where appropriate. Planning agreements and obligations will be sought to secure improvements in infrastructure, facilities, services and related works, where they are necessary to make development acceptable. In identifying appropriate contributions, due regard will be paid to the overall development viability, including the cost of measures that are necessary to physically deliver a development and ensure that it is acceptable in planning terms. The requirements for such agreements/obligations will include consideration and appropriate provision of: • Affordable housing • Education facilities and/or required improvements • Sustainable transport measures • Transport infrastructure • Recreation and leisure facilities including formal and informal open space • Green and blue infrastructure • Community and cultural facilities • Welsh language including Welsh language facilities • Ecological mitigation and enhancement • Strategic utilities including water and sewerage infrastructure • Waste management facilities • Health infrastructure and/or facilities In the event that viability considerations indicate that not all the identified contributions can be reasonably required, priority contributions will be determined on the basis of the individual circumstances of each case. In the case of residential developments, priority will be given to the affordable housing requirement set out in Policy S7 unless there is an overwhelming need for the contribution, in whole or in part, to be allocated for other necessary purpose/s.	There are no LSEs of this policy on European sites. This is a development management policy that ensures the necessary infrastructure is in place to meet the requirements of new developments. Planning agreements and obligations will be sought to secure the appropriate provision of a diverse range of infrastructure, including sustainable transport measures, recreation facilities, green / blue infrastructure and water / sewerage provision. This is an important policy mechanism that helps protect the integrity of European sites that are sensitive to recreational pressure and water quality changes. For example, the policy will ensure that sufficient headroom is available at the relevant WwTWs to accommodate the increase in sewage produced as a result of the Monmouthshire LP. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy S6 is screened out from AA.

Policy	Text	Assessment
Policy IN1– Telecommunication, broadband and other digital infrastructure	Telecommunication, broadband and other digital infrastructure proposals will be considered in light of technical and operational requirements and permitted where the following criteria are met: a) The development relates to planned development/provision of a wider network; The siting and appearance of the proposed apparatus and associated structures should seek to minimise impact on the visual amenity, character and appearance of the surrounding area and, the amenity of neighbouring residents; There would be no significant adverse impact on the built or natural heritage or, the historic environment. Particular care should be given in the Wye Valley National Landscape (AONB) and adjacent the Bannau Brycheiniog National Park (BBNP); The application is accompanied by evidence of compliance with Government guidelines on health impacts of telecommunications infrastructure. Where new apparatus/structures are proposed, the application is accompanied by evidence that explores opportunities to utilise existing buildings, masts or structures in the first instance, and provides justification of why the application location is necessary.	There are no LSEs of this policy on European sites. This is a development management policy that considers the delivery of telecommunication, broadband and other digital infrastructure proposals provided that a range of criteria are met. However, the mere consideration of such proposals has no direct bearing on European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy IN1 is screened out from AA.

Policy	Text	Assessment
New Housing		
Policy H1 – Residential Development in Primary and Secondary Settlements	Settlement boundaries have been drawn for the following Primary and Secondary Settlements identified in Policy S2: **Primary Settlements** • Abergavenny (inc. Llanfoist) • Chepstow • Monmouth (inc. Wyesham) • Caldicot (inc. Severnside area comprising of: Caerwent, Crick, Magor Undy, Portskewett, Rogiet and Sudbrook) **Secondary Settlements** • Penperlleni • Raglan • Usk Within the settlement boundaries new build residential development / redevelopment or conversion to residential, or subdivision of large dwellings or reuse of accommodation, such as upper vacant floors in town centres for residential use, will be permitted subject to detailed planning considerations and other policies of the RLDP that seek to protect existing retail, employment, community uses and tourism.	Likely Significant Effects on European sites cannot be excluded. This policy identifies the settlement boundaries for Primary Settlements and Secondary Settlements in which new residential development will be permitted. In conjunction with Strategic Policy 2, the location of new residential development is a key factor in determining the magnitude of negative impact pathways linking to specific European sites. **Potential impact pathways are present:** • **Atmospheric pollution** • **Recreational pressure** • **Loss of functionally linked land** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways Policy H1 is screened in for Appropriate Assessment.

Policy	Text	Assessment
Policy H2 – Residential Development in Main Rural Settlements	Settlement boundaries have been drawn for the following Main Rural Settlements identified in Policy S2: • Devauden • Dingestow • Little Mill • Llandogo • Llanellen • Llangybi • Llanover • Llanvair Discoed • Mathern • Pwllmeyric • Shirenewton/ Mynyddbach • St Arvans • Tintern • Trellech • Werngifford/Pandy Within the Settlement Boundaries of Main Rural Settlements planning permission will be granted for new residential development/redevelopment, or conversion to residential, or sub-division of large dwellings, subject to detailed planning considerations, including no unacceptable adverse impact on village form and character and surrounding landscape, and other policies of the RLDP that seek to protect existing retail, employment, community uses and tourism.	Likely Significant Effects on European sites cannot be excluded. This policy identifies the settlement boundaries for Main Rural Settlements in which new residential development will be supported. In conjunction with Strategic Policy 2, the location of new residential development is a key factor in determining the magnitude of negative impact pathways linking to specific European sites. **Potential impact pathways are present:** • **Atmospheric pollution** • **Recreational pressure** • **Loss of functionally linked land** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways Policy H2 is screened in for Appropriate Assessment.

Policy	Text	Assessment
Policy H3 – Residential Development in Minor Rural Settlements	In the following Minor Rural Settlements planning permission will be granted for minor small scale rounding off or infilling of a small gap between existing buildings, of no more than 1 or 2 dwellings, or residential redevelopment, or conversion to residential or sub-division of large dwellings, subject to detailed planning considerations, including no unacceptable adverse impact on village form and character and surrounding landscape, and other policies of the RLDP that seek to protect existing retail, employment, community uses and tourism. Minor Rural Settlements: • Bettws Newydd • Broadstone /Catbrook • Brynygwenin • Coed y Paen • Cross Ash • Cuckoo's Row • Great Oak • Grosmont • Gwehelog • Llanarth • Llanddewi Rhydderch • Llandegveth • Llandenny • Llangwm • Llanishen • Llansoy • Llantilio Crossenny • Llantrisant • Llanvair Kilgeddin • Llanvapley • Mitchel Troy • Penallt • Penpergwm • The Bryn • The Narth • Tredunnock	Likely Significant Effects on European sites cannot be excluded. This policy identifies Minor Rural Settlements in which small scale residential development will be supported. In conjunction with Strategic Policy 2, the location of new residential development is a key factor in determining the magnitude of negative impact pathways linking to specific European sites. **Potential impact pathways are present:** • **Atmospheric pollution** • **Recreational pressure** • **Loss of functionally linked land** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways Policy H3 is screened in for Appropriate Assessment.

Policy	Text	Assessment
Policy H4 – Conversion/Rehabilitation of Buildings in the Open Countryside for Residential Use	The conversion / rehabilitation of a building in the open countryside for residential use will be permitted where all the following criteria are met: a) The form, bulk, materials and general design of the proposal, including any extensions, respect the rural character and design of the building; The proposal, including curtilage and access, is in scale and sympathy with the surrounding landscape and does not require the provision of unsightly infrastructure; Rebuilding works, necessitated by poor structural conditions and / or the need for new openings in walls, should not involve substantial reconstruction, with structural surveys being required for marginal cases; The more isolated and prominent the building, the more stringent will be the design requirements with regard to new door and window openings, extensions, means of access, service provision and garden curtilage, especially if located within the Wye Valley National Landscape (AONB); Buildings of modern and / or utilitarian construction and materials such as concrete block work, portal framed buildings clad in metal sheeting or buildings of substandard quality and / or incongruous appearance will not be considered favourably for residential conversion; and The building is capable of providing adequate living space within the structure. Only very modest extensions and ancillary buildings will be allowed having regard to the context and scale of the existing building and normal permitted development rights to extend further or to construct ancillary buildings will be withdrawn.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for the refurbishment and conversion of existing rural buildings for residential use. While this policy does concern the enhancement of building to create residential space, the policy sets no quantum or allocation for any development. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H4 is screened out from AA.
Policy H5 – Replacement Dwellings in the Countryside	The replacement of existing dwellings in the countryside will be permitted provided that: a) The original dwelling i) Is not a traditional farmhouse, cottage or other building that is important to the visual and intrinsic character of the landscape; ii) Has not been demolished, abandoned its residential use or fallen into such a state of disrepair so that it no longer has the appearance of a dwelling; b) The design of the new dwelling is of a form, bulk, size and scale that respects its setting; c) The proposal does not require an unacceptable extension to the existing residential curtilage; d) The replacement dwelling shall be of similar size to the replaced; and e) Any outbuildings should be modest in size and sensitively located and it can be demonstrated at the time of the original application that adequate ancillary garage and storage space can be achieved for the dwelling.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for replacement of rural dwellings. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H5 is screened out from AA.

Policy	Text	Assessment
Policy H6 – Extension of Rural Dwellings	In order to protect the character of the countryside, extensions to dwellings in the open countryside should be modest and respect or enhance the appearance of the existing dwelling. They will be required to: a) Be subordinate to the existing building; and b) Where the building is of a traditional nature, to respect its existing form, including the pattern and shape of openings, and materials.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for extension of rural dwellings. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H6 is screened out from AA.
Policy H7 – Specialist Housing	Proposals for specialist housing development, and extensions to established specialist housing facilities, will be permitted within or adjacent to defined settlement boundaries where: a) There is safe and convenient access to shops, services, community facilities and public transport appropriate to the needs of the intended occupiers; It is appropriate for its intended residents and the neighbourhood in terms of form, scale and design, type and affordability of the accommodation, as well as the provision of support and care; and It meets the affordable housing requirements of Policy S7 where the development falls within Use Class C3.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for the development of specialist housing. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H7 is screened out from AA.
Policy H8 – Housing Mix	To assist in addressing the demographic and affordability challenges in Monmouthshire, development proposals of 10 or more homes must include a range and mix of house types, tenure and size, to be agreed by the Council. Such development proposals must be accompanied by a statement setting out how the mix of market housing will assist in achieving balanced communities, including the site allocations included within the RLDP.	There are no LSEs of this policy on European sites. This is a development management policy that ensures there is a mix of housing tenure and size in new developments. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H8 is screened out from AA.

Policy	Text	Assessment
Policy S7 – Affordable Housing	The affordable homes target for the Plan period of 2018 – 2033 is 1,595 – 2,000 homes. This will be delivered in accordance with the following framework: a) New site allocations – On-site provision of 50% affordable homes on all new site allocations. b) Sites of 20 homes and over – On-site provision of 50% affordable housing applies to development proposals on sites within existing settlement boundaries as identified in Tiers 1-3 of Strategic Policy S2. c) Sites of 5 to 19 homes – On-site provision of 40% affordable housing applies to development proposals on sites within existing settlement boundaries as identified in Tiers 1-3 of Strategic Policy S2. d) Sites of 1 to 4 homes – Financial contributions towards the provision of affordable housing in the local planning authority area will be required in accordance with details set out in the Affordable Housing Supplementary Planning Guidance. e) Conversions and sub-divisions – Financial contributions towards the provision of affordable housing in the local planning authority area will be required in accordance with details set out in Affordable Housing Supplementary Planning Guidance. In determining how many affordable homes should be provided on a development site, the figure resulting from applying the proportion required to the total number of dwellings will be rounded to the nearest whole number, where half rounds up. All proposals must meet national policy guidance in relation to the most efficient use of land and should not be subdivided or phased in an attempt to avoid on-site provision of affordable homes. This Strategic Policy applies to all residential planning applications. Exceptions will not be made for sites that previously had planning permission and have been resubmitted.	There are no LSEs of this policy on European sites. This is a development management policy that ensures housing is affordable. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H8 is screened out from AA.

Policy	Text	Assessment
Policy H9 – Affordable Housing Exception Sites	Favourable consideration will be given to the siting of 100% affordable housing exception sites adjoining Tier 1, 2, 3 and 4 settlements identified in Strategic Policy S2, that would not otherwise be released for residential development provided that all of the following criteria are met: a) The scheme meets a genuine local need which could not otherwise be met within the locality; The proposed homes are of a size, tenure and design which is commensurate with the identified affordable housing need of the locality; The proposal relates to: i) 25 or less homes in Tier 1 Primary Settlements, ii) 15 homes or less in Tier 2 Secondary Settlements, iii) 10 homes or less in Tier 3 Main Rural Settlements or iv) 5 homes or less in Tier 4 Minor Rural Settlements; b) The site represents a logical extension to the existing settlement with no significant adverse impact on settlement form, character and surrounding landscape; The affordable housing meets the needs of local people and will be managed by a Registered Social Landlord (RSL) in perpetuity, which will be secured via a S.106 legal agreement. In exceptional circumstances where an RSL is not involved, clear and adequate legal agreements must be in place to ensure that the benefits of affordable housing will be secured for initial and subsequent occupiers.	There are no LSEs of this policy on European sites. This is a development management policy that favours the creation of affordable housing. This policy does not set any quanta or location for this development and is primarily concerned with the affordability of the dwellings, which has no bearing on their ecological impacts. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H9 is screened out from AA.
Residential Allocations		

Policy	Text	Assessment
S8 – Site Allocation Placemaking Principles	All residential site allocations must comply with and incorporate the following placemaking principles into the schemes: Sustainable Communities • Creation of a high-quality and well-connected extension to the settlement, which responds to its edge of settlement location. Where appropriate, the layout will identify and respect key views to and from the wider landscape setting. • Provision of 50% affordable homes on-site comprising a mix of housing types and tenures to meet local need. • Dwellings built to net zero carbon standards, including the incorporation of renewable energy generation technologies and low carbon heating systems and ULEV charging points. • Provide a mix of house types, tenures, sizes, materials and colour to be developed at an appropriate density. • Broadband /digital infrastructure must be provided to serve each new home. Green Infrastructure, Landscape and Nature Recovery • Make provision within the development for appropriate green infrastructure, multifunctional streetscapes and useable public open space in accordance with National Policy and agreed standards, including play and recreation provision, community growing opportunities and accessibility for all. • Demonstrate a proposal that is informed by the surrounding landscape character and reflects the distinctive landscape character, qualities and sensitivities of the area. • Take a proactive approach to deliver a net benefit for biodiversity and ecosystem resilience within the development site by maintaining, incorporating and enhancing semi-natural habitats and ecological connectivity between them. • Ensure the protection and enhancement of biodiversity through appropriate building design, site layouts, lighting proposals that retain dark corridors, landscaping techniques and choice of plant species. • Ensure that trees, woodland and hedgerows along site boundaries and within the site are retained and protected as far as possible with adequate space to allow access for maintenance and to maintain functional and viable wildlife corridors and green infrastructure assets. Sustainable Travel and Highways	There are no LSEs of this policy on European sites. This is a development management policy that does not set any quanta or location for this development and is primarily concerned with the affordability of the dwellings, which has no bearing on their ecological impacts. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy H9 is screened out from AA.

Policy	Text	Assessment
	• Design of the site and its connections must prioritise active travel to local trip attractors and public transport, in line with the Sustainable Transport Hierarchy (PPW12/Wales Transport Strategy). Active Travel Act guidance should be applied to routes, facilities and sustainable transport promotion. • Sites must contribute to active travel and public transport improvements as necessary. • Ensure that the development does not adversely affect the safety, capacity and operation of the highway network. • Streets must be designed and built to adoption standards in accordance with national and local design standards and offered for adoption pursuant to the requisite highway adoption agreements. Education Requirements • Sites must contribute to primary and secondary school provision in the area in accordance with capacity requirements. Residential amenity • Ensure a safe, secure, pleasant and accessible environment for all members of the community. • Maintain reasonable levels of privacy and amenity of occupiers of neighbouring properties. • Incorporate satisfactory air quality measures for mitigating and/or reducing emissions, as appropriate. • Incorporate good acoustic design which must be compatible with thermal comfort by ensuring adequate ventilation and avoidance of overheating, in the interests of protecting residents from the harmful effects of noise. Flood Risk and Sustainable Drainage Systems • Potential flood risk to, or as a consequence of, the development of the site must be suitably assessed in accordance with national planning policy. • The development must manage surface water through a sustainable drainage system in accordance with Welsh Government's Statutory Standards for Sustainable Drainage Systems 2018. The distribution of SuDS features across the site should be prioritised, reducing the size of any single SuDS feature. Site specific considerations are set out in Policies HA1 to HA18.	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA1 - Land to the East of Abergavenny</td>
<td>
Allocated as a residential-led mixed-use development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.
<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>Total Site: 35.9 ha</td><td>Strategic Mixed-use Development including:
• Residential
• Mixed -use Commercial Hu
• Park & Rid
• B Use Class Uses</td><td>Approx No. of Homes: 500
Open Market: 250
Affordable Homes: 250</td></tr>
</table>
*Within the Plan period

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

a) To provide a mixed-use development containing the following key uses:
• Approximately 500 homes including 50% affordable homes.
• A minimum 1 hectare of B1 Use Class uses.
• A neighbourhood centre, the uses and scale of which to be agreed by MCC.
• Green infrastructure and open space provision, including allotments/community food growing spaces, incorporating the creation of focal points for the community.
• Park and ride facility serving Abergavenny Railway Station.
• Active travel connections with visible, prioritised routes to/from the site to the Railway Station and Abergavenny.

b) The completion of non-residential elements must be delivered in line with an agreed phasing programme.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 35.9ha large site on Land to the East of Abergavenny for residential-led mixed-use development, including the delivery of 500 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, retention of hedgerows as viable wildlife corridors, incorporating / enhancing existing PRoWs and sustainable travel (e.g. walking / cycling links). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA1 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	c) The site design and masterplanning should create an exemplar of residential and GI-led placemaking, establishing clear parameters and principles to be followed by site developers. d) A balanced approach to densities should be provided that makes efficient use of land and reflects the character of historic Abergavenny and enhances Abergavenny Conservation Area while also respecting the character of the surrounding landscape. e) Higher densities should be focussed on western and central locations and towards key attractors such as the mixed-use centre and Railway Station. Lower density development may be appropriate along the eastern boundary to retain the visual and physical integrity of the urban/countryside edge and maintain the distinct landscape character of Abergavenny. f) Densities and layout should respect the changes in levels within the site. **Green Infrastructure, Landscape, and Nature Recovery** g) Site design and layout should include opportunities to capture views of the wider landscape including the Bannau Brycheiniog National Park (BBNP), Usk Valley and Blaenavon Industrial Landscape World Heritage Site. h) Development must ensure the retention and protection of substantial GI assets as far as possible, including retaining and enhancing tributaries of the River Gavenny. i) Hedgerows along the site boundary should be retained with adequate space to allow access for maintenance and to maintain functional and viable wildlife corridors. j) Provision of an appropriate design response and interface between the western edge of the development and the A465 corridor that respects the importance of the visual connectivity between the site and existing settlement and is in keeping with the distinct character of Abergavenny. k) Any tree loss associated with the redesign of the A465 corridor must be subject to appropriate compensatory planting. **Sustainable Travel & Highways** l) A connectivity strategy setting out the number, location form and delivery of connectivity points between the site and existing settlement of Abergavenny will be agreed with the Local Planning Authority. The strategy will include changes to the character and environment of the A465 to provide safe and accessible crossings and means of access(s) and appropriate crossings over the railway line. m) Off-site highway infrastructure improvements must be delivered as necessary, having regard to requirements arising from the Transport Assessment and including:	

Policy	Text	Assessment
	• An agreement with the Highway Authority for the proposed accesses and junction on to the A465. • Emergency secondary access on to Garth Road. n) Make provision for good quality, safe, legible and accessible pedestrian and cycle linkages to key access points including linkages to the local schools, Abergavenny town centre and bus transport services. o) Incorporate and enhance the existing Public Right of Way footpaths as key connection routes running through the site linking up with wider Abergavenny and as a through route to the wider countryside. p) Make provision for a bus link into the site design and a financial contribution towards improved public transport and bus frequency. **Air Quality** q) Incorporate satisfactory air quality measures for mitigating and/or reducing emissions. Particular regard should be given to the potential impact on Merthyr Road Bridge/Waitrose roundabout. **A masterplan establishing key design and placemaking parameters is being prepared and will be agreed with the Local Planning Authority prior to the determination of any planning application.**	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA2 – Land to the East of Caldicot</td>
<td>
Allocated for a residential-led mixed-use development.

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>Circa 64ha</td><td>Strategic Mixed-Use Development including:
Residential
Primary School
Mixed use Local Centre
B1 Use Class Employment
Strategic public open space</td><td>Approx No. of Homes: 770
Open Market Homes: 385
Affordable Homes: 385</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following criteria below:

Sustainable Communities

a) Provision of a mixed-use development containing the following key uses:
• 770 homes including 50% affordable homes.
• Primary School.
• Strategic public open space, including community playing fields, allotments, community orchard and green infrastructure provision.
• A local centre including appropriate community facilities, the uses and scale of which to be agreed by MCC.
• A minimum of 1ha B1 Use Class employment land.

b) Crick Road must be incorporated into the site as an active street frontage providing cohesion and a gateway for the development as a whole.

c) The design and masterplanning of the site should create an exemplar of residential and GI-led placemaking, establishing clear parameters and principles to be followed by site developers.

d) The completion of non-residential elements must be delivered in line with an agreed phasing programme.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 64ha large site on Land to the East of Caldicot for residential-led mixed-use development, including the delivery of 770 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the provision of strategic public open space, consideration of the location and potential disturbance in relation to the Severn Estuary SAC / SPA / Ramsar, grassland and hedgerow restoration, provision of a lighting scheme and sustainable transport links. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA2 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	Green Infrastructure, Landscape and Nature Recovery e) Development of the site to consider existing topography, assets, features and contours of the site and include measures to integrate development appropriately while reducing visual impact. Less dense development should be provided on the edge of the site. f) Development should consider and respond positively to the setting of the Grade II Listed Building, the Conservation Area, Country Park and views to the nearby Scheduled Ancient Monument. No built development will take place within these sensitive areas. g) Recognition of the impact the scale and location of the site on the Severn Estuary European Marine Site (EPS) and Nedern Brook Site of Special Scientific Interest (SSSI). Interface between the SSSI and built development (including areas of formal recreation) requires careful design to avoid increased disturbance to qualifying features. No built development or additional access/transport routes shall occur within the SSSI. h) The site is within the 7km Core Recreational Catchment Zone for the Severn Estuary European Marine Site and will be considered for a financial contribution as part of the Mitigation Strategy for the site. Green space design must consider any emerging guidance for Suitable Alternate Natural Greenspace (SANG) to reduce recreational pressure on the features of the Estuary. i) Mount Ballan SINC and other woodland areas will be retained and protected with an appropriate buffer. j) Include opportunities for grassland and hedgerow restoration, wetland creation and woodland connectivity that will be managed appropriately for protected species. k) Include opportunities for grassland area enhancement and enhanced native planting around ponds and wetland areas that will be managed appropriately for protected species. No built development will take place in the SSSI. l) The proposal will be accompanied by a lighting scheme. Dark corridors should be maintained and light spillage on to wildlife corridors is minimised, with particular reference to corridors and priority habitats used by bats and dormice present on the site. m) Public Rights of Way within the site must be incorporated into the site design and remain available for public use. **Sustainable Travel and Highways** n) The site must incorporate on and off-site measures to provide good quality, attractive, safe, legible and accessible pedestrian and cycle linkages both to and within the new development area. Key connections include an active travel route to Caldicot Town Centre. Connection should also be made to the former MoD railway cycle and walking route.	

Policy	Text	Assessment
	o) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including: • An agreement must be entered into with the Council to facilitate the construction of multiple development accesses along Crick Road and any necessary access points along the B4245 to the north of the site; • A minimum of a 2 metre footway for pedestrians over the site's frontages linking to existing footways; • Revision of speed limits along Crick Road to 20mph, the location of which to be agreed with MCC. • Provision of a public transport link to be provided along Crick Road and throughout the site, details of which to be agreed with MCC, including any necessary financial contributions to improve nearby infrastructure. **Flood Risk and Sustainable Drainage Systems** p) No built development will be permitted within the part of the site located in floodplain. **Other** q) Development must ensure adequate buffers are provided to take account of water mains intersecting the site. **A masterplan establishing key design and placemaking parameters is being prepared and will be agreed with the Local Planning Authority prior to the determination of any planning application.**	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA3 - Land at Mounton Road, Chepstow</td>
<td>
Allocated for a mixed-use residential scheme

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>12.8 ha</td><td>Strategic Mixed-Use:
Residential
Commercial uses such as Class C1 Hotel and Class C2 Residential care home</td><td>Approx No. of Homes: 146
Open Market Homes: 73
Affordable Homes: 73</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following criteria below:

Sustainable Communities
a) Creation of a high-quality well-connected extension, which responds to its edge of settlement location and to its gateway locality to Chepstow and Wye Valley National Landscape (AONB) setting.
b) A street hierarchy comprising a legible, permeable and connected network of street, footpaths and cycleways should be developed to inform the character of different parts of the site.
c) A focal tree-lined avenue should lead to the entrance of the community parkland from the A466 entrance point.
d) The non-residential element of the site to be delivered in line with an agreed phasing schedule.
e) The commercial uses of the development, which could include a hotel and care home are to be located in the north east focal/gateway point of the site.
f) An appropriate scale, massing, height and appearance of buildings, in particular the hotel and care-home, to respect the site’s location, character and residential amenity impact;
g) Provision of a publicly accessible Community Parkland, with a parkland character that respects the setting of the Grade II listed St Lawrence House and creates opportunities for recreation and leisure.
h) Provision of an appropriate design response and interface between the eastern edge of the development and the A466 road corridor.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 12.8ha site on Land at Mounton Road for residential-led mixed-use development, including the delivery of 146 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, retention of hedgerows as viable wildlife corridors, incorporating / enhancing existing PRoWs and sustainable travel (e.g. walking / cycling links). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA3 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	i) Provision of an appropriate design response for the proximity and transition to the green wedge and wider landscape to the south and west of development in terms of lighting and built form. Green Infrastructure, Landscape and Nature Recovery j) Existing western and northern boundary hedgerow and woodland shall be retained, buffered and protected for a width of a minimum 30m and/or root protection area. Trees with TPOs and other mature trees will be retained and protected within the Community Parkland and managed appropriately to maintain biodiversity value. k) The site is within the 7km Core Recreational Catchment Zone for the Severn Estuary European Marine Site and will be considered for a financial contribution as part of the Mitigation Strategy for the site. Green space design must consider any emerging guidance for Suitable Alternate Natural Greenspace (SANG) to reduce recreational pressure on the features of the Estuary. l) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats. Sustainable Travel and Highways m) Provision of on and off-site highways infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including: • A legal agreement for the proposed A466 primary access junction, footways, street lighting, crossing provision and the widening and improvement of the existing footway on the A466. • A legal agreement for the construction of off-site pedestrian/cycling improvements, including connections to bus stops in both directions, the National Cycle route and Chepstow's community hospital. • The layout in north west corner of the site will connect the proposal to the existing Public Right of Way 355/3/3 footpath. • Land to be safeguarded for potential future improvements to the Highbeech Roundabout. • Provision of a public transport link through the site, details of which to be agreed with MCC, including any necessary financial contributions to improve public transport services and nearby infrastructure. Residential Amenity n) The incorporation of satisfactory air quality measures for mitigating and/or reducing emissions. Development must not significantly worsen (either individually or cumulatively) any air pollution	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td></td><td>A masterplan establishing key design and placemaking parameters is being prepared and will be agreed with the Local Planning Authority prior to the determination of any planning application.</td><td></td></tr>
<tr><td>Policy HA4 – Land at Leasbrook, Monmouth</td><td>Allocated for residential development

Development of the site should accord with the following parameters, Placemaking Principles and Development Requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>11ha</td><td>Residential</td><td>Approx No. of Homes: 270
Open Market Homes: 135
Affordable Homes: 135</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following criteria below:

Sustainable Communities

a) Creation of a high-quality and well-connected extension to Monmouth, which responds to its edge of settlement location.

Green Infrastructure, Landscape and Nature Recovery

b) Development of the site to consider existing topography, assets, features and contours of the site and include measures to integrate development appropriately while reducing visual impact. Less dense development should be provided on the northern and eastern edge of the site.

c) Maintain and enhance populations of protected and priority species.

d) The proposal must be accompanied by a lighting scheme. Dark corridors should be maintained and light spillage on to wildlife corridors minimised, with particular regard to the Greater Horseshoe Bat Juvenile Sustenance Zone and corridors used by bats.

e) A S.106 agreement must be signed and include the requirement for additional woodland buffer planting with well-designed public access to be provided on the eastern edge of the site (in the blue line of ownership) to protect the Greater Horseshoe Bat Juvenile Sustenance Zone and the wider landscape character due to the site's proximity to the Dixton Conservation Area and Lower Wye Valley Landscape of Historic Interest. This is required in addition to any on-site GI provision.</td><td>Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 11ha site on Land at Leasbrook for residential development, including the delivery of 270 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, retention and buffering of significant trees, incorporating / enhancing existing PRoWs and sustainable travel (e.g. walking / cycling links). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA4 is screened in for Appropriate Assessment.</td></tr>
</table>

Policy	Text	Assessment
	f) Protect, buffer and maintain existing TPO trees and significant trees by including within the Green Infrastructure provision and enhance by including new planting of native species of local provenance. **Sustainable Travel and Highways** g) Emergency vehicular access must be provided to connect to the A466 on Hereford Road to allow for a secondary means of access if required in an extreme flooding event. h) Provision of on and off-site measures must be delivered to provide good quality, attractive, safe, legible and accessible pedestrian and cycle linkages both to and within the new development area. Key connections include a footpath link to Dixton Close and along Dixton Road which allows links to further active travel routes in Monmouth. Sufficient space within the site boundary must also be included to allow the future provision of active travel route MCC-M25A(DL)4A. i) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including: • An agreement must be entered into with the Council for the facilitation of the construction of the development access; • The implementation of required off-site junction mitigation/ improvement measures as appropriate, details of which to be agreed with the Council; • Provision of a public transport link through the site, details of which to be agreed with the Council, including any necessary financial contributions to improve public transport services and nearby infrastructure. **Flood Risk and Sustainable Drainage Systems** j) Potential flood risk to, or as a consequence of, the development of the site must be suitably assessed in accordance with Welsh Government's Technical Advice Note (TAN) 15: Development and Flood Risk including consideration of flooding in extreme events on Dixton Road. **A masterplan establishing key design and placemaking parameters is being prepared and will be agreed with the Local Planning Authority prior to the determination of any planning application.**	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA5 – Land at Penlanlas Farm, Abergavenny</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, Placemaking Principles and Development Requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>6.17ha</td><td>Residential</td><td>Approx No. of Homes: 100
Open Market Homes: 50
Affordable Homes: 50</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

a) Incorporation of lower density development on the northern edge of the site and buffer zone to the north-west of the site to integrate it into the landscape.
b) Provision of allotments in the site.

Green Infrastructure, Landscape and Nature Recovery

c) Preserve or enhance the landscape setting of Bannau Brycheiniog National Park (BBNP) and have no adverse impact on the International Dark Skies Reserve designation.
d) Incorporate and enhance the existing Public Right of Way Footpath 91 running along the site's eastern boundary to include sufficient space to maintain existing and new hedgerows, green infrastructure assets, SuDS and public access.
e) Include opportunities for species rich grassland restoration and creation that will be managed appropriately.

Sustainable Travel and Highways

f) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
• An agreement with the Council to construct the development access and undertake off-site works to widen Old Hereford Road and necessary pedestrian/cycling improvements and reduce the speed limit on Old Hereford Road.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 6.17ha site on Land at Penlanlas Farm for residential development, including the delivery of 100 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, creation or restoration of species rich grassland, incorporating / enhancing existing PRoWs and sustainable travel (e.g. walking / cycling links). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA5 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	• Financial contributions to improve public transport services and nearby • infrastructure. g) Provision of good quality, safe, legible and accessible pedestrian and cycle linkages to key access points including the north-eastern corner of the site, south- eastern corner of the site and Old Hereford Road. **Residential Amenity** h) The incorporation of satisfactory air quality measures for mitigating and/or reducing emissions. Development must not significantly worsen (either individually or cumulatively) any air pollution emissions in areas where pollution levels are close to their objective or limit value levels, nor result in a breach of an air quality objective or limit value.	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA6 – Land at Rockfield Road, Monmouth</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, Placemaking Principles and Development Requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.
<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>1.5ha</td><td>Residential</td><td>Approx No. of Homes: 60
Open Market Homes: 30
Affordable Homes: 30</td></tr>
</table>
In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery
a) Include opportunities for grassland and hedgerow restoration, with appropriate buffers that ensure features can be managed appropriately for protected species including dormouse.
b) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats, with particular reference to corridors used by horseshoe bats.
c) Ensure that PROW 375/127 is linked to development and has adequate space provided to accommodate active travel provision, public realm and hedgerows.

