

Habitats Regulations Assessment of the West Lancashire Local Plan

Screening for Likely Significant Effects

West Lancashire Borough Council

60662021

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	July 2021	Initial draft for client comments	JR	James Riley	Technical Director
1	September 2021	Revision response to client comments	in JR	James Riley	Technical Director

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1. Background

Introduction

- 1.1 AECOM was appointed by West Lancashire Borough Council (hereafter referred to as 'WLBC') to assist the Council in undertaking a Habitats Regulations Assessment of its Issues & Options Regulation 18 draft policy approaches. The objective of this assessment was to identify any aspects of the Plan that would potentially cause Likely Significant Effects (LSEs) on the National Site Network, also known as European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), candidate Special Areas of Conservation (cSACs), potential Special Protection Areas (pSPAs) and, as a matter of Government policy, Ramsar sites), either in isolation or in combination with other plans and projects. The LSEs screening exercise is to be followed by an assessment of the Reg. 18 preferred site allocations and development requirements, and the Reg. 19 Local Plan.
- 1.2 The UK is bound by the terms of the Conservation of Habitats and Species Regulations 2017, as amended. An Appropriate Assessment of identified impact pathways is required, where a plan or project is likely to result in LSEs upon a European Site, either individually or 'in combination' with other projects.
- 1.3 The West Lancashire Local Plan seeks to meet housing and employment needs within the Borough without compromising the built and natural environment. It will identify requirements for growth across West Lancashire, including where this will occur throughout the Plan period (2023 – 2040). For example, the draft Plan's Vision indicates that the three main settlements of Skelmersdale, Ormskirk and Burscough are likely to continue to see significant development. At the same time, one of the draft Plan's main objectives is to sustain a flourishing natural environment and improve its network of green spaces and waterways. This HRA focuses on high-level screening of policy options, given that the exact quanta and locations of residential and employment development are not yet confirmed.
- 1.4 An initial review of the European sites surrounding West Lancashire and the potential impact pathways linked to the Local Plan, indicates that multiple European sites require consideration. Most designated sites within 15km are designated for overwintering waterfowl, waders and breeding seabirds, including the Martin Mere SPA / Ramsar, Ribble & Alt Estuaries SPA / Ramsar and Mersey Narrows & North Wirral Foreshore SPA / Ramsar. Two sites (e.g. the Sefton Coast SAC and Dee Estuary SAC) are designated for sensitive habitats. One of the main HRA issues in the heavily urbanised wider Liverpool City Region (LCR) to the south is coastal recreation and resulting disturbance to qualifying birds. Along various stretches of coastline, bird populations are declining, which has been largely attributed to human disturbance. As a result, authorities in the LCR are adopting a concerted effort to mitigate recreational pressure impacts in the Recreation Mitigation and Avoidance Strategy (RMAS). At the same time, it is important to note that the key population centres of West Lancashire are a considerable distance from the coast (10km or more) and lie beyond the much larger and closer settlements within the LCR. The implication of the West Lancashire Local Plan in relation to bird disturbance will be discussed in this HRA.

Legislative Context

- 1.5 The need for an assessment of impacts on European sites is set out within the Conservation of Habitats and Species Regulations 2017.
- 1.6 The Regulations apply the precautionary principle¹ to European Sites. Consent should only be granted for plans and projects once the relevant competent authority has ascertained that there

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".

will either be no likelihood of significant effects, or no adverse effect on the integrity of the European Site(s) in question. Where an Appropriate Assessment has been carried out and results in a negative impact, or if uncertainty remains over the significant effect, consent will only be granted if there are no alternative solutions and there are Imperative Reasons of Over-riding Public Interest (IROPI) for the development and compensatory measures have been secured.

- 1.7 To ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question. The competent authority is entitled to request the applicant to produce such information as the competent authority may reasonably require for the purposes of the assessment, or to enable it to determine whether an appropriate assessment is required. Figure 1 provides the legislative basis for an Appropriate Assessment.

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

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

Figure 1. The legislative basis for Appropriate Assessment

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

Scope of the Project

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

- All sites within West Lancashire Borough boundary; and,
- Other sites shown to be linked to development within the borough through a known 'pathway' (discussed below).

- 1.10 Briefly defined, pathways are routes by which the implementation of a policy within a Local Plan document can lead to an effect upon a European designated site. An example of this would be new residential development resulting in an increased population and thus increased recreational pressure, which could then affect European sites by, for example, disturbance of wintering or breeding birds.

- 1.11 Guidance from the Ministry of Housing, Communities and Local Government (MHCLG) states that the HRA should be '*proportionate to the geographical scope of the [plan policy]*' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (MHCLG, 2006, p.6). More recently, the Court of Appeal² ruled that providing the Council (competent authority) was duly satisfied that proposed mitigation could be 'achieved in practice' to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Core Strategy document)³. In this case the High Court ruled that for '*a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the*

² No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015

³ High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Reg 61 of the Habitats Regulations’.

1.12 In order to fully inform the HRA process, a number of recent studies have been consulted to determine Likely Significant Effects (LSEs) that could arise from the draft Local Plan. These include:

- Future development proposed (and, where available, HRAs) for Fylde, South Ribble, Chorley, Wigan, St Helens, Knowsley and Sefton;
- Visitor survey and bird disturbance fieldwork undertaken across coastal and estuarine SSSIs in the north-west of England⁴;
- The UK Air Pollution Information System (www.apis.ac.uk); and
- The Multi Agency Geographic Information for the Countryside (MAGIC) and its links to the JNCC website (www.magic.gov.uk)

Quality Assurance

1.13 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.

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

⁴ Liley D., Panter C., Marsh P. & Roberts J. (2017). Recreational activity and interactions with birds within the SSSIs on the North-West coast of England. Footprint Ecology report for Natural England. 127pp.

