

Newport Replacement Local Development Plan - Preferred Strategy

Habitats Regulations Assessment

Newport City Council

September 2023

Quality information

Prepared by	Checked by	Verified by	Approved by
Isla Hoffmann Heap Senior Ecologist MCIEEM	Dr Damiano Weitowitz Principal Ecologist MCIEEM	Dr James Riley Technical Director MCIEEM CEnv	Dr James Riley Technical Director MCIEEM CEnv

Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	September 2023	Initial draft for comment	HRA client	JR	Dr James Riley Technical Director
1	October 2023	Updated following comments	HRA client	JR	Dr James Riley Technical Director

Prepared for:

Newport City Council

Prepared by:

AECOM Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 310200
aecom.com

AECOM Limited ("AECOM") has prepared this Report for the sole use of **Newport City Council** ("Client") in accordance with the terms and conditions of appointment.

AECOM shall have no duty, responsibility and/or liability to any party in connection with this report howsoever arising other than that arising to the Client under the Appointment. Save as provided in the Appointment, no warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by AECOM.

Where any conclusions and recommendations contained in this report are based upon information provided by the Client and/or third parties, it has been assumed that all relevant information has been provided by the Client and/or third parties and that such information is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in this report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from the Client and/or third parties.

Mae'r ddogfen hon ar gael yn Gymraeg/ This document is available in Welsh

Table of Contents

1. Introduction	1
Legislative Context	1
Scope of the Project	2
Quality Assurance.....	3
2. Methodology	4
Introduction	4
HRA Task 1 – Test of Likely Significant Effects (LSEs).....	4
HRA Task 2 – Appropriate Assessment (AA)	5
In-Combination Assessment	5
Habitats Sites	6
3. Background to Relevant Impact Pathways	8
Recreational Pressure	8
Bird Disturbance.....	8
Non-breeding Birds (October – March)	9
Mechanical and Abrasive Damage	12
Nutrient Enrichment.....	13
Summary.....	14
Water Quality.....	14
Summary.....	15
Water Quantity, Level and Flow	15
Summary.....	16
Atmospheric Pollution	16
Summary.....	20
Loss of Functionally Linked Habitat.....	20
Noise and Visual Disturbance (During Construction)	22
Coastal Squeeze	23
4. Screening for Likely Significant Effects (LSEs)	25
Recreational Pressure	25
Severn Estuary SAC / SPA / Ramsar	25
River Usk SAC	25
Cardiff Beech Woods SAC.....	26
River Wye SAC	26
Wye Valley Woodlands SAC	27
Aberbargoed Grasslands SAC.....	28
Wye Valley and Forest of Dean Bat Sites SAC.....	28
Summary.....	28
Water Quality.....	29
Severn Estuary SAC / SPA / Ramsar	29
River Usk SAC	29
River Wye SAC	30
Summary.....	30
Water Quantity, Level and Flow	30
Severn Estuary SAC / SPA / Ramsar	30
River Usk SAC	31
River Wye SAC	31
Summary.....	32
Atmospheric Pollution	32
Severn Estuary SAC / SPA / Ramsar	32
Cardiff Beech Woods SAC.....	32

Wye Valley Woodlands SAC	33
River Wye SAC	33
Summary.....	33
Loss of Functionally Linked Habitat.....	34
Severn Estuary SPA / Ramsar	34
Wye Valley Woodland SAC.....	37
Aberbargoed Grasslands SAC.....	38
Wye Valley and Forest of Dean Bat Sites SAC.....	38
Summary.....	39
Noise and Visual Disturbance (During Construction)	39
Severn Estuary SPA / Ramsar	39
River Usk/ Afon Wysg SAC.....	40
Summary.....	41
Coastal Squeeze	41
Severn Estuary SAC / SPA / Ramsar	41
River Usk SAC	41
Summary.....	42
Screening of RLDP Policies and Allocations.....	42
5. Conclusions & Recommendations	43
Screening of RLDP Policies and Allocations.....	44
Appendix A Habitats Sites	46
Figure A1. Location of Habitats Sites in Relation to the RLDP	46
Severn Estuary SPA / Ramsar	47
Introduction	47
SPA Qualifying Features.....	47
Ramsar Qualifying Features	48
SPA Conservation Objectives	50
Threats and Pressures to Site Integrity	50
Severn Estuary SAC.....	51
Introduction	51
Qualifying Features	51
Conservation Objectives.....	52
Threats and Pressures to Site Integrity	52
Cardiff Beech Woods SAC.....	53
Introduction	53
Qualifying Features	53
Conservation Objectives.....	54
Threats / Pressures to Site Integrity	54
River Usk / Afon Wysg SAC.....	54
Introduction	54
Qualifying Features	55
Conservation Objectives.....	56
Threats and Pressures to Site Integrity	57
Aberbargoed Grasslands SAC.....	58
Introduction	58
Qualifying Features	58
Conservation Objectives.....	58
Threats and Pressures to Site Integrity	59
Wye Valley and Forest of Dean Bat Sites/ Safleoedd Ystumod Dyffryn Gwy a Fforest y Ddena SAC	59
Introduction	59

Qualifying Features	60
Conservation Objectives	60
Threats and Pressures to Site Integrity	60
Wye Valley Woodlands / Coetiroedd Dyffryn Gwy SAC	60
Introduction	60
Qualifying Features	61
Conservation Objectives	61
Threats and Pressures to Site Integrity	62
River Wye/ Afon Gwy SAC	62
Introduction	62
Qualifying Features	63
Conservation Objectives	63
Threats and Pressures to Site Integrity	64
Appendix B Screening for Likely Significant Effects.....	65
Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Policies	65
Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Allocations	68
Figure B2: Location of NRDLP Site Allocations (Residential and Employment).....	68

Figures

Figure 1: The legislative basis for Appropriate Assessment.	2
Figure 2: Four Stage Approach to Habitats Regulations Assessment.....	4
Figure 3: Generalised depiction of traffic contribution to concentrations of pollutants at different distances from a road	20

Tables

Table 1 Habitats Sites that could Potentially Link to the RLDP.....	7
Table 2: Tolerance distances in metres of 21 species of waterfowl to various forms of recreational disturbance, as described in the literature. Where the mean is not available, distances are provided as a range.	11
Table 3: Main sources and effects of air pollutants on habitats and species.	17
Table 4: Qualifying individual species in the Severn Estuary SPA/ Ramsar and their dependence on functionally linked habitats outside the designated site boundary.....	34
Table 5: Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Policies.....	65
Table 6: Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Allocations	69

1. Introduction

- 1.1.1 AECOM has been appointed by Newport City Council (NDC) to undertake a report to inform the Habitats Regulations Assessment (HRA) of the Newport Replacement Local Development Plan (RLDP) 2021 – 2036 Preferred Strategy. The aim of this assessment is to identify any policies, allocations or spatial elements of the Plan that may result in Likely Significant Effects (LSEs) and, where relevant, adverse effects on the integrity of Habitats Sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either alone or in-combination with other plans and projects. The HRA process is also to advise on appropriate policy mechanisms for delivering mitigation where adverse effects would otherwise occur. The first stage for which AECOM has been commissioned is a Test of Likely Significant Effects (HRA screening) for the Preferred Strategy, with an Appropriate Assessment (HRA stage 2) to accompany the Deposit Plan.
- 1.1.2 The Preferred Strategy is the first stage in the iterative RLDP preparation process (a Deposit Plan will follow), providing for the strategic direction of development in Newport. As such the overall purpose of the Preferred Strategy RLDP is to identify key issues and challenges within the Local Planning Authority, define a key vision for the subsequent stage of the RLDP, specify the anticipated scale of future housing and employment growth, set out the spatial delivery framework for development and set out a broad suite of strategic policies that will deliver the RLDP visions.

Legislative Context

- 1.1.3 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. The most recent amendments to the Habitats Regulations – the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 – make it clear that the need for HRA continues after Brexit.
- 1.1.4 The need for HRA is set out in the Conservation of Habitats and Species Regulations 2017 (as amended), which applies the Precautionary Principle¹ to Habitats Sites. Consent should only be granted for plans or projects once the relevant competent authority has ascertained that there will either be no LSEs, or that mechanisms are in place to ensure that no adverse effect on the integrity of Habitats Site(s) arises. Where an AA has been carried out and results in a negative assessment, or if uncertainty remains over the adverse effect, consent can only be granted if there are no reasonable alternative solutions delivering similar objectives, Imperative Reasons of Over-riding

¹ 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”.

Public Interest (IROPI) for the development are present and compensatory measures have been secured.

- 1.1.5 To ascertain whether site integrity will be affected, an AA must be undertaken of the plan or project in question. Figure 1 provides the legislative basis for AAs. Over the years, the term 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Regulations, from LSEs screening through to identification of IROPI. This has arisen 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 AA to the specific stage of that name.

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

“A competent authority, before deciding to ... give any consent, permission or other authorisation for, a plan or project which – (a) is likely to have a significant effect on a European site ... (either alone or in combination with other plans or project)... must make an appropriate assessment of the implications of the plan or project in view of the 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.

Scope of the Project

- 1.1.6 There is no guidance that dictates the physical scope of an HRA of a development plan document or planning proposal under all circumstances. Therefore, in determining the physical scope of the assessment, AECOM is guided primarily by the identified impact pathways (called the source-pathway-receptor model) rather than arbitrary 'zones'. Based on an assessment of the available evidence, the Habitats Sites to be included in the scope of assessment are shown in Appendix A.
- 1.1.7 To fully inform this HRA, several reports, studies and databases were consulted to determine whether LSEs and, potentially, adverse effects may arise from the Newport RLDP. These include:
- LDPs and accompanying HRAs (where available) for the adjoining authorities of Cardiff, Caerphilly, Rhondda Cynon Taf and Vale of Glamorgan;
 - Visitor survey undertaken by AECOM on the Welsh side of the Severn Estuary SAC / SPA / Ramsar for the authorities of Monmouthshire and Torfaen;
 - Water Resources Management Plan (WRMP) published by Welsh Water and its associated HRA;
 - Countryside Council for Wales' (now Natural Resources Wales) Core Management Plans for Habitats Sites; and

- Multi Agency Geographic Information for the Countryside (MAGIC) and its links to SSSI citations and the JNCC website (www.magic.gov.uk).

Quality Assurance

- 1.1.8 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.
- 1.1.9 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, 2019).

2. Methodology

Introduction

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

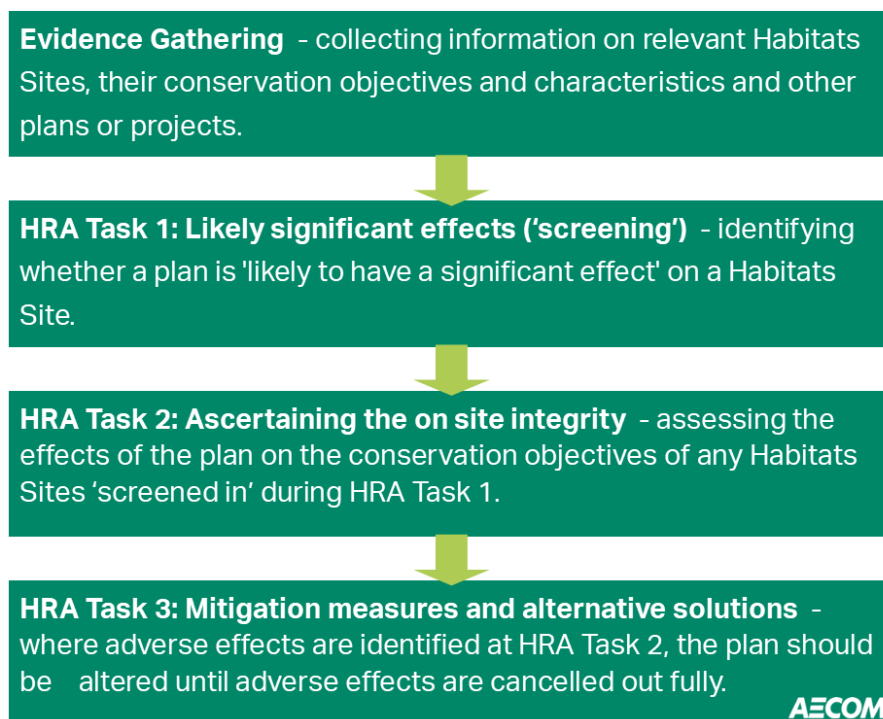


Figure 2: Four Stage Approach to Habitats Regulations Assessment.

HRA Task 1 – Test of Likely Significant Effects (LSEs)

- 2.1.2 Following evidence gathering, the first stage of any Habitats Regulations Assessment is the LSEs test – essentially a high-level assessment of a project or plan to decide whether the full subsequent stage known as Appropriate Assessment (AA) 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 Habitats Sites?"

- 2.1.3 The objective is to filter out those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in LSEs upon Habitats Sites, usually because there is no mechanism for an impact pathway with Habitats Sites. This stage is undertaken in Chapter 5 of this report.
- 2.1.4 This report only undertakes HRA Task 1 Test of Likely Significant Effects of the NRLDP. The AA will be undertaken of the Deposit Plan. The following text

relating to Appropriate Assessment is included to help define the difference between.

HRA Task 2 – Appropriate Assessment (AA)

- 2.1.5 Where it is determined that a conclusion of no LSEs cannot be drawn, the analysis needs to progress to the next stage of HRA known as AA. Case law has clarified that ‘Appropriate Assessment’ is not a technical term. In other words, there are no specific technical analyses, or level of technical analysis, that are classified by law as belonging to AA rather than determination of LSEs.
- 2.1.6 By virtue of the fact that it follows the LSEs screening stage, there is a clear implication that the analysis must be more detailed than at the preceding stage. One of the key considerations during AA is whether there are deployable mitigation measures that would entirely address the potential effect(s). In practice, the AA takes any part of a plan or project that could not be dismissed following the high-level screening and analyses the potential for negative impacts in more detail, with a view to concluding whether there would be an adverse effect on integrity (in other words, disruption of the coherent structure and function of the Habitats Site(s)). The AA would then identify a comprehensive mitigation approach to avoid adverse effects on site integrity.
- 2.1.7 A decision by the European Court of Justice² concluded that measures intended to avoid or reduce harmful effects of a development plan document or planning application on a Habitats Site may no longer be considered by competent authorities at the LSEs stage of HRA. That ruling has been taken into account in producing this HRA.
- 2.1.8 Also, in 2018 the Holohan ruling³ was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that ‘*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, ... typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*’ [emphasis added]. This ruling has been duly considered in relation to the Newport RLDP, particularly regarding the utilisation of functionally linked habitats by SPA / Ramsar birds beyond the designated site boundary.
- 2.1.9 This report only undertakes HRA Task 1 Test of Likely Significant Effects of the NRLDP. The AA will be undertaken of the Deposit Plan.

In-Combination Assessment

- 2.1.10 It is a requirement of the Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in-combination with other plans and projects that may also be affecting the Habitats Site(s) in question. When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e., to ensure that those plans or projects (which in themselves have minor impacts) are not simply dismissed on that basis but are evaluated for any cumulative contribution they

² People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

³ Case C-461/17

may make to an overall significant effect. In practice, in-combination assessment is therefore of greatest relevance when a plan document would otherwise be screened out because its individual contribution is inconsequential. The overall approach is to exclude the risk of there being unassessed LSEs in accordance with the Precautionary Principle. This was first established in the seminal Waddenzee⁴ case.

2.1.11 While it is important not to assess planning proposals in isolation, it should be noted that many of the impact pathways are inherently analysed in-combination. For example, data from visitor surveys, the primary means of appraising recreational footfall and patterns of use in Habitats Sites, include counts and interviews of visitors from all Local Planning Authorities (i.e., they assess the in-combination recreational burden). Furthermore, atmospheric pollution impacts are modelled using traffic flows from multiple adjoining authorities, thereby not just considering an individual development plan document.

2.1.12 The following plans and strategic projects are considered to have potential cumulative effects with the Newport RLDP:

- Cardiff Replacement Local Development Plan to 2036 (in preparation)
- Caerphilly Replacement Local Development Plan to 2035 (in preparation)
- Torfaen Replacement Local Development Plan to 2037 (in preparation)
- Monmouthshire Replacement Local Development Plan to 2033 (in preparation)
- Future Wales: The national plan 2040 (the national development framework for Wales that sets out strategic and local targets for development across the country; development plan status).