Sustainable Travel and Highways
d) Provision of access to the development and off-site highway improvements that are deemed necessary are subject to the approval and agreement of the Highway Authority.
e) Financial contributions are required to improve public transport services and nearby infrastructure.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 1.5ha site on Land at Rockfield Road for residential development, including the delivery of 60 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including opportunities for grassland and hedgerow restoration and providing space for active travel, public realm and hedgerows. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA6 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA7 – Land at Drewen Farm, Monmouth</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, Placemaking Principles and Development Requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>6.6ha</td><td>Residential</td><td>Approx No. of Homes: 110
Open Market Homes: 55
Affordable Homes: 55</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

a) Incorporation of lower densities along the boundaries of the open countryside responding to its edge of settlement location.

Green Infrastructure, Landscape and Nature Recovery

b) Existing boundary features to be enhanced with additional hedgerow and tree planting to mitigate for development and respond to its edge of settlement location.

c) Requirement of additional GI connectivity and buffers between sensitive habitats and built development, and areas adjacent to the Wonastow Field SINC.

Sustainable Travel and Highways

d) Provision of on and off-site measures to provide good quality, attractive, safe, legible and accessible pedestrian and cycle linkages both to and within the new development area. Key connections include PROW MCC-M17B, future PROW route MCC-M17A along Watery Lane and into the adjacent Kingswood Gate site allowing links to further active travel routes in Monmouth.

e) Provision of access to the development and off-site highway improvements that are deemed necessary are subject to the approval and agreement of the Highway Authority.

f) Financial contributions are required to improve public transport services and nearby infrastructure.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 6.6ha site on Land at Drewen Farm for residential development, including the delivery of 110 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, enhanced green infrastructure connectivity and buffers, and additional hedgerow and tree planting. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA7 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA8 – Land at Tudor Road, Wyesham, Monmouth</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, Placemaking Principles and Development Requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>2.1ha</td><td>Residential</td><td>Approx. Number of Homes: 50
Open Market Homes: 25
Affordable Homes: 25</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

a) A mix of house types, tenure and size with lower densities on the edge of the site adjacent to the boundary of the Wye Valley National Landscape (AONB).

Green Infrastructure, Landscape and Nature Recovery

b) Development of the site to consider existing topography, assets, features and contours of the site and include measures to integrate development appropriately while reducing visual impact.
c) Protect, buffer and maintain existing trees and hedgerows, on site boundaries and central linear features, by including within the Green Infrastructure provision and enhance to provide both a buffer and enhanced green corridor.
d) Appropriate buffer planting to be included to enhance and protect linear features used by foraging and commuting bats associated with the Wye Valley and Forest of Dean Bat Sites SAC.
e) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats, including corridors used by bats.
f) An area of public open space to be included within the site boundary in the south eastern corner of the site.

Sustainable Travel and Highways
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 2.1ha site on Land at Tudor Road for residential development, including the delivery of 50 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, appropriate buffer planting to enhance or protect linear features, incorporating / enhancing existing PRoWs and sustainable travel (e.g. walking / cycling links). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA8 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	g) Provision of on and off-site measures to provide good quality, attractive, safe, legible and accessible pedestrian and cycle linkages both to and within the new development area. Key connections include to the nearby active travel route MCC-M14A, which allows links to further active travel routes in Monmouth. h) Provision of the development's primary access involving re-engineering of the existing Tudor Road junction, providing access to 7 – 19 Tudor Road, garage block and forecourt along with relocation of the associated residents' off-street parking. i) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including: • An agreement must be entered into with the Council for the construction of the development access; • The implementation of required off-site junction mitigation/improvement measures as appropriate, details of which to be agreed with the Council; • Financial contributions to improve public transport services and nearby infrastructure, details of which to be agreed with the Council. **Flood Risk and Sustainable Drainage Systems** j) A scheme for the management of overland flows from the land above the site will need to be considered and incorporated into the site drainage.	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA9 – Land at former MOD Land, Caerwent</td>
<td>
Allocated for a mixed-use residential scheme

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>4.2ha</td><td>Mixed Use
Residential
Commercial B1</td><td>Approx No. of Homes: 40
Open Market Homes: 20
Affordable Homes: 20</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

a) Provision of a mixed-use development of residential and commercial B1 uses with a minimum of 1ha for B1 employment land.
b) The non-residential element of the site to be delivered in line with an agreed phasing schedule.
c) Any proposed new commercial buildings must be of an appropriate scale, massing and height to respect the site’s character and edge of settlement setting and residential amenity impact.

Green Infrastructure, Landscape and Nature Recovery

d) Maintain and enhance populations of protected and priority species including reptiles, dormouse, and the lesser horseshoe maternity roost through retention of existing habitat and appropriate buffer planting.
e) Appropriate buffer and boundary treatments to the north of the site must be considered.
f) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats, including corridors used by bats and dormice present on the site.
g) The site is within the 7km Core Recreational Catchment Zone for the Severn Estuary European Marine Site and will be considered for a financial contribution as part of the Mitigation Strategy for the site. Green space design must consider any emerging guidance for Suitable Alternate Natural Greenspace (SANG) to reduce recreational pressure on the features of the estuary.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 4.2ha site on Land at former MOD Land for a residential-led mixed-use development, including the delivery of 40 homes and Commercial B1 property.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, appropriate buffer and boundary treatments, incorporating / enhancing existing PRoWs and sustainable travel (e.g. walking / cycling links). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA9 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	Sustainable Travel and Highways h) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including: • An agreement for the proposed A48 Junction, footways, street lighting, crossing provision and associated highway improvements. An agreement for the construction of safe off-site pedestrian and cycling crossing of the A48, and to allow for connection to the NCN 4.	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA10 – Land South of Monmouth Road, Raglan</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, Placemaking Principles and Development Requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>4.5 ha</td><td>Residential</td><td>Approx No. Homes: 54
Open Market Homes: 27
Affordable Homes: 27</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

a) Development should not have a significant adverse impact on the settings of Raglan Castle Schedule Ancient Monument and Registered Park and Garden.
b) The site’s location bordering Raglan Conservation Area and positioning alongside the main access into the Conservation Area should be reflected in the site’s masterplanning.
c) Building form and type should be varied with a mix of positions to help create space between the buildings and emphasise the linkages to the wider landscape.
d) Building heights should be one or two storeys to ensure effective integration into the landscape.

Green Infrastructure, Landscape and Nature Recovery

e) Protect, buffer and maintain existing TPO trees and other trees and hedgerows by including within the Green Infrastructure provision and enhance by include new planting of native species of local provenance.
f) Include opportunities for grassland improvement and habitat suitable for breeding great crested newts.

Sustainable Travel and Highways

g) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 4.5ha site on Land South of Monmouth Road, for residential development, including the delivery of 54 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection of Green Infrastructure assets, opportunities for grassland improvement and habitat for breeding great crested newts, incorporating / enhancing existing PRoWs and contributing to sustainable travel. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA10 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	• An agreement with the Council for the proposed Monmouth Road junction, footways, street lighting, crossing provision and the widening and improvement of the existing footway on Monmouth Road. • Primary access arrangements on to Monmouth Road. • An emergency secondary access on to Station Road. • Financial contributions to carry out necessary improvements to the local and strategic highway network. • Financial contributions to improve public transport services and nearby infrastructure. • Provision of good quality, safe, legible and accessible pedestrian and cycle linkages to key access points including a footpath link onto Station Road linking to the primary school and playing fields to the south and the village centre via Chepstow Road.	

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA11 – Land-east of Burrium Gate, Usk</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>2.6 ha</td><td>Residential</td><td>Approx No. of Homes: 40
Open Market Homes: 20
Affordable Homes: 20</td></tr>
</table>

In addition to the placemaking principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery

a) The development layout will respond to its topography and be maintained within a 35m contour above Ordnance Datum (AOD) with a development ridgeline no more than 40m AOD, in order to protect the landscape character of Usk.
b) The boundary hedge to the east and south of the site will be retained and enhanced, allowing for site access where appropriate.
c) An appropriate buffer to SINC sites will be included and opportunities to create and enhance priority grassland habitat will be provided as part of the development.

Sustainable Travel and Highways

d) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
• An agreement for the proposed Monmouth Road junction, footways, street lighting, crossing provision and the widening and improvement of the existing footway on Monmouth Road.
• Provision of good quality, safe, legible and accessible pedestrian and cycle linkages.
• Financial contributions to improve public transport services and nearby infrastructure.
• Implementation of a traffic regulation order to extend the speed limit on Monmouth Road.

Residential amenity
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 2.6ha site on Land East of Burrium Gate, for residential development, including the delivery of 40 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the provision of and appropriate buffer for SINC sites, opportunities for grassland creation and enhancement, provision of pedestrian and cycle linkages and contributions towards public transport. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA11 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td></td><td>e) The incorporation of satisfactory air quality measures for mitigating and/or reducing emissions within Usk's AQMA. Development must not significantly worsen (either individually or cumulatively) any air pollution emissions in areas where pollution levels are close to their objective or limit value levels, nor result in a breach of an air quality objective or limit value.

Flood Risk and Sustainable Drainage Systems

f) A scheme for the management of overland flows from adjacent land will need to be included to ensure existing overland flood risk has been accommodated within the layout of the site.</td><td></td></tr>
<tr><td>Policy HA12 – Land west of Trem yr Ysgol, Penperlleni</td><td>Allocated for a residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>3.4 ha</td><td>Residential</td><td>Approx No. of Homes: 42
Open Market Homes: 21
Affordable Homes: 21</td></tr>
</table>

In addition to the placemaking principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery

a) The site design will identify and respect any key views to the wider Bannau Brycheiniog National Park (BBNP).

b) Protect, buffer, enhance and maintain existing TPO trees and other veteran and over-mature trees and hedgerows and include within the Green Infrastructure provision new planting of native species of local provenance.

c) An appropriate landscape buffer will be provided to the eastern stream corridor.

Sustainable Travel and Highways

d) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
• An agreement to extend and re-engineer Trem yr Ysgol to provide pedestrian and primary vehicular access;</td><td>Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 3.4ha site on Land west of Trem yr Ysgol, for residential development, including the delivery of 42 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the protection and provision of existing mature trees and hedgerows, and provision of pedestrian access to the southbound bus stop. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA12 is screened in for Appropriate Assessment.</td></tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td></td><td>• Provision of a link through the site to allow for pedestrian access to the southbound bus stop.</td><td></td></tr>
<tr><td>Policy HA13 – Land adjacent to Piercefield Public House, St Arvans</td><td>Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table><tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr><tr><td>1.1 ha</td><td>Residential</td><td>Approx No. of Homes: 16
Open Market Homes: 8
Affordable Homes: 8</td></tr></table>
In addition to the placemaking principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery

a) The site design will identify and respect any key views to the wider Wye Valley National Landscape (AONB) setting.
b) The site is within the 7km Core Recreational Catchment Zone for the Severn Estuary European Marine Site and will be considered for a financial contribution as part of the Mitigation Strategy for the site. Green space design must consider any emerging guidance for Suitable Alternate Natural Greenspace (SANG) to reduce recreational pressure on the features of the estuary.
c) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats, including corridors used by bats.

Sustainable Travel and Highways

d) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
• An agreement for proposed A466 road junction, footways, street lighting, crossing provision, connection to the cycle network and the widening and improvement of the existing footway on the A466.
• The layout will connect the proposal to the existing Public Right of Way 379/1/2 footpath running along the site’s south eastern boundary.</td><td>Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 1.1ha site on Land adjacent to Piercefield Public House, for residential development, including the delivery of 16 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including possible financial contributions to mitigate impacts on the Severn Estuary European Marine Site, and following emerging guidance for Suitable Alternative Natural Greenspace (SANG). These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA13 is screened in for Appropriate Assessment.</td></tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA14 – Land at Churchfields, Devauden</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>1 ha</td><td>Residential</td><td>Approx No. of Homes: 20
Open Market Homes: 10
Affordable Homes: 10</td></tr>
</table>

In addition to the placemaking principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery

a) The site design will identify and respect any key views to the wider Wye Valley National Landscape (AONB) setting.

b) Development of the site to consider existing topography, assets, features and contours of the site and include measures to integrate development appropriately while reducing visual impact.

Sustainable Travel and Highways

c) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
• An agreement to extend and re-engineer Churchfields to provide pedestrian improvements (to nearby bus stops) and primary vehicular access;

d) The layout will connect the proposal to the existing Public Right of Way 357/64/1 footpath running along the site’s western boundary.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 1ha site on Land at Churchfields, for residential development, including the delivery of 20 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including connection to existing PRoW and provision of pedestrian improvements to nearby bus stops. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA14 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA15 – Land east of Little Mill</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>1.68ha</td><td>Residential</td><td>Approx No. of Homes: 20
Open Market Homes: 10
Affordable Homes: 10</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery

a) Sensitive lighting of the site and associated infrastructure will be required due to the presence of a high conservation value lesser horseshoe bat roost to the south of the site.

b) An area of public open space must be included within the site boundary in the south eastern corner of the site.

Sustainable Travel and Highways

c) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including:
• Provision of vehicular access via Cae Melin
• Provision of a 2.0 metre wide footway on eastern side of Cae Melin linking to existing footways on the A472.

Flood Risk and Sustainable Drainage Systems

d) A scheme for the management of overland flows from adjacent land will need to be included to ensure the potential flood risk from the land above the site has been accommodated within the layout of the site.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 1.68ha site on Land east of Little Mill, for residential development, including the delivery of 20 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including the provision of on site open space in the south east of the site, provision of a footway to connect to existing footways. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA15 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA16 – Land North of Little Mill</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>0.87ha</td><td>Residential</td><td>Approx No. of Homes: 15
Open Market Homes: 7
Affordable Homes: 8</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery
a) Protect buffer and maintain existing mature trees within the Green Infrastructure provision of the site.
b) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats, including corridors used by bats.

Sustainable Travel and Highways
c) Off-site highway infrastructure improvements as necessary including vehicular access through the extension of Ty Gwyn Road.
d) Provision of good quality, safe, legible and accessible pedestrian and cycle linkages to key access points including public transport stops, the public rights of way network and key services including those located along Berthon Road.

Residential Amenity
e) The incorporation of appropriate noise and vibration mitigation measures reflecting the site's proximity to the railway line on its north-western boundary.

Flood Risk and Sustainable Drainage Systems
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 0.87ha site on Land North of Little Mill, for residential development, including the delivery of 15 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including protecting, buffering and maintaining existing mature trees, provision of pedestrian and cycle linkages. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA16 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td></td><td>f) Incorporation of surface water drainage solutions to the south eastern corner of the site.</td><td></td></tr>
<tr><td>Policy HA17 – Land adjacent to Llanellen Court Farm, Llanellen</td><td>Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>1.56ha</td><td>Residential</td><td>Approx No. of Homes: 26
Open Market Homes: 13
Affordable Homes: 13</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Green Infrastructure, Landscape and Nature Recovery

a) Protect, buffer and maintain existing TPO trees and other trees and hedgerows by including within the Green Infrastructure provision and enhance by include new planting of native species of local provenance.

Sustainable Travel and Highways

b) An agreement must be entered into with the Council for the implementation of required off-site works and improvement measures including:
• The adoption of the existing development access.
• The construction of the proposed off-site pedestrian/cycling improvements for safe access to bus stops on the A4042 in both directions.
• The creation of accessible pedestrian access to the bus stop on Elm Drive, a shared-use path to link to the Monmouthshire and Brecon Canal and exploration of better links to the village centre other than the PROW.
• The provision of access improvements where necessary.</td><td>Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 1.56ha site on Land adjacent to Llanellen Court Farm, for residential development, including the delivery of 26 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including protecting, buffering and maintaining existing trees and hedgerows, provision of pedestrian access to existing bus stops. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA17 is screened in for Appropriate Assessment.</td></tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy HA18 – Land West of Redd Landes, Shirenewton</td>
<td>
Allocated for residential development

Development of the site should accord with the following parameters, placemaking principles and development requirements, which should be delivered in an appropriately phased manner and be formally tied to planning consents.

<table>
<tr><th>Site Area</th><th>Allocation Type</th><th>Total Homes</th></tr>
<tr><td>1.76ha</td><td>Residential</td><td>Approx No. of Homes: 26
Open Market Homes: 13
Affordable Homes: 13</td></tr>
</table>

In addition to the Placemaking Principles identified in Policy S8, the site must comply with the following:

Sustainable Communities

c) Inclusion of an active frontage along the main road to foster connection with the wider settlement.

Green Infrastructure, Landscape and Nature Recovery

d) Existing boundary features to be enhanced with additional hedgerow and tree planting to boundaries to mitigate for development and respond to its edge of settlement location.

e) The site is within the 7km Core Recreational Catchment Zone for the Severn Estuary European Marine Site and will be considered for a financial contribution as part of the Mitigation Strategy for the site. Green space design must consider any emerging guidance for Suitable Alternate Natural Greenspace (SANG) to reduce recreational pressure on the features of the estuary.

f) Provision of a lighting strategy that considers and mitigates for visual impact on landscape character and setting and minimises light spillage on to wildlife corridors and habitats.

Sustainable Travel and Highways

g) Provision of on and off-site measures to provide good quality, attractive, safe, legible and accessible pedestrian and cycle linkages both to and within the new development area. Key connections include a footpath link on the eastern part of the site to the road frontage footway allowing for ease of access to the recreation hall and grounds, along with a new footway link to the north of the site connecting to the existing Public Right of Way 380/42/1.
</td>
<td>
Likely Significant Effects on European sites cannot be excluded.

This policy allocates a 1.76ha site on Land West of Redd Landes, Shirenewton, for residential development, including the delivery of 26 homes.

Importantly, the policy also specifies that the development proposal will need to comply with a number of provisions, including enhancing boundary features wit hedgerow and tree planting, potential financial contributions to Severn Estuary European Marine Site, provision of pedestrian and cycle linkages. These measures have the potential to mitigate some of the impact pathways identified below.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy HA18 is screened in for Appropriate Assessment.
</td>
</tr>
</table>

Policy	Text	Assessment
	h) Provision of off-site highway infrastructure improvements as necessary, having regard to requirements arising from the Transport Assessment and including: • An agreement must be entered into with the Council for facilitation of the construction of the development access; • A 2 metre footway on the northern side of Route R122 Earlswood Road over the site's frontage linking to the existing footway at Redd Landes; • Relocation of the existing 20mph and 40mph speed limits and measures to promote the change in speed limit and environment, the location of which to be agreed with the Council. Other i) Protection measures in the form of a diversion or easement width may be required to ensure the protection of any water mains traversing the site.	
Gypsy and Travellers		
Strategic Policy S9 – Gypsy and Travellers	Land will be made available at Bradbury Farm, Crick for 7 pitches to accommodate unmet Gypsy and Traveller accommodation needs identified in the latest Gypsy and Traveller Accommodation Assessment.	Likely Significant Effects on European sites cannot be excluded. Potential impact pathways are present: • Atmospheric pollution • Recreational pressure • Water quality • Water quantity, level and flow Due to these potential linking impact pathways Policy S9 is screened in for Appropriate Assessment.

Policy	Text	Assessment
Policy GT1 – Gypsy, Traveller and Showpeople Sites	Proposals for Gypsy and Traveller and Travelling Showpeople Site will be permitted provided that: a) the site is within or adjacent to a settlement boundary. Sites in the countryside away from existing settlements will be considered where there is a lack of suitable sustainable locations for sites within or adjacent to existing settlement boundaries, in accordance with Circular 005/2018; b) the site has a safe and convenient access to the highway network and will not cause traffic congestion or safety problems; c) the site is of a suitable size to allow for the planned number of caravans, amenity blocks, a play area (for children on sites housing multiple families), the access road and include sufficient space for the parking and safe circulation of all vehicles associated with occupiers within the site curtilage; d) the site does not occupy a prominent location and is consistent with LP policies for protecting and enhancing character and distinctiveness of the landscape and environment. Where necessary the proposal will include mitigating measures to reduce the impact, and assimilate the proposal into its surroundings e.g. screening and landscaping; e) the site is not within areas at high risk of flooding and proximity to uses with potential sources of pollution or emissions; f) the site is of an appropriate scale to its location and does not have an unacceptable impact on the amenities of neighbouring land uses; g) it is served, or can be served, by adequate on-site services for water supply, power, drainage, sewage disposal and waste disposal (storage and collection), and for Travelling Showpeople	There are no LSEs of this policy on European sites. This is a development management policy that requires sites for gypsy, travellers and travelling showpeople to meet certain criteria including being of suitable size. Location and not pose unacceptable impacts on amenity of neighbouring land uses. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy GT1 is screened out from AA.
Employment and Economy		

Policy	Text	Assessment
Strategic Policy S10 – Employment Sites Provision	Provision is made for 57ha of employment land to meet a minimum requirement of 38ha of land on a suitable range and choice of sites for industrial and business development (Use Classes B1, B2, B8) in accordance with the Plan's Spatial Strategy. Existing employment land and premises that continue to be required for employment purposes will be protected from alternative forms of development. Development proposals within settlement boundaries that seek to deliver the Council's vision for sustainable economic growth will be permitted, particularly where they reflect the aims of the Economy, Employment & Skills Strategy. All proposals will be subject to detailed planning considerations, including the protection of the natural and built environment.	Likely Significant Effects on European sites cannot be excluded. This is an employment management policy that provides for 57ha of employment land to be delivered in the Plan period. There are potential linking impact pathways associated with the delivery of industrial and business development. **Potential impact pathways are present:** • **Atmospheric pollution** • **Loss of functionally linked land** • **Water quality** • **Water quantity, level and flow** Due to these potential linking impact pathways Strategic Policy 10 is screened in for Appropriate Assessment.

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy EA1 – Employment Allocations</td>
<td>The following sites are identified for new industrial and business development (Use classes B1, B2 and B8):
<table>
<tr><th>Site Ref</th><th>Site Name</th><th>Area (Ha)</th><th>Use Class</th></tr>
<tr><td colspan="4">Industrial and Business Sites</td></tr>
<tr><td>EA1a</td><td>Land at Nantgavenny Business Park, Abergavenny</td><td>0.59</td><td>B1</td></tr>
<tr><td>EA1b</td><td>Poultry Units, Rockfield Road, Monmouth</td><td>1.3</td><td>B1</td></tr>
<tr><td>EA1c</td><td>Land North of Wonastow Road, Monmouth</td><td>4.5</td><td>B1, B2, B8</td></tr>
<tr><td>EA1d</td><td>Newhouse Farm, Chepstow</td><td>2.5</td><td>B1, B2, B8</td></tr>
<tr><td>EA1e</td><td>Land adjoining Oak Grove Farm, Caldicot</td><td>6</td><td>B1, B2, B8</td></tr>
<tr><td>EA1f</td><td>Quay Point, Magor</td><td>14</td><td>B1, B2, B8</td></tr>
<tr><td>EA1g</td><td>Rockfield Farm, Undy</td><td>3.2</td><td>B1</td></tr>
<tr><td>EA1h</td><td>Gwent Euro Park, Magor</td><td>7</td><td>B1, B2, B8</td></tr>
<tr><td>EA1i</td><td>Raglan Enterprise Park, Raglan</td><td>1.5</td><td>B1, B2, B8</td></tr>
<tr><td>EA1j</td><td>Land West of Raglan</td><td>4.5</td><td>B1, B2, B8</td></tr>
<tr><td colspan="4">Identified Mixed Use Sites</td></tr>
<tr><td>EA1k</td><td>Land to the East of Abergavenny</td><td>1</td><td>B1</td></tr>
<tr><td>EA1l</td><td>Land at Former MoD Site, Caerwent</td><td>1</td><td>B1</td></tr>
<tr><td>EA1m</td><td>Land to the East of Caldicot</td><td>1</td><td>B1</td></tr>
<tr><td colspan="2">Total</td><td>48.09</td><td></td></tr>
</table>
</td>
<td>Likely Significant Effects on European sites cannot be excluded.

This is an employment management policy that allocates 48.09ha of employment land to be delivered in the Plan period. There are potential linking impact pathways associated with the delivery of industrial and business development.

Potential impact pathways are present:
• Atmospheric pollution
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

Due to these potential linking impact pathways Policy EA1 is screened in for Appropriate Assessment.</td>
</tr>
</table>

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr>
<td>Policy EA2 – Protected Employment Sites</td>
<td>The following existing sites as indicated on the Proposals Maps are protected for industrial and business development (Use Classes B1, B2 and B8):
<table>
<tr><th>Site Ref</th><th>Site Name</th></tr>
<tr><td>EA2a</td><td>Mill Street, Abergavenny</td></tr>
<tr><td>EA2b</td><td>Lower Monk Street, Abergavenny</td></tr>
<tr><td>EA2c</td><td>Union Road, Abergavenny</td></tr>
<tr><td>EA2d</td><td>Hatherleigh Place, Abergavenny</td></tr>
<tr><td>EA2e</td><td>Former Cranberry Foods, Abergavenny</td></tr>
<tr><td>EA2f</td><td>Nantgavenny Business Park, Abergavenny</td></tr>
<tr><td>EA2g</td><td>Station Road, Chepstow</td></tr>
<tr><td>EA2h</td><td>Job Centre, Chepstow</td></tr>
<tr><td>EA2i</td><td>Bulwark Road, Chepstow</td></tr>
<tr><td>EA2j</td><td>Beaufort Park, Chepstow</td></tr>
<tr><td>EA2k</td><td>Newhouse Farm, Chepstow</td></tr>
<tr><td>EA2l</td><td>Wonastow Road, Monmouth</td></tr>
<tr><td>EA2m</td><td>Mayhill/Hadnock Road, Monmouth</td></tr>
<tr><td>EA2n</td><td>Tri-Wall, Wonastow, Monmouth</td></tr>
<tr><td>EA2o</td><td>Magor Brewery, Magor</td></tr>
<tr><td>EA2p</td><td>Severn Bridge, Caldicot</td></tr>
<tr><td>EA2q</td><td>Cheeseman’s Industrial Estate, Rogiet</td></tr>
<tr><td>EA2r</td><td>Progress Industrial Estate, Rogiet</td></tr>
<tr><td>EA2s</td><td>Wales One, Magor</td></tr>
<tr><td>EA2t</td><td>Cuckoo’s Row, Raglan</td></tr>
<tr><td>EA2u</td><td>Raglan Enterprise Park, Raglan</td></tr>
<tr><td>EA2v</td><td>Grange Mill Industrial Estate, Raglan</td></tr>
<tr><td>EA2w</td><td>Little Castle Farm Business Park, Raglan</td></tr>
<tr><td>EA2x</td><td>Woodside Industrial Estate, Usk</td></tr>
</table>
</td>
<td>Likely Significant Effects on European sites cannot be excluded.
This is an employment management policy that protects existing sites for industrial and business uses. There are potential linking impact pathways associated with the delivery of industrial and business development.
Potential impact pathways are present:
• Atmospheric pollution
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow
Due to these potential linking impact pathways Policy EA2 is screened in for Appropriate Assessment.</td>
</tr>
</table>

Policy	Text	Assessment
	EA2y Mamhilad	
Policy E1 – Protection of Existing Employment Land	Proposals that will result in the loss of existing or allocated industrial and business sites or premises (Use Classes B1, B2 and B8) to other uses will only be permitted if: a) The site or premises is no longer suitable or well-located for employment use; b) A sufficient quantity and variety of industrial sites or premises is available and can be brought forward to meet the employment needs of the County and the local area; c) There is no viable industrial or business employment use for the site or premises; d) There would be substantial amenity benefits in allowing alternative forms of development at the site or premises; e) The loss of the site would not be prejudicial to the aim of creating a balanced local economy. Exceptionally, planning permission may be granted for a change of use of existing employment land when the above criteria are not fully complied with if: i) The proposal is for small scale retail uses which are ancillary to the main business / industrial activity; or ii) Small scale service activities of an industrial nature which are not suited to the high street and involve the sale, service or repair of vehicles or machinery.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for any loss of existing or allocated industrial and business sites. It also states that exceptions for small scale ancillary uses may be granted. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy E1 is screened out from AA.

Policy	Text	Assessment
Policy E2 – Non-allocated Employment Sites	Proposals for industrial and business development (Use Classes B1, B2 and B8) by non-speculative single-site users will be permitted provided that all the following conditions are met: a) The proposed site is within or adjoining settlement boundaries of Primary Settlements or existing and proposed industrial / business sites; b) It can be demonstrated that the proposal cannot be accommodated on existing or proposed industrial or business sites within the County; c) The proposal is compatible with adjacent land uses; d) There is a demonstrable need for the type and scale of development in that location; and e) The proposal would cause no unacceptable harm to the surrounding landscape, historic / cultural heritage, biodiversity or local amenity value. f) Such developments will be controlled with a Section 106.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for proposals for non-allocated employment sites. This includes being located within or adjacent to existing settlement boundaries, being compatible with adjacent land uses and not causing unacceptable harm. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy E2 is screened out from AA.
Strategic Policy S11 – Rural Economy	Development to enable rural enterprise uses and the diversification of the rural economy will be permitted outside settlement boundaries where it is of a scale and type compatible with the surrounding area and will cause no unacceptable harm to the surrounding landscape, historic and cultural heritage, biodiversity or local amenity value. Development must re-use or adapt existing buildings where possible. The exceptional circumstances in which new buildings may be permitted outside settlement boundaries to support the rural economy are set out in RE1, RE3, RE4, RE5 and RE6.	There are no LSEs of this policy on European sites. This is a development management policy providing for the development of the rural economy, provided there is no unacceptable harm to the surrounding landscape and biodiversity value. While the policy might therefore accommodate employment development, this is covered in Strategic Policy S10, and as such is not reassessed here. Overall, there are no impact pathways present and this policy can be screened out from Appropriate Assessment.

Policy	Text	Assessment
Policy RE1 – Secondary and Main Rural Settlements Employment Exceptions	Within or adjoining the settlement boundaries of the Secondary and Main Rural Settlements identified in Policy S2, the construction of small-scale purpose built industrial and business development will be permitted, subject to detailed planning considerations, including: a) The proposal would cause no unacceptable harm to the natural or built environment; b) It can be demonstrated that the proposal cannot be accommodated on existing or proposed industrial or business sites with the County; c) The proposal is compatible with surrounding land uses and in scale with the existing settlement.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for industrial and business developments in rural settlements. This includes not causing unacceptable harm to the natural environment and being compatible with surrounding land. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RE1 is screened out from AA.
Policy RE2 – The Conversion and Rehabilitation of Buildings in the Open Countryside for Employment Use	Proposals for the conversion or rehabilitation of existing buildings in the open countryside, to employment use will be permitted provided that all the following criteria are met: a) The form, bulk, and general design of the proposal, including any extensions, respect the rural character and design of the building; b) In respect of farm diversification proposals, any necessary re-building work should respect or be in sympathy with the location and traditional characteristics of the building; in all other cases the buildings should be capable of conversion without major or complete reconstruction; c) The more isolated and prominent the building the more stringent will be the design requirements with regard to new door and window openings, extensions and means of access, service provision and curtilage, especially if located within the Wye Valley National Landscape (AONB); d) The conversion of modern farm and forestry buildings will only be permitted if the building has been used for its intended purpose for a significant period of time. Particularly close scrutiny will be given to proposals relating to buildings that are less than 5 years old, or which are known to have been used for their intended purpose for less than 5 years, and where there has been no change in farming or forestry activities on the unit since the building was erected permission may be refused;	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for the conversion of existing rural buildings to employment use. This includes not requiring extensive expansion. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RE2 is screened out from AA.