2. Methodology

Introduction

- 2.1 The HRA has been carried out with reference to the general EC guidance on HRA⁵ and that produced in July 2019 by the UK government⁶; Natural England has produced its own internal guidance⁷. These have been referred to in undertaking this HRA.
- 2.2 Figure 2 below outlines the stages of HRA according to current EC guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations, and any relevant changes to the plan until no significant adverse effects remain.

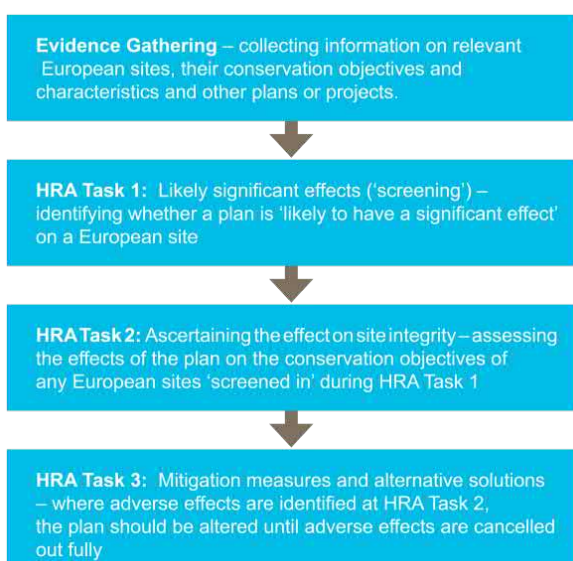


Figure 2. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001¹.

Description of HRA Tasks

HRA Task 1 – Screening for Likely Significant Effects (LSEs)

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

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

- 2.4 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites. This stage is undertaken in Chapter 5 of this report and in Appendix 2.

HRA Task 2 – Appropriate Assessment (AA)

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

⁵ European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.

⁶ <https://www.gov.uk/guidance/appropriate-assessment>

⁷ http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf

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

- 2.6 By virtue of the fact that it follows Screening, there is a clear implication that the analysis will be more detailed than undertaken at the Screening stage and one of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any policies or allocations that could not be dismissed following the high-level Screening analysis and analyse the potential for an effect in more detail, with a view to concluding whether there would actually be an adverse effect on integrity (in other words, disruption of the coherent structure and function of the European site(s)).
- 2.7 A decision by the European Court of Justice⁸ in 2018 concluded that measures intended to avoid or reduce the harmful effects of a proposed project on a European site may no longer be taken into account by competent authorities at the Likely Significant Effects or 'screening' stage of HRA. That ruling has been taken into account in producing this HRA.
- 2.8 Also, in 2018 the Holohan ruling⁹ 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 taken into account in the HRA process, particularly regarding the qualifying wader, waterfowl and seabird species of the Martin Mere SPA / Ramsar, Ribble & Alt Estuaries SPA / Ramsar and the Mersey Narrows & North Wirral Foreshore SPA / Ramsar, which are known to rely on foraging and roosting habitats beyond the site boundaries.

HRA Task 3 – Avoidance and Mitigation

- 2.9 Where necessary, measures are recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on European sites. There is considerable precedent concerning the level of detail that a Local Plan document needs to contain regarding mitigation for recreational impacts on European sites. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.
- 2.10 In evaluating significance, AECOM has relied on professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the European sites considered within this assessment. When discussing 'mitigation' for a Local Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the details of the mitigation measures themselves since the Local Plan document is a high-level policy document.

Physical Scope of the HRA

- 2.11 There are no standard criteria for determining the ultimate physical scope of an HRA. Rather, the source-pathway-receptor model should be used to determine whether there is any potential pathway connecting development to any European sites. In the case of West Lancashire Borough, it was decided that this HRA would focus on the following European sites:
- Martin Mere SPA / Ramsar;
 - Ribble & Alt Estuaries SPA / Ramsar;
 - Mersey Narrows & North Wirral Foreshore SPA / Ramsar;
 - Liverpool Bay SPA;

⁸ People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

⁹ Case C-461/17

- Sefton Coast SAC; and
- Dee Estuary SAC.

2.12 An introduction to these sites, their qualifying features, their conservation objectives, and the current pressures and threats to site integrity is provided in Chapter 3. Appendix 1 shows these European sites in relation to the boundary of West Lancashire Borough. This was based upon a 15km search zone around the Borough boundary. It should be noted that the presence of a conceivable pathway linking the Borough to a European site does not mean that LSEs will occur.

3. Relevant European Sites

Martin Mere SPA / Ramsar

Introduction

- 3.1 The Martin Mere SPA / Ramsar is a wetland nature reserve managed by the Wildfowl and Wetlands Trust. It occupies a site comprising a former lake and mire, which extended over 1,300ha of the Lancashire coastal plain in the 17th century. Until it was drained, Martin Mere was the largest freshwater body in England. Active management of the mere began in 1692, with most remaining sections of land now in agricultural use. The land levels have dropped by as much as 4m over the last 100 years as a result of hundreds of years of land drainage. Agriculture is a protected use in Martin Mere, with a pumped drainage system keeping agricultural land adjacent to the SPA / Ramsar dry.
- 3.2 Today, the SPA / Ramsar comprises open water, seasonally flooded marsh and damp hay meadows overlying peat. The site harbours a large refuge for wintering, passage and breeding birds, including significant numbers of Bewick's swans *Cygnus columbianus bewickii*, whooper swans *Cygnus cygnus*, pink-footed geese *Anser brachyrhynchus* and pintail *Anas acuta*. The SPA / Ramsar is a significant component of the network of sites that includes nearby estuarine and coastal sites in the wider Liverpool area.