2.1.13 It should be noted that, while the broad potential impacts of these plans and projects will be considered where relevant, this HRA does not carry out a full assessment of these planning documents. Instead, it draws upon evidence from existing HRAs that were undertaken on these documents prior to their adoption (where available).

Habitats Sites

2.1.14 Full information of Habitats Sites considered are detailed in Appendix A. This includes details of the designated features, Conservation Objectives and potential threats and vulnerabilities to the Habitats Sites. Table 1 (below) provides a summary of the Habitats Sites considered, including distance from Newport City Council boundary, reason for designation, threats and vulnerabilities that could potentially link to the LDP. The locations of these Habitats Sites are illustrated in Appendix A.

⁴ Waddenzee case (Case C-127/02, [2004] ECR-I 7405)

Table 1 Habitats Sites that could Potentially Link to the RLDP

Habitats Site	Location in Relation to LDP Area	Vulnerabilities and Threats that Could Potentially Link to the LDP.
Severn Estuary SPA Severn Estuary SAC Severn Estuary Ramsar site	Within the RLDP area. Located along the southern extent of the LDP area.	<ul style="list-style-type: none"> • Public access / disturbance • Impacts of development • Coastal squeeze • Water pollution • Hydrological changes • Air pollution: Impact of atmospheric nitrogen deposition
River Usk/ Afon Wysg SAC	Within the RLDP area. Broadly located within the central section of the NRLDP, roughly flowing from north to the coast in the south.	<ul style="list-style-type: none"> • Water quality • Water flow / level • Increased sedimentation / siltation • Non-marine fisheries: recreational and commercial
Cardiff Beech Woods SAC	Located 7.6km west of the RLDP area within Caerphilly authority	<ul style="list-style-type: none"> • Public access / disturbance • Atmospheric pollution • Development pressure
River Wye/ Afon Gwy SAC	Located 9.5 km east of the RLDP area within the Forest of Dean and Monmouthshire authorities.	<ul style="list-style-type: none"> • Water pollution • Hydrological changes • Water abstraction • Public access / disturbance • Fisheries: Freshwater • Air pollution: Impact of atmospheric nitrogen deposition • Transportation and service corridors
Wye Valley Woodlands / Coetiroedd Dyffryn Gwy SAC	Located 9.5 km east of the RLDP area within the Forest of Dean authority	<ul style="list-style-type: none"> • Habitat connectivity • Air pollution: Impact of atmospheric nitrogen deposition • Public access / disturbance
Aberbargoed Grasslands SAC	Located 11.3 km northwest of the RLDP area within Cardiff City authority	<ul style="list-style-type: none"> • Appropriate grazing levels • Public access / disturbance
Wye Valley and Forest of Dean Bat Sites/ Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena SAC	Located 11.4 km northeast of the RLDP area within the Forest of Dean authority	<ul style="list-style-type: none"> • Public access / disturbance • Habitat connectivity

3. Background to Relevant Impact Pathways

Recreational Pressure

3.1.1 Development in proximity to Habitats Sites has the potential to result in increased recreational use of these sites. The types and magnitude of recreational pressure differ between Habitats Sites, dependent on site-specific qualifying features and sensitivities. For the Habitats Sites vulnerable to recreational pressure identified in Table 1 (above), recreational use may encompass:

- Bird disturbance;
- Mechanical / abrasive damage; and
- Nutrient enrichment.

Bird Disturbance

3.1.2 There is concern over 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. Various research reports have provided compelling links between changes in housing and access levels⁵, and impacts on Habitats Sites protected sites^{6 7}. While these impacts are relevant to any habitat, recreational pressure is particularly significant for Habitats Sites designated for bird species. HRAs of plan documents tend to focus on recreational sources of disturbance as a result of new residents⁸.

3.1.3 Studies across a range of species have shown that the effects from recreation can be complex. Human activity can affect birds either directly (e.g., by eliciting flight responses) or indirectly (e.g., through 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 subtler 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 / death⁹.

3.1.4 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding

⁵ Weitowitz D.C., Panter C., Hoskin R. & Liley D. 2019. The effect of urban development on visitor numbers to nearby protected nature conservation sites. *Journal of Urban Ecology* 5. <https://doi.org/10.1093/jue/juz019>

⁶ 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. Report by Footprint Ecology for Natural England.

⁷ 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. Report by Footprint Ecology for Dorset County Council.

⁸ The RTP1 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'.

⁹ Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. *Scottish Natural Heritage*.

to disturbance is time that is not spent feeding¹⁰. 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 birds¹¹. Moreover, the higher proportion of time a breeding bird spends away from its nest, the more likely it is that eggs will cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and nightjar^{12 13}.

3.1.5 Several factors (e.g., seasonality, type of recreational activity) may have pronounced impacts on the nature of bird disturbance. Recreation disturbance in winter can be more impactful because food shortages make birds more vulnerable at this time of the year. In contrast, there are often fewer recreational users in the winter months and some effects of disturbance may be reduced because birds are not breeding. 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 compared to hiking¹⁴. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers¹⁵. Furthermore, differences in on-site route lengths and usage patterns likely imply that key spatial and temporal parameters (such as the area of a site potentially impacted and the frequency of disturbance) will also differ between recreational activities. This suggests that activity type is a factor that should be taken into account in HRAs.

Non-breeding Birds (October – March)

3.1.6 The Severn Estuary SPA / Ramsar (located on the southern boundary of NRLDP area) is designated for sensitive overwintering birds, including waterfowl and waders such as Bewick's swan, white-fronted goose, dunlin and redshank. The site also supports a complex assemblage of waterbirds. The following studies provide evidence on disturbance to these functional groups of birds:

- Evans & Warrington¹⁶ found that on Sundays total water bird numbers (including shoveler and gadwall) were 19% higher on Stocker's Lake LNR in Hertfordshire and attributed this to observed greater recreational activity on surrounding water bodies at weekends relative to weekdays displacing birds into the LNR. However, in this study, recreational activity was not

¹⁰ Riddington, R. et al. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* **43**:269-279

¹¹ Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* **12**: 67-72

¹² Clarke R.T., Liley D., Sharp J.M., Green R.E. 2013. Building development and roads: Implications for the distribution of stone curlews across the Brecks. *PLOS ONE*. <https://doi:10.1371/journal.pone.0072984>.

¹³ Liley D., Clarke R.T. 2003. The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. *Biological Conservation* **114**: 219-230.

¹⁴ Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biological Letters* **3**: 14pp.

¹⁵ Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. **29**: 124-132.

¹⁶ Evans, D.M. & Warrington, S. 1997. The effects of recreational disturbance on wintering waterbirds on a mature gravel pitlake near London. *International Journal of Environmental Studies* **53**: 167-182

quantified in detail, nor were individual recreational activities evaluated separately.

- Tuite et al¹⁷ 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 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^{18 19}.
- A study on recreational disturbance on the Humber²⁰ assesses different types of noise disturbance on waterfowl referring to previous research relating to aircraft (see Drewitt 1999²¹), traffic (Reijnen, Foppen, & Veenbaas 1997)²², dogs (Lord, Waas, & Innes 1997²³; Banks & Bryant 2007²⁴) and machinery (Delaney et al. 1999; Tempel & Gutierrez 2003). It identifies 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. 2004²⁵ for a review). In general terms, both distance from the source of disturbance and the scale of the disturbance (noise level, group size) is likely to influence the response (Delaney et al. 1999²⁶; Beale & Monaghan 2005²⁷). 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)²⁸.

3.1.7 The specific distance at which a species takes flight when disturbed is known as the 'tolerance distance' (also called the 'escape flight distance'), which differs greatly between species. Reliable data on tolerance distances of birds are scarce due to a multitude of confounding factors in field studies. Furthermore, due to considerable inter-specific differences in disturbance tolerance, data should not be extrapolated to other species. Tolerance distances from various literature sources are summarised in Table 2. It is reasonable to assume from this evidence that disturbance is unlikely to be relevant at distances of over 400m.

¹⁷ 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

¹⁸ Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary

¹⁹ Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent Disturbance and Mitigation Project – various reports.

²⁰ Fearnley H., Liley D. & Cruickshanks K. (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology

²¹ Drewitt, A. (1999) Disturbance effects of aircraft on birds. *English Nature*, Peterborough.

²² 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.

²³ 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.

²⁴ 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.

²⁵ 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.

²⁶ 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.

²⁷ 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.

²⁸ 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.

Table 2: Tolerance distances in metres of 21 species of waterfowl to various forms of recreational disturbance, as described in the literature. Where the mean is not available, distances are provided as a range.²⁹

Species	Type of disturbance. ¹ Tydeman (1978), ² Keller (1989), ³ Van der Meer (1985), ⁴ Wolff et al (1982), ⁵ Blankestijn et al (1986)		
	Rowing boats/kayak	Sailing boats	Walking
Little grebe		60 – 100 ¹	
Great crested grebe	50 – 100 ²	20 – 400 ¹	
Mute swan		3 – 30 ¹	
Teal		0 – 400 ¹	
Mallard		10 – 100 ¹	
Shoveler		200 – 400 ¹	
Pochard		60 – 400 ¹	
Tufted duck		60 – 400 ¹	
Goldeneye		100 – 400 ¹	
Smew		0 – 400 ¹	
Moorhen		100 – 400 ¹	
Coot		5 – 50 ¹	
Curlew			211 ³ ; 339 ⁴ ; 213 ⁵
Shelduck			148 ³ ; 250 ⁴
Grey plover			124 ³
Ringed plover			121 ³
Bar-tailed godwit			107 ³ ; 219 ⁴
Brent goose			105 ³
Oystercatcher			85 ³ ; 136 ⁴ ; 82 ⁵
Dunlin			71 ³ ; 163 ²

²⁹ Tydeman, C.F. 1978. Gravel Pits as conservation areas for breeding bird communities. PhD thesis. Bedford College
Keller, V. 1989. Variations in the response of Great Crested Grebes *Podiceps cristatus* to human disturbance - a sign of adaptation? *Biological Conservation* **49**: 31-45
Van der Meer, J. 1985. *De verstoring van vogels op de slikken van de Oosterschelde*. Report 85.09 Deltadienst Milieu en Inrichting, Middelburg. 37 pp.
Wolf, W.J., Reijnders, P.J.H. & Smit, C.J. 1982. The effects of recreation on the Wadden Sea ecosystem: many questions but few answers. In: G. Luck & H. Michaelis (Eds.), *Schriftenreihe M.E.L.F., Reihe A: Agnew. Wissensch* **275**: 85-107.
Blankestijn, S. et al. 1986. Seizoensverbreding in de recreatie en verstoring van Wulp en Scholkester op hoogwatervluchplaatsen op Terschelling. Report Projectgroep Wadden, L.H. Wageningen. 261pp.

3.1.8 Mitigation measures to avoid recreational pressure effects usually involve a combination of access and habitat management, and the provision of alternative recreational space. Typically, Local Planning Authorities (LPAs; in their role as Competent Authorities) can set out frameworks for improved habitat and access management, in collaboration with other adjoining LPAs. Provision of alternative recreational space can help to attract recreational users away from sensitive Habitats Sites and reduce pressure on the sites. However, the location and habitat type of such alternative destinations must be carefully selected to be effective.

Mechanical and Abrasive Damage

3.1.9 Most terrestrial and estuarine Habitats Sites can be affected by trampling, which causes soil compaction and erosion. The magnitude of damage differs considerably between different recreational activities, with motorcycle scrambling and off-road vehicle use considered to be particularly impactful. Various academic papers on mechanical and abrasive damage have provided empirical evidence for the disturbance caused by vehicles, walkers, horses and cyclists in different habitat types:

- Wilson and Seney³⁰ 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^{31,32} conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow and 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 vegetation recovery. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. Cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but recovered well after one year, indicating that these were most resilient to trampling in the long-term. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling, and it was concluded that these would be the least tolerant of a regular cycle of disturbance.

³⁰ Wilson, J.P. & Seney, J.P. (1994) Erosional impact of hikers, horses, motorcycles and off road bicycles on mountain trails in Montana. *Mountain Research and Development* 14:77-88.

³¹ Cole, D.N. (1995a) Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* 32: 203-214.

³² Cole, D.N. (1995b) Experimental trampling of vegetation. II. Predictors of resistance and resilience. *Journal of Applied Ecology* 32: 215-224.

- Cole³³ conducted a follow-up study (in four 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 trampers caused a greater reduction in vegetation height than lighter trampers, but there was no difference in effect on cover.
- Cole and Spildie³⁴ 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 traffic was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Higher trampling intensities caused more disturbance.

Nutrient Enrichment

- 3.1.10 A major concern for nutrient-poor terrestrial habitats (e.g., ancient woodland, heathland) is nutrient enrichment associated with dog fouling (addressed in various reviews, e.g.,³⁵). 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 widespread 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 annually³⁶. While there is limited information on the chemical constituents of dog faeces, nitrogen is one of its main components³⁷.
- 3.1.11 A recent study has published further compelling evidence on the relative impact of N and phosphorus (P) deposition arising from dogs. Using 487 direct-count censuses from four peri-urban forests and nature reserves, the modelling data suggested that canine fertilisation rates amount to 11 kg N and 5 kg P per hectare per year respectively³⁸. These amounts are significant when compared to atmospheric nitrogen deposition rates and the offsetting achievable through traditional habitat management techniques (e.g. cutting and removal of hay). The nitrogen deposition by dogs is particularly significant given the nitrogen Critical Load of 10-20 kg N/ha/yr provided for Atlantic beech forests (qualifying feature of the Burnham Beeches SAC) on the Air Pollution Information System (APIS). This implies that the minimum CL of a site may be exceeded by N nitrogen deposition from dogs alone, before atmospheric sources are considered. Nutrient availability is the major determinant of plant community composition and the effect of dog defecation in sensitive habitats

³³ 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.

³⁴ 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.

³⁵ Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. (2005). Dogs, access and nature conservation. English Nature Research Report, Peterborough.

³⁶ 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.

³⁷ 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.

³⁸ De Frenne P., Cougnon M., Janssens G.P.J. & Vangansbeke P. (2022). Nutrient fertilization by dogs in peri-urban ecosystems. *Ecological Solutions and Evidence* 3, <https://doi.org/10.1002/2688-8319.12128>

is comparable to a high-level application of fertiliser, potentially resulting in a shift towards plant communities that are more typical of improved grasslands.

Summary

3.1.12 The increase in residential development allocated in the NRLDP will lead to an increase in the local population and demand for access to outdoor spaces. Overall, the following Habitats Sites require further consideration in relation to recreational pressure (the sites in **bold** are taken forward to the following chapters):

- **Severn Estuary SAC / SPA / Ramsar** (stretching along the south-east boundary of the authority);
- **River Usk/ Afon Wysg SAC** (situated within the RLDP area. Broadly located within the central section of the RLDP, roughly flowing from north to the coast in the south);
- **Cardiff Beech Woods SAC** (situated 7.6km west of the RLDP area within Caerphilly authority);
- **River Wye SAC** (located 9.5 km east of the RLDP area within the Forest of Dean and Monmouthshire authorities);
- **Wye Valley Woodlands SAC** (situated 9.5 km east of the RLDP area within the Forest of Dean authority);
- **Aberbargoed Grasslands SAC** (situated 11.3 km north west of the RLDP area within Cardiff City authority); and
- **Wye Valley and Forest of Dean Bat Sites SAC** (situated 11.4 km north east of the RLDP area within the Forest of Dean authority)

Water Quality

3.1.13 The quality of the water that feeds Habitats Sites is an important determinant of the condition of the habitats and 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 water with nutrients, 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 bioavailable 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.

3.1.14 The most significant issue in relation to the NRLDP is the discharge of treated sewage effluent into surface watercourses, which is likely to increase the nutrient concentration, most importantly phosphate levels, in Habitats Sites that are hydrologically linked to these watercourses. The NRLDP assessed in this HRA provides for development in the Dwr Cymru Welsh Water catchment, responsible for the public water supply and wastewater treatment for large parts of Wales.