Policy	Text	Assessment
	e) The proposal including curtilage and access, is in scale and sympathy with the surrounding landscape and does not require the provision of unsightly infrastructure and ancillary buildings; and f) The building is capable of accommodating the proposed use without substantial extension. The above criteria will also be applied to proposals to extend buildings that have already been converted.	
Policy RE3 – Agricultural Diversification	Development proposals which make a positive contribution to agriculture diversification will be permitted where the new use or building meets the following criteria: a) The proposed non-agricultural development is run in conjunction with, and is complementary to, the agricultural activities of the enterprise; b) The proposal is supported by an appropriate business case which demonstrates the link to existing business activity and the benefits of the scheme in terms of sustaining employment / the rural economy; c) In relation to new build, the applicant must demonstrate that there are no existing buildings suitable for conversion / re-use in preference to new build; d) Any rebuilding work should respect or be in sympathy with the local and traditional characteristics of the building; e) Proposals for new built development meet the criteria set out in Policy OC1.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for agricultural diversification. This includes having an appropriate business case and operating alongside agricultural activities. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RE3 is screened out from AA.

Policy	Text	Assessment
Policy RE4 – New Agricultural and Forestry Buildings	New agricultural and forestry buildings, as well as any means of access and yard spaces, that are subject to planning control, will be permitted where: a) The building, hard standing or access is necessary for agricultural or forestry purposes; b) The building is functionally suitable for the specific use; c) Adequate provision is made for the disposal of foul and surface water and any animal waste without risk to the environment.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for new agricultural and forestry buildings. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RE4 is screened out from AA.
Policy RE5 – Intensive Livestock / Free Range Poultry Units	Intensive livestock or free-range poultry production units will be permitted subject to the following criteria: a) New livestock units and associated slurry tanks and lagoons are sited so as not to cause unacceptable nuisance to any non-agricultural dwelling or building; b) New units are sited so as to minimise their visual impact by avoiding exposed locations and, where practicable, locating them within or adjoining existing groups of buildings; c) Units that have serious implications for the surrounding highway network will be resisted; d) The unit is designed, and uses appropriate technology, to minimise the nuisance of smell, noise, air pollution and neutralise impact on water quality.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for new livestock and poultry production units. This includes being designed to minimise the impacts on smell and noise as well as neutralising impact on water quality. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RE5 is screened out from AA.

Policy	Text	Assessment
Policy RE6 – Provision of Recreation and Leisure Facilities in the Open Countryside	Development proposals for recreation and leisure uses in the countryside will be permitted subject to detailed planning considerations provided that: a) They are of a small-scale, informal nature and, including adequate safeguards for the character and appearance of the countryside (particularly its landscape, biodiversity and local amenity value). b) Development must re-use or adapt existing buildings where possible. In exceptional circumstances new buildings of an appropriate scale may be acceptable where justified and where the proposal meets the criteria set out in Policy OC1.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for recreation and leisure facilities in the countryside. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RE6 is screened out from AA.
Visitor Economy		
Strategic Policy 12 – Visitor Economy	Development proposals that support Monmouthshire's visitor economy and promote sustainable forms of tourism will be permitted subject to material planning considerations. Development proposals that would have an unacceptable adverse impact on features and areas of tourism interest and their landscape character and settings, or that would result in the unjustified loss of tourism facilities will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that broadly supports tourism development within the LP area. It specifically encourages sustainable tourism. While this policy does support increases tourism development it does not allocate and quanta or sites for growth Overall, there are no impact pathways present and Policy S12 is screened out from AA.

Policy	Text	Assessment
Policy T1 – New or Extended Tourism Accommodation and Facilities in the Open Countryside	Development proposals for sustainable tourism accommodation and facilities in the open countryside will only be permitted if the proposal can be justified against any of the following criteria: a) Is of a small scale appropriate to its context and a non-permanent nature that would cause no material harm to the landscape character and environmental/biodiversity quality of the surrounding area, either individually or cumulatively with other development in the area; or b) Contributes to agricultural diversification or an existing rural enterprise business and meets the criteria set out in S11 and RE3; or c) Consists of the conversion/rehabilitation of an existing rural building meeting criteria set out within Policy H4; or d) Relies upon a geographically fixed resource which exceptionally justifies the development; or e) Is located within or adjacent to an existing visitor attraction or accommodation as ancillary development to established medium or large hotels.; or f) Demonstrates significant economic benefit to Monmouthshire. Sustainable tourism proposals in the open countryside that accord with any of the criteria above must also meet all of the following criteria set out in (g)-(l) below: g) Protect, maintain and enhance landscape character, biodiversity, the resilience of ecosystems and the historic environment; h) Are of a scale, permanency and design appropriate to site context; i) Incorporate sustainable and efficient resource use; j) Have the necessary infrastructure capacity; k) Prioritise, promote and facilitate sustainable travel and have safe and efficient highway design; l) Do not have an unacceptable amenity impact on occupiers of neighbouring properties. All tourism proposals must be evidenced with a 'Sustainable Tourism Need and Impact Assessment' (STNIA). All tourism proposals are required to be short-stay only and not extend beyond a period of stay of 28 days.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for the development of sustainable tourism facilities in the open countryside. These include protecting, maintaining and enhancing the biodiversity and resilience of ecosystems, and promoting sustainable travel. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy T1 is screened out from AA.

Policy	Text	Assessment
Policy T2 – Protection of Existing Tourism Facilities	The loss of a tourism facility will only be permitted if: a) Its loss would not adversely affect the range and quality of tourism facilities available within the locality and/or County; and b) It can be demonstrated that the facility is no longer suitable or financially viable and could not be expected to become financially viable for tourism use.	There are no LSEs of this policy on European sites. This is a development management policy that sets criteria for the loss of a tourism facility. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy T2 is screened out from AA.
Sustainable Transport		
Strategic Policy S13 – Sustainable Transport	Development proposals will be required to accord with the Sustainable Transport Hierarchy, as set out in National Policy. This will be facilitated by: a) Promoting and prioritising active travel (walking, wheeling and cycling) and public transport above private motor vehicles, using location and design to reduce the need to travel; b) Maintaining and improving on the Active Travel Network Maps (ATNMs) to maximise active travel opportunities, including links to these networks associated with new developments; c) Ensuring development enables transition to Ultra Low Emission Vehicles (ULEVs) by providing necessary underlying infrastructure; d) Ensuring developments are designed to provide safe and efficient access and safe and efficient capacity to the transport network; e) Ensuring developments are served by an adequate level of parking provision, with cycle parking given competitive advantage, in accordance with relevant guidance; f) Demonstrating how proposals enable solutions to rural transport issues, where appropriate, and; g) Promoting digital and innovative infrastructure in both urban and rural areas to enable remote access to work, education and services.	There are no LSEs of this policy on European sites. This is a development management policy that sets a requirement for new development to accord with the Sustainable Transport Hierarchy that is national Policy. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy S13 is screened out from AA.

Policy	Text	Assessment
Policy ST1 – Sustainable Transport Proposals	All developments which are likely to have a significant impact on trip generation and travel demand must be accompanied by a Transport Assessment (TA). The TA must include a Transport Implementation Strategy that accords with the Sustainable Transport Hierarchy as set out in National Policy and develop a strategy to reduce the need to travel, facilitate, promote and prioritise active travel and ensure access to the public transport network. In town centre locations car-free development will be supported where practicable. If a rural location is essential for the proposed development, links to public transport should be considered and if necessary, included. A proportionate approach will be applied to the assessment of TAs and their accordance with the Sustainable Transport Hierarchy. Any new highway infrastructure and design will be expected to satisfy Active Travel Act Guidance (ATAG), National and Local highway design guides and parking guidelines. Financial contributions may be required for safety/congestion mitigation measures, or towards improvements to the highway network and sustainable travel. Developments that are likely to create significant additional road traffic growth, or adversely affect the safe and efficient operation of the highway system will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that sets a requirement for the preparation of a Transport Assessment for developments that are likely to have significant impact on travel demand, as well as considering public transport, Active Travel Act Guidance, and required highway improvements. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy ST1 is screened out from AA.
Policy ST2 – Highway Hierarchy	The following transport routes are identified as the main routes in the County for the movement of people and goods. Development proposals should be assessed from the appropriate level highway in the hierarchy, which comprises the following routes: a) Strategic Routes: • Motorways M4 and M48; • Trunk roads A40T, A48T, A4042T, A449T, A465T, and A466T Only in exceptional circumstances, will new direct accesses be permitted off Strategic Routes. Proposals that would result in short local journeys on these routes and add to unacceptable congestion will be refused. b) Arterial Routes: • A48 (High Beech Roundabout, Chepstow to Newport) • A466 (High Beech Roundabout, Chepstow to Herefordshire boundary north of Monmouth) • A472 (Little Mill to Usk Interchange)	There are no LSEs of this policy on European sites. This is a development management policy that sets a hierarchy for main transport routes in Monmouthshire. This hierarchy informs what parking, turning movements, and route connections will be deemed acceptable in the interests of road safety. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy ST2 is screened out from AA.

Policy	Text	Assessment
	• A4077 (Gilwern to Powys boundary) • A4136 (Monmouth to Gloucestershire boundary) • A4143 (Llanfoist to Brecon Road, Abergavenny) • B4245 (Parkwall to Magor) On arterial routes proposals for on street parking, new frontage access and turning movements will be considered against the interests of road safety and the efficient movement of traffic. c) Local Routes: • B4233 (Monmouth to Abergavenny) • B4235 (Usk to Chepstow) • B4246 (Llanfoist to Gilwern) • B4251 (Abergavenny to Skenfrith) • B4269 (Llanfoist to Llanellen) • B4293 (Chepstow to Monmouth) • B4347 (Rockfield to Grosmont) • B4598 (Abergavenny to Usk). On local routes parking and turning movements may be restricted and the number of frontage accesses limited on road safety and traffic movement (especially public transport) grounds. d) Access Routes These roads are those not listed in (a), (b) or (c) above. If appropriate, parking, turning movements, traffic speeds and the number of frontage access will be limited on road safety, amenity and traffic movement grounds.	

Policy	Text	Assessment
Policy ST3 – Freight	To reduce or prevent heavy road freight traffic, opportunities to develop freight transfer points between road / rail / last mile sustainable transport should be explored and will be favourably considered subject to detailed planning considerations. The development of facilities for the movement of freight by rail will be favourably considered, subject to detailed planning considerations. Proposals which would prejudice the operation of, or cause the loss of, freight sites and facilities will not be permitted, unless the facility has closed or is closing and it can be shown that there is no realistic prospect of it resuming, having regard to its potential viability in the long term.	There are no LSEs of this policy on European sites. This is a development management policy that favourably considers development of freight transfer points between road/rail/last mile sustainable transport. This support for rail freight and sustainable last mile freight could have positive effects in terms of air pollution. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy ST3 is screened out from AA.
Policy ST4 – Rear Access/Service Areas within Central Shopping and Commercial Areas	Development within the defined Central Shopping and Commercial Areas that require servicing must, where feasible, include provision for rear access and servicing. Development that relies on the use of on-street servicing will only be permitted where this would not conflict with walking, cycling and general traffic flows, or create highway dangers. Development that would result in the loss of rear service roads or yards will only be permitted if satisfactory alternative provision is made.	There are no LSEs of this policy on European sites. This is a design management policy that supports rear servicing of developments in Central Shopping and Commercial Areas. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy ST4 is screened out from AA.

Policy	Text	Assessment
Policy ST5 – Transport Schemes	The following transport schemes identified in the Local Transport Strategy will be supported and safeguarded from development that would likely prejudice their implementation: **Active Travel schemes** a) Abergavenny and Llanfoist Active Travel Schemes b) Caldicot Active Travel Schemes c) Chepstow Active Travel Schemes d) Monmouth Active Travel Schemes e) Usk Active Travel Schemes f) Magor and Undy Active Travel Schemes g) Undy to Rogiet Active Travel improvements alongside B4245 **Public Transport Improvement schemes** h) Abergavenny Train Station improvements i) Abergavenny Bus Station improvements j) Chepstow Transport Hub (rail and bus) k) Severn Tunnel Junction Interchange improvements (rail and bus) l) Monmouth Bus/Coach Stop m) Magor Walkway Station **Road Schemes** n) B4245 /M48/ Severn Tunnel Junction Link Road o) B2425/Severn Tunnel Junction Link Road p) Chepstow Highbeech Roundabout improvements	There are no LSEs of this policy on European sites. This is a development management policy which indicates general support for several active transport improvements and schemes. This is a positive policy which will encourage greater use of active travel and public transport, thus reducing air pollution and its potential impact on European sites. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy ST5 is screened out from AA.

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td>Policy ST6 – Protection of Redundant Routes</td><td>Redundant routes, such as former canal and rail routes and associated features, will be protected from development that would prejudice future sustainable transport use.</td><td>There are no LSEs of this policy on European sites.
This is a development management policy that protects redundant transport routes.
The policy does not specify any quantum or location of housing and / or employment development.
Overall, there are no impact pathways present and Policy ST6 is screened out from AA.</td></tr>
<tr><td>Retail and Commercial Centres</td><td></td><td></td></tr>
<tr><td>Strategic Policy S14 – Town, Local and Neighbourhood Centres</td><td>All new or enhanced retail, commercial and social developments, including leisure, cultural and entertainment uses, will be focused in accordance with the hierarchy defined below. Developments should be consistent in scale and nature with the size and character of the centre and its role in the hierarchy.
Proposals must maintain or enhance the vibrancy, vitality and attractiveness of the centre. Proposals which would undermine the vibrancy, vitality and attractiveness of the centre will not be permitted.
<table>
<tr><td>Town Centres:</td><td>Abergavenny, Caldicot, Chepstow, Monmouth</td></tr>
<tr><td>Minor County Town Centres:</td><td>Usk, Magor</td></tr>
<tr><td>Local Centres:</td><td>Raglan, Bulwark</td></tr>
<tr><td>Neighbourhood Centres:</td><td></td></tr>
<tr><td>Abergavenny:</td><td>Hillcrest Road, Rother Avenue and Hereford Road</td></tr>
<tr><td>Caldicot:</td><td>West End</td></tr>
</table></td><td>There are no LSEs of this policy on European sites.
This is a development management policy that sets out the retail hierarchy and protects the vitality, vitality and attractiveness of centres.
The policy does not specify any quantum or location of housing and / or employment development.
Overall, there are no impact pathways present and Policy S14 is screened out from AA.</td></tr>
</table>

Policy	Text	Assessment
	Chepstow: The Old Farm Shopping Centre, Thornwell and Larkfield Business Estate Monmouth: Overmonnow, Wyesham, The Albion and Monmouth District Centre	
Policy RC1 – Central Shopping and Commercial Areas	Central Shopping and Commercial Areas (CSCAs) are designated for Abergavenny, Caldicot, Chepstow, Monmouth, Magor and Usk. Within CSCAs (except for Primary Shopping Frontages) the following policy criteria apply, subject to detailed planning considerations: a) Development will be permitted where the proposal relates to a retail or commercial use which will safeguard the vitality, attractiveness and viability of the defined CSCAs; b) Change of use at ground floor level to uses other than retail or commercial will not be permitted unless it can be demonstrated that the vitality and viability of the CSCA will not be adversely affected; c) Change of use of ground floor premises to residential will not be permitted unless evidence is provided to demonstrate that the premises is not viable for retail or commercial use, including that the premises has been vacant for at least one year and that genuine attempts at marketing the existing use have been unsuccessful; The loss of car parking within CSCAs will be resisted, unless it can be demonstrated that the proposal is linked to a town centre regeneration scheme and sufficient parking is available.	There are no LSEs of this policy on European sites. This is a development management policy that supports rear servicing of developments in Central Shopping and Commercial Areas. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RC1 is screened out from AA.

Policy	Text	Assessment
Policy RC2 – Primary Chopping Frontages	Primary Shopping Frontages are designated in Abergavenny, Caldicot, Chepstow and Monmouth in the following locations: Abergavenny PSF1 Cross Street, High Street & Frogmore Street PSF2 Cibi Walk PSF3 Cross Street (51-60 & Town Hall) Caldicot PSF4 Newport Road (17-41 & 26-32 & Holman House) Chepstow PSF5 High Street (2-23 & 24-29) PSF6 St Mary Street Monmouth PSF7 Monnow Street (1-93 & 6-114) PSF8 Church Street & Agincourt Square Within Primary Shopping Frontages, development or redevelopment proposals for non-A1 commercial uses on ground floors, or a change of use on ground floors from Use Class A1 to non-A1 commercial uses, will only be permitted where all of the following apply: a) It retains or delivers an active shopfront; b) The use would not create an over-concentration or unacceptable balance of non-A1 uses that would disproportionately dilute the continuity of the primary shopping frontage detracting from its established retail character; c) It would not result in the loss of A1 retail units in prominent locations, corner units or those with long frontages. Where a proposal fails to meet all of the above criteria, an exception may be considered provided: i) It can be demonstrated that the proposed use would not harm the vitality, attractiveness and viability of the street frontage; and ii) The premises have been vacant for at least a year, genuine attempts at marketing the existing use have been unsuccessful, and the proposal would bring a vacant premises back into an active commercial or community use.	There are no LSEs of this policy on European sites. This is a development management policy that designates certain areas as primary shopping frontages. This policy also limits development in these areas to ensure the provision of an active shop front and suitable commercial uses. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RC2 is screened out from AA.

Policy	Text	Assessment
	A justification statement must be submitted to provide evidence for all proposals considered to be exceptions.	
Policy RC3 – Local Centres and Neighbourhood Centres/ Shops	The County's local centres, neighbourhood centres and shops are defined in Strategic Policy S14 and are identified on the Proposals Map. Development proposals for A1 retail development in designated local centres and neighbourhood centres will be permitted provided that the development, either individually or cumulatively with other recent or proposed developments, does not undermine the vitality, attractiveness or viability of town centres. Proposals for A1, A2, A3 and other complementary commercial uses will be supported in local and neighbourhood centres where they are in keeping with the scale, role and function of the individual centre. Proposals that would result in the loss of A1, A2, A3, or commercial uses within local centres and neighbourhood centres will not be permitted unless genuine attempts at marketing the existing use have been unsuccessful.	There are no LSEs of this policy on European sites. This is a development management policy that prevents development within local and neighbourhood centres if it would harm town centres. This policy also limits development in these areas to ensure the provision is appropriate to its location. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RC3 is screened out from AA.
Policy RC4 – New Retail Proposals Outside of Identified Town and Local Centres	The preferred location for new retail and commercial uses, including extensions to existing retail and commercial premises, will be in the designated Central Shopping and Commercial Areas (CSCAs) and Local Centres. Where it can be demonstrated that no suitable sites exist in the CSCA/local centre, then sites on the edge of the CSCA/local centre should be considered before finally considering out-of-town sites. Development proposals outside these areas will be required to be assessed against the following criteria: a) A demonstrable need exists for the proposed development; b) The proposed development, either individually or cumulatively with other recent or proposed developments, would not have a detrimental impact on the trade/turnover, vitality and viability of town, local or neighbourhood centres; c) The proposed development is of an appropriate scale and type to the size, character and function of the centre and its position in the retail and commercial hierarchy; d) The proposed development would not have a detrimental impact on future public or private investment needed to safeguard vitality and viability of the centres; e) The proposal is in a location accessible by sustainable travel;	There are no LSEs of this policy on European sites. This is a development management policy that set criteria for the development of any retail and commercial development outside of designated centres. These criteria include that the site must be accessible by sustainable transport . The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy RC4 is screened out from AA.

Policy	Text	Assessment
	f) The proposal is not on land allocated for other uses. This especially applies to land designated for industry, employment and housing, where retail and commercial development can be shown to limit the range and quality of sites for such uses. Retail Impact Assessments will be required for retail and commercial developments outside the centres identified in the retail and commercial hierarchy in Strategic Policy S10, the content of which should be proportionate to the potential impact of the proposed use. The following floorspace thresholds will apply: g) Outside the CSCAs of Abergavenny, Caldicot, Chepstow & Monmouth – 500 sq.m gross	
Community Infrastructure		
Strategic Policy S15 – Community and Recreation Facilities	Development proposals that provide and/or enhance community and recreation facilities will be permitted within or adjoining settlement boundaries subject to detailed planning considerations. Development proposals that result in the unjustified loss of community and recreation facilities will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that protects existing community and recreation facilities and supports their provision in and adjoining settlements. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Strategic Policy S15 is screened out from AA.

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td>Policy CI1 – Retention of Existing Community Facilities</td><td>The change of use or conversion of neighbourhood or village shops, halls, public houses and other community facilities to other uses will only be permitted where all of the following criteria are met:
a) The local community would continue to be adequately served by facilities to which there is convenient access by sustainable travel;
b) Evidence is provided that the existing use is no longer viable. In respect to commercially operated facilities evidence must be provided that the facility is no longer financially viable;
c) Evidence is provided that appropriate marketing of the facility, whether in use or vacant, has been unsuccessful.</td><td>There are no LSEs of this policy on European sites.
This is a development management policy that set criteria for the change of use of community facilities.
The policy does not specify any quantum or location of housing and / or employment development.
Overall, there are no impact pathways present and Policy CI1 is screened out from AA.</td></tr>
<tr><td>Policy CI2 – Provision of Formal and Informal Open Space and Allotments/Community Growing Areas</td><td>New development proposals will be assessed against the Council's standards for recreation facilities, open space, allotments and community growing, as set out below:
<table>
<tr><th></th><th>Open Space Typology</th><th>Quantity Guideline (hectares per 1,000 population)</th><th>Definition</th></tr>
<tr><td rowspan="3">FORMAL OUTDOOR SPACE</td><td>Playing pitches</td><td>1.2 ha</td><td>Sports pitches including football rugby, hockey, lacrosse, cricket and American football</td></tr>
<tr><td>All outdoor sports</td><td>1.6 ha</td><td>Courts and greens comprising natural or artificial surfaces, including tennis courts, bowling greens, athletics tracks and other outdoor sports areas</td></tr>
<tr><td>Equipped/designated play areas</td><td>0.25 ha</td><td>Local Area for Play (LAP) and Locally Equipped Areas for Play (LEAP) aimed at children who can play independently, as well as</td></tr>
</table></td><td>There are no LSEs of this policy on European sites.
This is a development management policy that set criteria for the provision of outdoor space and allotments and community growing.
The policy does not specify any quantum or location of housing and / or employment development.
Overall, there are no impact pathways present and Policy CI2 is screened out from AA.</td></tr>
</table>

Policy	Text				Assessment
				Neighbourhood Equipped Areas of Play (NEAP)	
		Other outdoor provision	0.3ha	All weather multi-use games areas (MUGA) including skateboard parks	
		Sub total	3.35ha		
	INFORMAL OUTDOOR SPACE	Parks and gardens	0.8ha	Green spaces including urban parks, country parks, forest parks and formal gardens	
		Amenity green space	0.6ha	Informal recreation spaces, public squares, communal green spaces in and around housing, village greens	
		Natural and semi -natural space	2.0ha	Woodland, scrub, grassland and open access land	
		Sub total	3.4ha		
	ALLOTMENTS & COMMUNITY GROWING	Allotments & Community growing	0.3ha	Allotments, community gardens and community orchards	

Policy	Text	Assessment
Policy CI3 – Safeguarding Existing Recreational Facilities, Public Open Spaces and Allotments/Community Growing	Development proposals that involve the loss of land and facilities with recreational, open space, allotments and community growing uses will only be permitted where: a) Alternative provision of at least equivalent community benefit is made available in the locality by the developer on a site acceptable to the local planning authority; or b) There is, and would be, an excess of accessible recreational facilities, public open space and allotments/community growing areas in the locality having regard to the standard as set out in Policy CI2.	There are no LSEs of this policy on European sites. This is a development management policy that set criteria for developments resulting in the loss of land and recreational facilities. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy CI3 is screened out from AA.
Policy CI4 – Areas of Amenity Importance	Areas of Amenity Importance are identified on the Proposals Map. Development proposals that lead to the loss of Areas of Amenity Importance will not be permitted.	There are no LSEs of this policy on European sites. This is a development management policy that protects areas of Amenity Importance. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy CI4 is screened out from AA.
Minerals		
Strategic Policy S16 – Sustainable Minerals Management	The Council will sustainably manage its mineral resources by: i) Safeguarding known/potential land won sand and gravel, sandstone and limestone resources for future possible use; ii) Maintaining a minimum 10-year bank of crushed rock reserves throughout the Plan period in line with the requirements of the latest South Wales Regional Aggregates Working Party Regional Technical Statement on Aggregates; and iii) 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 won resources.	There are no LSEs of this policy on European sites. This is a development management policy that protects areas of value as mineral resources. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy S16 is screened out from AA.

Policy	Text	Assessment
Policy M1 – Local Building and Walling Stone	Proposals for new or the re-opening of small-scale quarries for building and walling stone for local conservation and heritage projects or new build to meet any unmet need will be permitted, subject to national planning policy and detailed planning considerations.	There are no LSEs of this policy on European sites. This is a development management policy that permits development of small quarries subject to national planning policies. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy M1 is screened out from AA.
Policy M2 – Minerals Safeguarding Areas	Development proposals which may impact on the minerals safeguarding areas shown on the Proposals Map will be considered against the following requirements, as applicable: a) Proposals for permanent development uses within identified mineral safeguarding areas will not be approved unless: i) The potential of the area for mineral extraction has been investigated and it has been shown that such extraction would not be commercially viable now or in the future or that it would cause unacceptable harm to ecological or other interests; or ii) The mineral can be extracted satisfactorily prior to the development taking place; or iii) There is an overriding need for the development; or iv) The development comprises infill development within a built up area or householder development or an extension to an existing building. b) Proposals for development uses of a temporary nature within identified mineral safeguarding areas will not be approved unless they can be completed and the site restored to a condition that does not inhibit mineral extraction within the timescale that the mineral is likely to be needed.	There are no LSEs of this policy on European sites. This is a development management policy that protects the mineral safeguarding zones from development. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy M2 is screened out from AA.

Policy	Text	Assessment
Policy M3 – Mineral Site Buffer Zones	Development proposals for sensitive or minerals development will not be permitted within the mineral site buffer zones identified on the Proposals Map.	There are no LSEs of this policy on European sites. This is a development management policy that prevents development proposals with the mineral site buffer zones. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy M3 is screened out from AA.
Waste		
Strategic Policy S17 – Sustainable Waste Management	To facilitate the delivery of sustainable management of waste the Plan will: i) Require waste proposals to conform to the principle of the waste hierarchy, supporting those that move waste up the hierarchy; ii) Support an integrated and adequate network of waste management installations that has regard to the nearest appropriate installation concept and self-sufficiency principles where necessary; iii) Identify suitable allocated and protected Class B2 industrial sites that are appropriate for in-building waste management treatment facilities, subject to detailed planning considerations; iv) Support the circular economy by encouraging the minimisation of waste production and the use of reused and recycled materials in the design, construction and demolition stages of development; and v) Ensure that provision is made for the sustainable management, sorting, storage and collection of waste in all new development.	There are no LSEs of this policy on European sites. This is a policy requiring waste to be sustainably managed with measures implemented to minimise the creation of waste. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy S17 is screened out from AA.

Policy	Text	Assessment
Policy W1 – Waste Management Facilities	Proposals for waste management facilities, except those involving the final deposit of waste on land at the site or open windrow composting, will be permitted within industrial sites (Class B2 of the Town and Country Planning Use Classes Order 1987) subject to detailed planning considerations, other RLDP policies and national and regional considerations. Where such proposals cannot be accommodated on existing or proposed Class B2 industrial sites they will be permitted provided that all the following conditions are met: a) The proposal site is within settlement boundaries or existing and proposed industrial/business sites; and There is a demonstrable need for the type and scale of development in that location. All proposals for waste management facilities should also comply with the following criteria: i) Where energy is recovered as part of the waste management process the means of access to the appropriate national grid or identified end user is demonstrated; ii) Where appropriate, the maximum possible use is made of non-road transportation for the receipt of the waste arisings and the distribution of the output products; iii) There is no processing and no substantial storage of waste material in the open air; and iv) The proposals are compatible with adjoining land uses. Development of sustainable waste management facilities in appropriate open countryside locations, including open windrow composting and anaerobic digestion, will be supported subject to detailed planning considerations.	There are no LSEs of this policy on European sites. This is a development management policy that sets out the criteria for considering waste management proposals . The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy W1 is screened out from AA.
Policy W2 – Agricultural Land – Disposal of Inert Waste	Proposals to deposit inert waste on an agricultural holding that has been brought in from elsewhere for the purpose of agricultural improvement will only be permitted where: a) A significant improvement in the agricultural land classification grade of the land will be achieved; b) It can be demonstrated that the improvement sought is essential for the purposes of agriculture within the holding and cannot be achieved by means other than by deposit of waste; c) The proposal involves depositing the minimum volume of waste consistent with achieving the agricultural land improvements sought; and d) Waste material capable of being economically recycled is not deposited on site.	There are no LSEs of this policy on European sites. This is a development management policy that controls the deposition of inert waste on agricultural land. The policy does not specify any quantum or location of housing and / or employment development. Overall, there are no impact pathways present and Policy W2 is screened out from AA.

<table>
<tr><th>Policy</th><th>Text</th><th>Assessment</th></tr>
<tr><td>Policy W3 – Identified Waste Management Sites</td><td>The following sites are identified as having potential for the location of in-building waste management facilities, subject to detailed planning considerations:
<table>
<tr><th>Site ref</th><th>Site Name</th><th>Area (Ha)</th></tr>
<tr><td>W3a</td><td>Raglan Enterprise Park, Raglan</td><td>1.5</td></tr>
<tr><td>W3b</td><td>Land West of Raglan, Raglan</td><td>4.5</td></tr>
<tr><td>W3c</td><td>Newhouse Farm, Chepstow</td><td>2.5</td></tr>
<tr><td>W3d</td><td>Quay Point, Magor</td><td>14</td></tr>
<tr><td>W3e</td><td>Gwent Euro Park, Magor</td><td>7</td></tr>
<tr><td>W3f</td><td>Land Adjoining Oak Grove Farm, Caldicot</td><td>6</td></tr>
<tr><td>W3g</td><td>Existing Waste Facility - Five Lanes, Caerwent</td><td>2.57</td></tr>
<tr><td>W3h</td><td>Existing Llanfoist Civic and Transfer Station</td><td>1.2</td></tr>
<tr><td colspan="2">Total</td><td>39.27</td></tr>
</table></td><td>Potential likely significant effects on European sites.
Although this policy states that suitability of these sites for waste uses will be subject to detailed planning considerations, it does indicate they are potentially suitable.