SPA Qualifying Features¹⁰

Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1):

- 3.3 During the non-breeding season, the SPA regularly supports:
- Bewick's swan *Cygnus columbianus bewickii*
 - Whooper swan *Cygnus cygnus*
 - Pink-footed goose *Anser brachyrhynchus*
 - Eurasian teal *Anas crecca*
 - Northern pintail *Anas acuta*

Qualifying assemblage of species (Article 4.2)

- 3.4 During the non-breeding season, the SPA regularly supports an assemblage of waterfowl of more than 20,000 birds. Over winter, the site regularly supports 46,196 individual waterfowl (5 year peak mean 1991/2 – 1995/6) including: pochard *Aythya farina*, mallard *Anas platyrhynchos*, teal *Anas crecca*, wigeon *Anas penelope*, pintail *Anas acuta*, pink-footed goose *Anser brachyrhynchus*, whooper swan *Cygnus cygnus* and Bewick's swan *Cygnus columbianus bewickii*.
- 3.5 Three broad supporting habitats are important for sustaining the waterfowl assemblage and its component species through the provision of food, shelter and refuge from human disturbance. These habitats are therefore important for the maintenance of favourable conservation status of the waterbird assemblage. The broad habitats are:
- Open standing water and other adjacent waterbodies
 - Lowland damp neutral grassland
 - Swamp and tall herb fen
 - Arable land outside of SPA used for feeding

¹⁰ <http://publications.naturalengland.org.uk/publication/4833056372293632> [Accessed on the 21/06/2021]

Ramsar Qualifying Features¹¹

3.6 The site qualifies as a Ramsar site due to the following criteria:

Ramsar Criterion 5 – Assemblages of international importance

Species with peak counts in winter: 25,306 waterfowl (5 year peak mean 1998/9 – 2002/3)

Ramsar Criterion 6 – Species / populations occurring at levels of international importance

Species with peak counts in spring / autumn

- Pink-footed goose *Anser brachyrhynchus*; 8,186 individuals, representing an average of 3.4% of the Greenland, Iceland, UK population (5 year peak mean 1998/9 – 2002/3)

Species with peak counts in winter

- Tundra swan *Cygnus columbianus bewickii*; 61 individuals, representing an average of 0.7% of the GB population (5 year peak mean 1998/9 – 2002/3)
- Whooper swan *Cygnus cygnus*; 1,320 individuals, representing an average of 6.3% of the Iceland / UK / Ireland population (5 year peak mean 1998/9 – 2002/3)
- Eurasian wigeon *Anas Penelope*; 3,062 individuals, representing an average of 0.7% of the GB population (5 year peak mean 1998/9 – 2002/3)
- Northern pintail *Anas acuta*; 415 individuals, representing an average of 1.4% of the GB population (5 year peak mean 1998/9 – 2002/3)

SPA Conservation Objectives¹²

3.7 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;

3.8 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 & Pressures to Site Integrity¹³

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

- Hydrological changes
- Invasive species
- Water pollution

3.10 In addition to this list, the Supplementary Advice on the Conservation Objectives indicate that loss of functionally linked habitat, interference with bird movements and air pollution could also

¹¹ <https://jncc.gov.uk/jncc-assets/RIS/UK11039.pdf> [Accessed on the 21/06/2021]

¹² <http://publications.naturalengland.org.uk/publication/4833056372293632> [Accessed on the 21/06/2021]

¹³ <http://publications.naturalengland.org.uk/publication/6181803727519744#:~:text=The%20plan%20provides%20a%20high,the%20condition%20of%20the%20features>. [Accessed on the 21/06/2021]

result in significant negative effects. The Supplementary Advice also notes that throughout the site, visitors are generally restricted to pathways in order to access hides to control the level of disturbance to wildlife.

Ribble & Alt Estuaries SPA / Ramsar

Introduction

- 3.11 The Ribble & Alt Estuaries SPA / Ramsar lies on the coast of Lancashire and Sefton in northwest England, comprising extensive areas of sandflats, mudflats, saltmarsh, and grazing marsh (the latter two particularly in the lower stretches of the River Ribble). The large area includes two estuaries (R. Ribble and R. Alt), which in turn comprise part of the chain of west coast sites that fringe the Irish Sea. The southern limit of the SPA / Ramsar is formed by the sand dunes in the Sefton Coast SAC.
- 3.12 The site supports internationally important populations of breeding and wintering seabirds, wildfowl and waders. The sand dunes support vegetation communities and amphibian populations of international importance. Pressure on this site largely stems from its proximity to a large urban population, including recreational as well as development pressures. Beach recreation (e.g. motorsports carried out in the intertidal zone) is a particular recreation concern with the potential to disturb roosting flocks and ground-nesting birds. Low-lying aircrafts have also been reported to disturb bird roosts in the SPA / Ramsar. Furthermore, recreational pressure concentrates around the coastal path, which is frequently used by cyclists and horse riders.

SPA Qualifying Features¹⁴

Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1):

3.13 During the non-breeding season, the SPA regularly supports:

- Bewick's swan *Cygnus columbianus bewickii*
- Whooper swan *Cygnus cygnus*
- Pink-footed goose *Anser brachyrhynchus*
- Common shelduck *Tadorna tadorna*
- Eurasian wigeon *Anas Penelope*
- Eurasian teal *Anas crecca*
- Northern pintail *Anas acuta*
- Eurasian oystercatcher *Haematopus ostralegus*
- Ringed plover *Charadrius hiaticula*
- European golden plover *Pluvialis apricaria*
- Grey plover *Pluvialis squatarola*
- Red knot *Calidris canutus*
- Sanderling *Calidris alba*
- Dunlin *Calidris alpina alpina*
- Black-tailed godwit *Limosa limosa islandica*
- Bar-tailed godwit *Limosa lapponica*

¹⁴ <http://publications.naturalengland.org.uk/publication/4868920422957056> [Accessed on the 21/06/2021].