3.1.15 The NRLDP assessed in this HRA provides for development in the geographic area covered by Welsh Water, responsible for wastewater treatment in Newport. There are four publicly owned Wastewater Treatment Works (WwTW) within Newport, these are: St Brides, Nash, St Julians and Christchurch. These WwTW discharge treated sewage effluent either directly to the Severn Estuary SAC/SPA/Ramsar site or into local watercourses that are in hydrological continuity with the estuary such as the River Usk.

Summary

3.1.16 The increase in residential development allocated in the NRLDP will lead to an increase in the local population and pressure on aquatic environments. Overall, the following Habitats Sites require further consideration in relation to water quality:

- **Severn Estuary SAC / SPA / Ramsar** (stretching along the south-east boundary of the authority);
- **River Usk SAC** (situated within the RLDP area. Broadly located within the central section of the RLDP, roughly flowing from north to the coast in the south); and
- **River Wye SAC** (located 9.5 km east of the RLDP area within the Forest of Dean and Monmouthshire authorities).

Water Quantity, Level and Flow

3.1.17 The water level, its flow rates and the mixing conditions are important determinants of the condition of Habitats Sites and their qualifying features. Hydrological processes are critical in influencing habitat characteristics in coastal waters, including current velocity, water depth, dissolved oxygen levels, salinity and water temperature. In turn these parameters determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition. 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.

3.1.18 Coastal environments rely on hydrological connections with freshwater bodies, such as rivers, streams and lakes. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause water levels to be outside of the required range of qualifying birds and fish, or the invertebrate or plant assemblages they depend upon. There are two mechanisms through which urban development might negatively affect the water level in Habitats Sites:

- The supply of new housing with potable water will require increased abstraction of water from surface water and groundwater bodies. Depending on the level of water stress in the geographic region, this may impact the aquatic conditions in Habitats Sites sharing the same catchment.
- The proliferation of impermeable surfaces in urban areas increases the volume and speed of surface runoff, particularly during intense rainfall events. Traditional drainage systems often cannot cope with the volume of stormwater and sewer overflows are designed to discharge untreated water directly into watercourses. Often this pluvial flooding results in downstream inundation of watercourses and larger volumes of water reaching designated sites.

3.1.19 Increases to the quantity and rate of water delivery can result in summer flooding and prolonged / deeper winter flooding. This in turn results in the reduction of feeding and roosting sites for birds. For example, in areas where water is too deep, most waders will be unable to reach their food sources close to the ground.

Summary

3.1.20 Newport is located within proximity to Habitats Sites that are sensitive to changes in the prevailing hydrological regime. The allocation of residential and employment development in the NRLDP means that the following Habitats Sites are at risk regarding changes in water quantity, level and flow:

- **Severn Estuary SAC / SPA / Ramsar** (stretching along the south-east boundary of the authority);
- **River Usk SAC** (situated within the RLDP area. Broadly located within the central section of the RLDP, roughly flowing from north to the coast in the south); and
- **River Wye SAC** (located 9.5 km east of the RLDP area within the Forest of Dean and Monmouthshire authorities).

Atmospheric Pollution

3.1.21 The main pollutants of concern for Habitats Sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂) and are summarised in Table 3. NH₃ can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges³⁹. NO_x can also be toxic at very high concentrations (far above the annual average Critical Level). However, NO_x and NH₃ exert their main impacts on ecosystems via determining the total nitrogen (N) deposition to soils, potentially leading to deleterious knock-on effects. Increases in N deposition from the atmosphere is widely known to enhance soil fertility and leading to eutrophication. This

³⁹ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

often has adverse effects on community composition and the quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats^{40 41}.

Table 3: Main sources and effects of air pollutants on habitats and species⁴².

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO₂)	<p>The main sources of SO₂ are electricity generation, and industrial and domestic fuel combustion. However, total SO₂ emissions in the UK have decreased substantially since the 1980's.</p> <p>Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO₂ have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO₂ emissions in the UK.</p>	<p>Wet and dry deposition of SO₂ acidifies soils and freshwater and may alter the composition of plant and animal communities.</p> <p>The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species.</p> <p>However, SO₂ 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.</p>
Acid deposition	<p>Leads to acidification of soils and freshwater via atmospheric deposition of SO₂, NO_x, 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.</p> <p>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.</p>	<p>Gaseous precursors (e.g. SO₂) can cause direct damage to sensitive vegetation, such as lichen, upon deposition.</p> <p>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.</p> <p>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.</p>
Ammonia (NH₃)	<p>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</p>	<p>The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation.</p>

⁴⁰ 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

⁴¹ 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

⁴² Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>)

Pollutant	Source	Effects on habitats and species
	<p>concentrations are directly related to the distribution of livestock.</p> <p>Ammonia reacts with acid pollutants such as the products of SO₂ and NO_x emissions to produce fine ammonium (NH₄⁺) - containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue).</p> <p>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.</p>	<p>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.</p> <p>As emissions mostly occur at ground level in the rural environment and NH₃ is rapidly deposited, some of the most acute problems of NH₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.</p>
Nitrogen oxides (NO_x)	<p>Nitrogen oxides are mostly produced in combustion processes. Half of NO_x emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes.</p> <p>Nitrogen oxides have been consistently falling for decades due to a combination of coal fired power station closures, abatement of other combustion point sources and improved vehicle emissions technology. They are expected to continue to fall over the plan period.</p>	<p>Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO_x for all vegetation types has been set to 30 ug/m³.</p> <p>Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.</p> <p>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.</p>
Nitrogen deposition	<p>The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_x) or reduced (e.g. NH₃) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices.</p> <p>The N pollutants together are a large contributor to acidification (see above).</p>	<p>All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.</p> <p>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.</p> <p>N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.</p>

Pollutant	Source	Effects on habitats and species
Ozone (O₃)	<p>A secondary pollutant generated by photochemical reactions involving NO_x, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).</p> <p>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.</p>	<p>Concentrations of O₃ above 40 ppb can be toxic to both humans and wildlife, and can affect buildings.</p> <p>High O₃ 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.</p>

3.1.22 SO₂ emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as shipping (particularly on a local scale)⁴³. NH₃ emissions primarily originate from agricultural practices⁴⁴, with some chemical processes and some vehicles (notably petrol cars) also making notable contributions.

3.1.23 In contrast, NO_x emissions 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 NO_x footprint (92%) through its associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison⁴⁵. Therefore, the emerging RLDP, which will increase the population of Newport, can be reasonably expected to increase emissions of NO_x and NH₃, and thus total N deposition through an increase in vehicular traffic.

3.1.24 According to the World Health Organisation, the critical NO_x concentration (Critical Level) 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 (CLs)⁴⁶ for atmospheric nitrogen deposition (that is, NO_x combined with NH₃).

3.1.25 According to advice provided by Institute of Air Quality Management⁴⁷, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is insignificant (Figure 3). Therefore, this is the distance that is used in this HRA to identify major commuter routes along Habitats Sites, which may be significantly affected by development outlined in the RLDP.

⁴³ http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.

⁴⁴ 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

⁴⁵ 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>

⁴⁶ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

⁴⁷ <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2019.pdf>

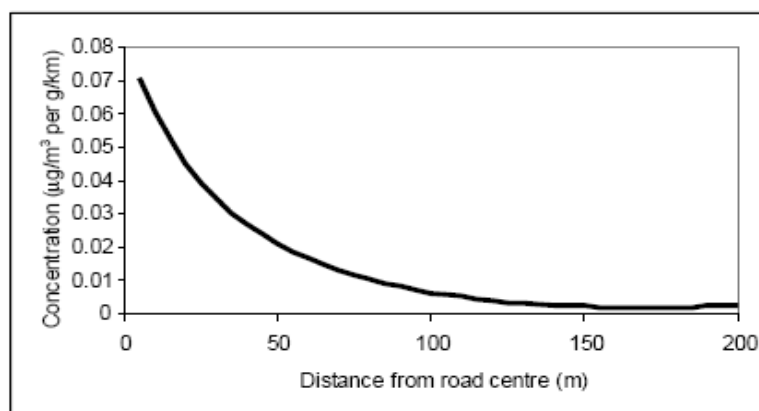


Figure 3: Generalised depiction of traffic contribution to concentrations of pollutants at different distances from a road

Summary

3.1.26 A zone of 10km is typically used to screen in European sites vulnerable to reductions in traffic-related air quality⁴⁸. The following Habitats Sites within 10km are sensitive to atmospheric pollution arising from urban growth, primarily due to a significant increase in the number of two-way vehicle trips through or within 200m of these sites.:

- **Severn Estuary SAC / SPA / Ramsar** (stretching along the south-east boundary of the authority); and
- **Cardiff Beech Woods SAC** (situated 7.6km west of the RLDP area within Caerphilly authority);
- **River Wye SAC** (located 9.5 km east of the RLDP area within the Forest of Dean and Monmouthshire authorities); and,
- **Wye Valley Woodlands SAC** (situated 9.5 km east of the RLDP area within the Forest of Dean authority).

Loss of Functionally Linked Habitat

3.1.27 While most Habitats 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 necessarily the case. A diverse array of qualifying species including birds, bats and fish are not always confined to the boundary of designated sites.

3.1.28 For example, the highly mobile nature of both wader and waterfowl species implies that areas of habitat of crucial importance to the integrity of qualifying populations lie outside the physical limits of Habitats Sites. Despite not being part of the formal designation, these habitats are integral to the maintenance of the structure and function of the designated site, for example by encompassing important foraging grounds. Bats are another example of mobile qualifying species. Bats are known to travel considerable distances from their roosts to feeding sites. Bats are not only dependent on their roosts and foraging habitat in the SAC, but potentially also on habitat that lies outside

⁴⁸ This is based on the average UK car journey being approximately 10.6km, Reference: GOV.UK (2019). Average number of trips made and distance travelled. <https://www.gov.uk/government/statistical-data-sets/nts01-average-number-of-trips-made-and-distance-travelled>

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)⁴⁹, 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 trips⁵⁰. 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, and in many cases further afield, need to be maintained. Both spring migrations or regular foraging trips might take these species beyond the designated site boundary. Therefore, land use plans that may affect such functionally linked habitat require further assessment.

- 3.1.29 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land⁵¹. 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. This finding led to considerable amendments in the planning proposal to ensure that the site integrity was not adversely affected.
- 3.1.30 Generally, the identification of an area as functionally linked habitat is not always a straightforward process. The importance of non-designated land parcels may not be apparent and thus might require the analysis of existing data sources (e.g., Bird Atlases or data from record centres) to be firmly established. In some instances, data may not be available at all, requiring further survey work.
- 3.1.31 Overall, the available baseline information suggests that the following Habitats Sites are sensitive to the loss of functionally linked habitat due to the presence of mobile waterfowl and waders, bats and terrestrial invertebrates:
- **Severn Estuary SPA / Ramsar** (stretching along the south-east boundary of the authority).
 - **Wye Valley Woodland SAC** (situated 9.5 km east of the RLDP area within the Forest of Dean authority)
 - **Wye Valley and Forest of Dean Bat Sites SAC** (situated 11.4 km northeast of the RLDP area within the Forest of Dean authority)

⁴⁹ https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135
[Accessed on the 15/09/2023]

⁵⁰ Schofield H.W. 2008. The Lesser Horseshoe Bat Conservation Handbook.

⁵¹ 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

- **Aberbargoed Grasslands SAC** (situated 11.3 km northwest of the RLDP area within Cardiff City authority)

Noise and Visual Disturbance (During Construction)

- 3.1.32 Development can result in noise or visual disturbance to qualifying species in Habitats Sites, particularly during the construction phase of planning proposals. This may result in temporary behavioural changes in qualifying birds (e.g., interruption or cessation foraging, minor and major flight responses). Three of the most important factors determining the magnitude of disturbance from development schemes on ecological receptors appear to be individual species sensitivity, proximity of the disturbance source and timing / duration of the disturbance.
- 3.1.33 An increasing amount of research on visual and noise disturbance to waders and waterfowl from construction (and other activities) is now available. Both noise and visual stimuli may elicit disturbance responses, potentially affecting the fitness and survival of qualifying birds. Noise is a complex disturbance parameter requiring the consideration of multiple factors, including its non-linear scale, nonadditive effect and source-receptor distance. A high level of noise disturbance constitutes a sudden noise event of over 60dB or prolonged noise of over 72dB. Bird responses to high noise levels include major flight or the cessation of feeding, both of which might affect the survival of birds, particularly if other stressors are also present (e.g., cold weather, food scarcity).
- 3.1.34 Generally, research has shown that above noise levels of 84dB waterfowl show a flight response, while at levels below 55dB there is no effect on their behaviour⁵². Therefore, these two thresholds are considered useful as defining two extremes. The same authors have advised that regular noise levels should remain below 70dB at bird receptors, which will habituate to noise levels below this level⁵³. Generally, noise is attenuated by 6dB with every doubling of distance from the source. Impact piling, the noisiest construction activity of approx. 110dB at 0.67m from source, will thus reduce to 67-68dB by 100m away from the source. This implies that the loudest construction noise should have fallen to below disturbing levels by 100m, and certainly by 200m, away from the source even without mitigation. Note that this is a rule of thumb and does not obviate the need for application-level noise modelling. However, comparison with baseline noise levels will also be important in any assessment rather than purely using comparison with the 70dB metric.
- 3.1.35 Visual stimuli are considered to have a higher disturbance potential than noise stimuli as, in most instances, visual stimuli will elicit a disturbance response at much greater distances than noise⁵⁴. For example, a flight response is triggered in most species when they are approached to within 150m across a mudflat. Visual disturbance can be exacerbated by workers operating equipment outside machinery, undertaking sudden movements and using

⁵² Cutts N & Allan J. (1999). Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency.

⁵³ Cutts N., Phelps A. & Burdon D. (2009). Construction and waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA, Institute of Estuarine and Coastal Studies, University of Hull.

⁵⁴ Research undertaken by the Institute of Estuarine & Coastal Studies, University of Hull. 2013. Available at: <http://bailey.persona-pi.com/Public-Inquiries/M4%20-%20Revised/11.3.67.pdf> [Accessed on the 24/04/2023].

large machinery. Several species are particularly sensitive to visual disturbance⁵⁸, including curlew (taking flight at 275m), redshank (at 250m), shelduck (at 199m) and bar-tailed godwit (at 163m). Overall, specific regard should be given to assemblage composition when identifying threshold levels for both visual and noise disturbance.

3.1.36 The following Habitats Sites within the RDLP boundary could potentially be sensitive to noise and visual disturbance arising in the construction period of development sites allocated in the RLDP):

- **Severn Estuary SPA / Ramsar** (stretching along the south-east boundary of the authority).
- **River Usk/ Afon Wysg SAC** (broadly located within the central section of the RLDP, roughly flowing from north to the coast in the south).

Coastal Squeeze

3.1.37 Coastal squeeze is a well-established process that results in the net contraction and eventual disappearance of intertidal habitats, which may be designated features themselves and / or critical supporting habitats for SPA / Ramsar waders and waterfowl. Specifically, this impact pathway is facilitated by brownfield development immediately inland from the coastline, which results in intertidal habitat loss by preventing the landward migration of these habitats in response to sea level rise. The published literature⁵⁵ provides the following definition of coastal squeeze: *'the loss of natural habitats or deterioration of their quality arising from anthropogenic structures or actions, preventing the landward transgression of those habitats that would otherwise naturally occur in response to sea level rise in conjunction with other coastal processes. Coastal squeeze affects habitat on the seaward side of existing structures.'* Several modelling studies on the implications of coastal squeeze have been undertaken. For example, provided that no additional space for accommodating sea level rise is provided (e.g., through nature-based coastal management approaches and Managed Realignment), a global loss of coastal wetland up to 30% is forecast to 2100⁵⁶. A study comparing armoured and unarmoured coastal segments determined that defended coasts lacked dry upper beach zones and comprised narrower mid-beach zones. Furthermore, areas with frontline defences were also characterised by lower abundance, biomass and size of upper intertidal macroinvertebrates, and lower abundance and species richness of shorebirds⁵⁷.