Potential impact pathways are present:
• Atmospheric pollution
• Recreational pressure
• Loss of functionally linked land
• Water quality
• Water quantity, level and flow

This policy is therefore taken forward to appropriate assessment.</td></tr>
</table>

Appendix C Air quality modelling

Air Quality Modelling Results

Transect / Receptor	Total Annual Mean NOx (µg/m3)				Total Annual Mean NH3 (µg/m3)				Total Annual Mean N Dep (kgN/ha/yr)				Total Annual Mean N Acid Dep (keq/ha/yr)			
	2024	2033	2033	2033	2024	2033	2033	2033	2024	2033	2033	2033	2024	2033	2033	2033
	Base	FB	DM	DS	Base	FB	DM	DS	Base	FB	DM	DS	Base	FB	DM	DS
E01a_3.5m	8.39	6.91	6.92	6.93	1.62	1.62	1.62	1.62	13.98	13.32	13.32	13.33	1.00	0.95	0.95	0.95
E01a_10m	8.40	6.91	6.92	6.93	1.62	1.62	1.62	1.62	13.98	13.32	13.32	13.33	1.00	0.95	0.95	0.95
E01a_20m	8.41	6.92	6.93	6.94	1.62	1.62	1.62	1.62	13.98	13.32	13.33	13.34	1.00	0.95	0.95	0.95
E01a_30m	8.44	6.93	6.93	6.94	1.62	1.62	1.62	1.62	13.99	13.33	13.33	13.34	1.00	0.95	0.95	0.95
E01a_40m	8.47	6.93	6.94	6.95	1.62	1.62	1.62	1.62	14.00	13.34	13.34	13.35	1.00	0.95	0.95	0.95
E01a_50m	8.51	6.94	6.95	6.97	1.62	1.62	1.62	1.62	14.02	13.35	13.35	13.37	1.00	0.95	0.95	0.95
E01a_60m	8.56	6.96	6.96	6.98	1.63	1.62	1.62	1.63	14.03	13.36	13.37	13.38	1.00	0.95	0.95	0.96
E01a_70m	8.60	6.97	6.98	6.99	1.63	1.62	1.63	1.63	14.05	13.37	13.38	13.39	1.00	0.95	0.96	0.96
E01a_80m	8.63	6.98	6.99	7.00	1.63	1.63	1.63	1.63	14.06	13.38	13.39	13.40	1.00	0.96	0.96	0.96
E01a_90m	8.67	6.98	7.00	7.01	1.63	1.63	1.63	1.63	14.07	13.38	13.39	13.41	1.01	0.96	0.96	0.96
E01a_100m	8.69	6.99	7.00	7.02	1.63	1.63	1.63	1.63	14.08	13.39	13.40	13.42	1.01	0.96	0.96	0.96
E01a_110m	8.71	6.99	7.01	7.03	1.63	1.63	1.63	1.63	14.09	13.39	13.40	13.42	1.01	0.96	0.96	0.96
E01a_120m	8.72	7.00	7.01	7.03	1.64	1.63	1.63	1.64	14.09	13.40	13.41	13.43	1.01	0.96	0.96	0.96
E01a_130m	8.72	7.00	7.01	7.03	1.64	1.63	1.63	1.64	14.09	13.40	13.41	13.43	1.01	0.96	0.96	0.96
E01a_140m	8.73	7.00	7.01	7.03	1.64	1.63	1.63	1.64	14.09	13.40	13.41	13.43	1.01	0.96	0.96	0.96
E01a_150m	8.73	7.00	7.01	7.03	1.64	1.63	1.63	1.64	14.09	13.40	13.41	13.43	1.01	0.96	0.96	0.96
E01a_160m	8.72	7.00	7.01	7.03	1.64	1.63	1.63	1.64	14.09	13.40	13.41	13.43	1.01	0.96	0.96	0.96
E01a_170m	8.72	7.00	7.01	7.03	1.64	1.63	1.63	1.64	14.09	13.40	13.41	13.43	1.01	0.96	0.96	0.96
E01a_180m	8.71	7.00	7.01	7.03	1.63	1.63	1.63	1.63	14.09	13.39	13.41	13.42	1.01	0.96	0.96	0.96
E01a_190m	8.71	6.99	7.01	7.03	1.63	1.63	1.63	1.63	14.08	13.39	13.40	13.42	1.01	0.96	0.96	0.96
E01a_200m	8.70	6.99	7.00	7.02	1.63	1.63	1.63	1.63	14.08	13.39	13.40	13.42	1.01	0.96	0.96	0.96
E01b_6.5m	8.39	6.91	6.92	6.93	1.62	1.62	1.62	1.62	13.98	13.32	13.32	13.33	1.00	0.95	0.95	0.95
E01b_10m	8.39	6.91	6.92	6.93	1.62	1.62	1.62	1.62	13.98	13.32	13.32	13.33	1.00	0.95	0.95	0.95
E01b_20m	8.40	6.92	6.92	6.93	1.62	1.62	1.62	1.62	13.98	13.32	13.32	13.33	1.00	0.95	0.95	0.95
E01b_30m	8.41	6.92	6.93	6.94	1.62	1.62	1.62	1.62	13.98	13.32	13.33	13.34	1.00	0.95	0.95	0.95
E01b_40m	8.43	6.92	6.93	6.94	1.62	1.62	1.62	1.62	13.99	13.32	13.33	13.34	1.00	0.95	0.95	0.95
E01b_50m	8.44	6.93	6.93	6.94	1.62	1.62	1.62	1.62	13.99	13.33	13.33	13.35	1.00	0.95	0.95	0.95
E01b_60m	8.46	6.93	6.94	6.95	1.62	1.62	1.62	1.62	14.00	13.33	13.34	13.35	1.00	0.95	0.95	0.95
E01b_70m	8.47	6.93	6.94	6.95	1.62	1.62	1.62	1.62	14.00	13.34	13.34	13.35	1.00	0.95	0.95	0.95
E01b_80m	8.48	6.94	6.94	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_90m	8.49	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_100m	8.50	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_110m	8.50	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_120m	8.50	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_130m	8.50	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_140m	8.50	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_150m	8.49	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_160m	8.49	6.94	6.95	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_170m	8.48	6.94	6.94	6.96	1.62	1.62	1.62	1.62	14.01	13.34	13.35	13.36	1.00	0.95	0.95	0.95
E01b_180m	8.47	6.94	6.94	6.96	1.62	1.62	1.62	1.62	14.00	13.34	13.34	13.35	1.00	0.95	0.95	0.95

E01b_190m	8.47	6.93	6.94	6.95	1.62	1.62	1.62	1.62	14.00	13.33	13.34	13.35	1.00	0.95	0.95	0.95
E01b_200m	8.46	6.93	6.94	6.95	1.62	1.62	1.62	1.62	14.00	13.33	13.34	13.35	1.00	0.95	0.95	0.95
E02a_2.3m	8.12	6.68	6.69	6.70	1.61	1.60	1.60	1.61	14.23	13.57	13.58	13.59	1.02	0.97	0.97	0.97
E02a_10m	8.13	6.68	6.69	6.70	1.61	1.60	1.61	1.61	14.23	13.57	13.58	13.59	1.02	0.97	0.97	0.97
E02a_20m	8.14	6.68	6.69	6.70	1.61	1.60	1.61	1.61	14.24	13.58	13.58	13.59	1.02	0.97	0.97	0.97
E02a_30m	8.17	6.69	6.70	6.71	1.61	1.61	1.61	1.61	14.25	13.58	13.59	13.60	1.02	0.97	0.97	0.97
E02a_40m	8.20	6.70	6.71	6.72	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.61	1.02	0.97	0.97	0.97
E02a_50m	8.24	6.71	6.72	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02a_60m	8.28	6.72	6.73	6.74	1.61	1.61	1.61	1.61	14.29	13.61	13.62	13.63	1.02	0.97	0.97	0.97
E02a_70m	8.32	6.73	6.74	6.76	1.62	1.61	1.61	1.62	14.30	13.62	13.63	13.64	1.02	0.97	0.97	0.97
E02a_80m	8.35	6.74	6.75	6.77	1.62	1.61	1.62	1.62	14.31	13.63	13.64	13.66	1.02	0.97	0.97	0.98
E02a_90m	8.38	6.75	6.76	6.78	1.62	1.62	1.62	1.62	14.32	13.64	13.65	13.66	1.02	0.97	0.97	0.98
E02a_100m	8.41	6.75	6.76	6.78	1.62	1.62	1.62	1.62	14.33	13.64	13.65	13.67	1.02	0.97	0.98	0.98
E02a_110m	8.42	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.64	13.66	13.68	1.02	0.97	0.98	0.98
E02a_120m	8.43	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.65	13.66	13.68	1.02	0.97	0.98	0.98
E02a_130m	8.44	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.65	13.66	13.68	1.02	0.97	0.98	0.98
E02a_140m	8.44	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.65	13.66	13.68	1.02	0.98	0.98	0.98
E02a_150m	8.44	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.65	13.66	13.68	1.02	0.97	0.98	0.98
E02a_160m	8.44	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.65	13.66	13.68	1.02	0.97	0.98	0.98
E02a_170m	8.43	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.65	13.66	13.68	1.02	0.97	0.98	0.98
E02a_180m	8.42	6.76	6.77	6.79	1.62	1.62	1.62	1.62	14.34	13.64	13.66	13.67	1.02	0.97	0.98	0.98
E02a_190m	8.42	6.75	6.77	6.79	1.62	1.62	1.62	1.62	14.33	13.64	13.65	13.67	1.02	0.97	0.98	0.98
E02a_200m	8.41	6.75	6.76	6.78	1.62	1.62	1.62	1.62	14.33	13.64	13.65	13.67	1.02	0.97	0.98	0.98
E02b_4.3m	8.12	6.68	6.69	6.69	1.61	1.60	1.60	1.61	14.23	13.57	13.58	13.59	1.02	0.97	0.97	0.97
E02b_10m	8.12	6.68	6.69	6.70	1.61	1.60	1.61	1.61	14.23	13.57	13.58	13.59	1.02	0.97	0.97	0.97
E02b_20m	8.13	6.68	6.69	6.70	1.61	1.60	1.61	1.61	14.24	13.57	13.58	13.59	1.02	0.97	0.97	0.97
E02b_30m	8.14	6.69	6.69	6.70	1.61	1.60	1.61	1.61	14.24	13.58	13.58	13.59	1.02	0.97	0.97	0.97
E02b_40m	8.16	6.69	6.70	6.71	1.61	1.61	1.61	1.61	14.24	13.58	13.59	13.60	1.02	0.97	0.97	0.97
E02b_50m	8.17	6.69	6.70	6.71	1.61	1.61	1.61	1.61	14.25	13.58	13.59	13.60	1.02	0.97	0.97	0.97
E02b_60m	8.18	6.70	6.70	6.71	1.61	1.61	1.61	1.61	14.25	13.59	13.59	13.60	1.02	0.97	0.97	0.97
E02b_70m	8.20	6.70	6.71	6.72	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.61	1.02	0.97	0.97	0.97
E02b_80m	8.21	6.70	6.71	6.72	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.61	1.02	0.97	0.97	0.97
E02b_90m	8.22	6.70	6.71	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.60	13.62	1.02	0.97	0.97	0.97
E02b_100m	8.23	6.71	6.71	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02b_110m	8.23	6.71	6.72	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02b_120m	8.23	6.71	6.72	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02b_130m	8.23	6.71	6.72	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02b_140m	8.23	6.71	6.72	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02b_150m	8.23	6.71	6.72	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.61	13.62	1.02	0.97	0.97	0.97
E02b_160m	8.22	6.71	6.71	6.73	1.61	1.61	1.61	1.61	14.27	13.60	13.60	13.62	1.02	0.97	0.97	0.97
E02b_170m	8.22	6.70	6.71	6.73	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.62	1.02	0.97	0.97	0.97
E02b_180m	8.21	6.70	6.71	6.72	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.61	1.02	0.97	0.97	0.97
E02b_190m	8.21	6.70	6.71	6.72	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.61	1.02	0.97	0.97	0.97
E02b_200m	8.20	6.70	6.71	6.72	1.61	1.61	1.61	1.61	14.26	13.59	13.60	13.61	1.02	0.97	0.97	0.97

E03_4m	6.75	4.73	4.78	4.91	1.59	1.57	1.58	1.60	29.77	28.71	28.80	29.02	2.13	2.05	2.06	2.07
E03_10m	5.72	4.45	4.48	4.54	1.52	1.51	1.51	1.53	29.06	28.22	28.26	28.37	2.08	2.02	2.02	2.03
E03_20m	5.25	4.33	4.34	4.38	1.49	1.48	1.49	1.49	28.75	28.01	28.03	28.09	2.05	2.00	2.00	2.01
E03_30m	5.07	4.28	4.29	4.31	1.48	1.47	1.48	1.48	28.63	27.92	27.94	27.98	2.05	1.99	2.00	2.00
E03_40m	4.97	4.25	4.26	4.28	1.47	1.47	1.47	1.47	28.57	27.88	27.89	27.92	2.04	1.99	1.99	1.99
E03_50m	4.91	4.24	4.24	4.26	1.47	1.47	1.47	1.47	28.53	27.86	27.86	27.89	2.04	1.99	1.99	1.99
E03_60m	4.87	4.22	4.23	4.24	1.47	1.46	1.46	1.47	28.51	27.84	27.84	27.86	2.04	1.99	1.99	1.99
E03_70m	4.84	4.22	4.22	4.23	1.46	1.46	1.46	1.47	28.49	27.83	27.83	27.85	2.03	1.99	1.99	1.99
E03_80m	4.82	4.21	4.21	4.22	1.46	1.46	1.46	1.46	28.48	27.82	27.82	27.84	2.03	1.99	1.99	1.99
E03_90m	4.80	4.21	4.21	4.22	1.46	1.46	1.46	1.46	28.47	27.81	27.81	27.83	2.03	1.99	1.99	1.99
E03_100m	4.79	4.20	4.20	4.21	1.46	1.46	1.46	1.46	28.46	27.80	27.81	27.82	2.03	1.99	1.99	1.99
E03_110m	4.77	4.20	4.20	4.21	1.46	1.46	1.46	1.46	28.45	27.80	27.80	27.81	2.03	1.99	1.99	1.99
E03_120m	4.76	4.20	4.20	4.20	1.46	1.46	1.46	1.46	28.44	27.79	27.80	27.80	2.03	1.99	1.99	1.99
E03_130m	4.75	4.19	4.19	4.20	1.46	1.46	1.46	1.46	28.43	27.79	27.79	27.80	2.03	1.98	1.98	1.99
E03_140m	4.74	4.19	4.19	4.20	1.46	1.46	1.46	1.46	28.43	27.78	27.79	27.79	2.03	1.98	1.98	1.99
E03_150m	4.74	4.19	4.19	4.19	1.46	1.46	1.46	1.46	28.43	27.78	27.78	27.79	2.03	1.98	1.98	1.98
E03_160m	4.73	4.19	4.19	4.19	1.46	1.46	1.46	1.46	28.42	27.78	27.78	27.79	2.03	1.98	1.98	1.98
E03_170m	4.72	4.18	4.19	4.19	1.46	1.46	1.46	1.46	28.42	27.78	27.78	27.78	2.03	1.98	1.98	1.98
E03_180m	4.72	4.18	4.18	4.19	1.46	1.46	1.46	1.46	28.42	27.78	27.78	27.78	2.03	1.98	1.98	1.98
E03_190m	4.71	4.18	4.18	4.19	1.46	1.46	1.46	1.46	28.41	27.78	27.78	27.78	2.03	1.98	1.98	1.98
E03_200m	4.71	4.18	4.18	4.18	1.46	1.46	1.46	1.46	28.41	27.77	27.77	27.78	2.03	1.98	1.98	1.98
E04_6.5m	6.28	4.77	4.80	4.85	1.68	1.67	1.68	1.69	28.96	28.09	28.13	28.21	2.07	2.01	2.01	2.01
E04_10m	6.04	4.70	4.73	4.76	1.67	1.66	1.66	1.67	28.79	27.97	28.01	28.07	2.06	2.00	2.00	2.00
E04_20m	5.66	4.60	4.62	4.64	1.64	1.64	1.64	1.64	28.54	27.80	27.82	27.85	2.04	1.99	1.99	1.99
E04_30m	5.48	4.56	4.57	4.58	1.63	1.63	1.63	1.63	28.43	27.72	27.73	27.75	2.03	1.98	1.98	1.98
E04_40m	5.39	4.53	4.54	4.55	1.63	1.62	1.63	1.63	28.37	27.68	27.69	27.71	2.03	1.98	1.98	1.98
E04_50m	5.33	4.52	4.52	4.53	1.62	1.62	1.62	1.62	28.33	27.65	27.66	27.68	2.02	1.98	1.98	1.98
E04_60m	5.29	4.51	4.51	4.52	1.62	1.62	1.62	1.62	28.31	27.63	27.64	27.65	2.02	1.97	1.97	1.98
E04_70m	5.26	4.50	4.50	4.51	1.62	1.62	1.62	1.62	28.29	27.62	27.63	27.63	2.02	1.97	1.97	1.97
E04_80m	5.24	4.49	4.50	4.50	1.62	1.62	1.62	1.62	28.27	27.61	27.62	27.62	2.02	1.97	1.97	1.97
E04_90m	5.22	4.49	4.49	4.50	1.62	1.62	1.62	1.62	28.26	27.60	27.61	27.62	2.02	1.97	1.97	1.97
E04_100m	5.20	4.48	4.49	4.49	1.62	1.62	1.62	1.62	28.25	27.60	27.60	27.61	2.02	1.97	1.97	1.97
E04_110m	5.19	4.48	4.48	4.49	1.62	1.61	1.61	1.62	28.24	27.59	27.59	27.60	2.02	1.97	1.97	1.97
E04_120m	5.17	4.48	4.48	4.48	1.61	1.61	1.61	1.61	28.23	27.59	27.59	27.59	2.02	1.97	1.97	1.97
E04_130m	5.16	4.47	4.47	4.48	1.61	1.61	1.61	1.61	28.23	27.58	27.58	27.59	2.02	1.97	1.97	1.97
E04_140m	5.15	4.47	4.47	4.47	1.61	1.61	1.61	1.61	28.22	27.58	27.58	27.58	2.02	1.97	1.97	1.97
E04_150m	5.15	4.47	4.47	4.47	1.61	1.61	1.61	1.61	28.22	27.57	27.58	27.58	2.02	1.97	1.97	1.97
E04_160m	5.14	4.47	4.47	4.47	1.61	1.61	1.61	1.61	28.21	27.57	27.57	27.58	2.02	1.97	1.97	1.97
E04_170m	5.13	4.46	4.47	4.47	1.61	1.61	1.61	1.61	28.21	27.57	27.57	27.57	2.01	1.97	1.97	1.97
E04_180m	5.13	4.46	4.46	4.47	1.61	1.61	1.61	1.61	28.21	27.57	27.57	27.57	2.01	1.97	1.97	1.97
E04_190m	5.12	4.46	4.46	4.46	1.61	1.61	1.61	1.61	28.21	27.57	27.57	27.57	2.01	1.97	1.97	1.97
E04_200m	5.12	4.46	4.46	4.46	1.61	1.61	1.61	1.61	28.20	27.57	27.57	27.57	2.01	1.97	1.97	1.97
E05_53.1m	9.13	6.10	6.16	6.19	1.82	1.79	1.80	1.81	29.96	28.84	28.92	28.97	2.14	2.06	2.07	2.07
E05_60m	8.83	6.02	6.07	6.10	1.80	1.78	1.79	1.79	29.77	28.70	28.78	28.82	2.13	2.05	2.06	2.06

E05_70m	8.52	5.94	5.98	6.01	1.78	1.76	1.77	1.77	29.57	28.57	28.63	28.67	2.11	2.04	2.05	2.05
E05_80m	8.26	5.87	5.91	5.93	1.76	1.75	1.76	1.76	29.41	28.46	28.51	28.55	2.10	2.03	2.04	2.04
E05_90m	8.03	5.81	5.84	5.86	1.75	1.74	1.74	1.75	29.27	28.37	28.41	28.44	2.09	2.03	2.03	2.03
E05_100m	7.83	5.76	5.78	5.80	1.74	1.73	1.73	1.74	29.16	28.29	28.33	28.35	2.08	2.02	2.02	2.03
E05_110m	7.66	5.71	5.74	5.75	1.73	1.72	1.73	1.73	29.06	28.22	28.26	28.28	2.08	2.02	2.02	2.02
E05_120m	7.52	5.67	5.70	5.71	1.72	1.72	1.72	1.72	28.98	28.17	28.20	28.22	2.07	2.01	2.01	2.02
E05_130m	7.40	5.64	5.66	5.67	1.72	1.71	1.71	1.72	28.91	28.13	28.15	28.17	2.07	2.01	2.01	2.01
E05_140m	7.30	5.62	5.63	5.64	1.71	1.71	1.71	1.71	28.86	28.09	28.11	28.12	2.06	2.01	2.01	2.01
E05_150m	7.21	5.59	5.61	5.62	1.71	1.70	1.71	1.71	28.81	28.06	28.08	28.09	2.06	2.00	2.01	2.01
E05_160m	7.14	5.57	5.59	5.60	1.70	1.70	1.70	1.70	28.77	28.04	28.05	28.06	2.05	2.00	2.00	2.00
E05_170m	7.07	5.56	5.57	5.58	1.70	1.70	1.70	1.70	28.73	28.01	28.03	28.04	2.05	2.00	2.00	2.00
E05_180m	7.02	5.54	5.55	5.56	1.70	1.70	1.70	1.70	28.70	27.99	28.00	28.01	2.05	2.00	2.00	2.00
E05_190m	6.97	5.53	5.54	5.54	1.70	1.69	1.70	1.70	28.68	27.98	27.99	28.00	2.05	2.00	2.00	2.00
E05_200m	6.93	5.52	5.53	5.53	1.70	1.69	1.69	1.69	28.66	27.96	27.97	27.98	2.05	2.00	2.00	2.00

Transect / Receptor	Total Annual Mean NOx (µg/m3)				Total Annual Mean NH3 (µg/m3)				Total Annual Mean N Dep (kgN/ha/yr)				Total Annual Mean N Acid Dep (keq/ha/yr)			
	2024	2033	2033	2033	2024	2033	2033	2033	2024	2033	2033	2033	2024	2033	2033	2033
	Base	FB	DM	DS	Base	FB	DM	DS	Base	FB	DM	DS	Base	FB	DM	DS
E06_79.5m	6.51	5.15	5.17	5.18	0.95	0.94	0.95	0.95	26.38	25.58	25.61	25.62	1.88	1.83	1.83	1.83
E06_80m	6.51	5.15	5.17	5.18	0.95	0.94	0.95	0.95	26.38	25.58	25.60	25.62	1.88	1.83	1.83	1.83
E06_90m	6.41	5.12	5.14	5.15	0.95	0.94	0.94	0.94	26.32	25.54	25.56	25.58	1.88	1.82	1.83	1.83
E06_100m	6.32	5.10	5.11	5.12	0.94	0.93	0.94	0.94	26.28	25.51	25.53	25.54	1.88	1.82	1.82	1.82
E06_110m	6.25	5.08	5.09	5.10	0.94	0.93	0.93	0.94	26.24	25.48	25.50	25.51	1.87	1.82	1.82	1.82
E06_120m	6.18	5.06	5.07	5.08	0.93	0.93	0.93	0.93	26.20	25.46	25.47	25.48	1.87	1.82	1.82	1.82
E06_130m	6.12	5.04	5.06	5.06	0.93	0.93	0.93	0.93	26.17	25.44	25.45	25.46	1.87	1.82	1.82	1.82
E06_140m	6.07	5.03	5.04	5.05	0.93	0.92	0.93	0.93	26.14	25.42	25.43	25.44	1.87	1.82	1.82	1.82
E06_150m	6.03	5.02	5.03	5.03	0.93	0.92	0.92	0.93	26.12	25.40	25.42	25.42	1.87	1.81	1.82	1.82
E06_160m	5.99	5.01	5.02	5.02	0.93	0.92	0.92	0.92	26.10	25.39	25.40	25.41	1.86	1.81	1.81	1.81
E06_170m	5.96	5.00	5.01	5.01	0.92	0.92	0.92	0.92	26.08	25.38	25.39	25.40	1.86	1.81	1.81	1.81
E06_180m	5.93	4.99	5.00	5.00	0.92	0.92	0.92	0.92	26.07	25.37	25.38	25.39	1.86	1.81	1.81	1.81
E06_190m	5.90	4.98	4.99	5.00	0.92	0.92	0.92	0.92	26.06	25.36	25.37	25.37	1.86	1.81	1.81	1.81
E06_200m	5.88	4.98	4.99	4.99	0.92	0.92	0.92	0.92	26.04	25.35	25.36	25.37	1.86	1.81	1.81	1.81
E07a_5m	14.44	7.50	7.70	7.79	1.39	1.31	1.35	1.36	31.29	29.10	29.38	29.52	2.24	2.08	2.10	2.11
E07a_10m	12.56	7.01	7.16	7.22	1.27	1.22	1.24	1.25	30.09	28.27	28.48	28.59	2.15	2.02	2.03	2.04
E07a_20m	10.69	6.50	6.60	6.65	1.16	1.12	1.14	1.15	28.91	27.46	27.61	27.68	2.07	1.96	1.97	1.98
E07a_30m	9.83	6.27	6.35	6.39	1.11	1.08	1.10	1.10	28.39	27.11	27.22	27.27	2.03	1.94	1.94	1.95
E07a_40m	9.29	6.12	6.19	6.22	1.08	1.06	1.07	1.07	28.05	26.87	26.97	27.01	2.00	1.92	1.93	1.93
E07a_50m	8.99	6.04	6.10	6.13	1.06	1.04	1.05	1.05	27.86	26.74	26.83	26.86	1.99	1.91	1.92	1.92
E07a_60m	8.75	5.97	6.03	6.06	1.05	1.03	1.04	1.04	27.71	26.64	26.71	26.75	1.98	1.90	1.91	1.91
E07a_70m	8.54	5.91	5.97	5.99	1.04	1.02	1.03	1.03	27.58	26.54	26.61	26.64	1.97	1.90	1.90	1.90
E07a_80m	8.27	5.85	5.89	5.91	1.02	1.01	1.01	1.02	27.42	26.44	26.50	26.52	1.96	1.89	1.89	1.89
E07a_90m	8.05	5.78	5.83	5.85	1.01	1.00	1.00	1.01	27.30	26.36	26.40	26.43	1.95	1.88	1.89	1.89
E07a_100m	7.87	5.73	5.77	5.79	1.00	0.99	0.99	1.00	27.20	26.29	26.33	26.35	1.94	1.88	1.88	1.88
E07a_110m	7.71	5.69	5.73	5.74	0.99	0.98	0.99	0.99	27.11	26.24	26.28	26.29	1.94	1.87	1.88	1.88

E07a_120m	7.59	5.66	5.69	5.70	0.99	0.98	0.98	0.98	27.05	26.19	26.23	26.25	1.93	1.87	1.87	1.87
E07a_130m	7.47	5.63	5.66	5.67	0.98	0.97	0.98	0.98	26.99	26.16	26.19	26.20	1.93	1.87	1.87	1.87
E07a_140m	7.37	5.60	5.63	5.64	0.98	0.97	0.97	0.98	26.93	26.12	26.15	26.16	1.92	1.87	1.87	1.87
E07a_150m	7.28	5.58	5.60	5.61	0.97	0.97	0.97	0.97	26.89	26.09	26.12	26.13	1.92	1.86	1.87	1.87
E07a_160m	7.21	5.56	5.58	5.59	0.97	0.97	0.97	0.97	26.86	26.07	26.09	26.10	1.92	1.86	1.86	1.86
E07a_170m	7.14	5.54	5.56	5.57	0.97	0.96	0.97	0.97	26.82	26.05	26.07	26.08	1.92	1.86	1.86	1.86
E07a_180m	7.08	5.52	5.54	5.55	0.97	0.96	0.96	0.96	26.79	26.03	26.05	26.06	1.91	1.86	1.86	1.86
E07a_190m	7.03	5.51	5.53	5.53	0.96	0.96	0.96	0.96	26.77	26.01	26.03	26.04	1.91	1.86	1.86	1.86
E07a_200m	6.98	5.49	5.51	5.52	0.96	0.96	0.96	0.96	26.74	26.00	26.01	26.02	1.91	1.86	1.86	1.86
E07b_5m	13.30	7.19	7.35	7.43	1.32	1.26	1.29	1.30	30.59	28.61	28.86	28.97	2.18	2.04	2.06	2.07
E07b_10m	11.60	6.74	6.86	6.92	1.22	1.17	1.19	1.20	29.52	27.88	28.06	28.15	2.11	1.99	2.00	2.01
E07b_20m	10.00	6.30	6.39	6.44	1.13	1.09	1.11	1.11	28.53	27.20	27.33	27.38	2.04	1.94	1.95	1.96
E07b_30m	9.16	6.08	6.15	6.18	1.08	1.05	1.06	1.07	28.01	26.85	26.94	26.99	2.00	1.92	1.92	1.93
E07b_40m	8.63	5.94	5.99	6.02	1.05	1.03	1.04	1.04	27.70	26.64	26.72	26.75	1.98	1.90	1.91	1.91
E07b_50m	8.26	5.84	5.88	5.91	1.03	1.01	1.02	1.02	27.48	26.49	26.55	26.58	1.96	1.89	1.90	1.90
E07b_60m	7.97	5.76	5.80	5.82	1.01	1.00	1.01	1.01	27.31	26.38	26.43	26.45	1.95	1.88	1.89	1.89
E07b_70m	7.76	5.70	5.74	5.75	1.00	0.99	1.00	1.00	27.19	26.29	26.34	26.36	1.94	1.88	1.88	1.88
E07b_80m	7.57	5.65	5.68	5.70	0.99	0.98	0.99	0.99	27.08	26.22	26.26	26.28	1.93	1.87	1.88	1.88
E07b_90m	7.42	5.61	5.64	5.65	0.98	0.98	0.98	0.98	27.00	26.17	26.20	26.21	1.93	1.87	1.87	1.87
E07b_100m	7.29	5.58	5.60	5.61	0.98	0.97	0.97	0.98	26.92	26.12	26.15	26.16	1.92	1.87	1.87	1.87
E07b_110m	7.18	5.55	5.57	5.58	0.97	0.97	0.97	0.97	26.86	26.08	26.10	26.12	1.92	1.86	1.86	1.87
E07b_120m	7.09	5.52	5.54	5.55	0.97	0.96	0.97	0.97	26.82	26.05	26.07	26.08	1.92	1.86	1.86	1.86
E07b_130m	7.01	5.50	5.52	5.53	0.97	0.96	0.96	0.96	26.78	26.02	26.04	26.05	1.91	1.86	1.86	1.86
E07b_140m	6.94	5.49	5.50	5.51	0.96	0.96	0.96	0.96	26.74	26.00	26.02	26.03	1.91	1.86	1.86	1.86
E07b_150m	6.89	5.47	5.48	5.49	0.96	0.96	0.96	0.96	26.71	25.98	25.99	26.00	1.91	1.86	1.86	1.86
E07b_160m	6.84	5.46	5.47	5.48	0.96	0.95	0.96	0.96	26.69	25.96	25.98	25.99	1.91	1.85	1.86	1.86
E07b_170m	6.80	5.45	5.46	5.46	0.96	0.95	0.95	0.95	26.66	25.95	25.96	25.97	1.90	1.85	1.85	1.85
E07b_180m	6.76	5.44	5.45	5.45	0.95	0.95	0.95	0.95	26.65	25.94	25.95	25.96	1.90	1.85	1.85	1.85
E07b_190m	6.72	5.43	5.44	5.44	0.95	0.95	0.95	0.95	26.63	25.93	25.94	25.94	1.90	1.85	1.85	1.85
E07b_200m	6.70	5.42	5.43	5.43	0.95	0.95	0.95	0.95	26.62	25.92	25.93	25.93	1.90	1.85	1.85	1.85

Monmouthshire County Council - Air Quality Modelling

Monmouthshire County Council - Regulation 19

Monmouthshire County Council

Project number: 60640455

July 2024

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Quality information

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Figures

Tables

1. Introduction

1.1 Monmouthshire County Council (MCC) has prepared a Replacement Local Development Plan (RLDP), setting out planned development from 2018 to 2033. The Council has commissioned AECOM Limited to conduct an air quality assessment to inform the Habitats Regulations Assessment (HRA) of the Regulation 18 Local Plan 2033.

1.2 The work presented in this report is to be used to inform the Appropriate Assessment of the HRA. It focuses on the impact of traffic related emissions due to planned development during the Local Plan period on sensitive ecosystems within River Wye, Severn Estuary, Wye Valley Woodlands, Cwm Clydach Woodlands and Usk Bat Sites Special Areas of Conservation (SAC). The River Wye, Cwm Clydach Woodlands and Wye Valley Woodlands SACs are mainly designated for beech and oak forest habitat, whilst the Severn Estuary and Usk Bat Sites SACs are mainly designated for bog, dry heath, sandflats, meadow and woodlands habitat. These habitats are all sensitive to nitrogen and acid deposition due to several reasons, such as soil acidification and toxicity to species (Natural England, 2018). It should be noted that the Cwm Clydach Woodlands and Usk Bat Sites are on the border with the Blaenau Gwent County Borough Council (BGCBC) and MCC areas and include transects in both counties, however, the assessment is of the impact of the MCC RLDP.

1.3 This assessment considers the following four key pollutants shown to affect sensitive ecosystems: ammonia (NH_3), oxides of nitrogen (NO_X), total nitrogen deposition and total acid deposition. All pollutants are considered at receptor points, within transects, up to 200m of the roadside, within the SACs considered in this assessment.