- Common redshank *Tringa totanus*

3.14 During the breeding season the SPA regularly supports:

- Ruff *Philomachus pugnax*
- Lesser black-backed gull *Larus fuscus*
- Common tern *Sterna hirundo*

Qualifying assemblage of species (Article 4.2)

3.15 During the non-breeding season, the SPA regularly supports an assemblage of waterfowl of more than 20,000 birds. Over winter, the site regularly supports 46,196 individual waterfowl (5 year peak mean 1991/2 – 1995/6) including: pochard *Aythya farina*, mallard *Anas platyrhynchos*, teal *Anas crecca*, wigeon *Anas penelope*, pintail *Anas acuta*, pink-footed goose *Anser brachyrhynchus*, whooper swan *Cygnus cygnus* and Bewick's swan *Cygnus columbianus bewickii*.

Ramsar Qualifying Features¹⁵

3.16 The site qualifies as a Ramsar site due to the following criteria:

Ramsar Criterion 2

This site supports up to 40% of the Great Britain population of natterjack toads *Bufo calamita*.

Ramsar Criterion 5 – Assemblages of international importance

Species with peak counts in winter: 222,038 waterfowl (5 year peak mean 1998/9 – 2002/3)

Ramsar Criterion 6 – Species / populations occurring at levels of international importance

Species regularly supported during the breeding season

- Lesser black-backed gull *Larus fuscus graellsii*; 4,108 apparently occupied nests, representing an average of 2.7% of the breeding population (Seabird 2000 Census)

Species with peak counts in spring / autumn

- Ringed plover *Charadrius hiaticula*; 3,761 individuals, representing an average of 5.1% of the population¹⁶ (5 year peak mean 1998/9 – 2002/3)
- Grey plover *Pluvialis squatarola*; 11,021 individuals, representing an average of 4.4% of the population (5 year peak mean 1998/9 – 2002/3)
- Red knot *Calidris canutus islandica*; 42,692 individuals, representing an average of 9.4% of the population (5 year peak mean 1998/9 – 2002/3)
- Sanderling *Calidris alba*; 7,401 individuals, representing an average of 6% of the population (5 year peak mean 1998/9 – 2002/3)
- Dunlin *Calidris alpina alpina*; 38,196 individuals, representing an average of 2.8% of the population (5 year peak mean 1998/9 – 2002/3)
- Black-tailed godwit *Limosa limosa islandica*; 3,323 individuals, representing an average of 9.4% of the population (5 year peak mean 1998/9 – 2002/3)
- Common redshank *Tringa totanus totanus*; 4,465 individuals, representing an average of 1.7% of the population (5 year peak mean 1998/9 – 2002/3)

¹⁵ <https://jncc.gov.uk/jncc-assets/RIS/UK11057.pdf> [Accessed on the 21/06/2021]

¹⁶ Population numbers presented here generally relate to the European population.

- Lesser black-backed gull *Larus fuscus graellsii*; 1,747 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9 – 2002/3)

Species with peak counts in winter

- Tundra swan *Cygnus columbianus bewickii*; 230 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9 – 2002/3)
- Whooper swan *Cygnus cygnus*; 211 individuals, representing an average of 1% of the population (5 year peak mean 1998/9 – 2002/3)
- Pink-footed goose *Anser brachyrhynchus*; 6,552 individuals, representing an average of 2.7% of the population (5 year peak mean 1998/9 – 2002/3)
- Common shelduck *Tadorna tadorna*; 2,944 individuals, representing an average of 3.7% of the GB population (5 year peak mean 1998/9 – 2002/3)
- Eurasian wigeon *Anas Penelope*; 69,841 individuals, representing an average of 4.6% of the population (5 year peak mean 1998/9 – 2002/3)
- Eurasian teal *Anas crecca*; 5,107 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9 – 2002/3)
- Northern pintail *Anas acuta*; 1,497 individuals, representing an average of 2.4% of the population (5 year peak mean 1998/9 – 2002/3)
- Eurasian oystercatcher *Haematopus ostralegus ostralegus*; 18,926 individuals, representing an average of 1.8% of the population (5 year peak mean 1998/9 – 2002/3)
- Bar-tailed godwit *Limosa lapponica lapponica*; 13,935 individuals, representing an average of 11.6% of the population (5 year peak mean 1998/9 – 2002/3)

SPA Conservation Objectives¹⁷

- 3.17 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;
- 3.18 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 & Pressures to Site Integrity¹⁸

- 3.19 The following threats and pressures to the site integrity of the Ribble & Alt Estuaries SPA have been identified in Natural England's Site Improvement Plan:
 - Coastal squeeze
 - Air pollution: Risk of atmospheric nitrogen deposition
 - Inappropriate scrub control

¹⁷ <http://publications.naturalengland.org.uk/publication/4868920422957056> [Accessed on the 21/06/2021]

¹⁸ <http://publications.naturalengland.org.uk/publication/6274126599684096> [Accessed on the 21/06/2021]

- Invasive species
- Hydrological changes
- Public access / disturbance
- Inappropriate coastal management
- Fisheries: Commercial marine and estuarine
- Change to site conditions
- Shooting / scaring

3.20 The Supplementary Advice on the Conservation Objectives¹⁹ also highlights that the maintenance of safe passage between roosting or nesting habitats is essential to the integrity of the site. The document also states that most qualifying bird species prefer open areas without obstructions to enable early detection of predators and utilisation of preferential flightlines.

Mersey Narrows & North Wirral Foreshore SPA / Ramsar

Introduction

3.21 The Mersey Narrows and North Wirral Foreshore SPA / Ramsar comprises extensive intertidal mud- and sandflats, areas of rocky shores and saltmarsh. Much of the site is composed of intertidal sandflats and extensive stretches of sea defences (e.g. breakwaters, groynes and hard embankments). The Seaforth Nature Reserve is made up of saltwater lagoons, saltmarsh, sand- and mudflats, and a large freshwater lagoon.

3.22 The habitats of the SPA / Ramsar are submerged at high tide and exposed at low tide, providing an important feeding habitat for birds. Seaforth Nature Reserve primarily constitutes a high tide roost and breeding site for terns, and foraging habitats to little gulls. Birds are also known to roost outside the SPA boundary near Hightown and on nearby fields, with terns also nesting at Langton Docks and Birkenhead Docks. Birds from several count sectors outside the SPA may also utilise the SPA / Ramsar at certain tidal stages and should be taken into account in impact assessments.