3.1.38 Given the increasing density of urban development along coastlines, which interferes with natural adaptive processes of coastal habitats, coastal squeeze is becoming an increasingly important consideration in the HRA process. The approaches for coastal management are typically set at the strategic level in Shoreline Management Plans (SMPs) and Coastal Management Strategies (CMS). While being bound under the Habitats and Species Regulations 2017

⁵⁵ Environment Agency. (February 2021). Flood and Coastal Erosion Risk Management Research and Development Programme. Available at: <https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/what-is-coastal-squeeze#:~:text=Coastal%20squeeze%20is%20now%20defined,conjunction%20with%20other%20coastal%20processes> [Accessed on the 01/08/2022]

⁵⁶ Schuerch M, Spencer T, Temmerman S, Kirwan ML, Wolff C, Lincke D, McOwen CJ, Pickering MD, Reef R, Vafeidis AT, Hinkel J, Nicholls RJ & Brown S. (2018). Future response of global coastal wetlands to sea-level rise. *Nature* **561**: 231-234.

⁵⁷ Dugan JE, Hubbard DM, Rodil IF, Revell DL & Schroeter S. (2008). Ecological effects of coastal armoring on sandy beaches. *Marine Ecology* **29**: 160-170.

(as amended), Local Planning Authorities are also legally required to protect important human receptors, including homes, businesses and critical infrastructure (e.g., roads and railway lines). These objectives may be conflicting, which means that in many instances protection of coastal assets cannot be achieved without adverse effects on site integrity. Clearly, the development allocated in the RLDP would constitute important human assets in close proximity to the coastline and its protection would be identified in the overarching SMP / CMS.

3.1.39 The following Habitats Sites within the RLDP boundary are vulnerable to pressure from coastal squeeze, potentially arising from development allocated in the RLDP:

- **Severn Estuary SPA / Ramsar** (stretching along the south-east boundary of the authority).
- **River Usk/ Afon Wysg SAC** (broadly located within the central section of the RLDP, roughly flowing from north to the coast in the south).

4. Screening for Likely Significant Effects (LSEs)

Recreational Pressure

Severn Estuary SAC / SPA / Ramsar

- 4.1.1 Due to the growing population and a trend towards spending an increased amount of time outdoors, recreational pressure is one of the most widely documented impacts in Habitats Sites. The Severn Estuary SAC / SPA / Ramsar is sensitive to recreational pressure as identified in Natural England's Site Improvement Plan (SIP): *'Public access and recreation may have an impact on bird species sensitive to disturbance, causing displacement from feeding, roosting and moulting areas, and if severe could affect long term survival and population numbers and distributions within the Estuary.'* This is affirmed in the joint Countryside Council for Wales (CCW) (now Natural Resources Wales (NRW)) and Natural England (NE) advice note on the Severn Estuary European Marine Site (EMS), which states that *'there is intermittent disturbance to the internationally important migratory species and the waterfowl assemblage from both the landward and seaward side of the site which has increased in recent years, due to the estuary becoming more populated and the development of all weather recreational pursuits. All supporting habitats are currently **highly vulnerable** to noise and visual disturbance.'*
- 4.1.2 Pressure in the estuary arises from a diverse number of recreational activities, including dog walking, walking, horse-riding, cycling, beach activities, angling, wildfowling and water-based sports. The Site Improvement Plan (SIP) already specifies an action of developing a strategic approach to visitor management, including appropriate zonation to protect currently undisturbed areas and management plans for major recreational beaches.
- 4.1.3 The authority of Newport adjoins the Severn Estuary SAC / SPA / Ramsar, such that future residents of housing to be allocated in the RLDP will have short travel times to the site. Direct access to the estuarine foreshore is possible. All residential allocations within the RDLDP could contribute to increased recreational pressure. **Overall, Likely Significant Effects of the RLDP on the Severn Estuary SAC / SPA / Ramsar regarding recreational pressure cannot be excluded and the site is screened in for Appropriate Assessment.**

River Usk SAC

- 4.1.4 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 SAC⁵⁸ identifies that both recreational and commercial fishing are threatening shad populations. These species are

⁵⁸ https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on the 31/08/2023]

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 stocks⁵⁹. 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). All residential allocations within the RDLP could contribute to increased recreational pressure. **Given that exploitation of shad is currently unregulated, the River Usk SAC is screened in for Appropriate Assessment.**

Cardiff Beech Woods SAC

- 4.1.5 The Cardiff Beech Woods SAC is designated for two woodland types, including *Asperulo-Fagetum* beech forest and *Tilio-Acerion* forest of slopes, screes and ravines. Both woodlands are sensitive to impacts from recreational access, albeit from different types of activities. The beech forest lies on moderately sloping ground that attracts a wide range of activities, including dog walking, walking, cycling and horse riding. In contrast, *Tilio-Acerion* forest is characterised by much steeper gradients and attracts more specialist niche activities such as rock climbing, scrambling and mountain-biking.
- 4.1.6 Trees in woodland are primarily sensitive to trampling-related impacts, including continued abrasion of exposed roots and soil compacting. For example, increased footfall around sensitive root zones reduces the number and extent of pore spaces for water and nutrient storage. This can reduce the ability of trees to absorb essential nutrients from the soil. Furthermore, the high proportion of dog walkers in many Habitats Sites represents an issue in relation to nutrient deposition in dog faeces and urine, an impact that is comparable to the application of agricultural fertilisers. Excessive inputs of nutrients to Habitats Sites can lead to long-term changes in community composition, such as woodland ground flora. Generally, habitats of conservation importance are characterised by diverse plant assemblages that tend to be replaced by graminoids under high nutrient regimes. The SAC is situated 7.6km west of the RLDP area within Caerphilly authority. However, the SAC is located more than 15km from the closest residential allocation (H1 (51) Whitehead Works). This is well beyond the typical distance that visitor surveys of Habitats Sites across the UK have indicated as the core recreational catchment for inland sites. As such, due to the distances involved, it is not considered that recreational pressure is a realistic linking impact pathway in relation to this SAC and no likely significant effects will result.

River Wye SAC

- 4.1.7 The River Wye SAC is located 9.5 km east of the RLDP area within the Forest of Dean and Monmouthshire authorities. It is designated for its water course

⁵⁹ <https://naturalresources.wales/days-out/things-to-do/fishing/?lang=en> [Accessed on the 31/08/2023]

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 regeneration⁶⁰. 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 canoeists⁶¹. All residential allocations within the RDLP could contribute to increased recreational pressure. **Given the current evidence relating to recreational pressure in the SAC, LSEs cannot be excluded, and the site is screened in for Appropriate Assessment.**

Wye Valley Woodlands SAC

4.1.8 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, Monmouth⁶²). 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. A review of the contours on Ordnance Survey Maps within ViewRanger indicates that most of the SAC's woodland components are very steep⁶³ 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 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. Overall, Likely Significant Effects of the RLDP on the Wye Valley Woodlands SAC are unlikely, and the site is screened out from Appropriate Assessment.

⁶⁰ <http://publications.naturalengland.org.uk/publication/6096799802589184> [Accessed on the 31/08/2023]

⁶¹ p17 of the Site Improvement Plan; <http://publications.naturalengland.org.uk/publication/5178575871279104> [Accessed on the 28/10/2019]

⁶² <https://naturalresources.wales/days-out/places-to-visit/south-east-wales/beacon-view/?lang=en> [Accessed on the 28/10/2019]

⁶³ <https://my.viewranger.com/user/routes/add> [Accessed on the 07/11/2019]

Aberbargoed Grasslands SAC

4.1.9 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 Newport (well beyond the typical distance that visitor surveys of European sites across the UK have indicated as the core recreational catchment for inland sites), it is considered that the RLDP will not result in LSEs on the SAC.

Wye Valley and Forest of Dean Bat Sites SAC

4.1.10 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 Brecon Beacons 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 concluded that there will be no Likely Significant Effects of the RLDP on the SAC regarding recreational pressure. The site is therefore screened out from Appropriate Assessment.

Summary

4.1.11 Some Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC
- River Wye SAC

- 4.1.12 Cardiff Beech Woods SAC, Wye Valley and Forest of Dean Bat Sites SAC, Wye Valley Woodlands SAC, and Aberbargoed Grasslands SAC could be screened out from resulting in Likely Significant Effects and Appropriate Assessment is not required.

Water Quality

Severn Estuary SAC / SPA / Ramsar

- 4.1.13 All qualifying habitats and species in the Severn Estuary SAC / SPA / Ramsar have specific water quality requirements and could be negatively impacted by a reduction in water quality. The theme of water quality encompasses a wide range of physico-chemical parameters, including temperature, salinity, oxygen, nutrient concentrations, pH and turbidity. NRW and Natural England advice on the 'estuaries' feature in the Severn Estuary EMS⁶⁴ stipulates that *'changes in any of the physico-chemical parameters in the water column can impact on the quality of the estuary habitat and hence could lead to changes in the presence and distribution of species...'* Negative changes in water quality may alter the typical assemblages of freshwater and vascular plant species that is found within the water column and / or saltmarsh habitat. For example, high nutrient concentrations are a well-established consequence of urbanisation, which fuel phytoplankton biomass and diversity, as well as macroalgal cover / density. Eutrophication, the unchecked growth of algae, is associated with a series of knock-on impacts, including high turbidity, low DO concentration and, ultimately, death of invertebrates and fish.
- 4.1.14 Changes in water quality, and particularly in nutrient loading, can result in indirect impacts on qualifying SPA / Ramsar birds. As highlighted above, nutrient enrichment can change plant community composition in saltmarsh, which in turn may reduce the ability of certain bird species to forage on the sward. Excessive nutrient loadings on mudflats can lead to excessive algal growth, making it more difficult for waders to access preferred food items and changing invertebrate species composition in the sediment. According to the EMS advice note, the intertidal sand- and mudflats in the estuary are considered to be 'moderately vulnerable' to eutrophication processes. All allocations within the NRDLDP could contribute to increased pressure on water resources. **The available evidence suggests that Likely Significant Effects of the RLDP on the Severn Estuary SAC / SPA / Ramsar regarding water quality cannot be excluded and the site is screened in for Appropriate Assessment.**

River Usk SAC

- 4.1.15 Located within the NRLDP area. The River Usk SAC is a riverine freshwater system of plain to montane levels with *Ranunculus fluitantis* and *Callitriche-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 Plan⁶⁵ published by Natural Resources Wales (NRW) 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

⁶⁴ [Severn Estuary EMS \(naturalengland.org.uk\)](https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf) [accessed 31/08/2023]

⁶⁵ https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf [Accessed on the 31/08/2023]

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 oxygen concentrations, which in turn reduces the viability of fish populations. Following recent evidence on negative impacts of phosphate in Welsh rivers⁶⁶, NRW have adopted tighter water quality targets. 88% of waterbodies in the R. Usk catchment are failing the tightened water quality objectives. All allocations within the RDLP could contribute to increased pressure on water resources. **Overall, the River Usk SAC is screened in for Appropriate Assessment.**

River Wye SAC

4.1.16 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. According to NRW, 67% of waterbodies in the River Wye catchment are currently failing to meet the new water quality targets. However, Newport is not located within the River Basin Catchment of the River Wye SAC, and as such it can be screened out from resulting in Likely Significant Effects from the NRLDP.

Summary

4.1.17 Some Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment with regards to water quality will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC

4.1.18 The River Wye SAC could be screened out from resulting in Likely Significant Effects and Appropriate Assessment is not required.

Water Quantity, Level and Flow

Severn Estuary SAC / SPA / Ramsar

4.1.19 Being an estuarine ecosystem, the Severn Estuary SAC / SPA / Ramsar is sensitive to changes in water flow rates. For example, the condition and quality of many SAC habitats depends on the intricate flux of freshwater and seawater inputs. The characteristic zonation patterns in Atlantic salt meadows depend on adequate water flow rates to maintain optimum sediment supply. While a degree of sediment deposition is needed for healthy saltmarsh communities, a high reduction in water flow rates may lead to heavy sedimentation and

⁶⁶ Available online at: <https://www.monmouthshire.gov.uk/planning/water-quality/> [Accessed on the 31/08/2023]

subsequent smothering of qualifying communities. Changes in water flow rates can also lead to salinity being outside the optimum requirements for saltmarsh. For example, reduced freshwater inflow is typically associated with increased salinity, which can result in shifts in the characteristic zonation pattern of sward assemblages.

- 4.1.20 It is unlikely that alterations in water flow will be impacting SPA / Ramsar species directly. However, changes in the supply of freshwater to the estuary may have marked indirect effects on qualifying birds through impacts on supporting habitats. Excessive shifts in water flow rates affect essential abiotic parameters in foraging / roosting habitats (e.g., DO, turbidity, temperature, salinity, etc.) that in turn shape plant and invertebrate communities. Effects on the suitability of supporting habitats may affect the long-term survival of individuals and distributions of birds. CCW and Natural England advice on the Severn Estuary EMS identifies that all supporting habitats for SPA / Ramsar birds have 'high vulnerability' to changes in water flows.
- 4.1.21 The RLDP allocates 10,530 net new dwellings and 87.5ha of employment land, all of which will need to be supplied with potable water. Furthermore, the RLDP will also lead to a proliferation of impermeable surfaces in proximity to the Severn Estuary SAC / SPA / Ramsar. All allocations within the RDLP could contribute to increased pressure on water resources. **The available evidence suggests that Likely Significant Effects of the NRLDP on the Severn Estuary SAC / SPA / Ramsar regarding water quantity, level and flow impacts cannot be excluded and the site is screened in for Appropriate Assessment.**

River Usk SAC

- 4.1.22 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 future⁶⁷. 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 RLDP will require the abstraction of water for households and industry, and therefore could result in LSEs on the River Usk SAC. All allocations within the RDLP could contribute to increased pressure on water resources. **This site is therefore screened in for Appropriate Assessment.**

River Wye SAC

- 4.1.23 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

⁶⁷ Ibid.

development allocated in the RLDP 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.**

Summary

4.1.24 Some Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment with regards to water quantity, level and flow will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC
- River Wye SAC

Atmospheric Pollution

Severn Estuary SAC / SPA / Ramsar

4.1.25 By allocating 711,960 new homes and 87.5ha of employment land, the RLDP will likely lead to increased mobility patterns within and outwards from the authority. While electric vehicle usage is growing, it is likely that a large proportion of the increase in commuter journeys will be undertaken in fossil-fuelled vehicles. Atlantic saltmarsh is the only qualifying habitat within the Severn Estuary SAC that is sensitive to atmospheric nitrogen deposition. APIS identifies a CL of 20-30 kg N/ha/yr for saltmarsh, exceedance of which is likely to result in shifts in sward community composition. While estuarine habitats are naturally tolerant to fluctuations in nutrient loadings, excessive nitrogen deposition may lead to the replacement of characteristic saltmarsh species by graminoids.

4.1.26 The Severn Estuary SPA / Ramsar is designated for several species of waders and waterfowl, which all depend on SAC supporting habitats within the site boundary. Birds are not directly sensitive to nitrogen deposition, but potential indirect atmospheric pollution effects could occur through impacts on supporting habitats. While greylag goose, redshank and shelduck all utilise various zones in saltmarsh (the only supporting habitat that is sensitive to atmospheric nitrogen deposition), APIS identifies these species as not being sensitive to atmospheric nitrogen impacts. This is because some species (e.g., redshank) may actually benefit from increased prey abundance under elevated nutrient regimes (notwithstanding a likely reduction in species diversity).

4.1.27 The closest road within Newport to the Severn Estuary is the B4239. However, at its closest it is located more than 200m from the Habitats site. As such impact relating to atmospheric nitrogen deposition are not a realistic linking impact pathway and it can be considered that no likely significant effects will result.