1.4 The main aims of this study are to:

- Identify potentially sensitive ecological receptor locations within the SAC within 200m of roads that are expected to be affected by the Local Plan 2033;
- Predict annual mean NO_X and NH_3 concentrations and nitrogen and acid deposition rates for the following scenarios at selected ecological receptors;
    - Baseline year (2024): represents current air quality situation in 2024;
    - Future Baseline (2033): uses the traffic data from the ‘current baseline’ in 2024, but applies future assessment year vehicle emission factors and background pollutant concentrations to allow for the ‘in combination’ assessment required for the HRA;
    - 2033 ‘Do Minimum’: future assessment year which does not include the influence of planned development from the MCC Local Plan but does allow for strategic planned development in neighbouring local authorities; and
    - 2033 ‘Do Something’: future assessment year which includes the influence of planned development from the MCC Local Plan and from strategic planned development in neighbouring local authorities.
- Determine if there are any exceedances of NO_X and NH_3 critical levels, and nitrogen and acid deposition critical loads within the SAC.

1.5 The results and implications of the modelling outputs are presented in the accompanying HRA of the ‘Monmouthshire Local Plan’. More detail on the Transport Assessment and associated modelling are available separately.

2. Policy Context

Clean Air Strategy

2.1 In 2019, the UK government released its Clean Air Strategy 2019 (Defra, 2019) as part of its 25 Year Environment Plan (Defra, 2018). These documents include targets to reduce emissions of ammonia from farming activities, and nitrogen oxides from combustion processes, and thus reduce the deposition of nitrogen to sensitive ecosystems.

Environment Act

2.2 The Environment Act 2021 (HM Government, 2021) amends the Environment Act 1995 (HM Government, 1995). On 9th November 2021, the Act received Royal Assent after being first introduced to Parliament in January 2020 to address environmental protection and the delivery of the Government's 25 Year Environment Plan. It includes provisions to establish a set of statutory environmental principles to ensure environmental governance through an environmental watchdog, the Office for Environmental Protection (OEP).

2.3 The Secretary of State must publish a review report every five years (as a minimum and with yearly updates to Parliament). The 25 Year Environment Plan has been adopted as the first Environmental Improvement Plan (EIP) of the Environment Act 2021, with long-term legally binding targets being finalised by Defra[1]. The EIP 2023 was published in January 2023 (updated February 2023), building on the 25 Year Environment Plan, and setting out how the delivery of environmental goals will be coordinated with landowners, communities and businesses.

Habitats Regulations Assessment

2.4 While the UK is no longer a member of the EU, a requirement for HRA will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

2.5 The HRA process applies the 'Precautionary Principle'[2] to European sites[3]. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. To ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the Plan or project in question.

2.6 Following evidence gathering, the first stage of any HRA is the screening for Likely Significant Effects (LSEs), a high-level assessment to decide whether the Appropriate Assessment is required. Where it is determined that a conclusion of 'no Likely Significant Effects' cannot be drawn, the analysis proceeds to the Appropriate Assessment.

Other Guidance documents

2.7 Best practice and advice / guidance contained within documents from Natural England (Natural England, 2018), the Institute of Air Quality Management (IAQM) (IAQM, 2020), the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2021) and National Highways (Design Manual for Roads and Bridges DMRB LA105) (DMRB, 2019) have been used to determine the methodology applied, and in the accompanying ecological interpretation of the results.

Critical Levels

2.8 Annual mean critical levels of NO_X and NH_3 are summarised in Table 1. These are concentrations above which adverse effects on ecosystems may occur based on present knowledge. The critical level for NO_X is taken from the EU Ambient Air Quality Directive 2008/50/EU (EU Directives, 2008) which has also

[1] https://www.gov.uk/government/news/update-on-progress-on-environmental-targets

[2] 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".***

[3] https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site - "***A European site is protected by the Conservation of Habitats and Species Regulations 2017 as amended (known as the Habitats Regulations)***". These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and Ramsar sites (wetlands of international importance).

been set as the Air Quality Strategy objective for the protection of vegetation and ecosystems and has been incorporated into English legislation.

2.9 The EU Directive (EU Directives, 2008) states that the sampling point to determine compliance should be sited more than 20 km away from agglomerations or more than 5 km away from other built-up areas, industrial installations or motorways or major roads with traffic counts of more than 50,000 vehicles per day, which means that a sampling point must be sited in such a way that is representative of an area of at least 1,000 km^2. Applying the critical level for NO_X to designated nature conservation sites that are located close to busy roads is therefore precautionary.

2.10 The critical levels for NH_3 have not been incorporated into legislation and are a recommendation made by the United Nations Economic Commission for Europe (UNECE) Executive Body for the Convention on Long-Range Transboundary Air Pollution (CLRTAP) (UNECE, 2013).

Table 1: Annual Mean Critical Levels (NO_X and NH_3)

Pollutant	Critical Level
Oxides of nitrogen (NO_X)	30 µg/m^3
Ammonia (NH_3)	3 µg/m^3 for higher plants 1 µg/m^3 for lichens and bryophytes

Planning Policy Wales

2.11 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government.Llwybr Newydd: The Wales Transport Strategy (2021-2040).

2.12 Llwybr Newydd, the Wales Transport Strategy (Llywodraeth Cymru, 2021), provides the strategic policy framework for transport-related activities in Wales. It sets out a long-term vision for transport over the next 20 years and outlines priorities for the next five years.

Strategic Framework

2.13 Llwybr Newydd establishes two tiers of transport plans:

- National Transport Delivery Plan (NTDP) (2022-2027): This plan outlines specific projects, schemes, initiatives, or interventions to be undertaken in the next five years. It identifies expenditure based on the Strategy's priorities, including ongoing projects. The NTDP supports the implementation of Future Wales – the National Plan 2040 and aligns with the Wales Infrastructure Investment Plan. It will be reviewed every five years and replaces the current National Transport Finance Plan (Llywodraeth Cymru, 2023).
- Regional Transport Plans: These statutory documents, developed by Corporate Joint Committees, aim to deliver the ambitions and priorities of Llwybr Newydd. Covering north, mid, southeast, and southwest Wales, these plans will replace the Local Transport Plans approved in 2015.

Integration of Land Use and Transport Planning

2.14 Land use and transport planning must be integrated to ensure cohesive development. The planning system should enable integration within and between different types of transport, land use planning, environmental policies, and policies for education, health, social inclusion, and wealth creation.

Development Plans

2.15 Development plans are the primary means to achieve integration between land use and transport planning. They must explain the authority's transport aims, how transport policies support other plan objectives, and how the development plan will support sustainable transport.

Integrated Planning and Transport Strategy

2.16 Planning authorities must set out an integrated planning and transport strategy in their development plans. This strategy should:

- Integrate and coordinate sustainable transport and land use planning
- Facilitate and promote accessibility for all
- Improve physical and digital connectivity
- Reduce the need to travel
- Reduce dependency on private vehicles
- Prioritize and support walking, cycling, and public transport
- Support the uptake of Ultra Low Emission Vehicles (ULEVs)
- Reduce transport-related airborne pollution
- Facilitate the provision of necessary transport infrastructure and sustainable transport improvements

Sustainable Transport

2.17 The Welsh Government is committed to reducing reliance on private cars and supporting a shift to walking, cycling, and public transport. This contributes to decarbonization, improves air quality, increases physical activity, and improves public health, aligning with the Well-being of Future Generations Act.

2.18 The planning system has a crucial role in reducing the need to travel and supporting sustainable transport by:

- Siting developments in locations easily accessible by sustainable travel modes
- Designing developments to integrate with existing land uses and neighbourhoods
- Facilitating short journeys by walking and cycling

2.19 Development proposals must maximize accessibility by walking, cycling, and public transport. This includes providing appropriate on-site infrastructure and, where necessary, mitigating transport impacts through off-site measures like developing active travel routes and bus priority infrastructure. Sustainable transport infrastructure and services should be prioritized and implemented before occupancy to establish sustainable travel patterns from the outset.

Sustainable Transport Hierarchy

2.20 Welsh Government policy mandates the use of a sustainable transport hierarchy in new developments, prioritizing walking, cycling, and public transport over private motor vehicles. This hierarchy aims to reduce travel needs, prevent car-dependent developments, and support schemes designed to facilitate active and sustainable transport.

2.21 The sustainable transport hierarchy should guide the preparation of development plans, site allocations, and planning application decisions. Careful consideration is needed to ensure new sites generating significant movement include provisions for walking, cycling, and public transport, and address any airborne pollution implications.

Active and Social Streets

2.22 Well-designed, people-oriented streets are fundamental to creating sustainable places. New developments should enhance place quality and create safe, social, attractive streets prioritizing pedestrians, cyclists, and public transport users. This includes integrating green infrastructure to filter pollutants, manage water, and provide urban cooling and habitats.

Public Transport and Ultra Low Emission Vehicles

2.23 Public transport accessibility is vital for sustainability, reducing dependency on cars for medium and long journeys. Development should be directed to locations with good public transport access, with site layouts and densities supporting public transport use.

2.24 To encourage ULEV adoption, the planning system should support the provision of ULEV charging points in new developments, integrating them into the overall design for maximum benefits. Charging points should be accessible, well-lit, and use renewable energy where possible.

Traffic Management and Car Parking

2.25 Traffic management aims to reduce traffic levels and speed in new developments, ensuring streets are designed for low speeds. Car parking provision should adopt a design-led approach, minimizing reliance on private cars and integrating parking into development designs without dominating the space.

2.26 Transport Assessments are crucial for understanding and mitigating development impacts on transport networks, promoting sustainable travel options, and minimizing air and noise pollution. They provide the basis for preparing Travel Plans, essential for managing transport impacts during and post-construction
.

3. Methodology

3.1 The Local Development Plan will significantly increase the population and employment opportunities within Monmouthshire County, which may result in more commuter and other journeys being undertaken within 200m of sensitive habitats. Therefore, Likely Significant Effects (LSEs) cannot be excluded, and the aforementioned European sites have been screened in for Appropriate Assessment regarding this impact pathway. This is in accordance with Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (Natural England, 2018).

3.2 As such, the air quality modelling methodology and analyses presented in this report have been undertaken to inform the HRA for the River Wye, Wye Valley Woodlands, Cwm Cyldach Woodlands, Usk Bat Sites and Severn Estuary SACs, which contain habitats and species that are sensitive to air quality impacts.

3.3 The following sections outline the methodology used to model air quality in the identified SACs, affected by changes to traffic associated with the Monmouthshire RLDP 2033. The following sources of information and data have been used to form the basis of the air quality assessment:

- Department for Environment, Food and Rural Affairs' (Defra) Air Quality Background Concentration Maps based on a 2018 base year (Defra, 2020a);
- Defra's Vehicle Emission Factors (Defra, 2023);
- Driver Vehicle Licencing Agency (DVLA) statistics on licensed road-using cars and light goods vehicles dataset for 2022 (DVLA, 2022);
- Department for Transport's (DfT) Transport Decarbonisation Plan of future vehicle fleet projections (DfT, 2022);
- Emission rates as published in the Calculator for Road Emissions of Ammonia (CREAM) tool (Air Quality Consultants, 2020);
- 1x1 km modelled nitrogen and acid deposition data and ammonia background concentrations from the Air Pollution Information System (APIS, 2024);
- Traffic count and speed data provided by the AECOM Transport Consultant for 2024 and 2033.

3.4 The modelling assessment was conducted following methodology within Defra's Local Air Quality Management Technical Guidance (LAQM.TG(22) (Defra, 2022), and guidance contained within documents from Natural England (Natural England, 2018), the Institute of Air Quality Management (IAQM) (IAQM, 2020) and the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2021).

Traffic Data

3.5 Traffic data were provided for the M48 Severn Bridge crossing near the Severn Estuary and River Wye SACs (covering transects E01a/b and E02a/b), for A466 near the Wye Valley Woodlands and River Wye SACs, for A40 near the River Wye SAC, and for the A465 near the Cwm Clydach Woodlands and Usk Bat Sites SAC (covering transects E06 and E07a/b). These roads are expected to experience changes in traffic flows over the Local Plan period to 2033. As such, an air quality effect due to emissions from additional traffic growth on these roads may occur. The modelled road links are shown in Figure 1 to Figure 6.

3.6 Traffic data were provided in the form of 24-hour Annual Average Daily Traffic (AADT) flows, with percentage heavy duty vehicle (HDV) flows and average speed for three scenarios – 2024 baseline (also used for the future baseline), future year 2033 'Do Minimum', and future year 2033 'Do Something' Scenario representing implementation of the Local Plan. A summary of the traffic data used in the air quality assessment is given in Annex A.1.

Modelled Vehicle Fleet

3.7 Version 12.0.1 of the Emissions Factor Toolkit (EFT) (Defra, 2023) includes a basic vehicle fleet mix for roads in England (excluding London) up to 2050. The basic vehicle fleet splits are based on data provided by DfT / Highways England (now National Highways). The composition of Euro emission standards and distribution of vehicle sizes/weights remain constant from 2030 until 2050. The intended use of the extended dataset to 2050 is in support of climate assessments and appraisals only. However, Defra advises that "Where emissions are to be used after 2030 to inform air quality assessments, the appropriate caveats around the limitations of the analysis must be included to accompany the assessment".

3.8 For the baseline modelling of the SACs, the nominal EFT v12.0.1 "Basic Split" rural fleet for the 2024 year was used, as this aligns well with the 2024 base year traffic data and suitable meteorological data within the last 5 years of the baseline year, 2024, was used.

3.9 For the future year (2033) modelling, an approach has been taken to determine the vehicle fleet used in the modelling to apply a more up-to-date projection than that published in the EFT v12.0.1 in relation to the uptake of hybrid and zero emission / battery electric vehicles. A current vehicle fleet representative of the local area was determined, which was then projected forward to the future year (2033) following the methodology below.

3.10 The current (2022) fleet composition, from which the 2033 fleet projection is based, is derived from the most up-to-date available full-year dataset (2022) of registered light-duty vehicles (LDV) from DVLA (DVLA, 2022). A high-level review of the fleet characteristics was conducted for Monmouthshire County Council and neighbouring counties. Based on the relative similarities in vehicle type breakdown, it was decided to use the county-level fleet for Monmouthshire to represent the modelled fleet.

3.11 Light Duty Vehicles (LDVs), which are mainly cars and light goods vehicles (LGVs), comprise the majority of vehicles in the overall fleet (between approximately 91% and 97%), and therefore this dataset will give a robust and accurate starting point for future fleet projections. Heavy Duty Vehicles (HDVs) made up of buses, coaches and HGVs), which comprise the remaining ~3-9% of the fleet, have been apportioned based on the EFT basic split for 2033. The exact LDV/HDV split varies according to the provided traffic data and depends on the road link, and the fleet breakdown for each road link takes this split into account.

3.12 Transport projections out to 2050 of UK's intended decarbonisation of the fleet and alignment with Net Zero are available from the DfT's Transport Decarbonisation Plan (TDP) (DfT, 2022). These projections are based on high and low ambition for rates of decarbonisation for every year up to 2050. These projections were adjusted to determine the breakdown of individual fuel types in line with the EFT v12.0.1.

3.13 To take a more cautious approach, the lower ambition "Decarbonising Transport Upper" projection was used to project the 2022-based current fleet out to the future year of 2033, by using the calculated year-on-year car, LGV and HDV growth rates for each vehicle fuel type. This projection was deemed to represent a more cautiously realistic scenario than either the EFT v12.0.1 or TDP baseline projections.

Pollutants of Interest

3.14 The pollutants of interest with regard to sensitive ecosystems for which critical levels and critical loads exist, and which are included in the air quality modelling and assessment of impacts on the five SACs listed above, are NO_X, NH_3, and nitrogen and acid deposition. Modelling of these pollutants is undertaken to assess the air quality impacts of planned development in the Local Plan on the SACs alone, and 'in combination' with existing plans within surrounding authorities.

3.15 Whilst emissions of NO_X from road vehicles are regulated according to Euro standards, emissions of NH_3 are not. This means that emissions of NH_3 from individual vehicle types are highly uncertain, particularly as measurements are rarely made (as this is not required for regulatory purposes). The uncertainty associated with the predicted nitrogen deposition rates from NH_3 is also greater than for NO_2, with the NH_3 derived nitrogen deposition rates representing an upper estimate.

3.16 There is currently no tool publicly available for the assessment of road traffic emissions of NH_3 from National Highways, Defra, Natural England, or other nature conservation bodies. However, there is

evidence that exclusion of NH_3 from assessments leads to an underestimate of deposited nitrogen (Air Quality Consultants, 2020).

3.17 The methodology used to model NH_3 concentrations from road traffic, using ADMS Roads, and the subsequent contribution to nitrogen deposition within the SACs (described below), is considered the most appropriate that is available at this time. The methodology has been applied by AECOM in several Appropriate Assessments to inform HRA including those for Selby District, Horsham District, Test Valley Borough and Epping Forest District Councils.

Nitrogen Oxides

3.18 Defra's EFT contains NOx emissions rates for local authorities to use for Local Air Quality Management (LAQM) assessments. The EFT is also used for other purposes including Environmental Impact Assessments (EIAs) and HRAs.

3.19 The EFT was used to calculate vehicle emissions in 2024 and 2033 assessment years using the fleet data which was calculated using the approach set out in paragraph 3.7 to 3.13.

3.20 Detailed dispersion modelling of road traffic emissions of NOx has been undertaken using the latest version of ADMS Roads (currently v5), EFT v12.0.1 emission rates, and custom vehicle fleet projections from the DfT for the future year 2033 scenarios. The subsequent contribution of emitted NOx to nitrogen deposition within the SAC has also been assessed.

Ammonia

3.21 In February 2020, Air Quality Consultants developed and published the Calculator for Road Emissions of Ammonia (CREAM) tool, '***in order to allow tentative predictions regarding trends in traffic-related ammonia emissions over time***'. The tool is based upon remotely sensed pollutant measurements, published real-world fuel consumption data, and ambient measurements of ammonia recorded in Ashdown Forest (2014-2016).

3.22 The report that was published alongside the CREAM tool states that:

"***It should be recognised that these emissions factors remain uncertain. Using them to make future year predictions will clearly be an improvement on any assessment which omits ammonia. They are also considered to be more robust than the emissions factors contained in the EEA Guidebook, which risk significantly under-predicting ammonia emissions. The emissions factors contained in the CREAM model can be considered to provide the most robust estimate of traffic-related ammonia possible at the present time, but they may be updated in the future as more information becomes available***."

3.23 The CREAM tool currently uses vehicle fleet information from Defra's EFT v9 which has now been superseded. AECOM has therefore applied the ammonia emission factors, as derived by Air Quality Consultants and in the current version of CREAM, with the vehicle fleet on rural roads from EFT v12.0.1, following the same vehicle fleet methodology as listed above, to estimate emissions in the SACs.

3.24 The latest version of ADMS Roads has been employed to model the dispersion of emissions of NH_3 from road traffic, consistent with the approach for modelling emissions of NO_X.

Figure 1: Modelled Road Network and Ecological Receptor Transects (Eco Transects E01a/b and E02a/b).

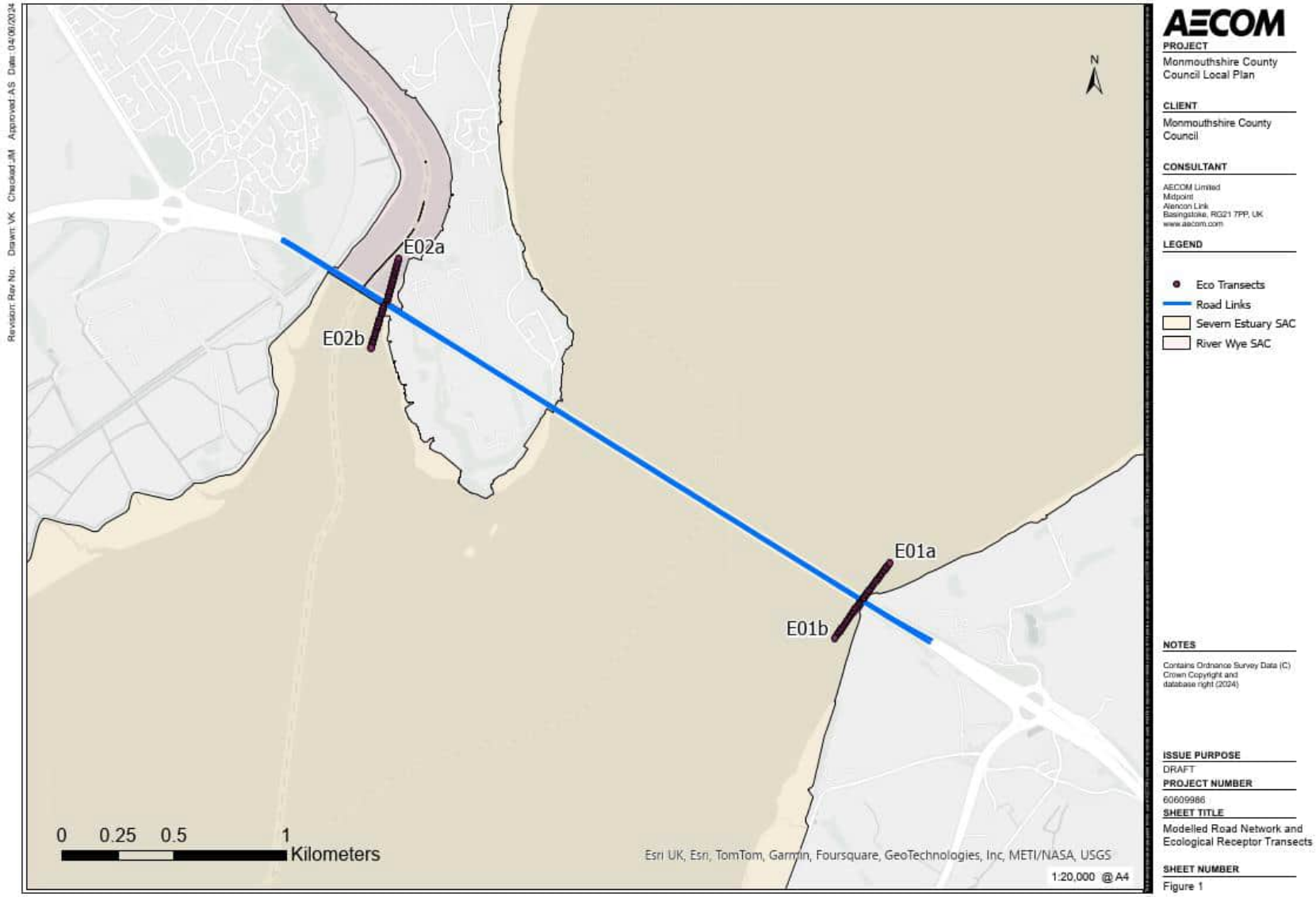


Figure 2: Modelled Road Network and Ecological Receptor Transects (Eco Transect E03)

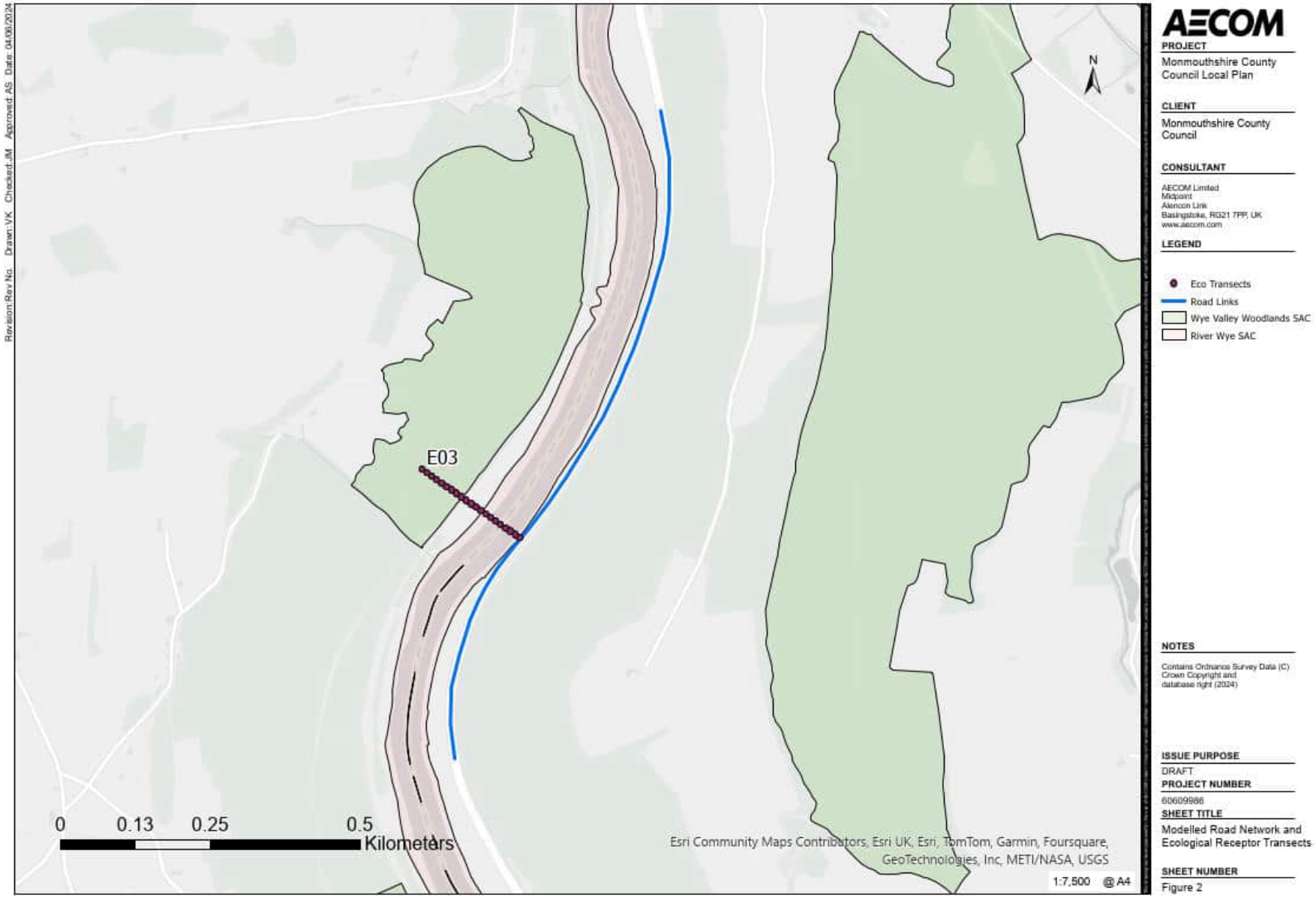


Figure 3: Modelled Road Network and Ecological Receptor Transects (Eco Transect E04)

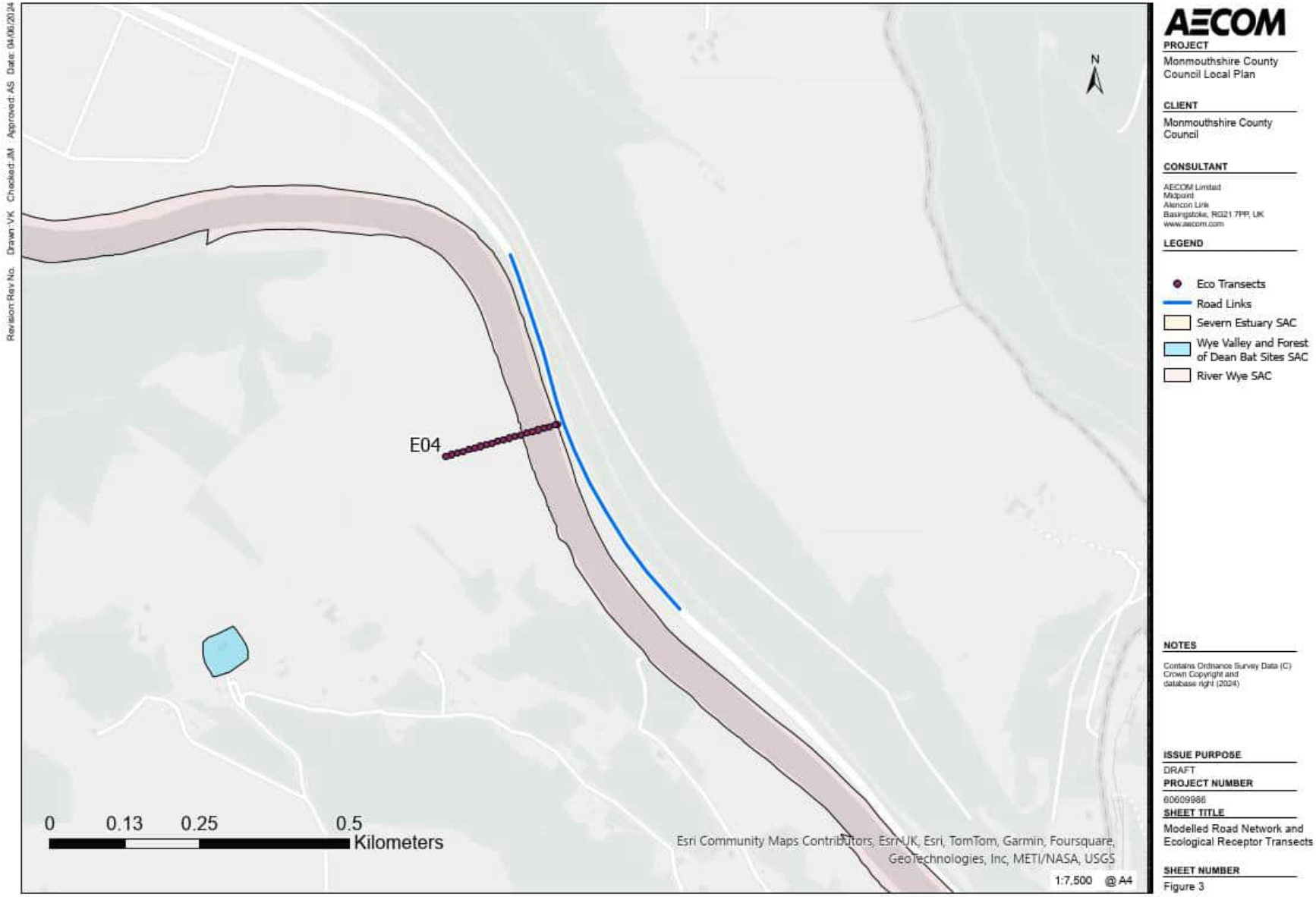


Figure 4: Modelled Road Network and Ecological Receptor Transects (Eco Transect E05)

Figure 5: Modelled Road Network and Ecological Receptor Transects (Eco Transect E06)