SPA Qualifying Features²⁰

Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1):

3.23 During the non-breeding season the SPA regularly supports:

- Bar-tailed godwit *Limosa lapponica*
- Common tern *Sterna hirundo*
- Red knot *Calidris canutus*
- Little gull *Hydrocoloeus minutus*

3.24 During the breeding season the SPA regularly supports:

- Common tern *Sterna hirundo*

¹⁹ Available at:

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9005103&SiteName=ribble&SiteNameDisplay=Ribble+and+Alt+Estuaries+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=20>
[Accessed on the 16/07/2021]

²⁰

<https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9020287&SiteName=nar&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&HasCA=1&NumMarineSeasonality=5&SiteNameDisplay=Mersey%20Narrow%20and%20North%20Wirral%20Foreshore%20SPA#SiteInfo> [Accessed on the 21/06/2021]

Qualifying assemblage of species (Article 4.2)

- 3.25 During the non-breeding season the SPA regularly supports an assemblage of waterfowl of more than 20,000 birds. Over winter, the site regularly supports 32,366 individual waterfowl (5 year peak mean 2004/5 – 2008/9) such as bar-tailed godwit *Limosa lapponica*, red knot *Calidris canutus*, cormorant *Phalacrocorax carbo*, grey plover, sanderling, dunlin, redshank and oystercatcher.
- 3.26 Egremont foreshore is an important feeding habitat for waders at low tide. The North Wirral Foreshore supports large numbers of feeding waders at low tide and comprises important high tide roosts. Seaforth Nature Reserve is a popular roost site for birds feeding at the Egremont and North Wirral Foreshores.

Ramsar Qualifying Features²¹

3.27 The site qualifies as a Ramsar site due to the following criteria:

Ramsar Criterion 4

The site regularly supports plant and / or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

During 2004/5 – 2008/9 the Mersey Narrows and North Wirral Foreshore Ramsar site supported important numbers of non-breeding little gulls and common terns.

Ramsar Criterion 5 – Assemblages of international importance

Species with peak counts in winter: 32,402 waterfowl (5 year peak mean 2004/5 – 2008/9))

Ramsar Criterion 6 – Species / populations occurring at levels of international importance

Species with peak counts in winter

- Bar-tailed godwit *Limosa lapponica*; 3,344 individuals, representing an average of 6.6% of the GB population (5 year peak mean 2004/5 – 2008/9)
- Little gull *Hydrocoloeus minutus*; 213 individuals (5 year peak mean 2004/5 – 2008/9)
- Common tern *Sterna hirundo*; 1,475 individuals (5 year peak mean 2004/5 – 2008/9)

SPA Conservation Objectives²²

- 3.28 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;
- 3.29 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.

²¹ <https://jncc.gov.uk/jncc-assets/RIS/UK11057.pdf> [Accessed on the 21/06/2021]

²² <http://publications.naturalengland.org.uk/publication/6521906232557568> [Accessed on the 21/06/2021]

Threats & Pressures to Site Integrity²³

3.30 The following threats and pressures to the site integrity of the Mersey Narrows and North Wirral Foreshore SPA have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Changes in species distributions
- Invasive species
- Climate change
- Coastal squeeze
- Inappropriate scrub control
- Water pollution
- Fisheries: Commercial marine and estuarine
- Inappropriate coastal management
- Overgrazing
- Direct impact from third party
- Marine litter
- Predation
- Planning permission: General
- Marine consents and permits
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Transportation and service corridors
- Physical modification

3.31 The Supplementary Advice on the Conservation Objectives²⁴ also specifies that connectivity to supporting habitats (e.g. foraging or roosting sites) and uninterrupted flightlines are important to the integrity of the site.

Liverpool Bay SPA

Introduction

3.32 The Liverpool Bay SPA lies in the eastern part of the Irish Sea, bordering the coastlines of north-west England and north Wales. The site covers an area of approx. 2,528km² and runs as a broad arc from Morecambe Bay to the east coast of Anglesey. Its seabed contains a range of mobile sediments, most commonly sand and gravelly sand, and is subject to relatively weak tidal currents (below 2 m/sec). Together with the large tidal range, this facilitates deposition of sediments and the formation of mud / sand belts.

²³ <http://publications.naturalengland.org.uk/publication/6579320399069184> [Accessed on the 21/06/2021]

²⁴ Available at:

<https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9020287&SiteName=nar&SiteNameDisplay=Mersey+Narrows+and+North+Wirral+Foreshore+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAArea=&NumMarineSeasonality=5> [Accessed on the 16/07/2021]

- 3.33 Primarily the site encompasses marine habitats that support large aggregations of wintering red-throated diver and common scoter, as well as important foraging areas for breeding little tern (from the Dee Estuary SPA / Ramsar) and common tern (from the Mersey Narrows and North Wirral Foreshore SPA / Ramsar). The boundary of the SPA extends beyond 12 nautical miles from the English coastline and, therefore, partly lies in Welsh territorial waters.

Qualifying Features²⁵

Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1):

- 3.34 During the non-breeding season the SPA regularly supports:

- Red-throated diver *Gavia stellate*
- Common scoter *Melanitta nigra*
- Little gull *Hydrocoloeus minutus*

- 3.35 During the breeding season the SPA regularly supports:

- Little tern *Sternula albifrons*
- Common tern *Sterna hirundo*

Qualifying assemblage of species (Article 4.2)

- 3.36 During the non-breeding season the SPA regularly supports an assemblage of waterfowl of more than 20,000 birds. Over winter, the site regularly supports 69,687 individual waterfowl (5 year peak mean 2004/5 – 2010/1).