Cardiff Beech Woods SAC

4.1.28 Housing and employment growth allocated in the RLDP will result in higher commuter traffic flows within the city, as well as increased traffic exchanges with adjoining authorities. The Cardiff Beech Woods SAC, situated in the north

of the authority near the Morganstown and Coryton suburbs, is designated for two woodland habitats (*Asperulo-Fagetum* beech forests and *Tilio-Acerion* forests of slopes, screes and ravines). Like many habitats of conservation importance, woodlands are sensitive to atmospheric nitrogen deposition particularly due to impacts on their associated ground flora and bryophyte / lichen assemblages. APIS specifies nitrogen CLs for beech forest and *Tilio-Acerion* forest of 10-20 kg N/ha/yr and 15-20 kg N/ha/yr respectively. Furthermore, since bryophytes and lichens are integral to beech forest ecosystems, a Critical Level for NH₃ of 1 µg/m³ is established for *Asperulo-Fagetum* beech forest.

- 4.1.29 The Cardiff Beech Woods SAC lies west of the authority near dense housing development and the A470, a strategic transport corridor connecting Cardiff to the adjoining authority of Rhondda Cynon Taf and Caerphilly. However, the SAC is located more than 12km from the nearest allocation (EM1 (i)). In addition, it is unlikely that the A4054 which passes within 200m of the SAC is an affected road as a result of the RDLP. As such this impact pathway can be screened out from resulting in a likely significant effect.

Wye Valley Woodlands SAC

- 4.1.30 The Wye Valley Woodlands SAC lies along the A466 and the River Wye, running on a north-south axis between Monmouth and Chepstow, which are two of the largest settlements in Monmouthshire. The Wye Valley Woodlands SAC is located c. 9.5km from the RLDP boundary in a straight line, or c. 13.8km along the A48 and A446. Due to the distances involved (i.e., more than c. 10km), impacts relating to increased atmospheric nitrogen deposition are not considered to be a realistic linking impact pathway between the RDLP and the SAC both alone and in combination. As such this impact pathway upon the Wye Valley Woodlands SAC can be screened out from resulting in Likely Significant Effects.

River Wye SAC

The Wye Valley Woodlands SAC lies along the A466 and the River Wye, near to the settlement of St Arvans. At its closest, the River Wye SAC is located c. 9.5km from the NRLDP boundary in a straight line, c. 11.3km via the A48 or c. 14km from the NRDLDP boundary on the M48. Due to the distances involved (i.e., more than c. 10km), impacts relating to increased atmospheric nitrogen deposition are not considered to be a realistic linking impact pathway between the RDLP and the SAC both alone and in combination. As such this impact pathway upon the River Wye SAC can be screened out from resulting in Likely Significant Effects.

Summary

- 4.1.31 Severn Estuary SPA / Ramsar, River Wye SAC, Cardiff Beech Woods SAC and The Wye Valley Woodlands SAC can be screened out from resulting in Likely Significant Effects and Appropriate Assessment is not required.

Loss of Functionally Linked Habitat

Severn Estuary SPA / Ramsar

- 4.1.32 The qualifying waterfowl and wader species in the Severn Estuary SPA / Ramsar are mobile and routinely travel beyond the designated site boundary. Natural England’s SIP for the Severn Estuary highlights the importance of modifications to offsite environments for SPA bird distributions. The dependence on functionally linked habitats varies considerably between species, but the Severn Estuary SPA / Ramsar is designated for several species that are known to regularly forage / roost outside designated sites (e.g., Bewick’s swan, white-fronted goose, redshank, and several species in the qualifying waterbird assemblage).
- 4.1.33 While all land parcels may be visited by SPA / Ramsar birds from time to time, some habitats are disproportionately important in sustaining qualifying populations (defined as a habitat parcel that supports at least 1% of the qualifying population of a given species). The dependence of individual species on land outside Habitats Site boundaries primarily varies with their foraging ecology. The dependence of the qualifying species of the Severn Estuary SPA / Ramsar on functionally linked habitat varies considerably.
- 4.1.34 Many overwintering swan species have strong associations with habitats outside Habitats Sites, particularly with low-lying wet pasture and agricultural stubble, where they feed on plant material including tubers, shoots and leaves. For example, the white-fronted goose forages on a wide range of plant material, grasses, clover, spilt grain, winter wheat and potatoes. While the species also forages on peat bogs, dune grassland and saltmarsh, the use of agricultural grasslands and stubble has been increasing in recent years. In contrast, the dependence of waders is often less pervasive, with most habitat use being limited to the intertidal zone. For example, dunlin preferentially feed on marine invertebrates in intertidal muds (e.g. ragworms, *hydrobia* snails). Only if severe storms impact these primary habitats do some birds revert to foraging on inland fields, where they target earthworms and other soil invertebrates. Redshank primarily winter in close proximity to the coast, favouring *Hydrobia* and *Corophium* spp. in mudflats, estuaries and muddy river channels. Smaller numbers (likely below 1% of qualifying populations will occur near inland lakes and large rivers. For a full assessment of supporting habitat requirements of qualifying species in the Severn Estuary SPA / Ramsar please see Table 4.

Table 4: Qualifying individual species in the Severn Estuary SPA / Ramsar and their dependence on functionally linked habitats outside the designated site boundary.

Species	Description of foraging and / or roosting habits	Overall dependence on functionally linked habitats
---------	--	--

Bewick’s swan <i>Cygnus columbianus bewickii</i>	Key supporting habitats are intertidal sand- and mudflats, and saltmarsh (feed on the transition	High
---	--	------

		<p>between saltmarsh and coastal grazing marsh.</p> <p>This species grazes on a range of 'soft' meadow grasses (e.g. <i>Agrostis stolonifera</i>, <i>Alopecurus geniculatus</i>) in wet meadows outside the designated site boundary.</p>	
White-fronted <i>Anser albifrons albifrons</i>	goose	<p>Roost on estuarine sandbanks at night and typically fly up to 10km to daytime feeding grounds.</p> <p>Graze on a range of saltmarsh grasses and herbs, such as common saltmarsh grass <i>Puccinellia maritima</i> and sea barley <i>Hordeum marinum</i>. Mainly in the transition between saltmarsh and coastal grazing marsh in front of sea defences in the upper estuary (The Dumbles).</p> <p>Supporting habitats outside the designated site boundary may include permanently wet herb-rich fen pasture fields as well as agricultural fields (e.g. barley stubble).</p>	High
Dunlin <i>Calidris alpina alpina</i>	<i>Calidris alpina</i>	<p>Distributed throughout the estuary, where they feed on marine polychaete worms. Crustaceans and molluscs (e.g. Baltic tellin <i>Macoma balthica</i>)</p> <p>Foraging / roosting in supporting habitats, such as freshwater coastal grazing marsh, improved grassland and open standing waters (particularly at high tide</p>	Low

		and on the English side of the estuary) – most supporting habitats are included in the SPA designation	
Redshank <i>Tringa tetanus</i>		<p>Distributed widely throughout the estuary, where they feed on marine polychaete worms. Crustaceans and molluscs (e.g. Baltic tellin <i>Macoma balthica</i>)</p> <p>Foraging / roosting in supporting habitats, such as freshwater coastal grazing marsh, improved grassland and open standing waters (particularly at high tide and on the English side of the estuary) – most supporting habitats are included in the SPA designation</p>	Low
Shelduck <i>tadorna</i>	<i>Tadorna</i>	<p>Shelduck primarily forage on the rich invertebrate assemblages in intertidal mudflats (<i>Hydrobia</i> spp., <i>Mytilus edulis</i> and the common shore crab <i>Carcinus maenas</i>)</p> <p>Roosting and moulting habitats also in the estuary, such as in Bridgwater Bay</p>	Medium
Gadwall <i>Anas strepera</i>		<p>Forage in intertidal areas that receive freshwater inflow from streams and pills. Taking animal material including aquatic insects, molluscs, annelids, small fish and amphibians.</p> <p>However, as freshwater plant feeders, they are expected to forage in freshwater bodies</p>	Medium

(including areas outside
the designated site
boundary).

- 4.1.35 The likelihood that a greenfield site represents functionally linked habitat reduces with distance from designated site boundaries. Generally, the further a site lies from the important roosts, the fewer individuals will undertake that 'commute' and lower proportion of a qualifying population will be supported. Government organisations for environmental protection in other countries have published guidance on the potential impact distance associated with different types of development. For example, Natural England have provided guidance on the extent of functionally linked habitat used by designated bird populations and identified Impact Risk Zones (IRZs) for different bird groups⁶⁸. Wintering waders in Bird Group 3 have a maximum foraging distance of 2km, which implies that redshank and dunlin would be restricted to a relatively narrow band north-west of the Severn Estuary. White-fronted goose and Bewick's swan in Bird Group 6 have maximum foraging distances of 10km, which is based on GIS distribution records, WeBS data and BirdTrack information. Scottish Natural Heritage (SNH) have provided core foraging ranges for various designated species in Scotland⁶⁹, including dunlin (500m) and white-fronted goose (5-8km). It is to be noted that these ranges should only act as a rough starting point for assessment, rather than for setting specific bird survey requirements.
- 4.1.36 Notwithstanding this, the site allocations have not been finalised for the Preferred Strategy RLDP. Therefore, it cannot be excluded that greenfield sites with a potential for functional linkage will come forward.
- 4.1.37 **At the time of writing, Likely Significant Effect of the RLDP on the Severn Estuary SPA / Ramsar regarding the loss of functionally linked habitat cannot be excluded and Appropriate Assessment will be required.**

Wye Valley Woodland SAC

- 4.1.1 The Wye Valley Woodland SAC lies c 9.5 km east from the Newport LDP area. It is designated for its lesser horseshoe bat population. As detailed above within the Wye Valley and Forest of Dean Bat Sites SAC section, the lesser horseshoe bats 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)⁷⁰, 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 trips⁷¹. The Bat Conservation Trust identifies a weighted average CSZ

⁶⁸ Knight M. (March 2019). Impact Risk Zones Guidance Summary – Sites of Special Scientific Interest Notified for Birds. Version 1.1. 8pp.

⁶⁹ Scottish Natural Heritage. (June 2016). Assessing Connectivity with Special Protection Areas (SPAs) – Guidance. 4pp. Available at: <https://www.nature.scot/sites/default/files/2022-12/Assessing%20connectivity%20with%20special%20protection%20areas.pdf> [Accessed on the 17/04/2023]

⁷⁰ https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135 [Accessed on the 01/09/2023]

⁷¹ Schofield H.W. 2008. The Lesser Horseshoe Bat Conservation Handbook.

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, and in many cases further afield, need to be maintained. The Wye Valley Woodlands SAC is located more than 2km from the RLDP boundary (c. 9.5km), there is no realistic linking impact pathway between this bat SAC and the RLDP, and as such no Likely Significant Effect will result.

Aberbargoed Grasslands SAC

4.1.2 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 population⁷². 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 Habitats Site boundary that contain significant areas of devils bit scabious. However, given that the boundary of the RLDP is c. 11.3km 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 impact pathway will not result in a Likely Significant Effect on the SAC, and as such it can be screened out from Appropriate Assessment.

Wye Valley and Forest of Dean Bat Sites SAC

4.1.3 The Wye Valley and Forest of Dean Bat Sites SAC lies c 11.4km from the Newport LDP area. It is designated for both its lesser and greater horseshoe bat populations. The lesser horseshoe bats 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)⁷³, 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 trips⁷⁴. 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, and in many cases further afield, need to be maintained.

4.1.4 Radio-tracking research on greater horseshoe bats has shown that they make longer foraging trips foraging from their roost sites than lesser horseshoe bats,

⁷² Butterfly Conservation, Dorset. 2009. Available at: <https://butterfly-conservation.org/sites/default/files/ni-marsh-frit-leaflet-july-2010.pdf> [Accessed on the 01/09/2023]

⁷³ https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135 [Accessed on the 01/09/2023]

⁷⁴ Schofield H.W. 2008. The Lesser Horseshoe Bat Conservation Handbook.

up to 9-10km from their roost^{75 76}. 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, and in many cases further afield, need to be maintained. The Wye Valley and Forest of Dean Bat Sites SAC is located more than 10km from the RLDP boundary (c. 11.4km), there is no realistic linking impact pathway between this bat SAC and the NRLDP, and as such no Likely Significant Effect will result.

Summary

4.1.5 Some Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar

4.1.6 Wye Valley and Forest of Dean Bat Sites SAC, Wye Valley Woodlands SAC, and Aberargoed Grasslands SAC could be screened out from resulting in Likely Significant Effects and Appropriate Assessment is not required.

Noise and Visual Disturbance (During Construction)

Severn Estuary SPA / Ramsar

4.1.7 To greater or lesser extent, all animal species are sensitive to noise and visual disturbance arising from human activity. Disturbance from construction activities is a major pressure where such work is carried out within established threshold distances from estuarine supporting habitats of SPA / Ramsar birds. Overwintering birds are particularly sensitive to disturbance from sudden movement and noise, as well as atypical peak noise events (typically defined as L_{max}). As established in relation to recreational pressure, noise and visual disturbance from construction activities may lead to the cessation of foraging and displacement to alternative (less suitable) feeding grounds. A reduced calorific intake in turn may affect the energy budget and survival rate of individual birds.

4.1.8 Delivering the growth targets that are included in the RLDP will inevitably require construction to be undertaken throughout the authority. Furthermore, its focus on urban redevelopment likely means that a sizable portion of the development will be delivered in the more urbanised southern part of the authority, and potentially in proximity to the Severn Estuary SPA / Ramsar. The disturbance potential associated with the RLDP will depend on a range of factors, including species distributions along the estuarine foreshore and construction programmes / methodologies for individual development proposals. **At the strategic level, LSEs of the RLDP on the Severn Estuary SPA / Ramsar regarding noise and visual disturbance from construction**

⁷⁵ Billington G. 2008. Radio-tracking Study of Greater Horseshoe Bats at Dean Hall, Littledean, Cinderford. Natural England Commissioned Report NERR012..

⁷⁶ Billington G. 2009. Radio Tracking Study of Greater Horseshoe Bats at Dean Hall, Littledean, Cinderford. Natural England Commissioned Report. NECR021.

works cannot be excluded. This impact pathway is screened in for further assessment in the AA stage of this HRA.

River Usk/ Afon Wysg SAC

- 4.1.9 The River Usk SAC is designated for several species of fish and the European otter (*Lutra lutra*), all of which are sensitive to noise and vibration through the water column (and in the case of the otter, in close proximity to holts and other terrestrial habitats). Where development is to take place in close proximity to the SAC, there is potential for both noise and visual impact to disturb both the fish and otter of the SAC.
- 4.1.10 Some species of fish are very sensitive to underwater noise. Migratory Atlantic salmon are not the most sensitive of fish where underwater noise is concerned but if the noise levels are high enough across the river for a long enough period during the migration season then it effectively forms an acoustic barrier and prevents fish from migrating.
- 4.1.11 Wherever piling works will take place close to the existing flood defence there is the potential for associated noise and vibration to affect the behaviour of fish populations, particularly the ability of migratory salmonids to migrate upstream in the spawning period.
- 4.1.12 There is no available research into the hearing thresholds of the European otter (*Lutra lutra*). However, research undertaken into the North American otter (*Lontra canadensis*) enabled a probable hearing threshold for the European otter to be determined by Bureau Veritas⁷⁷. Otters have very acute high frequency hearing sensitivity (16kHz) but much poorer hearing sensitivity than humans at frequencies below 4kHz. This partly explains why they appear to tolerate what, to humans, are perceived as 'noisy' environments. The 'Ecology of the European Otter'⁷⁸ highlights that otters rest under roads, in industrial buildings, close to quarries and at other sites close to high levels of human activity. Otters are considered to be flexible in their use of resting sites and do not necessarily avoid areas that are impacted by high noise or human activity levels.
- 4.1.13 The Bureau Veritas report identified that a sound pressure level below 50 dBht (*Lutra lutra*) would likely represent a low disturbance potential to otters, as it does for humans and many marine species. Furthermore, most construction activities involving ground penetration and noise would not result in disturbance (i.e., noise levels above 50 dBht (*Lutra lutra*)) if undertaken over 30m from a watercourse. However, some construction techniques (e.g. impact piling) may disturb up to 80m away. The Zone of Influence (Zoi) of construction activities regarding noise disturbance to otters may extend to 100m from source if highly percussive techniques are involved (e.g. impact piling).
- 4.1.14 **At the strategic level, LSEs of the RLDP on the River Usk SAC regarding noise and visual disturbance from construction works cannot be excluded. This impact pathway is screened in for further assessment in the AA stage of this HRA.**

⁷⁷ Postlethwaite B. February 2010. Noise Quality Assessment Eastleigh River Side Project. Unpublished report by Bureau Veritas on behalf of Eastleigh Borough Council

⁷⁸ Chanin P., Ecology of the European Otter, Conserving Natura 2000 Rivers, Ecology series No 10, Published by Life in the Rivers.