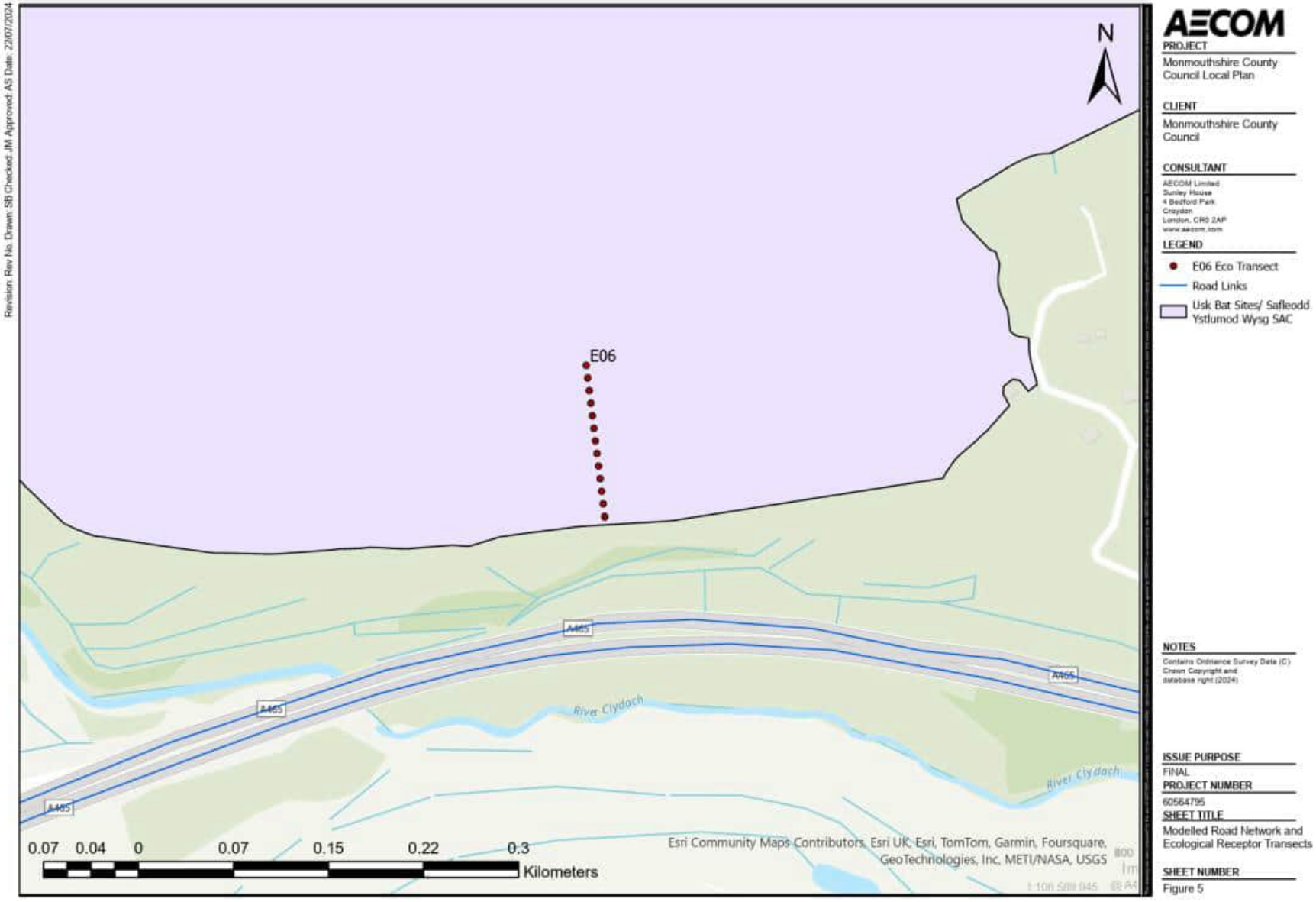
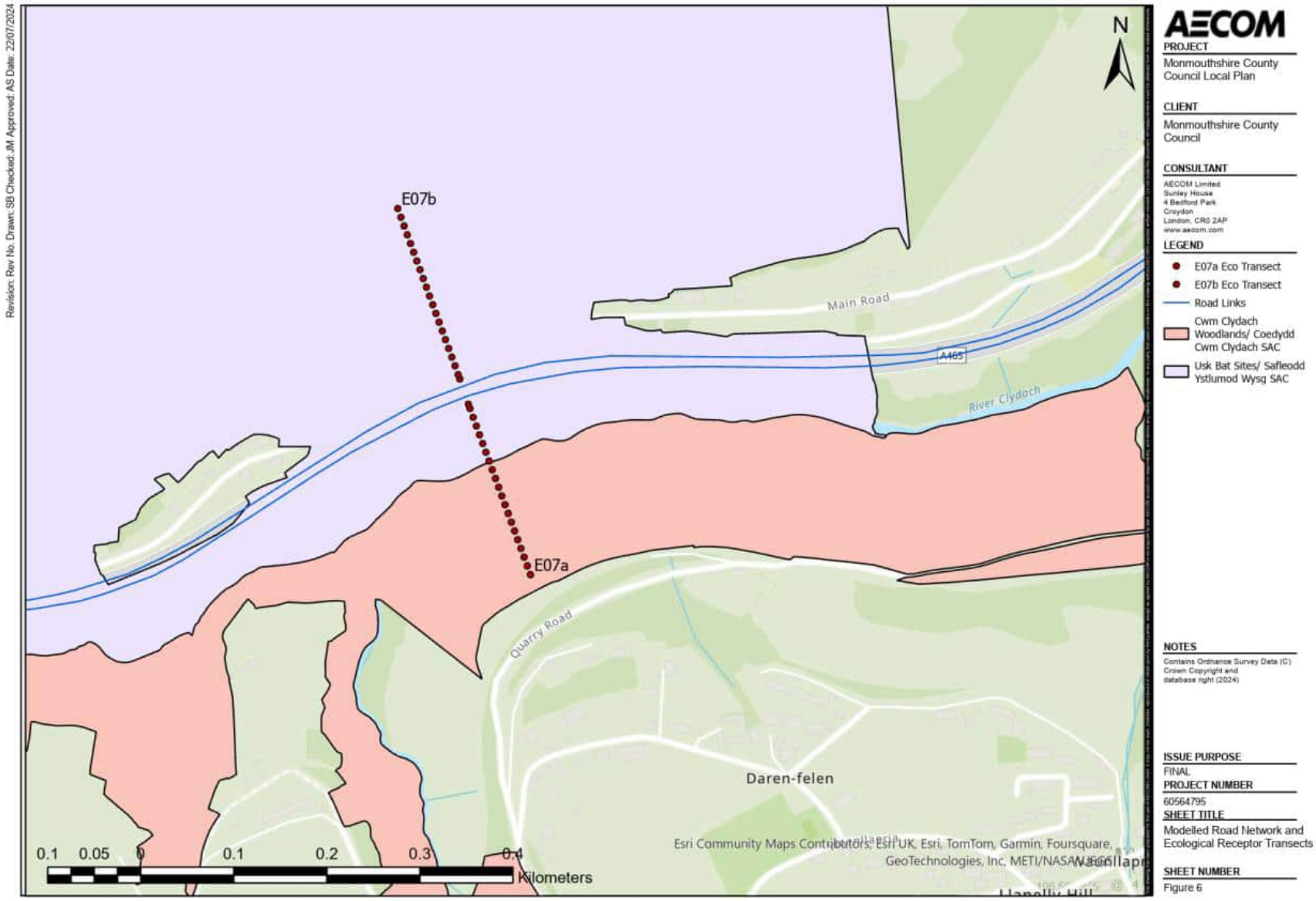


Figure 6: Modelled Road Network and Ecological Receptor Transects (Eco Transect E07a/b)



Receptors

3.25 Pollutant concentrations and deposition rates have been predicted along defined transects through the SACs within 200m of affected roads, in accordance with National Highways guidance for ecological assessments (LA105) (DMRB, 2019) and Natural England guidance (Natural England, 2018). The greatest impacts from changes in road traffic emissions will be observed and modelled closest to the roadside. Consideration of the road network within 200m of the SAC is therefore considered robust as background concentrations utilised in the assessment will account for all other sources that are not defined explicitly in the model.

3.26 The locations of the ecological transects relevant to this project were agreed with MCC and other stakeholders. The transects are situated at key locations where the greatest impacts upon each of the five SACs assessed are likely to occur. The locations are presented in Figure 1 to Figure 6 and further details are presented in Annex A.2.

3.27 For each SAC, the receptors are situated at the closest point to the road within the SAC, and spaced every 10m within the transect, up to 200m from the roadside. All receptors are modelled at ground level (0m height).

3.28 The greatest impacts will generally occur where both the greatest change in traffic flows is expected and the most sensitive SAC habitat lies closest to the road. This information has been used to select the transect locations. The usual approach is to place a transect on a modelled link (sometimes having a transect either side of the road to account for differences in the dispersion of emissions due to meteorology), with each link being defined as a stretch of road with changes in emissions i.e. where there are changes in traffic flows and/or speeds.

3.29 The modelled transects presented in Figure 1 to Figure 6 provide good coverage of the SACs.

Model Setup

3.30 As detailed above, road traffic emissions of NO_X were derived using Defra's EFT v12.0.1 and associated guidance and tools (Defra, 2023). For the base year (2024), the nominal EFT "Basic Split" rural vehicle fleet for 2024 was used, whereas for all the future year (2033) scenarios, the 2033 projected vehicle fleet, as described in the methodology above, was used with the default EFT emission factors for the latest year available (2030). Road traffic emissions of NH_3 were derived using emission rates taken from CREAM V1A (Air Quality Consultants, 2020) combined with the EFT v12.0.1 vehicle fleet for the relevant year, using the same vehicle fleet methodology as described above for NO_X.

3.31 Detailed dispersion modelling was undertaken using the current version of ADMS-Roads (v5.0) to model concentrations of NO_X and NH_3 using the parameters in Table 2 for the following scenarios:

- 2024 Baseline – 2024 AADT, 2024 emission factors and 2024 "Basic Split" fleet, and 2024 background concentrations;
- 2033 Future Baseline – 2024 AADT, 2030 emission factors (latest available year), 2033 projected vehicle fleet (ANPR-adjusted), and 2030 background concentrations (the latest projected year available from Defra);
- 2033 Do Minimum – 2033 AADT without Local Plan but with all committed development, 2030 emission factors, 2033 projected vehicle fleet, and 2030 background concentrations; and
- 2033 Do Something – 2039 AADT with Local Plan and all committed development using 2030 emission factors, 2033 projected vehicle fleet, and 2030 background concentrations.

3.32 A baseline year was modelled, using 2024 traffic data although it was not possible to undertake a model verification exercise due to a lack of suitable monitoring in the model domain, and as such, standard verification factors based on previous project experience and professional judgment were applied. To support the assessment of the potential impact of the planned development in the Local Plan scenarios, a 'future baseline' and future year 'do minimum'

scenario were modelled. The 'do minimum' scenario includes the influence of development in neighbouring local authorities, whereas the 'future baseline' does not.

3.33 The future baseline is a hypothetical scenario as it applies improvements in vehicle emissions standards to the baseline vehicle fleet without allowing for any traffic growth. However, such an approach enables the 'in combination' effect of development and traffic growth to be seen unobscured by improvements in emissions technology / performance.

3.34 The difference between the 'do something' and the 'do minimum' scenarios provide the impact of the planned development within the Local Development Plan, alone. The difference between the 'do something' and the 'future baseline' scenarios provides a thorough and precautionary assessment of the impact of the planned development within the Local Plan 'in combination', as the 'future baseline' accounts for no future growth.

Table 2: General ADMS-Roads Model Conditions

Variables	ADMS-Roads Model Input
Surface roughness at source	0.5m
Surface roughness at Meteorological Site	0.2m
Minimum Monin-Obukhov length for stable conditions	30m
Terrain types	Complex terrain (E03, E04, E05, E06, E07a/b) Flat (E01a/b, E02a/b)
Receptor location	x, y coordinates determined by GIS, z = 0m for ecological receptors.
Emissions	NO_X – Defra's EFT v12.0.1 NH_3 – CREAM V1A
Meteorological data	hourly sequential data from a numerical weather prediction (NWP) reanalysis dataset, centred on the following locations (lat/lon): 51.61°N, 2.70°W (E01a/b, E02a/b) (2023) 51.74°N, 2.63°W (E03, E04, E05) (2023) 51.77°N, 3.38°W (E06, E07a/b) (2022)
Receptors	Ecological transects
Model output	Long-term (annual) mean NO_X and NH_3 concentrations.

Complex Terrain

3.35 Due to the influence of steep-sided valley topography on meteorological conditions, air flow and pollutant dispersion conditions around transects E03, E04, E05, E06 and E07a/b, the complex terrain module in ADMS-Roads was activated for modelling these transects. Terrain data for the study area from the Shuttle Radar Topography Mission (SRTM) was downloaded from the CGIAR Consortium for Spatial Information (CSI) website[4], via the ADMS-Roads "download terrain data" link. The SRTM terrain data is 30m spatial resolution at the equator, or approx. 50m at UK latitude, and was processed into an ADMS-Roads terrain file (.ter) covering the area encompassing the E03, E04, E05, E06 and E07a/b transects using a GIS application. Transects E01a/b and E02a/b were not affected by steep or complex terrain and were therefore modelled without the use of a complex terrain file.

Plume Depletion

3.36 Plume depletion due to dry deposition onto vegetation was considered in the model, which was enabled by using the ADMS-Roads 'Dry Deposition' module. The short vegetation or 'grassland' deposition rates presented in the Air Quality Technical Advisory Group (AQTAG) deposition velocities that are cited in 2020 IAQM guidance (IAQM, 2020), as shown in Table 3, were applied to transects E01a/b and E02a/b. The 'forest' deposition rates were applied to transects E03, E04,

[4] CGIAR Consortium for Spatial Information (CSI). Available at https://srtm.csi.cgiar.org/srtmdata/

E05, E06 and E07a/b as along most of the transect length there was long vegetation in the form of forests.

3.37 The deposition velocity for NO_2 was applied to raw modelled NO_X. This assumes that 100% of NO_X is emitted as NO_2, and therefore represents an optimistic depletion of NO_X from the atmosphere.

Table 3: Nitrogen Deposition Velocities and Conversion Rates

Pollutant	Habitat	Nitrogen deposition conversion rates	Deposition velocity
NO_2	Grassland	1 µg/m^3 NO_2 = 0.14 kgN/ha/yr	0.0015 m/s
NO_2	Forest	1 µg/m^3 NO_2 = 0.29 kgN/ha/yr	0.003 m/s
NH_3	Grassland	1 µg/m^3 NH_3 = 5.2 kgN/ha/yr	0.020 m/s
NH_3	Forest	1 µg/m^3 NH_3 = 7.8 kgN/ha/yr	0.030 m/s

Meteorological Data

3.38 Three sets of hourly sequential numerical weather prediction (NWP) reanalysis data at locations 51.61°N, 2.70°W, 51.74°N, 2.63°W, 51.77°N, 3.38°W have been used in this modelling assessment. Meteorological data within the last 5 years of the baseline year, were used as they were deemed most suitable for comparison with baseline traffic data and emission factors. The former location being used to model transects E01a/b and E02a/b, the second location to model transects E03, E04 and E05, and the third to model transects E06 and E07a/b. The first station is located approximately 4km south-west of the River Wye and Severn Estuary SACs, the second station is located approximately 10km south of the Wye Valley Woodlands SAC, and the third station is located approximately 16km south-west, Cwm Clydach Woodlands and Usk Bat Sites SACs. All sites experience meteorological conditions that are representative of those within the air quality study area.

3.39 Figure 7, Figure 8 and Figure 9 show that the dominant direction of wind was from the west/south-west, as is typical for the UK.

Figure 7: Wind Rose, Meteorological Data at location 51.61°N, 2.70°W (Transects E01a/E01b and E02a/E02b) C:\Working\Monmouthshire\5161N_0270W_23.met

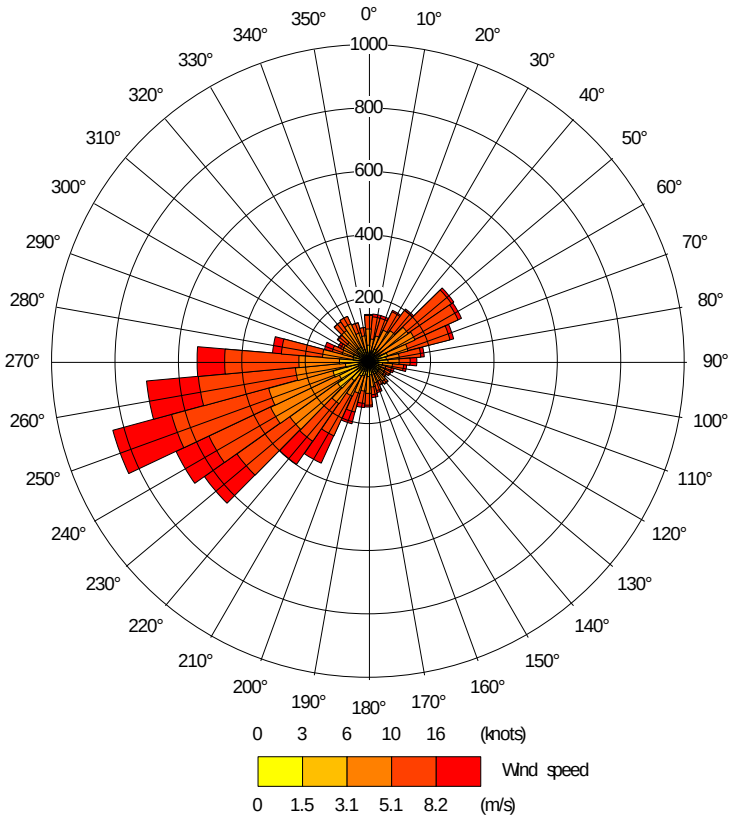


Figure 8: Wind Rose, Meteorological Data at location 51.74°N, 2.63°W (Transects E03, E04 and E05)

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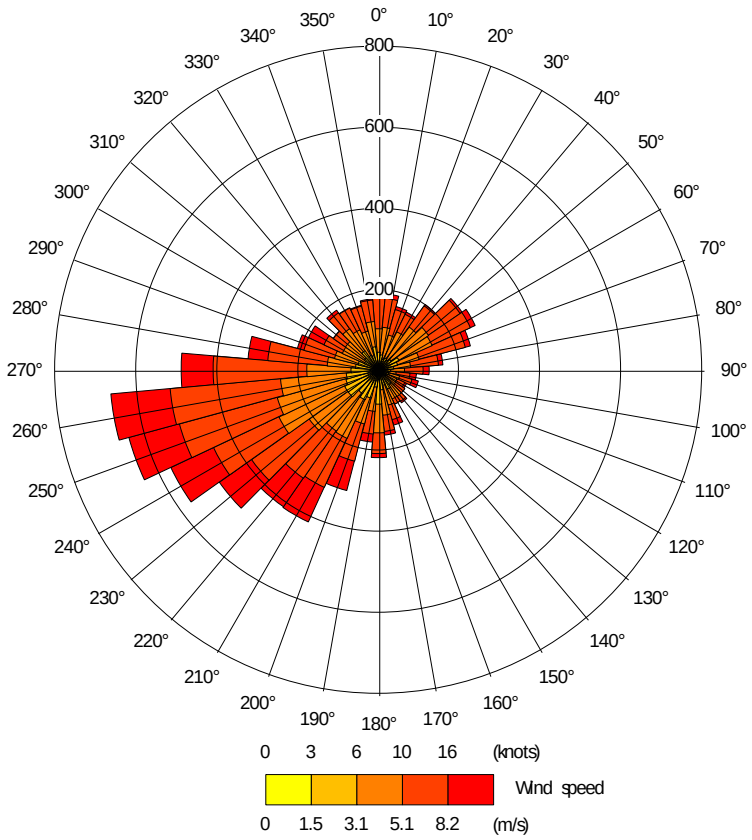
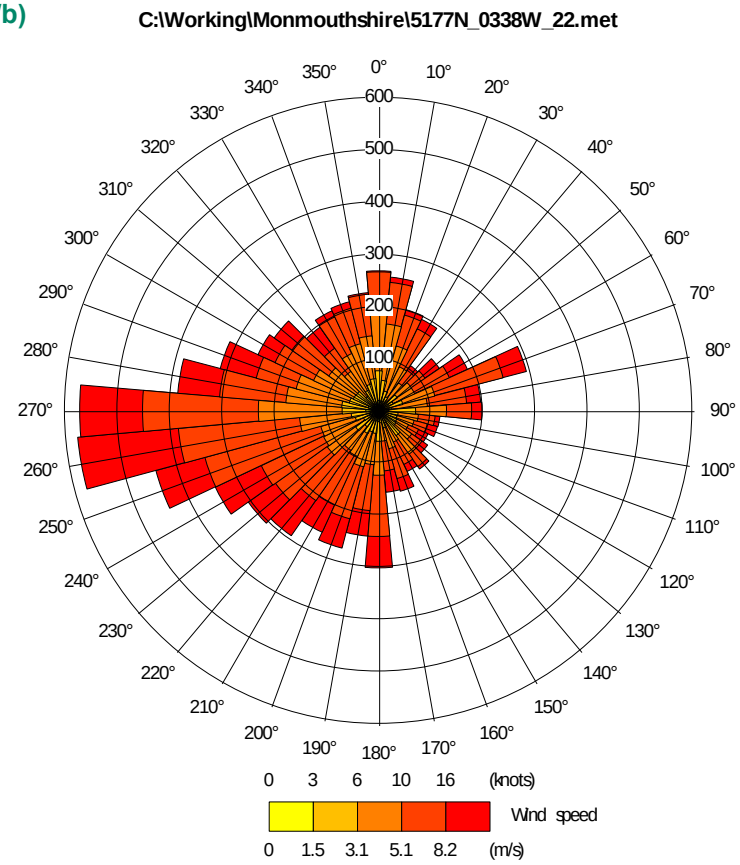


Figure 9: Wind Rose, Meteorological Data at location 51.77°N, 3.38°W (Transects E06 and E07a/b)



Background Data

3.40 Background concentrations of nitrogen dioxide (NO_2) and NO_X for 2024 and 2030 were sourced from Defra's 2018-based 1x1km background maps in the study area (Defra, 2020a). 2030 is the latest year for which background maps are published and, as concentrations of NO_2 and NO_X are predicted to reduce further in the future, is considered to be a worst-case representation of conditions in 2033.

3.41 It was decided to not remove explicitly modelled source sectors from the NO_2 and NO_X background concentrations, in order to give a worst-case assessment. The data presented in Table 4 show that the concentrations are predicted to decrease between 2024 and 2030.

3.42 The NH_3 background concentrations from APIS are presented in Table 5 on page 25.

Table 4: Defra Mapped Background Pollutant Concentrations

Transects	Road Name	Grid Square (X, Y)	Annual Mean Concentrations (µg/m³)			
			2024 NO_2	2024 NO_X	2030 NO_2	2030 NO_X
E01a	M48	356500, 189500	6.40	8.11	5.44	6.84
E01b	M48	356500, 189500	6.40	8.11	5.44	6.84
E02a	M48	354500, 191500	6.20	7.84	5.26	6.61
E02b	M48	354500, 191500	6.20	7.84	5.26	6.61
E03	A466	353500, 208500	3.76	4.67	3.37	4.17
E04	A466	352500, 211500	4.08	5.07	3.59	4.45
E05	A40	352500, 213500	5.23	6.55	4.35	5.42
E06	A465	318500, 213500	4.44	5.54	3.93	4.89
E07a	A465	321500, 212500	5.04	6.31	4.27	5.31
E07b	A465	321500, 212500	5.04	6.31	4.27	5.31

Note: Modelled source sectors have not been removed from the total background.

Ecological Data

3.43 APIS provides 'a searchable database and information on pollutants and their impacts on habitats and species'. Data for the appropriate habitats, both forest and grasslands, have been applied for each receptor along the transects. This includes critical loads of nitrogen and the average nitrogen and acid deposition rates to the habitat, as presented in Table 5.

3.44 Background concentrations of ammonia were also sourced from 5x5 km modelled maps available from APIS, whereas background concentrations of NO_X and NO_2 were sourced from Defra's latest 1x1 km maps, thereby accounting for all sources that are not explicitly defined in the model.

3.45 In order to create a robust and scientifically agreed projection for background nitrogen deposition trends in the UK, even allowing for growth, the Joint Nature Conservation Committee (JNCC) commissioned the Nitrogen Futures project, which reported in 2020 (JNCC, 2020). The JNCC Nitrogen Futures project investigated whether a net improvement in nitrogen deposition (including expected development over the same period) was expected to occur to 2030 under a alrange of scenarios ranging from the most cautious scenario (Business As Usual, BAU, reflecting simply existing emission reduction commitments /measures already in place) to much more ambitious scenarios that would require varying amounts of additional, currently uncommitted, measures from the UK government and devolved administrations.

3.46 The report concluded that ***'The scenario modelling predicts a substantial decrease in risk of impacts on sensitive vegetation by 2030, under the most likely future baseline [a scenario called '2030 NAPCP+DA (NECR NO_x)']. This is estimated to achieve the UK Government's Clean Air Strategy (CAS) target for England, defined as a 17% decrease in total reactive N deposition onto protected priority sensitive habitats, with a predicted 18.9% decrease [for England] from a 2016 base year'***. The report predicted a fall in nitrogen deposition by 2030 under every modelled scenario, including the most cautious (2030 BAU). For the BAU scenario nitrogen deposition was forecast to decrease between 2017 and 2030 from 277.1 kt N to 239.5 kt N (i.e. a reduction of 37.6 kt N).

3.47 Background nitrogen deposition at Ashdown Forest was specifically discussed in Annex 5 of the report as a case study. The report predicted a 1-2 kgN/ha/yr reduction in background nitrogen deposition to low growing vegetation (i.e. the heathland interest feature) at the SAC between 2016 and 2030, depending on scenario, and noted that ***'The emission reductions predicted between the 2017 and 2030 baseline scenarios cover a range of sectors, including road transport, and so improvements are predicted to occur over the whole site, including the worst-affected roadside locations'***. This was the case under all modelled scenarios.

3.48 In summary, the Nitrogen Futures study forecast a minimum rate of improvement in background nitrogen of 0.07 kgN/ha/yr at Ashdown Forest, with other forecasts indicating a greater rate of reduction. In line with the forecast for Ashdown Forest, and therefore taking a precautionary approach, this study applies a projected decrease in background nitrogen of 0.07 kgN/ha/yr. The corresponding decrease is also reflected in the total average acid deposition rate for nitrogen in the future scenarios (reduction of 0.065 keq/ha/yr N.).

3.49 Over the 9-year period, this equates to a reduction in the APIS background nitrogen deposition rate presented in Table 5 (3-year average, 2019-21/ 2020-2022) of 0.63 kg N/ha/yr for the 2033 model scenarios. This decrease is also reflected in the total average acid deposition rate for nitrogen in the 2033 scenarios (reduction of 0.045 keq/ha/yr N).

3.50 No other changes to the APIS data have been made from those presented (3-year average, 2019-21/ 2020-2022) for any modelled scenario.

3.51 Not to make ***any*** allowance for improvements in emission factors or background concentrations would result in increased emissions and hence concentrations over the plan period as an increased number of vehicles is expected on the roads. This is not expected to occur as can be seen from previous long-term trends in the UK, which show slowing of improvements over extended periods, not worsening. Historical records (e.g., Defra monitoring trends) show that as

increased vehicles enter the fleet that these increases are offset by the improvements in the emissions of the newer vehicles and the removal of older vehicles.

3.52 In 2018 the Court of Justice of the European Union (CJEU) ruled in cases C-293/17 and C-294/17 (often dubbed the Dutch Nitrogen cases). One aspect of that ruling concerned the extent to which autonomous measures (i.e., improvements in baseline nitrogen deposition that are not attributable to the Local Plan) can be taken into account in appropriate assessment, the CJEU ruled that it ***was*** legally compliant to take such autonomous measures into account provided the benefits were not 'uncertain' (paragraphs 130&132). Note that previous case law on the interpretation of the Habitats Directive has clarified that 'certain' does not mean absolute certainty but '***where no reasonable scientific doubt remains***'[5] [emphasis added].

3.53 The forecasts for improvements in NO_X emission factors, background concentrations and background deposition rates used in this report are considered to be realistic and have the requisite level of certainty. This is because a) data are used and to a large extent they build upon established historic trends in NO_X and oxidised nitrogen deposition and b) for total nitrogen deposition they are based on a cautious use of evidenced central government forecasts associated with uptake of technology that has either already been introduced or is widely expected within the professional community to be introduced and effective before 2030, as illustrated in the Nitrogen Futures project:

- When it comes to forecasting the NO_X emissions of additional traffic, it would overestimate those emissions to assume that by 2033 the emission factors will be no different to those in 2024; to make such an assumption would be to fail to take account of the expected continued uptake of Euro 6 compliant vehicles between 2024 and 2033 and would assume (putting it simply) that no motorists would replace their cars during the entire plan period. For example, the latest (Euro 6/VI) emissions standard only became mandatory in 2014 (for heavy duty vehicles) and 2015 (for cars) and the effects will not therefore be visible in the data available from APIS because relatively few people will have been driving vehicles compliant with that standard as early as 2019. Far more drivers can be expected to be using Euro 6 compliant vehicles by the end of the Local Plan period.
- The vehicle emission factors within the air quality modelling tools available only project out to 2030. While the fuel technology is projected out to 2033 following the DfT decarbonisation pathway, as described earlier, the breakdown of euro classifications published in the EFT extends to 2030, and so the 2033 assessment year does not recognise the further three years of continued uptake of more stringent emissions standards. Therefore, the results are likely to be slightly more cautious in terms of emissions related to vehicle age.

[5] Case C-239/04 Commission v Portugal [2006] ECR 10183, para. 24; Holohan et al vs. An Bord Pleanála (C-461/17), para. 33

Table 5: APIS Data for Ecological Transects

Transect	Av. N Dep kgN/ha/yr[$]	Critical Load N Dep kgN/ha/yr	Total Av. Acid Dep keq/ha/yr N[$]	Critical Load N Acid Dep keq/ha/yr MinCLMaxN	Background NH_3 (µg/m^3)*
E01a	13.89	10 - 20	1.04	No critical load available	1.61
E01b	13.89	10 - 20	1.04	No critical load available	1.61
E02a	14.14	10 - 15	1.06	0.851	1.593
E02b	14.14	10 - 20	1.06	No critical load available	1.593
E03	28.39	10 - 15	2.11	1.226	1.46
E04	28.18	10 - 15	2.10	0.851	1.61
E05	28.48	10 - 15	2.12	1.226	1.68
E06	25.88	5 - 15	2.04	0.709	0.906
E07a	26.42	10 - 15	2.06	1.645	0.935
E07b	26.42	5-15	2.06	0.709	0.935

Notes: Critical Load data for N and acid deposition were not available for Severn Estuary SAC (E01a/b and E02b transects). Transects E06, E07a and E07b used APIS data from 2020-2022 and transects E01a, E01b, E02a, E02b, E03, E04 and E05 use APIS data for 2019-2021.
[$] Average nitrogen deposition rate (kgN/ha/yr) projected to decrease by 0.63 kgN/ha/yr from base year to future year (i.e. 0.07 x 9 years = 0.63 kgN/ha/yr). This results in a corresponding decrease in acid deposition of 0.045 keq/ha/yr N.
* Average 2024 NH_3 background concentration applied in modelling assessment. No future projections used for background Ammonia

Verification

3.54 Model verification is the process by which the performance of the model is assessed to identify any discrepancies between modelled and measured concentrations at air quality monitoring sites within the study area.

3.55 There are no appropriately located local air quality monitoring stations within the model domain with which to make a comparison between modelled and measured concentrations. Therefore, verification factors have been used based upon professional judgement and experience of similar projects. Verification factors of 1.5 for NO_X and 1.0 for NH_3 have thus been applied to the modelled concentrations, based upon professional judgement and previous project experience to verify and validate the EFT and CREAM tools.

Deposition velocities

3.56 Deposited nitrogen from road traffic derived NH_3 and NO_2 was estimated using the relevant deposition velocities for grassland/short vegetation or forest habitat, presented in Table 3. The conversion rates were applied to the final modelled NO_2 and NH_3 concentrations from road traffic, to provide kgN/ha/year.