Conservation Objective²⁶

- 3.37 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;

- 3.38 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 & Pressures to Site Integrity²⁷

- 3.39 The following threats and pressures to the site integrity of the Liverpool Bay SPA have been identified in Natural England's Site Improvement Plan:

- Fisheries: Commercial marine and estuarine
- Transportation and service corridors
- Fisheries: Recreational marine and estuarine
- Extraction: Non-living resources

²⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/566835/liverpool-bay-bae-lerpwl-spa-departmental-brief.pdf [Accessed on the 21/06/2021]

²⁶ <http://publications.naturalengland.org.uk/publication/5089733892898816> [Accessed on the 21/06/2021]

²⁷ <http://publications.naturalengland.org.uk/publication/5296526586806272> [Accessed on the 21/06/2021]

- Siltation
- Water pollution

Sefton Coast SAC

Introduction

- 3.40 The Sefton Coast SAC is a 4,591.59ha large coastal site comprising tidal rivers / estuaries / sandflats / mudflats (50%), coastal sand dunes / sand beaches (30%), heath / scrub (10%) and coniferous woodland (10%). The site represents the fourth largest sand dune system in Britain, stretching over 20km from Southport in the north to Crosby in the south. Much of the site is publicly accessible, including the Ainsdale Sand Dunes and Cabin Hill National Nature Reserves. Parts of the SAC are under ownership by the Wildlife Trust and National Trust. Its location in relation to the Merseyside conurbation means that there are high levels of recreational use in some parts of the site, particularly surrounding the major car parks.
- 3.41 The site displays rapid erosion and active shifting dunes. In areas of high sand deposition, the mobile dunes are dominated by marram *Ammophila arenaria*. In areas of lower sand deposition, dominating species include lyme grass *Leymus arenarius*, sea holly *Eryngium maritimum*, cat's ear *Hypochaeris radicata*, red fescue *Festuca rubra* and meadow grass *Poa humilis*. The transition of habitats from foredunes, to dune grassland and dune slack is frequently present. There are large areas of semi-fixed and fixed dunes with herbaceous vegetation (ranging from calcareous to acidic). Extensive dune slacks are dominated by creeping willow *Salix repens*, 43% of which are found at this site.
- 3.42 Notably, the pools in the hollows and slacks of the more fixed dunes are the habitat of a large population of great-crested newts *Triturus cristatus*. Furthermore, there is a large population of petalwort *Petalophyllum ralfsii*, which was first recorded on the Sefton Coast in 1861. The species is often found adjacent to footpaths, where light trampling disturbance reduces ground vegetation.
- 3.43 Recreational pressure, dog fouling and disturbance by dogs are well documented pressures along the Sefton Coast, having the potential to affect the qualifying features.

Qualifying Features²⁸

- 3.44 Annex I habitats that are a primary reason for selection of this site:
- Embryonic shifting dunes
 - Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")
 - Fixed coastal dunes with herbaceous vegetation ("grey dunes")
 - Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
 - Humid dune slacks
- 3.45 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)
- 3.46 Annex II species that are a primary reason for selection of this site:
- Petalwort *Petalophyllum ralfsii*
- 3.47 Annex II species present as a qualifying feature, but not a primary reason for site selection:
- Great-crested newt *Triturus cristatus*

²⁸ <https://sac.incc.gov.uk/site/UK0013076> [Accessed on the 21/06/2021]

Conservation Objectives²⁹

- 3.48 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;
- 3.49 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 & Pressures to Site Integrity³⁰

- 3.50 The following threats and pressures to the site integrity of the Sefton Coast SAC have been identified in Natural England's Site Improvement Plan:
- Coastal squeeze
 - Air pollution: Risk of atmospheric nitrogen deposition
 - Inappropriate scrub control
 - Invasive species
 - Hydrological changes
 - Public access / disturbance
 - Inappropriate coastal management
 - Fisheries: Commercial marine and estuarine
 - Change to site conditions
 - Shooting / scaring

Dee Estuary SAC

Introduction

- 3.51 The Dee Estuary SAC is a 15,805.27ha large site comprising tidal rivers / estuaries (81.8%), salt marsh / salt pastures (16.1%), coastal sand dunes / sand beaches (0.7%), shingle / sea cliffs (0.5%) and bogs / marshes (0.4%). The Dee Estuary is one of the largest estuaries in the UK and the most extensive coastal plain between the Severn Estuary and the Solway Firth. Historically, the estuary stretched as far inland as Chester, but its form has been heavily modified over the past 300 years. On the English side of the estuary the sandstone Hilbre Islands and Red Rocks form low uneven cliffs and intertidal rock platforms, comprising one of the very few examples of rocky shore between Little Orme and St. Bees Head.

²⁹ <http://publications.naturalengland.org.uk/publication/6588974160150528> [Accessed on the 21/06/2021]

³⁰ <http://publications.naturalengland.org.uk/publication/6274126599684096> [Accessed on the 21/06/2021]

- 3.52 The intertidal sections of the SAC are dominated by sandflats and mudflats, with the remainder largely constituting saltmarsh. These intertidal flats are the fifth largest such area within any UK estuary. At the mouth of the estuary, where water movement is greatest, the sediment mainly comprises sand and invertebrate populations are dominated by polychaete worms and amphipod crustaceans. The upper reaches largely constitute muddy sand, inhabited by ragworms *Hediste diversicolor* and Baltic tellins *Macoma balthica*. The intertidal mudflats of the sheltered inner estuary particularly support populations of marine worms, molluscs and other invertebrates of high abundance and biomass.
- 3.53 Finally, the Dee Estuary includes approx. 2,480ha of saltmarsh, constituting roughly 7% of all saltmarsh in the UK. It is one of the few UK examples that demonstrates a full transition from pioneer saltmarsh through to non-tidal vegetation. The elaborate creek system in the estuary provides a wider range of habitats compared to other estuaries. Large sections of the saltmarsh remain ungrazed, favouring species that are otherwise susceptible to grazing.