Summary

4.1.15 Two Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC

Coastal Squeeze

Severn Estuary SAC / SPA / Ramsar

4.1.16 The Severn Estuary SAC is designated for intertidal sand- and mudflats, and Atlantic salt meadows. The ecological integrity of these habitats depends on regular inundation by seawater followed by temporary exposure to air. Due to the impacts of climate change, sea levels are predicted to rise considerably in the future, resulting in the prolonged submergence of Atlantic salt meadows. Along undefended and undeveloped stretches of coastline, intertidal habitats would typically 'respond' by retreating inland in line with sea level rise. Furthermore, qualifying birds in the overlapping SPA / Ramsar that rely on intertidal mudflats or saltmarsh for foraging are under considerable risk of losing essential supporting habitat.

4.1.17 Natural England's SIP for the English section of the Severn Estuary specifies coastal squeeze as an important pressure / threat to the integrity of the SAC / SPA / Ramsar: '*As sea levels rise, man-made defences are constraining the natural roll back of estuarine habitats, causing squeeze and loss of habitat and having impacts on species dependant upon those habits (birds: feeding / roosting, and fish: feeding / nursery and shelter areas).*' The CCW and Natural England advice note on the Severn Estuary EMS also indirectly refers to the process of coastal squeeze by stating that '*the intertidal mudflats and sandflats and the saltmarsh are highly sensitive to removal by land reclamation and major construction activities.*' **Overall, it is considered that Likely Significant Effects of the RLDP on the Severn Estuary SAC / SPA / Ramsar regarding coastal squeeze cannot be excluded. Whilst the SPA itself is located distant from allocations and the main urban area of Newport (the area around the Severn Estuary is quite rural), coastal squeeze on habitats of mudflats within the River Usk SAC could be subject to coastal squeeze. A more detailed assessment of the existing coastal management approaches along the Newport shoreline is required in the AA.**

River Usk SAC

4.1.18 The River Usk SAC is designated for its water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation, fish species including sea lamprey *Petromyzon marinus*, brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis*, twaite shad *Alosa fallax*, Atlantic salmon *Salmo salar*, and bullhead *Cottus gobio*. It is also designated for its European otter *Lutra lutra* population. Due to the impacts of climate change, sea levels are predicted to rise considerably in the future, resulting in the prolonged submergence of Atlantic salt meadows. Along undefended and

undeveloped stretches of coastline, intertidal habitats would typically 'respond' by retreating inland in line with sea level rise. Furthermore, qualifying birds in the overlapping SPA / Ramsar that rely on intertidal mudflats or saltmarsh for foraging are under considerable risk of losing essential supporting habitat.

- 4.1.19 **Coastal squeeze could impact on the riverine habitats, fish and otter for which the SAC is designed. A more detailed assessment of the existing coastal management approaches along the Newport shoreline is required in the AA.**

Summary

- 4.1.20 Two Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC

Screening of RLDP Policies and Allocations

- 4.1.21 A screening assessment of the RLDP policies is undertaken in Appendix B. It was concluded that LSEs cannot be excluded in relation to the following **policies** that are taken forward to the AA:

- PS1 Scale of Growth: makes provision for: 11,960 new homes and 87.5ha of employment land
- PS8 Employment Land Provision; provides employment land allocations.

- 4.1.22 The following **allocations** will be taken forward to AA:

- KS4: Langstone Road, Llanwern, Ref CS0032
- KS7: North Langstone, Ref CS0014, CS0053, CS0065
- KS8: South Langstone, Ref CS0016, CS0040
- H1 (10) Pencoed Castle
- H1 (15) Victoria Wharf
- H1 (5) Glebelands
- H1 (23) Traston Lane
- H1 (3) Llanwern Village
- H1 (8) The Severn Stiles
- H1 (31) Roman Lodge Hotel
- H1 (32) Former Sainsbury's
- H1 (47) Glan Llyn (Former Llanwern Steelworks)
- H1 (36) Farmwood Close

- H1 (45) Lysaghts Parc
- H1 (52) Old Town Dock Remainder
- H1 (51) Whitehead Works
- H1 (62) Former Queens hill School
- H1 (64) Uskside Paint Mills

5. Conclusions & Recommendations

- 5.1.1 A Test of Likely Significant Effects test was undertaken on the RDLP. The aim of the assessment was to identify any policies, allocations or spatial elements of the Plan that may result in Likely Significant Effects (LSEs) and, where relevant, adverse effects on the integrity of Habitats Sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either alone or in-combination with other plans and projects.
- 5.1.2 Following the Test of Likely Significant Effects test, the following impact pathways on the following Habitats Sites could not be screened out from resulting in a Likely Significant Effect and as such Appropriate Assessment will be required:
- 5.1.3 **Recreational Pressure:** three Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:
- Severn Estuary SPA / Ramsar
 - River Usk SAC
 - River Wye SAC
- 5.1.4 **Water Quality:** Two Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment with regards to water quality will be required of the following Habitats Sites:
- Severn Estuary SPA / Ramsar
 - River Usk SAC
- 5.1.5 **Water Quantity, Level and Flow:** two Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment with regards to water quantity, level and flow will be required of the following Habitats Sites:
- Severn Estuary SPA / Ramsar
 - River Usk SAC
 - Wye Valley SAC
- 5.1.6 **Atmospheric Pollution:** all Habitats can be screened out from resulting in Likely Significant Effects and Appropriate Assessment is not required.

5.1.7 **Loss of Functionally Linked Habitat:** one Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar

5.1.8 **Noise and Visual Disturbance (During Construction):** Two Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC

5.1.9 **Coastal Squeeze:** Two Habitats Sites could not be screened out because there is potential for a Likely Significant Effect to result. Appropriate Assessment will be required of the following Habitats Sites:

- Severn Estuary SPA / Ramsar
- River Usk SAC

Screening of RLDP Policies and Allocations

5.1.10 A screening assessment of the RLDP policies is undertaken in Appendix B. It was concluded that LSEs cannot be excluded in relation to the following **policies** that are taken forward to the AA:

- PS1 Scale of Growth: makes provision for: 11,960 new homes and 87.5ha of employment land
- PS8 Employment Land Provision; provides employment land allocations.

5.1.11 The following **allocations** will be taken forward to AA:

- KS4: Langstone Road, Llanwern, Ref CS0032
- KS7: North Langstone, Ref CS0014, CS0053, CS0065
- KS8: South Langstone, Ref CS0016, CS0040
- H1 (10) Pencoed Castle
- H1 (15) Victoria Wharf
- H1 (5) Glebelands
- H1 (23) Traston Lane
- H1 (3) Llanwern Village
- H1 (8) The Severn Stiles
- H1 (31) Roman Lodge Hotel
- H1 (32) Former Sainsbury's
- H1 (47) Glan Llyn (Former Llanwern Steelworks)

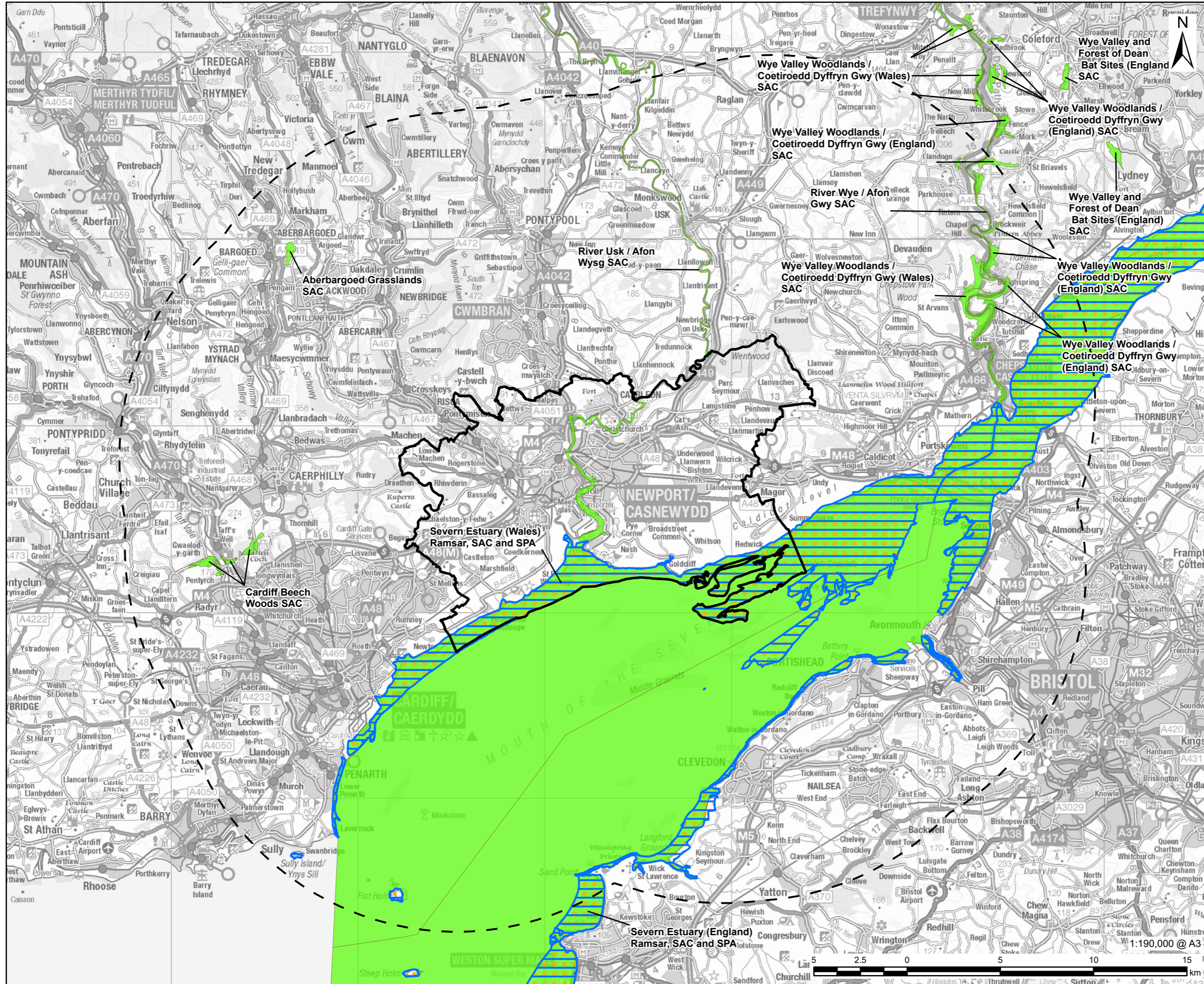
- H1 (36) Farmwood Close
- H1 (45) Lysaghts Parc
- H1 (52) Old Town Dock Remainder
- H1 (51) Whitehead Works
- H1 (62) Former Queens hill School
- H1 (64) Uskside Paint Mills

5.1.12 Due to the relatively early stage in plan preparation, the key parameters in determining the likelihood and potential magnitude of most of these impact pathways are not yet established. Most importantly, the geographic location of housing and employment sites has not been finalised. However, the precise location of such development is key in assessing potential implications regarding recreational pressures (where is housing in relation to the core catchment of the Severn Estuary SAC / SPA / Ramsar), water quality and water quantity, level and flow (the catchment of which WwTWs will be development fall into) and noise and visual disturbance (does allocated development fall within the precautionary 300m screening distance of the Severn Estuary SAC / SPA / Ramsar), and coastal squeeze. Therefore, a definitive assessment of the following impact pathways is deferred to the Deposit Plan stage of the RLDP:

- Recreational pressure;
- Water quality;
- Water quantity, level and flow;
- Loss of functionally linked habitat;
- Noise and visual disturbance (during construction); and
- Coastal squeeze

Appendix A Habitats Sites

Figure A1. Location of Habitats Sites in Relation to the RLDP



PROJECT
Newport Replacement
Local Development Plan
Habitats Regulations
Assessment

CLIENT
Newport City Council

CONSULTANT
AECOM Limited
5th Floor
2 City Walk
Leeds, LS11 9AR
www.aecom.com

- LEGEND**
- 15km Study Area
 - Newport City Local Authority Boundary
 - Ramsar
 - Special Protection Area (SPA)
 - Special Area of Conservation (SAC)

NOTES

Reproduced from Ordnance Survey digital map data © Crown copyright [2023]. All rights reserved. Licence number 0100031673. Contains Natural Resources Wales information © Natural Resources Wales and Database Right. All rights Reserved. Contains Ordnance Survey Data. Ordnance Survey Licence number 100019741. Crown Copyright and Database Right. © Natural England material is reproduced with the permission of Natural England [2023].

ISSUE PURPOSE
FINAL

PROJECT NUMBER
60657441

FIGURE TITLE
Location of Habitats Sites in Relation to the NRLDP

FIGURE NUMBER
Figure A1

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses, modifies, reproduces or relies upon this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

Severn Estuary SPA / Ramsar

Introduction

5.1.13 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.

5.1.14 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 closest part of the Severn Estuary SPA / Ramsar lies approx. 7km to the south of Torfaen in the adjoining county of Newport.

SPA Qualifying Features⁷⁹

5.1.15 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 international importance of the following species listed on Annex I of the Directive:

Over winter

- Bewick's swan *Cygnus columbianus bewickii*

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

5.1.17 On passage

- Ringed plover *Charadrius hiaticula*

5.1.18 Over winter

- Curlew *Numenius arquata*
- Dunlin *Calidris alpina alpina*
- Pintail *Anas acuta*
- Redshank *Tringa totanus*

⁷⁹ <http://archive.jncc.gov.uk/default.aspx?page=2066> [Accessed on the 25/04/2023]

- Shelduck *Tadorna tadorna*

Assemblage qualification: A wetland of international importance

- 5.1.19 The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.
- 5.1.20 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*.
- 5.1.21 According to NRW's most recent site condition assessment⁸⁰, three of the qualifying species in the Severn Estuary SPA are in unfavourable condition, including Bewick's swan, European white-fronted goose and dunlin. For all species this is due to long-term population declines, potentially fuelled by shifts in winter distribution and reflecting population declines at the national scale. However, access and recreation are also identified as a potential source for population-level effects.

Ramsar Qualifying Features⁸¹

- 5.1.22 The Severn Estuary 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 seawater at low tide and Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)

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

⁸⁰ NRW. (January 2018). Special Protection Areas in Welsh waters – Indicative site level feature condition assessments 2018. NRW Evidence Report No. 236. 44pp. Available at: <https://cdn.cyfoethnaturiol.cymru/media/683655/special-protection-areas-in-welsh-waters.pdf> [Accessed on the 29/05/2023]

⁸¹ <https://jncc.gov.uk/jncc-assets/RIS/UK11081.pdf> [Accessed on the 25/04/2023]

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

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)

5.1.23 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)

5.1.24 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.

SPA Conservation Objectives⁸²

- 5.1.25 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;
- 5.1.26 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.

Threats and Pressures to Site Integrity⁸³

- 5.1.27 CCW (now NRW) and Natural England have published an advice note on the Severn Estuary EMS⁸⁴, which discusses the types of operations that may cause deterioration or disturbance to the qualifying features of the SPA. Furthermore, 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
 - Marine consents and permits: Minerals and waste

⁸² <http://publications.naturalengland.org.uk/publication/5601088380076032> [Accessed on the 25/04/2023]

⁸³ <http://publications.naturalengland.org.uk/publication/4590676519944192> [Accessed on the 25/04/2023]

⁸⁴ Available at: <https://publications.naturalengland.org.uk/publication/3184206?category=3212324> [Accessed on the 02/05/2023]

- Fisheries: Recreational marine and estuarine
- Fisheries: Commercial marine and estuarine
- Invasive species
- Marine litter
- Marine pollution incidents

Severn Estuary SAC

Introduction

5.1.28 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 Severn Estuary SAC overlaps with the Severn Estuary SPA / Ramsar, and its closest point is approx. 7km to the south of Torfaen in the adjoining county of Newport.