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5. Annexes

A.1 Traffic Data

Link	SAC	Transect	2024 Base AADT	2024 Base HDV (%)	2033 DM AADT	2033 DM HDV (%)	203 DS AADT	2033 DS HDV (%)	All Scenarios Speed (kph)
M48	Severn Estuary	E01a	14,259	10.5	15,460	10.5	17,216	10.5	112.6
M48	Severn Estuary	E01b	12,601	9.5	13,663	9.5	15,590	9.5	112.6
M48	River Wye/ Afon Gwy	E02a	14,510	8.4	15,732	8.4	16,454	8.4	63.4
M48	Severn Estuary	E02b	14,172	6.1	15,366	6.1	16,099	6.1	65.1
A466	Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy	E03	2,153	9.2	2,334	9.2	2,845	9.2	55.7
A466_Redbrook Road	River Wye/ Afon Gwy	E04	3,524	8.2	3,821	8.2	4,333	8.2	58.7
A40	River Wye/ Afon Gwy	E05	14,259	10.5	15,460	10.5	17,216	10.5	112.6
A465	Usk Bat Sites	E06	19,910	7.9	21,663	7.9	22,503	7.9	52.2
A465	Cwm Clydach Woodlands	E07a	9,985	9.1	10,864	9.1	11,264	9.1	51.0
A465	Usk Bat Sites	E07b	9,925	6.7	10,800	6.7	11,239	6.7	53.3

A.2 Modelled Ecological Receptor Locations

Transect Point	X co-ordinate (m)	Y co-ordinate (m)
E01a_3.5m	356589.5	189814.4
E01a_10m	356593.4	189819.6
E01a_20m	356599.4	189827.6
E01a_30m	356605.5	189835.6
E01a_40m	356611.5	189843.5
E01a_50m	356617.5	189851.5
E01a_60m	356623.5	189859.5
E01a_70m	356629.5	189867.5
E01a_80m	356635.5	189875.5
E01a_90m	356641.6	189883.5
E01a_100m	356647.6	189891.5
E01a_110m	356653.6	189899.5
E01a_120m	356659.6	189907.4
E01a_130m	356665.6	189915.4
E01a_140m	356671.7	189923.4
E01a_150m	356677.7	189931.4
E01a_160m	356683.7	189939.4
E01a_170m	356689.7	189947.4
E01a_180m	356695.7	189955.4
E01a_190m	356701.7	189963.3
E01a_200m	356707.8	189971.3
E01b_6.5m	356573.3	189793.7
E01b_10m	356571.2	189790.8
E01b_20m	356565.5	189782.7
E01b_30m	356559.8	189774.5
E01b_40m	356554.0	189766.3
E01b_50m	356548.3	189758.1
E01b_60m	356542.6	189749.9
E01b_70m	356536.8	189741.7
E01b_80m	356531.1	189733.5
E01b_90m	356525.4	189725.3
E01b_100m	356519.6	189717.1
E01b_110m	356513.9	189708.9
E01b_120m	356508.2	189700.7
E01b_130m	356502.4	189692.6
E01b_140m	356496.7	189684.4
E01b_150m	356490.9	189676.2
E01b_160m	356485.2	189668.0
E01b_170m	356479.5	189659.8
E01b_180m	356473.7	189651.6
E01b_190m	356468.0	189643.4
E01b_200m	356462.3	189635.2
E02a_2.3m	354467.3	191138.0
E02a_10m	354469.3	191145.4

E02a_20m	354471.9	191155.1
E02a_30m	354474.5	191164.8
E02a_40m	354477.1	191174.4
E02a_50m	354479.7	191184.1
E02a_60m	354482.3	191193.7
E02a_70m	354484.8	191203.4
E02a_80m	354487.4	191213.1
E02a_90m	354490.0	191222.7
E02a_100m	354492.6	191232.4
E02a_110m	354495.2	191242.0
E02a_120m	354497.8	191251.7
E02a_130m	354500.4	191261.4
E02a_140m	354503.0	191271.0
E02a_150m	354505.6	191280.7
E02a_160m	354508.1	191290.3
E02a_170m	354510.7	191300.0
E02a_180m	354513.3	191309.6
E02a_190m	354515.9	191319.3
E02a_200m	354518.5	191329.0
E02b_4.3m	354452.1	191117.7
E02b_10m	354450.4	191112.2
E02b_20m	354447.5	191102.7
E02b_30m	354444.6	191093.1
E02b_40m	354441.6	191083.5
E02b_50m	354438.7	191074.0
E02b_60m	354435.8	191064.4
E02b_70m	354432.9	191054.9
E02b_80m	354429.9	191045.3
E02b_90m	354427.0	191035.7
E02b_100m	354424.1	191026.2
E02b_110m	354421.2	191016.6
E02b_120m	354418.3	191007.0
E02b_130m	354415.3	190997.5
E02b_140m	354412.4	190987.9
E02b_150m	354409.5	190978.3
E02b_160m	354406.6	190968.8
E02b_170m	354403.6	190959.2
E02b_180m	354400.7	190949.7
E02b_190m	354397.8	190940.1
E02b_200m	354394.9	190930.5
E03_0.8m	353324.4	208406.8
E03_10m	353316.9	208412.0
E03_20m	353308.7	208417.8
E03_30m	353300.5	208423.5
E03_40m	353292.3	208429.2
E03_50m	353284.1	208435.0
E03_60m	353275.9	208440.7

E03_70m	353267.7	208446.4
E03_80m	353259.5	208452.2
E03_90m	353251.3	208457.9
E03_100m	353243.1	208463.7
E03_110m	353234.9	208469.4
E03_120m	353226.7	208475.1
E03_130m	353218.6	208480.9
E03_140m	353210.4	208486.6
E03_150m	353202.2	208492.3
E03_160m	353194.0	208498.1
E03_170m	353185.8	208503.8
E03_180m	353177.6	208509.5
E03_190m	353169.4	208515.3
E03_200m	353161.2	208521.0
E04_6.5m	352756.9	211104.6
E04_10m	352753.6	211103.6
E04_20m	352744.0	211100.9
E04_30m	352734.3	211098.1
E04_40m	352724.7	211095.4
E04_50m	352715.1	211092.6
E04_60m	352705.5	211089.9
E04_70m	352695.9	211087.1
E04_80m	352686.3	211084.4
E04_90m	352676.7	211081.6
E04_100m	352667.1	211078.8
E04_110m	352657.4	211076.1
E04_120m	352647.8	211073.3
E04_130m	352638.2	211070.6
E04_140m	352628.6	211067.8
E04_150m	352619.0	211065.1
E04_160m	352609.4	211062.3
E04_170m	352599.8	211059.5
E04_180m	352590.2	211056.8
E04_190m	352580.5	211054.0
E04_200m	352570.9	211051.3
E05_53.1m	352369.8	213840.0
E05_60m	352374.1	213834.7
E05_70m	352380.4	213826.9
E05_80m	352386.7	213819.1
E05_90m	352393.0	213811.3
E05_100m	352399.3	213803.6
E05_110m	352405.6	213795.8
E05_120m	352411.9	213788.0
E05_130m	352418.2	213780.3
E05_140m	352424.4	213772.5
E05_150m	352430.7	213764.7
E05_160m	352437.0	213756.9

E05_170m	352443.3	213749.2
E05_180m	352449.6	213741.4
E05_190m	352455.9	213733.6
E05_200m	352462.2	213725.9
E06_79.5m	318536.7	213055.7
E06_80m	318536.6	213056.2
E06_90m	318535.4	213066.1
E06_100m	318534.2	213076.1
E06_110m	318532.9	213086.0
E06_120m	318531.7	213095.9
E06_130m	318530.5	213105.8
E06_140m	318529.3	213115.8
E06_150m	318528.1	213125.7
E06_160m	318526.8	213135.6
E06_170m	318525.6	213145.6
E06_180m	318524.4	213155.5
E06_190m	318523.2	213165.4
E06_200m	318522.0	213175.3
E07a_5m	321802.8	212685.1
E07a_10m	321804.5	212680.4
E07a_20m	321807.9	212671.1
E07a_30m	321811.3	212661.6
E07a_40m	321814.7	212652.3
E07a_50m	321818.2	212642.9
E07a_60m	321821.6	212633.5
E07a_70m	321825.0	212624.1
E07a_80m	321828.4	212614.7
E07a_90m	321831.8	212605.3
E07a_100m	321835.3	212595.9
E07a_110m	321838.7	212586.5
E07a_120m	321842.1	212577.1
E07a_130m	321845.5	212567.7
E07a_140m	321848.9	212558.3
E07a_150m	321852.3	212548.9
E07a_160m	321855.8	212539.5
E07a_170m	321859.2	212530.1
E07a_180m	321862.6	212520.7
E07a_190m	321866.0	212511.3
E07a_200m	321869.4	212501.9
E07b_5m	321793.5	212712.2
E07b_10m	321791.8	212716.9
E07b_20m	321788.3	212726.3
E07b_30m	321784.9	212735.7
E07b_40m	321781.5	212745.1
E07b_50m	321778.1	212754.5
E07b_60m	321774.7	212763.9
E07b_70m	321771.3	212773.3

E07b_80m	321767.8	212782.7
E07b_90m	321764.4	212792.1
E07b_100m	321761.0	212801.5
E07b_110m	321757.6	212810.9
E07b_120m	321754.2	212820.3
E07b_130m	321750.7	212829.7
E07b_140m	321747.3	212839.1
E07b_150m	321743.9	212848.5
E07b_160m	321740.5	212857.9
E07b_170m	321737.0	212867.3
E07b_180m	321733.6	212876.7
E07b_190m	321730.2	212886.1
E07b_200m	321726.8	212895.5

Appendix D Severn Estuary Visitor Survey Technical Note

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Project name:
HRAs of the Monmouthshire and Torfaen RLDPs - Deposit Plans

Project ref:

To:
[redacted]

From:
Damiano Weitowitz

Date:
11 July 2022

Memo

Subject: Severn Estuary SPA / Ramsar / SAC Visitor Survey Results

Background to the Visitor Survey

To obtain visitor data for the Severn Estuary SPA / Ramsar (and also the SAC), AECOM commissioned Strategic Research and Insight (SRI) to undertake a survey (comprising visitor counts and interviews) at four key access locations along the estuary. The survey followed a similar methodology to surveys carried out by Footprint Ecology in other European sites, which have provided the evidence base for numerous Habitats Regulations Assessments. To summarise, the key features of the survey methodology were:

- The interviewer roamed the survey location and approached first adult seen (alone or part of a larger group) for interview – the interview involved a set of questions to obtain key information such as activity undertaken and home postcode; upon completion of the interview the next adult is approached
- The interviewer counted the number of adults, minors and dog walkers to get an overview of the 'busyness' of the site at a given location
- The survey day was divided into a morning (07:30 to 12:30) and an afternoon shift (12:30 to 17:30)
- Each location was surveyed on two days, a weekday (Monday to Friday) and a weekend day (Saturday and Sunday), avoiding public holidays and special events resulting in high footfall

Using satellite imagery and in collaboration with Monmouthshire's and Torfaen's Countryside Teams, AECOM identified four key access locations to the Severn Estuary SPA / Ramsar / SAC based on their proximity to existing conurbations, the presence of parking opportunities and dedicated foot access points. The following locations from east to west along the estuary were identified for surveying (see Figure 4 in Appendix A):

- Caldicot Coast Path (ST 48103 87124)
- Black Rock Car Park (ST 51308 88083)
- RSPB Newport Wetlands (ST 32771 82905)
- Lighthouse Inn Car Park (ST 30030 81596)

It is to be noted that the visitor survey was paused on the 16th of March 2020 due to the outbreak of the Coronavirus pandemic. Following the end of COVID restrictions, the survey was continued on the 4th of March 2022. The non-breeding season was targeted for survey because, while visitor numbers will be lower than in the late spring and summer, the non-breeding period is when the flocks of disturbance-sensitive

waterfowl and waders congregate in the estuary. These data provide the only standardised evidence base that is available for the Welsh stretch of the Severn Estuary SPA / Ramsar / SAC.

Key Results

Visitor Counts

Table 1: Visitor counts (including adults and minors) at access points to the Severn Estuary SPA / Ramsar / SAC provided as totals and split by weekday / weekend.

Survey Location	Visitor Count Weekday	Visitor Count Weekend	Total Visitor Count
Caldicot Coast Path	73	54	127
Black Rock Car Park	58	212	268
RSPB Newport Wetlands	135	478	613
Lighthouse Inn Car Park	50	97	147

The total number of visitors varied significantly between survey locations. The RSPB Newport Wetlands was by far the busiest survey point (613 visitors over two survey days), followed by the Black Rock Car Park (268 visitors), Lighthouse Inn Car Park (147 visitors) and Caldicot Coast Path (127 visitors). The relatively low visitor count at Caldicot is most likely due to it providing foot access only, whereas all other survey locations adjoin car parks. This increases accessibility and is expected to draw visitors from further afield, resulting in higher overall busyness.

In context, it appears that the stretch of the Severn Estuary SPA / Ramsar / SAC in southern Wales is busier than parts in other authorities, such as the Forest of Dean in England. For example, a visitor survey in Lydney showed that the busiest location had 98 people entering over two days[1]. That is a similar count to the one obtained for Lighthouse Inn Car Park in a single day of surveying. Visitor numbers ranged between 8 and 153 people across 20 survey locations in a survey conducted in the Humber Estuary[2]. Overall, these data indicate that the Severn Estuary SPA / Ramsar / SAC in Monmouthshire is already a key recreation destination for people (even in winter) and would be highly attractive to new residents moving to the wider area around the site. It also implies that recreational pressure is an impact pathway requiring thorough assessment in relation to future housing growth.

Table 2: Local Authorities from which visitors to the Severn Estuary SPA / Ramsar / SAC derived. Only authorities contributing over 1% to the recreational burden are shown.

Source of Visitors (Local Authority)	Number of Visitors	Percentage of Visitors (%)
Monmouthshire	80	44.4
Newport	40	22.2
Cardiff	12	6.7
Caerphilly	10	5.6

[1] Liley D, Panter C & Hoskin R. (2017). Lydney Severn Estuary Visitor Survey and Recreation Strategy. Unpublished report by Footprint Ecology for the Forest of Dean District Council.
[2] Fearnley H, Liley D & Cruickshanks K. (2012). Results of the recreational visitor surveys across the Humber Estuary. Unpublished report by Footprint Ecology for the Humber Management Scheme.

Torfaen	5	2.8
Forest of Dean	3	1.7
Bristol	2	1.1
Wiltshire	2	1.1
Total	**188**	**100**

The geographic source of visitors was also assessed. Of the 188 interviewees, 80 (44.4%) visitors derive from Monmouthshire, the authority within which the surveyed stretch of the Severn Estuary SPA / Ramsar / SAC lies (Table 2). The second biggest contribution is made by Newport, where 40 (22.2%) of the interviewees live. Together, Monmouthshire and Cardiff account for 66.6% of the recreational burden in the estuary. Notable origins of visitors were also Cardiff (12 interviewees, 6.7%), Caerphilly (10 interviewees, 5.6%) and Torfaen (5 interviewees, 2.8%). It is noted that, while visitors from Torfaen were recorded within the SPA / Ramsar / SAC, these fall outside the defined core recreational catchment of the site, based on the distance that 75% of visitors travel to their destination (see section ‘Implications for the Torfaen RLDP’).

Visitor Interviews

The focus of this assessment was primarily to capture a large enough number of interviews to provide a robust randomised selection of opinions and home postcodes from people that visit the Severn Estuary SPA / Ramsar / SAC in order to understand recreational behaviour and to define a core recreational catchment within which increases in the resident population can be expected to translate into increases in visitor pressure. Overall, a total of 188 visitor interviews were undertaken, including 45 interviews (23.9%) at Caldicot Coast Path, 52 interviews (27.7%) at Black Rock Car Park, 55 interviews (29.2%) at the RSPB Newport Wetlands and 36 interviews (19.1%) at the Lighthouse Inn Car Par.

Activities and Mode of Transport

Dog walking was by far the most common recreational activity (92 interviewees, 48.9%), followed by walking (56 interviewees, 29.8%) and visitors on a family outing (11 interviewees, 5.9%; see Figure 1). Several interviewees were engaging in wildlife watching (9 interviewees, 4.8%) and ‘other’ activities (8 interviewees, 4.3%). The proportion of different activities recorded was relatively consistent between survey points, except for the RSPB Newport Wetlands. At this survey location only six dog walkers were interviewed (10.9%), compared to 32 people that were walking (58.2%) and eight visitors that were wildlife watching (14.5%). In contrast, dog walking was most frequent at Black Rock Car Park (36 out of 52 interviewees, 69.2%) and Caldicot Coast Path (29 out of 45 interviewees, 64.4%). The most probable explanation for this trend is that these locations provide easy foot access from nearby residential development in Portskewett and Caldicot, a factor that is important for most dog walkers. This interpretation is supported by the mode of transport provided by interviewees, particularly at Caldicot. At this survey point, 33 (73.3%) of the interviewees travelled to the site on foot, indicating that this access point is mainly used by locals. In contrast, the RSPB Newport Wetlands (52 interviewees, 94.5%) and the Lighthouse Inn Car Park (28 interviewees, 77.8%) travelled to the site by car, indicating that these car parks attract visitors from further afield.

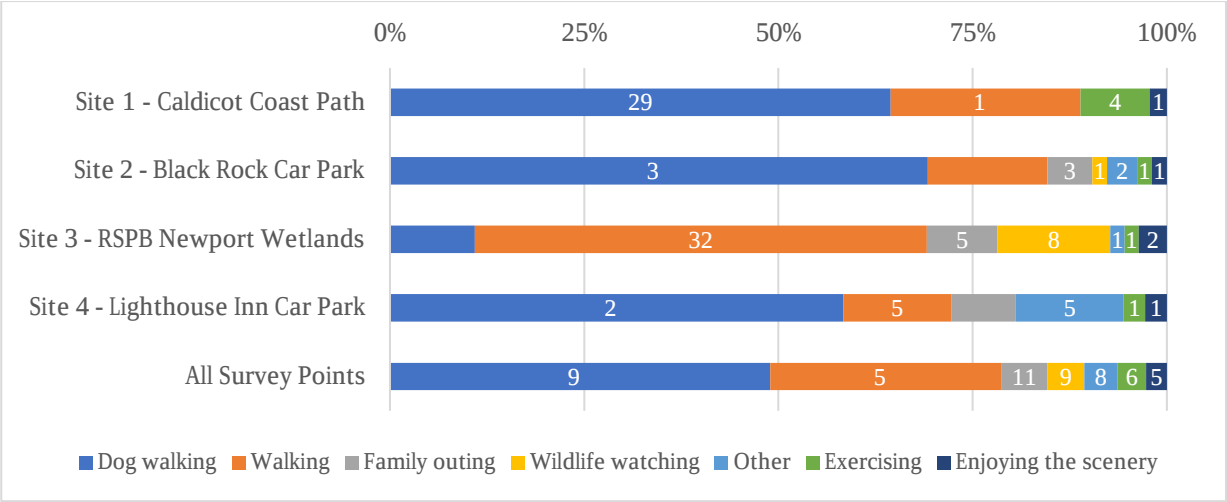


Figure 1: Main activities undertaken by interviewees in the Severn Estuary SPA / Ramsar / SAC across the four survey points.

Reasons for Visit

One of the main objectives of the visitor survey was to identify the main reasons for why visitors are drawn to the Severn Estuary SPA / Ramsar / SAC. By far the most important factor for visiting the estuary was 'proximity to home' (93 interviewees, 49.7%; Figure 2), followed by 'natural scenery' (24 interviewees, 12.8%), presence of the 'coast / estuary' (10 interviewees, 5.3%), 'good / easy parking' (9 interviewees, 4.8%) and 'quick travel route' (8 interviewees, 4.3%). Surprisingly, despite the high number of dog walkers interviewed at the site, relatively few interviewees provided dog-related reasons for visiting, including 'good for dog / dog enjoys it' (6 interviewees, 3.2%), 'ability to let dog roam off lead' (4 interviewees, 2.1%) and 'nearest safe place to let dog off lead' (4 interviewees, 2.1%). Identifying the main reasons for site choice is important in understanding visitor motivations and identifying potential opportunities for mitigation such as part of Suitable Alternative Natural Greenspaces (SANGs).

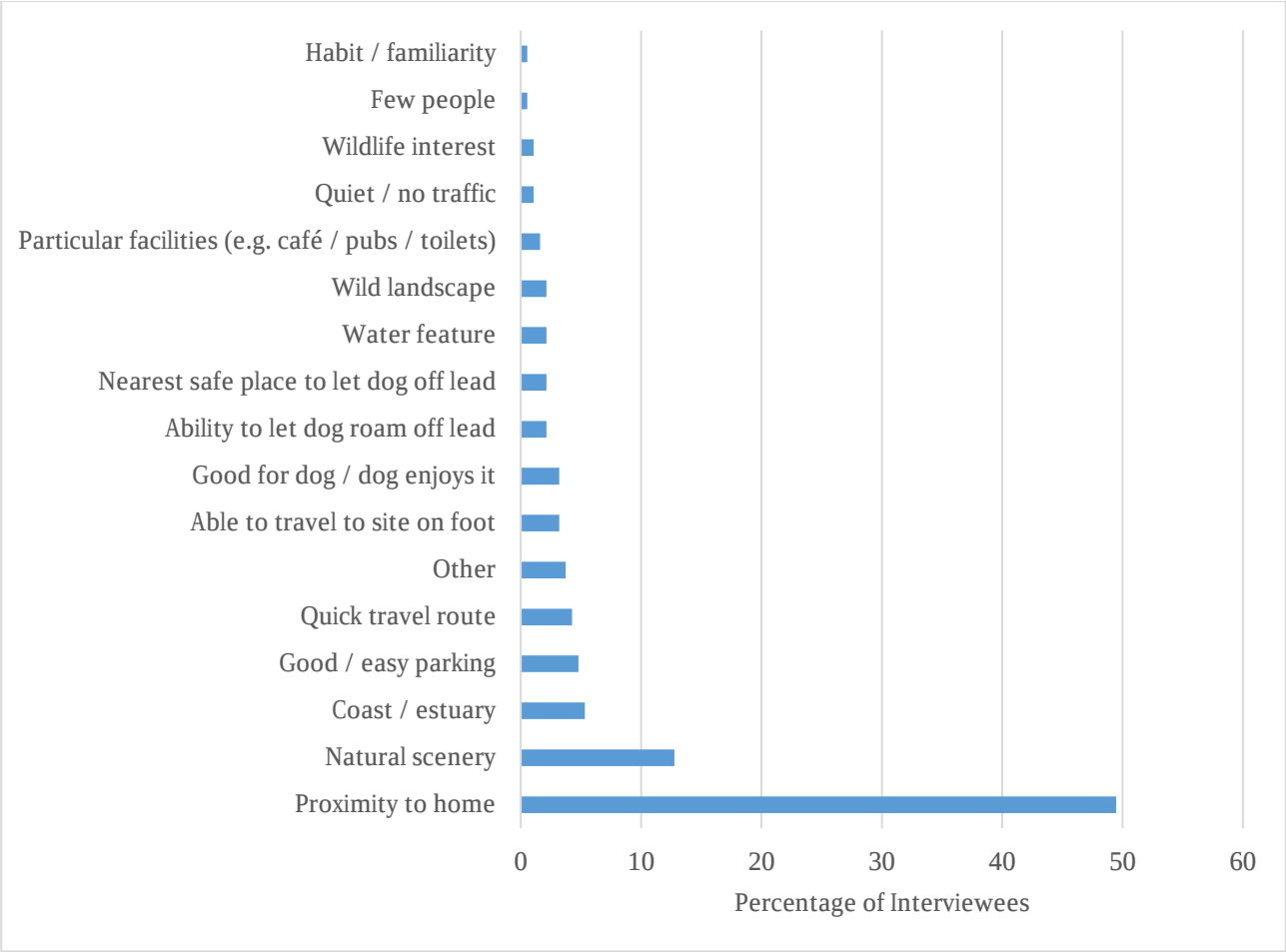


Figure 2: Main reasons for visiting the Severn Estuary SPA / Ramsar / SAC provided by interviewees.

Temporal Characteristics

Regarding the temporal characteristics of recreational pressure in the Severn Estuary SPA / Ramsar / SAC, an important trend is that more than half of interviewees (97 interviewees, 51.6%) visit the estuary frequently (i.e. they visit daily, most days or 1 to 3 times per week). Thirty-nine interviewees visit daily (20.7%), 16 come to the site on most days (180+ visits per annum; 8.5%) and 42 interviewees visit one to three times per week (40-180 visits per annum; 22.3%). The proportion of frequent visitors was by far the highest at Caldicot Coast Path (37 interviewees being high frequency visitors, 82.2%), providing further support to the notion that visitors to this stretch of the coast originate locally from the Caldicot area. Another trend that supports the notion of the estuary being primarily a local recreational resource is the relatively short duration of visits. 152 out of 188 interviewees (80.9%) stated that their visits last 'less than 30 minutes', 'between 30 minutes and 1 hour' and between '1-2 hours'. An exception is the RSPB Newport Wetlands site, where larger proportions of visitors stay on site between '2-3 hours' (16 interviewees, 29.1%) and '3-4 hours' (3 interviewees, 5.5%) compared to the other survey locations. Time spent on site is a major factor in determining the magnitude of recreational pressure, with longer visits likely to result in more disturbance events compared to shorter ones. Only a weak seasonal trend was discernible from the responses of interviewees. While most interviewees stated that they visit in summer (150 interviewees, 80%), visitation was only marginally lower in spring (148 interviewees, 79%), autumn (136 interviewees, 72%) and winter (132 interviewees, 70%). This is an important result because it implies that recreational pressure in the Severn Estuary SPA / Ramsar is relatively consistent across the year, including the sensitive overwintering period for the qualifying bird species (winter and early spring).

Home Postcodes

The home postcodes of interviewees provide the key most important parameter that is used to identify recreational catchments. Typically, the 75th percentile of interviewees (i.e. the distance from the SPA / Ramsar from which 75% of interviewees originate) is used to denote the core recreational catchment. This

cut-off point is used to remove the influence of outliers and to demark the catchment that forms the most likely visitor pool. Pooling the postcodes from all 'local' visitors (i.e. those on a day trip from home; n = 158), 75% of visitors travelled a linear Euclidean distance of 6.5km to the SPA / Ramsar. This core recreational catchment is broadly similar to those identified for stretches of the estuary in other geographic areas. For example, a visitor survey carried out in the estuary in Stroud District established a core catchment of 7.7km for that authority. Survey work undertaken for the West of England authorities delineated a core catchment of 7.36km for survey points in North Somerset and South Gloucestershire. One notable aspect of the various surveys undertaken in the Severn Estuary SPA / Ramsar / SAC is that the core recreational catchments, even though the surveys have been undertaken for different authorities, have a broad consistency of approx. 7km regarding the core catchment identified. This is useful since it is standard practice when European sites are involved for the affected authorities to agree on a standardized core catchment. For the Severn Estuary SPA / Ramsar / SAC it appears that 7km is a reasonable precautionary recreational buffer for all European sites.

Core recreational catchments were also drawn up for dog walkers and frequent visitors (ranging from daily visits to several visits per week). This was done to delineate the geographic zone that user groups with the highest ecological impacts on overwintering birds derive from. For dog walkers the core recreational catchment is approx. 3.1km, whereas for frequent visitors the core catchment is approx. 1.9km. This is notable because it highlights that the visitors with the highest impact potential come from a relatively small zone around the European sites. Notwithstanding this, in line with other visitor surveys and the evidence for other European sites, it is precautionary and advisable to work with the larger catchment of 7km.

Implications for the Torfaen RLDP

The data from the visitor survey presented here indicate that residential development coming forward in Torfaen does not fall within the core recreational catchment of 7km identified for the Severn Estuary SPA / Ramsar / SAC. While a total of 5 residents (2.8%) from Torfaen were interviewed in the estuary, the interviewee living closest to the site had travelled 8.8km from home, which is well beyond the 75th percentile of visitors. Applying the widely accepted methodology for delineating recreational catchments, Torfaen residents are not considered to meaningfully contribute to recreational impacts in the SPA / Ramsar / SAC. Therefore, housing that is projected to come forward under the Torfaen RLDP will not require mitigation.

Implications for the Monmouthshire RLDP

The data from the visitor survey presented here, which suggest that Monmouthshire contributes by far the highest proportion of visitor pressure in the stretch of the Severn Estuary SPA / Ramsar / SAC that was surveyed, have implications for the emerging Monmouthshire RLDP. Two of the Strategic Growth Areas identified in the RLDP (Severnside and Chepstow) lie within the core recreational catchment of the Severn Estuary SPA / Ramsar / SAC, particularly the easternmost stretch of the estuary including the Caldicot Coast Path and the Black Rock Car Park. The catchment zones for dog walkers and frequent visitors, the user groups with the highest disturbance impacts, include both these Strategic Growth Areas. Furthermore, of the 188 interviewees, 19 (23.8%) live in Caldicot, further underlining the importance of this part of Monmouthshire to the SPA's / Ramsar's / SAC's visitor pool.

Given the high sensitivity of the SPA / Ramsar to impacts from recreational pressure, adverse effects on its site integrity due to additional residential development cannot be excluded. It is anticipated that mitigation measures will be required to avoid adverse effects on the SPA / Ramsar. These could be delivered in the form of Strategic Access Management and Monitoring (SAMM) in the estuary itself, and / or through access enhancements and improvements to appropriately sited, existing or newly developed greenspaces (e.g. SANGs, if delivered to stringent guidelines). This memo does not propose or develop a full mitigation strategy, but rather identifies the options that are available to the Council to address the issue of recreational pressure.

In England, authorities within the core recreational catchment of European sites that are sensitive to recreational pressure have developed SAMM strategies to avoid adverse effects on the European sites; the most prominent examples being the Thames Basin Heaths SPA and the Dorset Heaths SPA. For example, to protect the Dorset Heaths, the relevant authorities have set out the Dorset Heathlands Planning Framework

Supplementary Planning Document (SPD)[3]. The SPD proposes a series of projects, including educational activities and on-site wardens to manage visitor pressure. The funding for these measures is collected through a combination of Community Infrastructure Levy (CIL) and Section 106 agreements (planning obligations) payable by the developer. It is considered that similar measures (and funding mechanisms) could be deployed for the Severn Estuary SPA / Ramsar / SAC, to help manage recreational pressure. Such measures would have to be identified and developed in collaboration with all key stakeholders (i.e. authorities, private landowners) and in consultation with Natural Resources Wales.

SAMM

The visitor survey data indicate that there are ample opportunities for SAMM projects in Monmouthshire's section of the Severn Estuary SPA / Ramsar / SAC. Most visitors are not aware of (125 interviewees, 66.5%) or unsure (21 interviewees, 11.2%) whether any conservation designations apply to the site. Furthermore, only one interviewee (0.5%) indicated that they knew about the site's SPA / Ramsar status and its international importance to overwintering birds. Regarding active conservation measures, a total of 87 interviewees (46.3%) had come across information boards along the estuary. Only 18 interviewees (9.6%) indicated that they were aware of any signage (e.g. dog-on-lead signs) along the estuary. Furthermore, only 3 interviewees (1.6%) had noticed a ranger presence along the estuary. These were all recorded at the RSPB Newport Wetlands, indicating that these are likely to have been RSPB employees rather than rangers specifically managing recreation in the estuary. Overall, 82 interviewees (43.6%) are not aware of any measures that are in place to deliver conservation in the SPA / Ramsar / SAC. Therefore, various SAMM measures along the estuary could be deployed to decrease the likely impact of future housing growth delivered under the RLDP. For example, enhanced signage (e.g. dog-on-lead signs covering the overwintering period) along the estuary is likely to increase public awareness and reduce disturbance to sensitive bird species. Changes in how the estuary is managed may also be beneficial to the Severn Estuary SPA / Ramsar / SAC, provided they support the site Conservation Objectives. While 155 interviewees (82.5%) did not provide any changes they would like to see in how the area is managed, 23 interviewees (12.2%) highlighted footpath improvements (particularly in Caldicot) and 5 interviewees (2.7%) wanted more dog bins (Figure 3). Improvements to footpaths along the estuary could be a key tool in discouraging off-track walking and reducing the number of major bird disturbance events.

A Recreation & Management Strategy (RMS) covering the Severn Estuary SPA / Ramsar / SAC is already in place for Stroud District, which aims at mitigating the 12,600 dwellings to be delivered over the Plan period. A similar approach could be adopted for Monmouthshire, which could take a lead in delivering a recreation management strategy in cross-boundary collaboration with other authorities in the area, such as Cardiff and Newport. The RMS proposes a range of mitigation approaches to be adopted for the estuary, including:

- Engaging with and educating dog walkers to raise awareness of disturbance issues and promote low-sensitivity sites and / or routes;
- Establishing a warden role for visitor engagement, targeting highly sensitive locations or focal areas with high visitor numbers;
- Reviewing and adapting parking opportunities to alter the spatial distribution of visitors along the estuary;
- Introducing Codes of Conduct that raise awareness and promote sustainable recreational use, particularly for wog walkers; and
- Ongoing monitoring of visitor numbers in line with 5-yearly LDP reviews to identify changes in use over time and evaluate the effectiveness of mitigation interventions put in place.

[3] The consultation draft of the Dorset Heathlands Planning Framework 2020-2025 can be found at: https://www.bournemouth.gov.uk/planningbuilding/PlanningPolicy/PlanningPolicyFiles/dorset-heathlands-planning-framework/dorset-heathlands-spd-2019-consultation.pdf [Accessed on the 30/06/2020].