Qualifying Features³¹

- 3.54 Annex I habitats that are a primary reason for selection of this site:
- Mudflats and sandflats not covered by seawater at low tide
 - *Salicornia* and other annuals colonizing mud and sand
 - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- 3.55 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
- Estuaries
 - Annual vegetation of drift lines
 - Vegetated sea cliffs of the Atlantic and Baltic Coasts
 - Embryonic shifting dunes
 - Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")
 - Fixed coastal dunes with herbaceous vegetation ("grey dunes")
 - Humid dune slacks
- 3.56 Annex II species present as a qualifying feature, but not a primary reason for site selection:
- Sea lamprey *Petromyzon marinus*
 - River lamprey *Lampetra fluviatilis*
 - Petalwort *Petalophyllum ralfsii*

Conservation Objectives³²

- 3.57 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;
- 3.58 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

³¹ <https://sac.incc.gov.uk/site/UK0030131> [Accessed on the 21/06/2021]

³² <http://publications.naturalengland.org.uk/publication/6124489284780032> [Accessed on the 21/06/2021]

- 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 & Pressures to Site Integrity³³

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

- Public access / disturbance
- Changes in species distributions
- Invasive species
- Climate change
- Coastal squeeze
- Inappropriate scrub control
- Water pollution
- Fisheries: Commercial marine and estuarine
- Inappropriate coastal management
- Overgrazing
- Direct impact from third party
- Marine litter
- Predation
- Planning permission: General
- Marine consents and permits
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Transportation and service corridors
- Physical modification

³³ <http://publications.naturalengland.org.uk/publication/6579320399069184> [Accessed on the 21/06/2021]

4. Impact Pathways

Impact Pathways Considered

4.1 The following impact pathways are considered relevant to the West Lancashire Local Plan:

- Recreational pressure
- Loss of functionally linked habitat
- Atmospheric pollution
- Water quality
- Water quantity, level and flow
- Visual and noise disturbance during construction
- Coastal squeeze
- Impacts of Tall Structures (collision mortality, disturbance displacement, impacts on flightlines)

Background to Recreational Pressure

4.2 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 levels and impacts on European protected sites^{34 35}. While many European sites are vulnerable to recreation, housing growth has particularly strong impacts in sites designated for their bird interest. HRAs of planning documents tend to focus on recreational sources of disturbance as a result of new residents³⁶.

4.3 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). 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 / death³⁷.

4.4 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding³⁸. 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, which then must sustain a greater number of birds³⁹. Moreover, the higher proportion of time a breeding bird spends away from its

³⁴ 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. Footprint Ecology report for Natural England.

³⁵ Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. 2006b. Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology report for Dorset County Council.

³⁶ 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'.

³⁷ Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. *Scottish Natural Heritage*.

³⁸ Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

³⁹ Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72

nest, the more likely it is that eggs will cool and the more vulnerable they, or any nestlings, are to predators. Recreational pressure 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^{40 41}.

- 4.5 Several factors (e.g. seasonality, type of recreational activity) may have pronounced impacts on the nature of bird disturbance. 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 disturbance impacts may be reduced because birds are not breeding. Furthermore, 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 hiking⁴². Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers⁴³. 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 (September to March)

- 4.6 The Borough of West Lancashire lies adjacent to the Liverpool City Metropolitan area and is adjoined in the north-west of the borough by the Ribble & Alt Estuaries SPA / Ramsar, most of which stretches along the coast separated by the borough by Sefton. The Mersey Narrows & North Wirral Foreshore SPA / Ramsar lies further to the south, adjoining Sefton. The Martin Mere SPA / Ramsar, owned and managed by the Wildfowl & Wetlands Trust, lies in central West Lancashire. These European sites are all designated for overwintering waterfowl and waders, which are sensitive to recreational pressure, and this section discusses academic research available on these groups of birds.
- 4.7 Evans & Warrington 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 quantified in detail, nor were individual recreational activities evaluated separately.
- 4.8 Tuite et al⁴⁴ used a large (379 sites), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They determined that the shoveler was one of the most sensitive species to water-based 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 populations⁴⁵⁴⁶.
- 4.9 A study on recreational disturbance in the Humber⁴⁷ assesses different types of noise disturbance on waterfowl referring to previous research relating to aircraft (see Drewitt 1999⁴⁸), traffic

⁴⁰ 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*. doi:10.1371/journal.pone.

⁴¹ 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.

⁴² Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* **3**: 14pp.

⁴³ Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.

⁴⁴ 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

⁴⁵ Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary.

⁴⁶ Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent Disturbance and Mitigation Project – various reports.

⁴⁷ Fearnley H., Liley D. & Cruickshanks K. (2012) Results of Recreational Visitor Survey across the Humber Estuary. Footprint Ecology.

⁴⁸ Drewitt, A. (1999) Disturbance effects of aircraft on birds. *English Nature Reports*, Peterborough.

(Reijnen, Foppen, & Veenbaas 1997⁴⁹), dogs (Lord, Waas, & Innes 1997⁵⁰; Banks & Bryant 2007⁵¹) 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. 2004 for a review⁵²). In general terms, both distance from the source of disturbance and the scale of the disturbance (noise level, group size) is likely to influence bird responses (Delaney et al. 1999⁵³; Beale & Monaghan 2005⁵⁴). 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 2002⁵⁵).