Qualifying Features⁸⁵

5.1.29 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 maritima*)

5.1.30 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

5.1.31 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*

5.1.32 According to NRW's most recent site condition assessment⁸⁶, the majority of qualifying features in the Severn Estuary SAC are in unfavourable condition. For example, the distribution / extent, structure / function and typical species of Atlantic saltmarsh are all in unfavourable condition. This is due to a range

⁸⁵ <https://sac.jncc.gov.uk/site/UK0013030> [Accessed on the 25/04/2023]

⁸⁶ NRW. (January 2018). Severn Estuary Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report No. 235. 41pp. Available at: <https://cdn.cyfoethnaturiol.cymru/media/684391/severn-sac-ica-2018.pdf> [Accessed on the 29/05/2023]

of impact pathways, including coastal squeeze (predicted to result in the loss of 38ha of intertidal sand- and mudflats) and water quality (e.g. moderate overall status and fail for water chemistry in one waterbody overlapping with this habitat type).

Conservation Objectives⁸⁷

5.1.33 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;

5.1.34 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 the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Threats and Pressures to Site Integrity⁸⁸

5.1.35 CCW (now NRW) and Natural England have published an advice note on the Severn Estuary EMS⁸⁹, which discusses the types of operations that may cause deterioration or disturbance to the qualifying features of the SAC. Furthermore, 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

⁸⁷ <http://publications.naturalengland.org.uk/publication/6081105098702848> [Accessed on the 25/04/2023]

⁸⁸ <http://publications.naturalengland.org.uk/publication/4590676519944192> [Accessed on the 25/04/2023]

⁸⁹ Available at: <https://publications.naturalengland.org.uk/publication/3184206?category=3212324> [Accessed on the 02/05/2023]

- 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

Cardiff Beech Woods SAC

Introduction

5.1.36 The Cardiff Beech Woods SAC is a 114.45ha large site comprising broad-leaved deciduous woodland (99.5%) and some developed tracts (0.5%). It represents an area of semi-natural broadleaved woodland dominated by beech. The SAC is considered one of the best examples of beech forest in the UK, representing this habitat close to its western limit of distribution. Mosaics and transitions to other woodland types are found throughout the SAC, such as acidic beech woodland and oak *Quercus* and ash *Fraxinus excelsior* woods. Characteristic and notable species in the ground flora include ramsons *Allium ursinum*, sanicle *Sanicula europea*, bird's-nest orchid *Neottia nidus-avis* and yellow bird's-nest orchid *Monotropa hypopitys*.

5.1.37 The SAC also supports significant stretches of *Tilio-Acerion* forests of slopes, screes and ravines, comprising ash *Fraxinus excelsior*, wych elm *Ulmus glabra* and small-leaved lime *Tilia cordata*. Introduced sycamore *Acer pseudoplatanus* is frequently present throughout.

Qualifying Features⁹⁰

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

- *Asperulo-Fagetum* beech forests

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

- *Tilio-Acerion* forests of slopes, screes and ravines (* priority feature)

5.1.40 NRW's 2020 Baseline Evaluation project⁹¹ assessed the condition of qualifying features across Wales' protected sites. The data indicate that both qualifying woodland types are currently in unfavourable condition as indicated through various performance indicators.

⁹⁰ <https://sac.jncc.gov.uk/site/UK0030109> [Accessed on the 25/04/2023]

⁹¹ Available at: <https://naturalresources.wales/evidence-and-data/research-and-reports/protected-sites-baseline-assessment-2020/?lang=en> [Accessed on the 30/05/2023]

Conservation Objectives⁹²

5.1.41 The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

5.1.42 The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- Population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Threats / Pressures to Site Integrity⁹³

5.1.43 The following performance indicators for factors affecting the Cardiff Beech Woods SAC are specified in NRW's Core Management Plan:

- Recreational use
- Atmospheric pollution
- Development pressure
- Commercial forestry
- Mineral extraction

River Usk / Afon Wysg SAC

Introduction

5.1.44 The River Usk SAC originates in the west of the Brecon Beacons National Park and flows south-east, joining the Severn Estuary at Newport. The overall 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

⁹² <https://naturalresources.wales/media/672066/FINAL%20Cdf%20Beech%20Woods%20SAC%20Man%20Plan.pdf> [Accessed on the 25/04/2023]

⁹³ Ibid.

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.

- 5.1.45 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.
- 5.1.46 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.

Qualifying Features⁹⁴

- 5.1.47 The site has been designated as a SAC, a site of international importance, for several features.
- 5.1.48 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 *Callitriche-Batrachion* vegetation
- 5.1.49 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*
 - Twait shad *Alosa fallax*
 - Atlantic salmon *Salmo salar*
 - Bullhead *Cottus gobio*
 - Otter *Lutra lutra*
- 5.1.50 Annex II species present as a qualifying feature, but not a primary reason for site selection:
- Allis shad *Alosa alosa*

⁹⁴ <https://sac.jncc.gov.uk/site/UK0013007> [Accessed on 30/08/2023]

Conservation Objectives⁹⁵

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

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

⁹⁵ https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf. As published by the Countryside Council for Wales (2008). [Accessed on 30/08/2023]

- 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 set by Natural Resources Wales (NRW) 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 set by NRW 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 set by NRW 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 set by NRW for each Water Framework Directive water body in the Usk SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

Threats and Pressures to Site Integrity⁹⁶

5.1.52 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.

5.1.53 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

⁹⁶ https://naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf. [Accessed on 30/08/2023]

Aberbargoed Grasslands SAC

Introduction

5.1.54 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.

5.1.55 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*.

Qualifying Features⁹⁷

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

5.1.57 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 (*Molinia caerulea*)

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

- Marsh fritillary butterfly *Euphydryas aurinia*

Conservation Objectives⁹⁸

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

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

- The site will support a sustainable metapopulation of the marsh fritillary in the Aberbargoed area. This will require at least 50ha of suitable habitat, although not all of this will be within the SAC;
- The population will be viable in the long term, acknowledging the extreme population fluctuations of the species;

⁹⁷ <https://sac.incc.gov.uk/site/UK0030071> [Accessed on 30/08/2023]

⁹⁸ <https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf>. As published by the Countryside Council for Wales (2008). [Accessed on 30/08/2023]

- 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.

Threats and Pressures to Site Integrity⁹⁹

5.1.61 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.

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

- Appropriate grazing levels
- Recreational pressure

Wye Valley and Forest of Dean Bat Sites/ Safleoedd Ystumod Dyffryn Gwy a Fforest y Ddena SAC

Introduction

5.1.63 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.

5.1.64 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.

5.1.65 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

⁹⁹ <https://naturalresources.wales/media/670637/Aberbargoed%20Grasslands%20Core%20SAC%20plan%20jan08.pdf>.
[Accessed on 30/08/2023]

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.

Qualifying Features¹⁰⁰

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

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

Conservation Objectives¹⁰¹

5.1.67 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;

5.1.68 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.

Threats and Pressures to Site Integrity¹⁰²

5.1.69 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

Wye Valley Woodlands / Coetiroedd Dyffryn Gwy SAC

Introduction

5.1.70 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

¹⁰⁰ <https://sac.incc.gov.uk/site/UK0014794> [Accessed on the 30/08/2023]

¹⁰¹ <http://publications.naturalengland.org.uk/publication/4907653293670400> [Accessed on the 30/08/2023]

¹⁰² <http://publications.naturalengland.org.uk/publication/6102625057505280> [Accessed on the 30/08/2023]

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.

5.1.71 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.

Qualifying Features¹⁰³

5.1.72 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

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

- Lesser horseshoe bat *Rhinolophus hipposideros*

Conservation Objectives¹⁰⁴

5.1.74 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;

5.1.75 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.

¹⁰³ <https://sac.jncc.gov.uk/site/UK0012727> [Accessed on the 24/10/2019]

¹⁰⁴ <http://publications.naturalengland.org.uk/publication/6331090281168896> [Accessed on the 30/08/2023]

Threats and Pressures to Site Integrity¹⁰⁵

5.1.76 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

River Wye/ Afon Gwy SAC

Introduction

5.1.77 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 4,136km². 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 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.

5.1.78 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.

5.1.79 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

¹⁰⁵ <http://publications.naturalengland.org.uk/publication/4735117343850496> [Accessed on the 30/08/2023]

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.

Qualifying Features¹⁰⁶

5.1.80 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 *Callitriche-Batrachion* vegetation

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

- Transition mires and quaking bogs

5.1.82 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*

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

- Allis shad *Alosa alosa*

Conservation Objectives¹⁰⁷

5.1.84 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;

5.1.85 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

¹⁰⁶ <https://sac.jncc.gov.uk/site/UK0012642> [Accessed on the 30/08/2023]

¹⁰⁷ <http://publications.naturalengland.org.uk/publication/6096799802589184> [Accessed on the 30/08/2023]

- 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.

Threats and Pressures to Site Integrity¹⁰⁸

5.1.86 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

¹⁰⁸ <http://publications.naturalengland.org.uk/publication/5178575871279104> [Accessed on the 30/08/2023]

Appendix B Screening for Likely Significant Effects

Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Policies

5.1.87 The screening exercise undertaken in Table 5 provides an in-combination assessment. In isolation none of these policies would result in a likely significant effect, however, in combination, some policies do have potential for likely significant effects.

5.1.88 Where the HRA Implications column is coloured green, this means that the policy does not provide for any potential linking impact pathways to a Habitats Site and as such will not result in likely significant effects. Where the HRA Implications column is coloured orange, this means that the policy could provide for a potential linking impact pathway to a Habitats Site and as such will result in likely significant effect and will require Appropriate Assessment.

Table 5: Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Policies

Policy Name/ Number	Policy Description	HRA Implications In-combination
PS1 Scale of Growth	The Plan will make provisions for: 10,530 new homes to deliver a housing requirement of 9,570; and 87.5ha of employment land to meet an employment land requirement of 77ha and minimum of 8,640 jobs.	Potential Likely Significant Effects in combination only Potentially linking impact pathways include: Recreational pressure Water quality Water quantity, levels and flow Atmospheric pollution
PS2 Delivery Strategy	This is a development management policy setting out the Delivery Strategy in the Urban Area, Rural Communities and the Countryside.	No Potential HRA implications. There are no linking impact pathways present
PS3 Sustainable Placemaking and Design	A development management policy that outlines the principles for design, green infrastructure, efficient land use, amongst other design elements.	No Potential HRA implications. There are no linking impact pathways present
PS4 Climate Change	A development management policy relating to climate change.	No Potential HRA implications. There are no linking impact pathways present
PS5 Health and Well-being	A development management policy relating to health and wellbeing	No Potential HRA implications. There are no linking impact pathways present

PS6 Infrastructure	A development management policy relating to infrastructure. It does not identify any location, type or quantum of development.	No Potential HRA implications. There are no linking impact pathways present
PS7 Affordable Housing	A development management policy relating to affordable housing. This policy does not identify any quantum, or location of development.	No Potential HRA implications. There are no linking impact pathways present
PS8 Employment Land Provision	This policy allocated employment land as follows: 87.5ha of employment land is allocated to address the requirement for 77ha of employment land, the following sites are allocated as employment land: i) Celtic Lakes – 38.5 hectares for B1, B2, and B8 uses; ii) Celtic Springs – 3 hectares primarily for B1 use; iii) Gwent Europark – 16 hectares for B8 distribution uses; iv) Land Off Chartist Drive, Rogerstone – 2 hectares for B1, B2 and B8 uses; v) Celtic Business Park (St Modwen Park) – 25.9 hectares for B1, B2 and B8 uses; vi) Godfrey Road (Rear of Station) – 2 hectares for B1 and other commercial uses; these allocations will be protected for employment uses, and alternative uses for the sites will be resisted.	Potential Likely Significant Effects in combination only in combination only Potentially linking impact pathways include: Water quality Water quantity, levels and flow Atmospheric pollution Specifics relating to the individual allocations are discussed further in Table 6.
PS9 Retail and Commercial Centres	This is a development management policy relating to retail and commercial centres. It identifies the centres but does not detail the type or quantum of development within these locations, merely development management policy.	No Potential HRA implications. There are no linking impact pathways present
PS10 Sustainable Transport	This is a development management policy relating to sustainable transport. It sets out requirements for development to be sustainable transport orientated and accord with Sustainable Transport Hierarchy.	No Potential HRA implications. There are no linking impact pathways present
PS11 Transport Proposals	This is a development management policy. It sets out the requirement to align with the Sustainable Transport Hierarchy.	No Potential HRA implications. There are no linking impact pathways present
PS12 Flood Risk	A development management policy relating to the avoidance of flood risk	No Potential HRA implications. There are no linking impact pathways present
PS13 Green Wedges	This development management policy outlines the location of four Green Wedges and the requirement to retain the open nature of the land	No Potential HRA implications. There are no linking impact pathways present
PS14 Special Landscape Areas	This development management policy details policy relating to Special Landscape Areas	No Potential HRA implications. There are no linking impact pathways present
PS15 Green Infrastructure and Biodiversity	A development management policy relating to Newport's green infrastructure and biodiversity.	No Potential HRA implications. There are no linking impact pathways present
PS16 Conservation of the Historic Environment	A development management policy relating to conservation of the historical environment.	No Potential HRA implications. There are no linking impact pathways present
PS17 Renewable Energy	A development management policy relating to renewable and low carbon schemes. No locations or type of development are identified.	No Potential HRA implications. There are no linking impact pathways present
PS18 Minerals	A development management policy relating to minerals. No locations or type of development are identified.	No Potential HRA implications. There are no linking impact pathways present

PS19 Waste Management	A development management policy relating to waste management. No locations or type of development are identified.	No Potential HRA implications. There are no linking impact pathways present
------------------------------	---	---

Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Allocations

Figure B2: Location of NRDLP Site Allocations (Residential and Employment)

5.1.89 The allocations in Table 6 are provided for within policies PS1 Scale of Growth and PS8 Employment Land Provision (see Table 5). Neither of these two policies could be screened out from Likely Significant Effects based on the following linking impact pathways: recreational pressure, water quality, water quantity, levels and flow, and atmospheric pollution. The Test of Likely Significant Effects undertaken below will identify potential linking impact pathways that will require consideration in addition to those identified in Table 5.

5.1.90 Impact pathways considered are, loss of functionally linked land, noise and visual disturbance, coastal squeeze and a more detailed look at recreational pressure.

Table 6: Likely Significant Effects (LSEs) Screening of the Newport Replacement Local Development Plan Allocations

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
Residential Sites					
KS4: Langstone Road, Llanwern, Ref CS0032	Land east and west of Langstone Road, Llanwern is identified for mixed use development for up to 2,500 homes, a district centre, public open space and a network of Green Infrastructure.	Located c. 6.3km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	Located within 10km of the Severn Estuary SPA. Potential for loss of functionally linked land. A suite of wintering bird surveys should be undertaken to determine if this site and surrounding land is in fact functionally linked land	If the allocation and/ or surrounding habitat is identified as functionally linked land, there is the potential for the development activities disturb designated features using the functionally linked land.	This is not a realistic linking impact pathway
KS7: North Langstone, Ref CS0014, CS0053, CS0065	Land north of Langstone is identified for residential development for up to 750 homes and a local centre.	Located c. 6.9km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	Located within 10km of the Severn Estuary SPA. Potential for loss of functionally linked land. A suite of wintering bird surveys should be undertaken to determine if this site and	If the allocation and/ or surrounding habitat is identified as functionally linked land, there is the potential for the development activities disturb designated	This is not a realistic linking impact pathway

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
			surrounding land is in fact functionally linked land	features using the functionally linked land.	
KS8: South Langstone, Ref CS0016, CS0040	Land south of Langstone is identified for residential development for up to 300 homes, SuDs and Green Infrastructure	Located c. 6.5km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	Located within 10km of the Severn Estuary SPA. Potential for loss of functionally linked land. A suite of wintering bird surveys should be undertaken to determine if this site and surrounding land is in fact functionally linked land.	If the allocation and/ or surrounding habitat is identified as functionally linked land, there is the potential for the development activities disturb designated features using the functionally linked land.	This is not a realistic linking impact pathway
H1 (10) Pencoed Castle	c. 2.0 ha residential	Located c. 5.7km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	Located within 10km of the Severn Estuary SPA. Potential for loss of functionally linked land. A suite of wintering bird surveys should be undertaken to determine if this site and surrounding land is in fact functionally linked land.	If the allocation and/ or surrounding habitat is identified as functionally linked land, there is the potential for the development activities disturb designated features using the functionally linked land.	This is not a realistic linking impact pathway
H1 (15) Victoria Wharf	c. 0.9 ha residential	Located c. 3.3km from the Severn Estuary SPA. Potentially located with the core recreational core catchment zone.	No HRA implications. Located c. 3.3 km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban setting and consists of hardstanding/ car park. As such it is not considered	The site is located in an urban setting and as such surrounding terrestrial land could not be considered to be functionally linked land for SPA features. However, the site is located up to immediately adjacent to the River USK SAC. The mud flats of the SAC could potentially act as functionally	Whilst this allocation is located within c. 13m of the River Usk, the Shoreline Management Plan (SMP) ¹⁰⁹ identifies that this section (New2) is Hold The Line. The SMP will have already been subject to HRA and as such no further analysis is required.