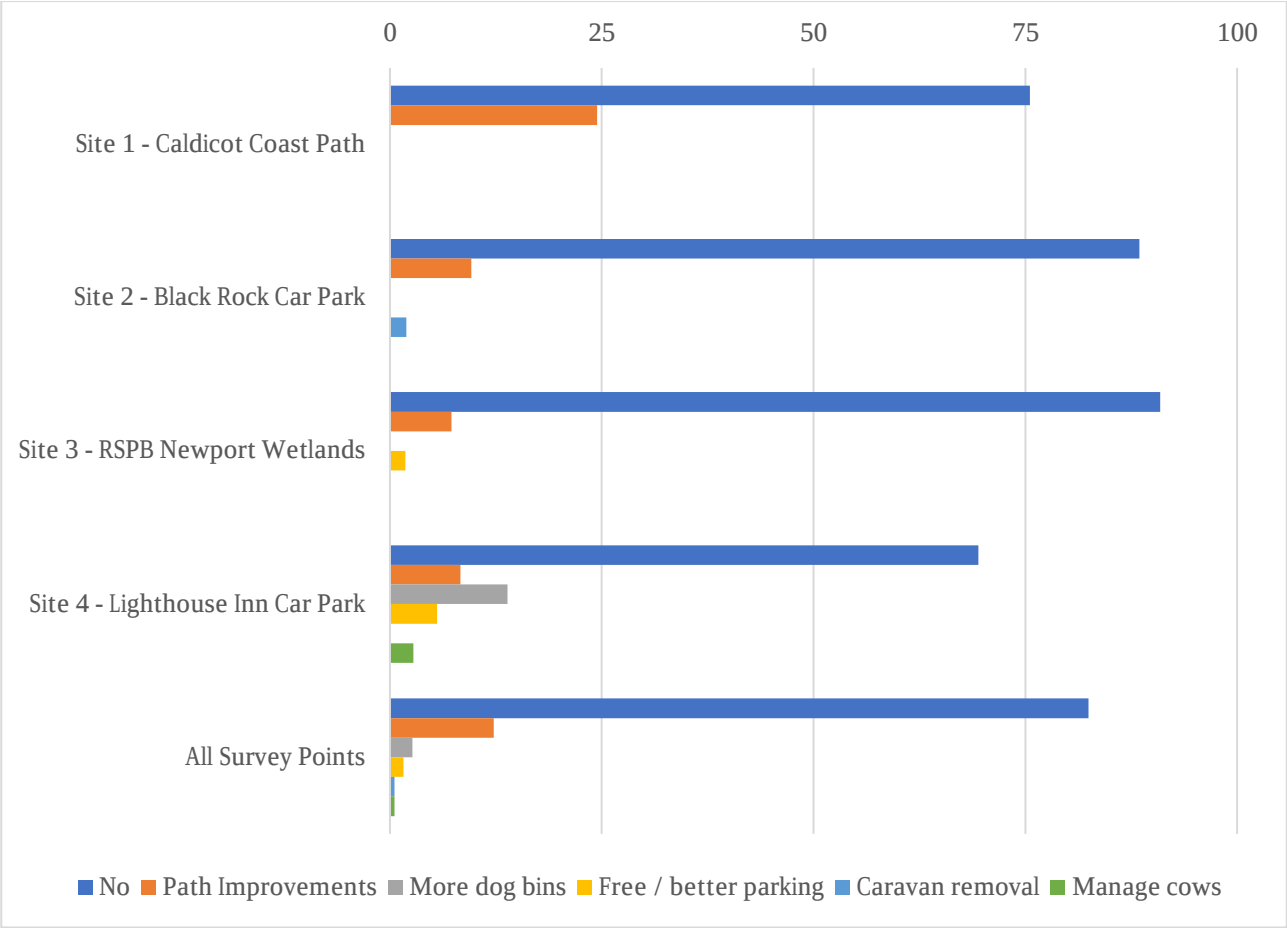


Figure 3: Changes interviewees would like to see in how the Severn Estuary SPA / Ramsar / SAC is managed across the four survey points.

Alternative Greenspaces

Enhancing existing greenspaces or opening new areas of greenspace to public access is the second pillar of mitigating recreational pressure. The rationale behind alternative greenspace provision is to attract a certain proportion of local residents, thereby reducing the recreational burden in more sensitive European sites. Understanding the factors underpinning site choice (see Figure 2) is important in devising effective mitigation approaches. As highlighted in the previous section, the main reasons for visiting the estuary included proximity to home (49.7%), natural scenery (12.8%), coast / estuary (5.3%), good / easy parking (4.8%) and quick travel route (4.3%). Some of these features, such as presence of the coast / estuary and natural scenery, will be impossible or difficult to recreate in alternative local greenspaces. Other characteristics (e.g. proximity to home and parking) are well recognised determinants of site choice and have influenced the greenspace provision underpinning many mitigation strategies in England. Alternative greenspaces should be adequately sited and designed to represent a realistic alternative to local residents, ideally being more attractive to potential users than the European sites themselves. In England, Natural England has published guidelines for the provision of Suitable Alternative Natural Greenspaces to mitigate recreational pressure in the Thames Basin Heaths SPA. These encompass a range of must-have parameters, including some of the characteristics mentioned by visitors to the Severn Estuary SPA / Ramsar / SAC such as the availability of parking, a well-maintained network of paths, habitat variety and suitable geographic location in relation to the proposed housing development.

Regarding the Monmouthshire RLDP, the Strategic Growth Areas of Caldicot and Chepstow, both within the core catchment of the Severn Estuary SPA / Ramsar / SAC, should be the main focus of mitigation. A review of satellite imagery on Google Maps indicates that there are extensive tracts of agricultural fields, grassland and woodland surrounding the two SGAs, which could form the starting point for evaluating alternative greenspace provision. In the first instance, this would entail a detailed site appraisal and early engagement with landowners to explore initial feasibility. The most obvious candidate site for improvements is the Caldicot

Castle Country Park (CCCP), which is approximately equidistant from existing residential development in Caldicot compared to the Severn Estuary SPA / Ramsar / SAC, thus representing a realistic alternative location geographically. The CCCP is owned and operated by Monmouthshire County Council, which would facilitate the delivery of mitigation measures compared to sites under multiple ownership. It is noted that the CCCP is already an attractive destination for visitors[4] and any mitigation measures would have to improve the capacity of the park to attract further visitors. A list of potential enhancements may include[5]:

- Provision of a variety of routes (ideally at least one circular route) leading out from the castle into the woodland;
- Enhancements to the existing main car park off Church Road (e.g. increasing capacity, renewing surfacing, etc.);
- Provision of enhanced information boards along the key walking routes, which may address the cultural / historical heritage of the CCCP and ecological interest features in the site; and
- Incorporation of Nedern Brook as a main feature into the walking routes starting at the Castle.

Notwithstanding the provision of enhanced local greenspaces, it is noted that these are unlikely to fully mitigate the increase in recreational pressure on European sites. Estuarine and coastal sites (such as the Severn Estuary SPA / Ramsar / SAC) have unique recreational draws (illustrated by large core catchment zones) and will continue to attract visitors regardless of destination alternatives. Any improvements to existing or new local greenspaces will fulfil their primary role in attracting local residents that undertake frequent and relatively short outings, including dog walkers, walkers and people exercising. Therefore, alternative greenspace provision could be particularly effective for residential development in the Caldicot and Chepstow SGAs.

AECOM recommends that Natural Resources Wales is consulted in the next instance to assess any implications arising from the visitor survey. This would include setting the growth projected in the RLDP into the context of existing concerns regarding the qualifying features of the SPA / Ramsar / SAC. Following consultation, the next stage in the delivery of mitigation would be to develop a detailed list of interventions, identify their governance body and explore potential funding mechanisms.

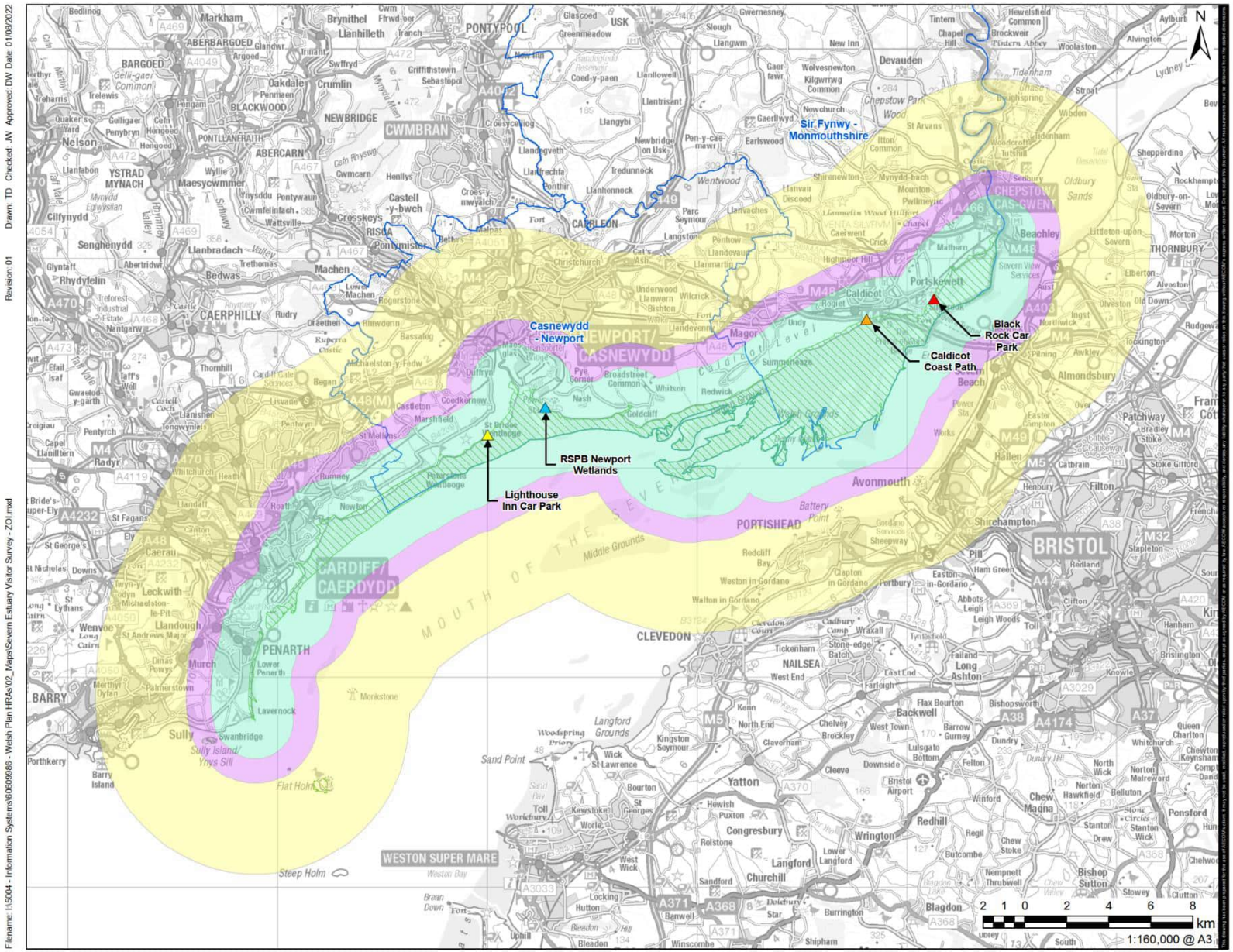
It is concluded that, provided an appropriate set of mitigation measures in and / or the wider area around the Severn Estuary SPA / Ramsar / SAC is delivered in agreement with the Natural Resources Wales, the Monmouthshire RLDP will not result in adverse effects on site integrity regarding recreational pressure.

[4] The Caldicot Castle Country Park is widely advertised as an attractive destination for outings, for example on the Monmouthshire tourism website available at: https://www.visitmonmouthshire.com/Caldicot-Caldicot-Castle-and-Country-Park/details/?dms=3&venue=1000670 [Accessed on the 30/06/2020].

[5] Note that rather than focussing on a specific site, greenspace enhancements may also be delivered as a series of small-scale projects designed to improve access to multiple greenspaces or to encourage responsible recreation in the estuary. This would be analogous to the Heathland Infrastructure Projects (HIPs) delivered to mitigate recreational pressure in the Dorset Heaths SPA.

Appendix A Maps

Figure 4: Map of locations surveyed along the Severn Estuary SPA / Ramsar / SAC in Monmouthshire and Newport.



AECOM

PROJECT
HRAs for the Monmouthshire and Torfaen Replacement Development Plans

CLIENT
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LEGEND

Survey Location
- Site 1 - Caldicot Coast Path
- Site 2 - Black Rock Car Park
- Site 3 - RSPB Newport Wetlands
- Site 4 - Lighthouse Inn Car Park
- Severn Estuary Special Protection Area & Ramsar
- Authority Boundary

Zone of Influence
- Frequent Visitors - 1.8km
- Dog Walking - 2.97km
- All Interviewees - 7.3km

NOTES

ISSUE PURPOSE
DRAFT

PROJECT NUMBER
60609986

SHEET TITLE
Severn Estuary Zone of Influence

SHEET NUMBER
Figure 5

Appendix E Wye Valley Woodlands Visitor Survey Technical Note

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HRAs of the Monmouthshire RLDP - Deposit Plan

Project ref:

To:
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From:
Damiano Weitowitz

Date:
26 October 2023

Memo

Subject: Wye Valley Woodlands SAC Visitor Survey Results

Background to the 2023 Visitor Survey

To obtain visitor data for the Wye Valley Woodlands SAC, AECOM commissioned Strategic Research and Insight (SRI) to undertake a survey (comprising visitor counts and interviews) at two key access locations agreed with Monmouthshire Council. The survey followed a similar methodology to surveys carried out by AECOM in the Severn Estuary SPA/Ramsar/SAC, and Footprint Ecology in other European sites, which have provided the evidence base for numerous Habitats Regulations Assessments. To summarise, the key features of the survey methodology were:

- The interviewer roamed the survey location and approached first adult seen (alone or part of a larger group) for interview – the interview involved a set of questions to obtain key information such as activity undertaken and home postcode; upon completion of the interview the next adult is approached;
- The interviewer counted the number of adults, minors and dog walkers to get an overview of the 'busyness' of the site at a given location;
- The survey day was divided into a morning (07:30 to 12:30) and an afternoon shift (12:30 to 17:30);
- Each location was surveyed on two days, a weekday (Monday to Friday) and a weekend day (Saturday and Sunday), in summer 2023, avoiding public holidays and special events resulting in high footfall; and
- A total of 16 hours of survey was therefore undertaken at each of the two survey locations, split into 4 weekend 5-hr shifts (2 morning, 2 afternoon) and 4 weekday 5-hr shifts (2 morning, 2 afternoon) per site.

Using satellite imagery and in collaboration with Monmouthshire's Countryside Team, AECOM identified two key access locations to the SAC based on their proximity to existing conurbations, the presence of parking opportunities and dedicated foot access points directly into the SAC. These were:

- Lower Wyndcliff Car Park (ST 52669716)
- Chepstow Leisure Centre (ST 52889432)

Key Results

Visitor Counts

Table 1: Visitor counts (including adults and minors) at access points to the Wye Valley Woodlands SAC provided as totals and split by weekday / weekend.

Survey Location	Visitor Count Weekday	Visitor Count Weekend	Total Visitor Count
Lower Wyndcliff Car Park	66	92	158
Chepstow Leisure Centre	54	75	129

At Lower Wyndcliff Car Park, a total of 158 people were recorded entering the SAC over 16hrs of survey, equating to an average of 10 people per hour. At Chepstow Leisure Centre, 129 people were recorded entering the SAC over 16hrs of survey, equating to an average of 8 people per hour. Compared to surveys for other European sites in Monmouthshire this is modest. For example, during the surveys of the Severn Estuary in Monmouthshire in the winters of 2020-22, an average of 38 people per hour were recorded at RSPB Newport Wetlands, and 16.75 per hour were recorded at Black Rock Car Park. Moreover, that level of visitor activity was recorded in winter. In summer, levels of use at the Severn Estuary can be expected to be even greater. The face-to-face surveys also suggest relatively lower use of Wye Valley Woodlands SAC than other European sites. Over this standardised survey period it is typical to achieve 12 interviews in a 5hr shift. In this case an average of just 5.4 per 5hr shift was achieved (a total of 65 interviews). This reflects relatively low footfall.

Visitor Interviews

The focus of this assessment was primarily to capture interviews to provide a randomised selection of opinions and home postcodes from people that visit Wye Valley Woodlands SAC in order to understand recreational behaviour and to define a core recreational catchment within which increases in the resident population can be expected to translate into increases in visitor pressure. A total of 65 visitor interviews were undertaken, including 29 interviews (45%) at Chepstow Leisure Centre and 36 interviews (55%) at Lower Wyndcliff Car Park.

Activities and Mode of Transport

Walking was by far the most common recreational activity (38 interviewees, 58.5%), followed by dog walking (22 interviewees, 33.8%). A total of 92.3% of survey respondents were undertaking one or the other of these activities. The proportion of different activities recorded was relatively consistent between survey points.

In terms of mode of travel to site, 22 (33.8%) of interviewees walked to site, while 42 (64.6%) drove to site. This is unsurprising given the wide diversity of home postcodes and the large geographic area they covered. This is also reflected in the relatively large proportion of visitors (17 or 26.2%) who were on holiday or otherwise staying away from home. Of Monmouthshire residents surveyed, just over half had walked to the site.

Reasons for Visit

One of the objectives of the visitor survey was to identify the main reasons for why visitors are drawn to the Wye Valley Woodlands SAC. By far the most important factor for visiting the SAC was ‘natural scenery/wild landscape’ (42 out of 65 interviewees, or 64.6%). This ties in with the large distances from across England and Wales that people are travelling to visit the site. The second most important factor (although considerably less often cited than the most important reason) was ‘proximity to home’ (24 out of 65 interviewees, 36.9%). The third, fourth and fifth most important reasons (a long way behind either first or second) were ‘other’ (8 interviewees or 12.3%), ‘easy parking’ (6 interviewees, or 9.2%) and ‘ability to travel to site on foot’ (5 interviewees or 7.7%). Where people answered ‘other’ their reasons included: ‘meeting a friend’, ‘to see Giant’s Cave’, ‘come every year in honour of father’, and ‘close to where we are camping’.

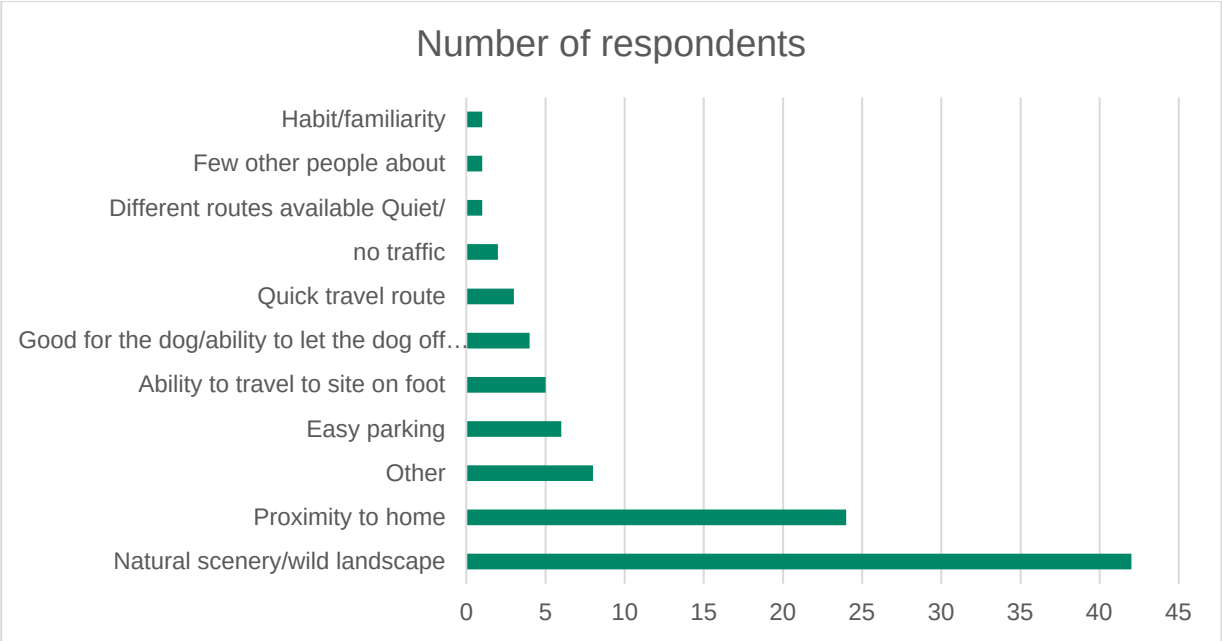

Figure 1: Main reasons for visiting the Wye Valley Woodlands SAC provided by interviewees. Note that not all interviewees provided a reason and some provided more than one reason.

Temporal Characteristics

Regarding the temporal characteristics of recreational pressure in the Wye Valley Woodlands SAC, an atypically small number of visitors (based on personal experience of surveying many European sites or reviewing such survey data) are frequent visitors. Just 13 (20%) of visitors attend the site at least once a week (i.e. said they visited the site 'daily', 'most days' or '1-3 times a week'). In contrast, 16 (24.6%) visit once a month or less, and 33 (50.8%) of survey respondents were on their first visit. Again, the large number of people on their first visit probably reflects the large number of non-locals and holidaymakers in the visitor sample.

Another trend that supports the notion of the SAC being primarily a regional or national recreational resource is the relatively long duration of visits. A total of 22 (33.8%) of survey respondents said they had spent, or intended to spend, at least three hours on site, with 17 of these (26.2% of the total) intending to spend over four hours on site. This is an unusually large proportion of visitors intending to spend a long time on site but is the response one would be more likely to expect where a relatively large number of visitors are holiday-markers or have travelled a considerable distance to the site. In contrast, during the Severn Estuary SPA/\Ramsar/SAC visitor survey, where the majority of visitors were relatively local, 80.9% of interviewees stated that their visits last less than 2 hours. In the Wye Valley Woodlands this figure drops to 60%.

Home Postcodes

The geographic source of visitors was also assessed. Of the 48 interviewees who provided valid postcodes, 14 (29.2%) derive from Monmouthshire (The face-to-face surveys also suggest relatively lower use of Wye Valley Woodlands SAC than other European sites. Over this standardised survey period it is typical to achieve 12 interviews in a 5hr shift. In this case an average of just 5.4 per 5hr shift was achieved (a total of 65 interviews). This reflects relatively low footfall.

). The second biggest contribution is made by Bristol, where 8 (16.7%) of the interviewees live. A total of 70.9% of visitors live in seven local authorities with some being as far distant as Sandwell in the West Midlands. Despite the location of the survey points within Monmouthshire, a clear majority of survey respondents (70.8%) came from outside Monmouthshire. This illustrates that the Wye Valley Woodlands SAC, based on this survey, can be considered a regional or even national draw, rather than a predominantly local attraction. This differs from the section of the Severn Estuary (for example) in Monmouthshire, where almost half (44%) of visitors were residents of Monmouthshire and two-thirds (66.6%) were residents of either Monmouthshire or Newport.

Table 2: Local Authorities from which visitors to the Wye Valley Woodlands SAC derived.

Source of Visitors (Local Authority)	Number of Visitors	Percentage of Visitors (%)
Monmouthshire	14	29.2
Bristol	8	16.7
North Somerset	3	6.2
South Gloucestershire	3	6.2
Newport	2	4.2
Forest of Dean	2	4.2
Sandwell, West Midlands	2	4.2
Bath & North-East Somerset	1	2.1
Boston, Lincolnshire	1	2.1
Dacorum, Hertfordshire	1	2.1
East Yorkshire	1	2.1
Hart, Hampshire	1	2.1
Newark & Sherwood, Nottinghamshire	1	2.1
North Devon	1	2.1
Bridgend	1	2.1
Powys	1	2.1
Sheffield, Yorkshire	1	2.1
South Oxfordshire	1	2.1
Stroud	1	2.1
Swindon	1	2.1
Torfaen	1	2.1
Total	**48**	**100**

The home postcodes of interviewees provide the key parameter that is used to identify recreational catchments. Typically, the 75th percentile of interviewees (i.e. the distance from the SAC from which 75% of

interviewees originate) is used to denote the core recreational catchment. This cut-off point is used to remove the influence of outliers and to demark the catchment that forms the most likely visitor pool.

Using these data, the 75th percentile of all visitors that travelled to the SAC is 39.3km. In other words, three quarters of visitors live within 39.3km of the SAC boundary. This is a very large catchment and represents the importance of the SAC in drawing visitors from long distances. For example, visitors come from as far afield as Lincolnshire, Sheffield, Devon, Hampshire and Nottinghamshire (Table 1), and visitors from outside Monmouthshire and Wales, make up a large proportion of the survey pool. Even excluding people on holiday to focus entirely on people 'visiting from home' still leaves a relatively large catchment of 24km. This indicates that the Wye Valley Woodlands SAC ha a regional, not to say national, draw rather than a local one. In contrast, during surveys of the Severn Estuary SPA/Ramsar/SAC, 75% of visitors lived within 6.5km of the site, indicating the much greater proportion of local residents in the visitor pool. The core recreational catchment for the Wye Valley Woodlands SAC for residents of Monmouthshire (i.e. the zone within which 75% of Monmouthshire-resident visitors are found) is 7km, but it is important to remember that Monmouthshire residents make up a minority of visitors, with 71% of visitors living in other local authorities.

Implications for the Monmouthshire RLDP

The data from the visitor survey presented here strongly suggest that:

- The visitor pressure in the Wye Valley Woodlands SAC is relatively low compared to other European sites. This is relevant given that, like most sites designated for their habitats, the SAC is more resilient to recreational pressure than a site harbouring easily disturbed/displaced interest features such as Severn Estuary SPA/Ramsar.
- The visitor profile is dominated by residents of other local authorities, some very far afield, who visit site infrequently (51% of survey respondents), possibly even just once given the high percentage who are on their first visit, but who stay on site for a considerable time (3-4 hours or more).
- A total of 71% of visitors derive from local authorities other than Monmouthshire, with only 29% of visitors being Monmouthshire residents.
- This visitor profile influences the core recreational catchment, yielding a very large core catchment of 39km. Even excluding holidaymakers, the SAC still has a large core catchment of 25km, indicating that some people travel a considerable distance from home to visit Wye Valley Woodlands SAC. For example, five visitors had travelled over 30km from home to visit the SAC, including one person from Swindon, located more than 60km away.
- The large distances travelled to visit the SAC do not apply to residents of Monmouthshire, who travel an average distance of 3km to visit the SAC, with 75% of Monmouthshire-based visitors living within 7km.

Given these data it is considered that visitor pressure within the SAC is limited, is a regional or national issue, and will not be heavily affected by housing and population growth within Monmouthshire. As such, no mitigation strategy for the Local Plan is required.

Appendix A Maps

Revision: 0 Drawn: AG Checked: LC Approved: JR Date: 2023-11-22

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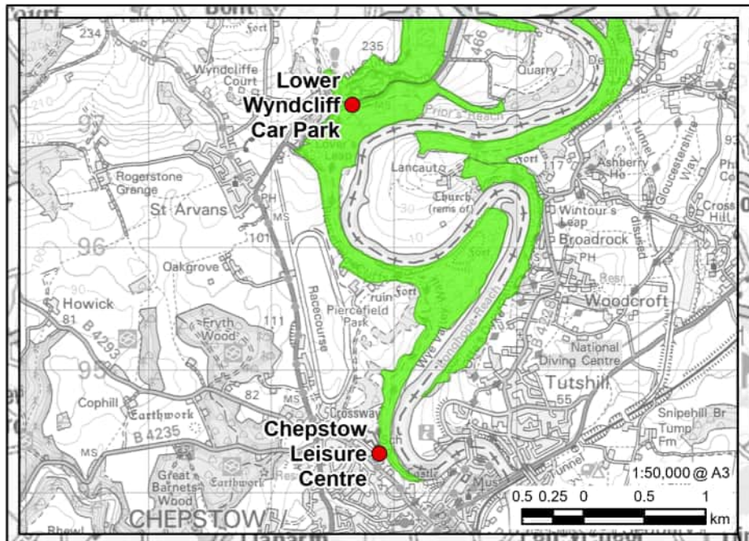

AECOM

PROJECT

Wye Valley Woodlands SAC

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LEGEND

- Visitor Survey Location
- Wye Valley Woodlands Special Area of Conservation

NOTES

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60609986

FIGURE TITLE

Visitor Survey Locations for Wye Valley Woodlands SAC

FIGURE NUMBER

Figure 1

Revision: 0 Drawn: AG Checked: LC Approved: JR Date: 2023-11-22

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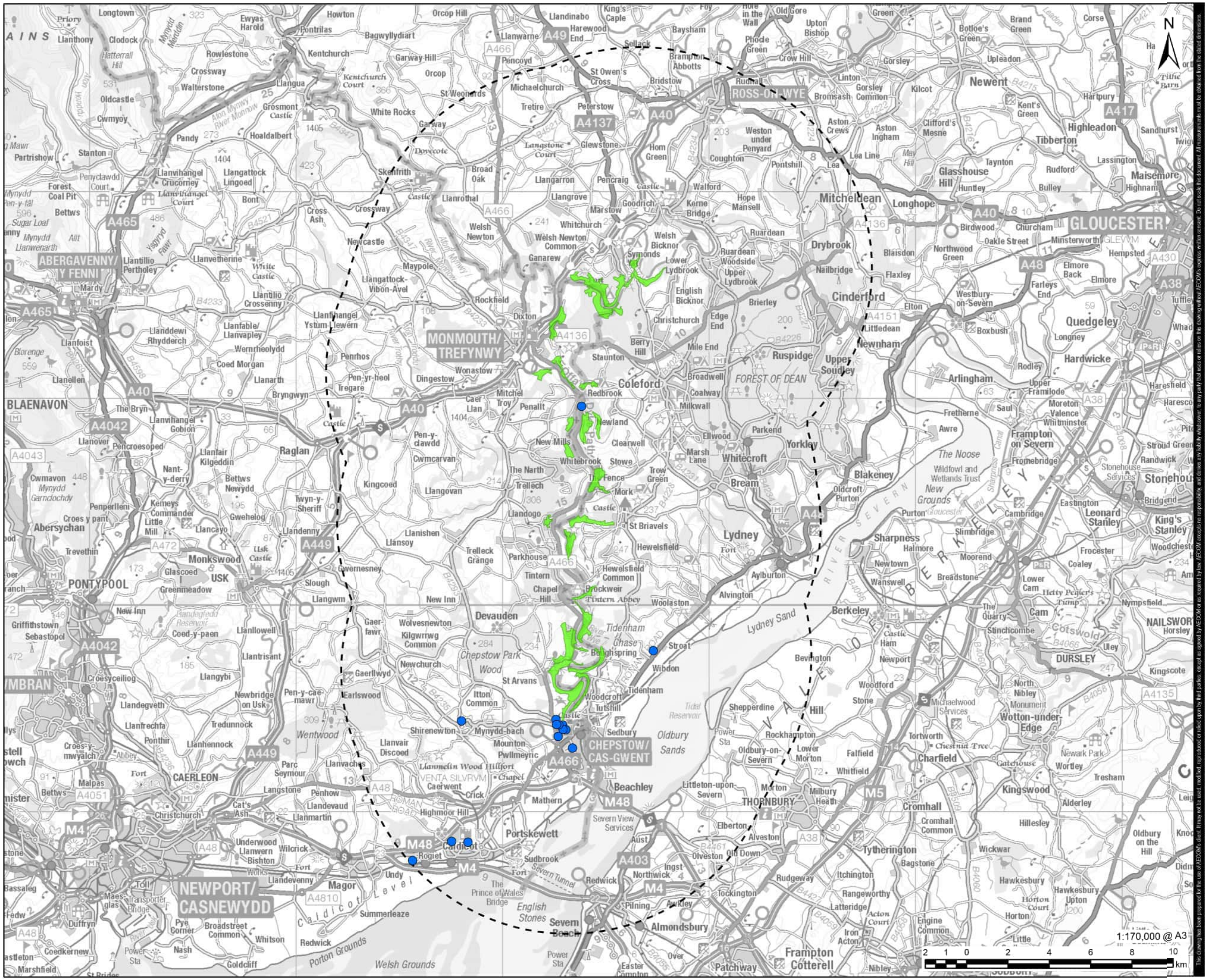

AECOM

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Wye Valley Woodlands SAC

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LEGEND

- Visitor Postcode
- 10km Study Area
- Wye Valley Woodlands Special Area of Conservation

NOTES

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60609986

FIGURE TITLE

Home Postcodes of Wye Valley Woodlands SAC Survey Respondents That Live Within 10km of the SAC

FIGURE NUMBER

Figure 2

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