¹⁰⁹ Available at [1 \(severnestuarycoastalgroup.org.uk\)](http://1.severnestuarycoastalgroup.org.uk) [accessed 07/09/2023]

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
			suitable to provide functionally linked land	linked land, and as such there is potential for disturbance from construction activities to SPA features using functionally link land and impact of SAC features. It is noted that the River at this location is already subject to some level of noises disturbance due to its urban setting. A suite of wintering bird surveys should be undertaken to determine if the mudflats of the River USK act as functionally linked land to the SPA.	
H1 (5) Glebelands	c. 3.7 ha residential	Located c. 5.5km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	No HRA implications. Located 5.5km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban and highly disturbed setting and consists of brownfield land. As such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such surrounding land could not be considered to be functionally linked land for SPA features. However, the site is located less than 10m from the River USK SAC. The mud flats of the SAC could potentially act as functionally linked land, and as such there is potential for disturbance to SPA features using functionally link land and impact of SAC features. It is noted that the	Whilst this allocation is located within less than 10m of the River Usk, the Shoreline Management Plan (SMP) ¹¹⁰ identifies that this section (New4) is Hold The Line. The SMP will have already been subject to HRA and as such no further analysis is required.

¹¹⁰ Available at [1 \(severnestuarycoastalgroup.org.uk\)](https://severnestuarycoastalgroup.org.uk) [accessed 07/09/2023]

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
				River at this location is already subject to some level of noises disturbance due to its urban setting. A suite of wintering bird surveys should be undertaken to determine if the mudflats of the River USK act as functionally linked land to the SPA.	
H1 (23) Traston Lane	c. 0.8 ha residential	Located c. 2.8km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	No HRA implications. Located 2.8km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban and highly disturbed setting and as such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such surrounding land could not be considered to be functionally linked land. This is not a realistic linking impact pathway.	This is not a realistic linking impact pathway
H1 (3) Llanwern Village	c. 39.4 ha residential	Located c. 5.1km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	Located within 10km of the Severn Estuary SPA. Potential for loss of functionally linked land within the northern portion of the allocation. A suite of wintering bird surveys should be undertaken to determine if this site and surrounding land is in fact functionally linked land.	If the allocation and/ or surrounding habitat is identified as functionally linked land, there is the potential for the development activities disturb designated features using the functionally linked land.	This is not a realistic linking impact pathway
H1 (8) The Severn Stiles	c. 0.3 ha residential	Located c. 4.5km from the Severn Estuary SPA.	No HRA implications.	The site is located in an urban setting and 4.5k from the	This is not a realistic linking impact pathway

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
		Potentially located with the core recreational core catchment zone.	Located 4.5km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within a disturbed urban setting and as such it is not considered suitable to provide functionally linked land	SPA. This is not a realistic linking impact pathway.	
H1 (31) Roman Lodge Hotel	c. 0.1 ha residential	Located c. 8.1km from the Severn Estuary SPA. Potentially located with the core recreational core catchment zone.	No HRA implications. Located 8.1km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within a disturbed urban setting and as such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and 4.5k from the SPA. This is not a realistic linking impact pathway.	This is not a realistic linking impact pathway
H1 (32) Former Sainsbury's	c. 2.1ha residential	Located c. 4.4km from the Severn Estuary SPA. Potentially located with the core recreational core catchment zone.	No HRA implications. Located c. 4.4 km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban setting and consists of hardstanding. As such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such surrounding terrestrial land could not be considered to be functionally linked land for SPA features. However, the site is located up to immediately adjacent to the River USK SAC. The mud flats of the SAC could potentially act as functionally	Whilst this allocation is located within c. 13m of the River Usk, the Shoreline Management Plan (SMP) ¹¹¹ identifies that this section (New2) is Hold The Line. The SMP will have already been subject to HRA and as such no further analysis is required.

¹¹¹ Available at [1 \(severnestuarycoastalgroup.org.uk\)](http://1.severnestuarycoastalgroup.org.uk) [accessed 07/09/2023]

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
				linked land, and as such there is potential for disturbance from construction activities to SPA features using functionally link land and impact of SAC features. It is noted that the River at this location is already subject to some level of noises disturbance due to its urban setting. A suite of wintering bird surveys should be undertaken to determine if the mudflats of the River USK act as functionally linked land to the SPA.	
H1 (47) Glan Llyn (Former Llanwern Steelworks)	c. 170.5 ha residential	Located c. 3.2km from the Severn Estuary SPA. Potentially located with the core recreational core catchment zone.	No HRA implications. Located 3.2km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to be a site with extensive earth works, some buildings and hardstanding and in a highly disturbed setting and as such it is not considered suitable to provide functionally linked land	The site is located in a semi urban setting with a busy road separating the site from surrounding fields to the south. There is residential development to the west, a canal to the north and further areas of earthworks to the east.	No
H1 (36) Farmwood Close	c. 2.4 ha residential	Located c. 4.7km from the Severn Estuary SPA. Potentially located with the core recreational	No HRA implications. Located 4.7km from the Severn Estuary SPA. Whilst this site is located within 10km	The site is located in an urban setting and as such will not be surrounded by functionally linked land. This is not a	No.

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
		core catchment zone. From review of aerial imaging, it appears as though there is public access to this site. Loss of this recreational space could further increase recreational pressures on the SPA.	of the Severn Estuary SPA, from review of aerial mapping the site is located in an urban setting and is well screened around its boundaries. It is not considered suitable to provide functionally linked land	realistic linking impact pathway.	
H1 (45) Lysaghts Parc	c. 5.6 ha residential	Located c. 3.1km from the Severn Estuary SPA. Potentially located with the core recreational core catchment zone.	No HRA implications. Located 3.1km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is currently being built out and is located in a disturbed urban setting. It is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such will not be surrounded by functionally linked land. This is not a realistic linking impact pathway.	No.
H1 (52) Old Town Dock Remainder	c. 4.5 ha residential	Located c. 2.9km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	No HRA implications. Located c. 2.9 km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban and highly disturbed setting and is currently being built upon. As such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such surrounding land could not be considered to be functionally linked land for SPA features.	This is not a realistic linking impact pathway

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
H1 (51) Whitehead Works	c. 11.2 ha residential	Located c. 2.3km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	No HRA implications. Located c. 2.3 km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban and highly disturbed and is currently being built upon. As such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such surrounding land could not be considered to be functionally linked land for SPA features.	This is not a realistic linking impact pathway
H1 (62) Former Queens hill School	c. 4.2 ha residential	Located c. 2.4km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	No HRA implications. Located c. 2.4 km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an urban and highly disturbed setting and is well screened providing no sight lines. As such it is not considered suitable to provide functionally linked land	The site is located in an urban setting and as such surrounding land could not be considered to be functionally linked land for SPA features.	This is not a realistic linking impact pathway
H1 (64) Uskside Paint Mills	c. 0.2 ha residential	Located c. 3.6km from the Severn Estuary SPA. Located with the core recreational core catchment zone.	No HRA implications. Located c. 3.6 km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site is located within an	The site is located in an urban setting and as such surrounding land could not be considered to be functionally linked land for SPA features. However, the site is located c. 13m from the River USK SAC.	Whilst this allocation is located within c. 13m of the River Usk, the Shoreline Management Plan (SMP) ¹¹² identifies that this section (New4) is Hold The Line. The SMP will have already

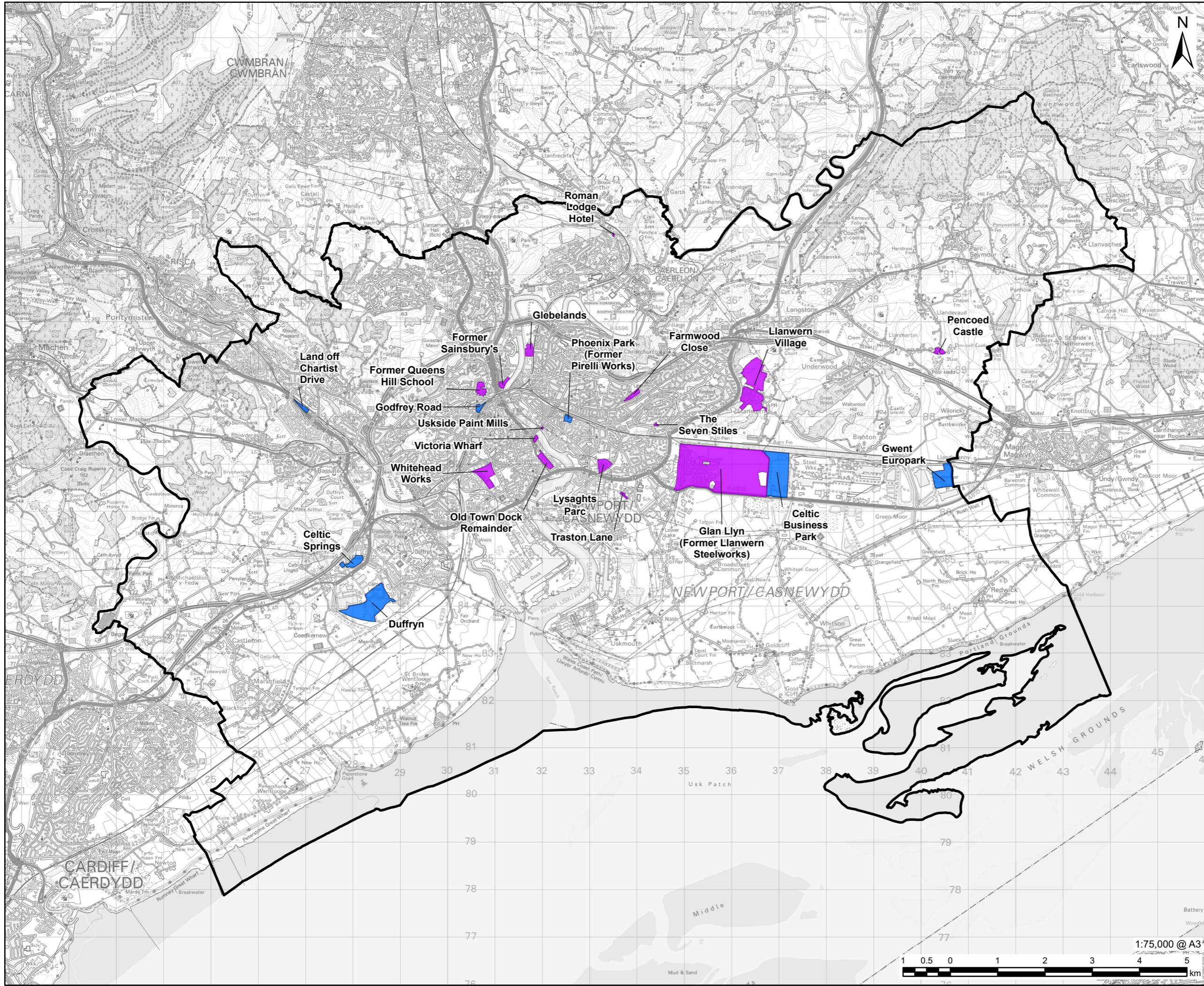
¹¹² Available at [1 \(severnestuarycoastalgroup.org.uk\)](http://1.severnestuarycoastalgroup.org.uk) [accessed 07/09/2023]

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
			urban and highly disturbed setting. As such it is not considered suitable to provide functionally linked land	The mud flats of the SAC could potentially act as functionally linked land, and as such there is potential for disturbance from construction activities to SPA features using functionally link land and impact of SAC features. It is noted that the River at this location is already subject to some level of noises disturbance due to its urban setting. A suite of wintering bird surveys should be undertaken to determine if the mudflats of the River USK act as functionally linked land to the SPA.	been subject to HRA and as such no further analysis is required. Further, Coverack Road is located between the River and the allocation
Employment Sites					
EM1 (i) Celtic Lakes , Duffryn-	38.5 hectares for B1, B2, and B8 uses;	Not Applicable	No HRA implications. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to be on the edge of the urban/ industrial setting. Imagery shows that the site contains tracks and tall scrub like vegetation, making it unsuitable to act as functionally linked land for SPA features.	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
EM1 (iii) Celtic Springs –	6.05 hectares primarily for B1 use;	Not Applicable	No HRA implications. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to be in an industrial setting that will already be subject to levels of disturbance and the site is visually screened by existing development. As such is not considered suitable to provide functionally linked land	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway
EM1 (v) Gwent Europark –	16 hectares for B8 distribution uses;	Not Applicable	No HRA implications. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to consist of hardstanding. It is located in an industrial setting that will already be subject to levels of disturbance and the site is visually screened by existing development. As such is not considered suitable to provide functionally linked land	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway
EM1 (vi) Land Off Chartist Drive, Rogerstone –	2 hectares for B1, B2 and B8 uses;	Not Applicable	No HRA implications. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to consist of hardstanding. It is located in a disturbed setting that will already be subject to levels of disturbance and the	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
			site is visually screened by existing development and vegetation. As such is not considered suitable to provide functionally linked land		
EM1 (vii) Celtic Business Park (St Modwen Park) –	40.1 hectares for B1, B2 and B8 uses;	Not Applicable	No HRA implications. Located 3.3km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to be an existing industrial site with extensive earth works, some buildings and hardstanding and as such it is not considered suitable to provide functionally linked land	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway
EM1 (ix) Godfrey Road (Rear of Station) –	2 hectares for B1 and other commercial uses	Not Applicable	No HRA implications. Located 3.3km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA, from review of aerial mapping the site appears to be an existing hardstanding car park. As such it is not considered suitable to provide functionally linked land	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway
EM1 (viii) Phoenix Park (Former Pirelli Works)	1.9ha employment	Not Applicable	No HRA implications. Located c. 4km from the Severn Estuary SPA. Whilst this site is located within 10km of the Severn Estuary SPA,	Land surrounding the site is not considered to act as functionally linked land. As such this is not a realistic linking impact pathway	This is not a realistic linking impact pathway

Allocation Name/ Number	Allocation Description	Recreational Pressure	Loss of Functionally Linked Land	Noise and Visual Disturbance	Coastal Squeeze
			from review of aerial mapping the site appears to be an existing industrial site consisting hardstanding and as such it is not considered suitable to provide functionally linked land.		



PROJECT
 Newport Replacement
 Local Development Plan
 Habitats Regulations
 Assessment

CLIENT
 Newport City Council

CONSULTANT
 AECOM Limited
 5th Floor
 2 City Walk
 Leeds, LS11 9AR
 www.aecom.com

LEGEND

- Newport City Local Authority Boundary
- Site Allocation**
- Residential
- Employment

NOTES
 Reproduced from Ordnance Survey digital map data © Crown copyright [2023]. All rights reserved. Licence number 0100031673.

ISSUE PURPOSE
 FINAL
PROJECT NUMBER
 60657441
FIGURE TITLE
 Location of Site Allocations within the
 NRLDP

FIGURE NUMBER
 Figure B1

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.