- 4.10 Generally, disturbing activities present themselves on a continuum. Activities that involve irregular, infrequent and loud noise events, movement or vibration are likely to be most disturbing. For example, the presence of dogs around water bodies generate substantial disturbance due to the type of habitats accessed (e.g. intertidal mudflats and saltmarsh), the area affected and dogs' impacts on bird behaviour. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable and quiet patterns of sound, movement or vibration. The further any activity is from the birds, the less likely it is to result in disturbance. Overall, the factors that determine species responses to disturbance include species sensitivity, timing/duration of the recreational activity and the distance between source and receptor of disturbance.
- 4.11 As part of the Bird Aware Project in the Solent, a study monitoring bird disturbance across 20 different locations was undertaken between December 2009 and February 2010⁵⁶. This involved recording all recreational activities and relating these to behavioural responses of birds in pre-defined focal areas of intertidal habitat. The study recorded a total of 2,507 potential disturbance events, generating 4,064 species-specific behaviours. Roughly 20% of recorded events resulted in disturbance to waterfowl, including behaviours such as becoming alert, walking / swimming away, short flights (< 50m) or major flights. Generally, the likelihood of disturbance decreased with increasing distance to the disturbance stimulus (i.e. the recreational activity being undertaken). Importantly, the study also illustrated that recreational activities in the intertidal zone have the highest disturbance potential (41% of recorded events resulted in disturbance), followed by water-based activities (25%) and shore-based activities (12%).
- 4.12 The specific distance at which a species takes flight when disturbed is known as the 'tolerance distance' (also called the 'escape distance') and greatly differs between species. The tolerance distances of the study carried out for the Bird Aware project are summarised in Table 1. It is reasonable to assume from this evidence that disturbance is unlikely to be relevant at distances of beyond 300m. The data show that disturbance sensitivity differs between species, but that intra-specific variation is equally important. It was also examined how disturbance to different recreational activities varies between species, but for most species the number of recorded events was insufficient for comparison (except for brent goose, oystercatcher and redshank). Again, there may be inter-specific differences in responses to different types of recreation. For example, brent geese responded to dog walkers much further away than oystercatchers and redshanks.

⁴⁹ 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.

⁵⁰ 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.

⁵¹ 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.

⁵² 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.

⁵³ 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.

⁵⁴ 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.

⁵⁵ 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.

⁵⁶ Liley D., Stillman R. & Fearnley H. 2011. The Solent Disturbance and Mitigation Project Phase 2: Results of Bird Disturbance Fieldwork 2009/10. Report by Footprint Ecology for the Solent Forum.

Table 1: Tolerance distances in metres of 16 species of waterfowl to various forms of recreational disturbance, as found in recent disturbance fieldwork⁵⁷. The distances are provided both as a median and a range.

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

4.13 The north-west coastline comprises several Sites of Special Scientific Interest (SSSIs) and Special Protection Areas (SPAs) and stretches over 1,400km. The sites that are most relevant to West Lancashire include the Ribble & Alt Estuaries SPA / Ramsar, the Mersey Narrows and North Wirral Foreshore SPA / Ramsar and the Martin Mere SPA / Ramsar (the latter representing an inland freshwater site). All sites are designated for overwintering bird species that are sensitive to recreational disturbance. A recent study of these SPAs / Ramsars ranked all sites according to their vulnerability to recreation, finding that the Mersey Narrows & North Wirral Foreshore SPA / Ramsar is the most sensitive⁵⁸. This was attributed to a number of factors, including easy access onto the foreshore, a high proportion of sand in the sediment (encouraging access) and a large number of high-capacity car parks. Dog walking has been highlighted as a significant issue in many of the north-western SPAs / Ramsars, leading to vigilance behaviours and displacement of wildfowl and waders.

4.14 In response to the growing issue of recreation along the north-western coast (particularly when considering future housing growth in the wider Liverpool area), Natural England commissioned bird disturbance assessments and visitor surveys in selected sites of conservation importance. These studies were to focus on the most sensitive locations, survey multiple access locations and yield standardised data. The data from the surveys, which was collected by Footprint Ecology in the winter of 2016/17⁵⁹, is relevant to West Lancashire and will be consulted in this Screening Report.

⁵⁷ Ibid.

⁵⁸ Ross K., Liley D., Austin G., Burton N., Stillman R., Cruickshanks K. & Underhill-Day J. (2014). Housing development and estuaries in England: Developing methodologies for assessing the impacts of disturbance to non-breeding waterfowl. Unpublished report for Natural England. 164pp.

⁵⁹ Liley D., Panter C., Marsh P. & Roberts J. (2017). Recreational activity and interactions with birds within the SSSIs on the North-West coast of England.

Breeding Birds (April to September)

- 4.15 In addition to their overwintering bird assemblages, the Ribble & Alt Estuaries SPA / Ramsar (ruff, lesser black-backed gull and common tern), Mersey Narrows & North Wirral Foreshore SPA / Ramsar (common tern) and Liverpool Bay SPA (little tern and common tern), are also designated for breeding birds. These species breed in the summer months, meaning that the recreational pressure impact pathway in the north-western SPAs / Ramsars is not limited to the overwintering period. Terns in particular are sensitive to recreational users (especially from off-lead dogs), because they are ground-nesting species that form their nest as a shallow scrape on bare ground. This makes them very susceptible to egg predation, trampling damage, egg theft and vandalism. Disturbance from dog walkers is a particular threat to ground-nesting birds, which tend to have lower disturbance tolerances because their nests are at higher risk from predators⁶⁰.
- 4.16 Disturbance to birds during the pre-incubation, incubation and chick provisioning stages may lead to the abandonment of potential nesting sites, eggs or chicks, resulting in failure to reproduce or in reduced calorific intake by chicks. If disturbance is pervasive, the failure to produce viable offspring may result in reduced fitness at the population level. This is supported in the literature. For example, a study assessing the breeding success of little tern and least tern found that nest success was significantly higher (82%) in artificial habitats than on natural sandy beaches (58%)⁶¹. This was primarily due to recreational disturbance on the beaches (which was absent in artificial habitats). Furthermore, even in successful nests, the number of unhatched eggs was twice as high in the natural habitat, most likely due to disturbance leading to the cooling of eggs.
- 4.17 Many qualifying bird species breed in colonies and the likelihood of disturbance to breeding birds depends on the accessibility of the wider nesting areas to the public. For example, in the Ribble & Alt Estuaries SPA / Ramsar, common terns breed within the Ribble Estuary National Nature Reserve and on sandy foreshores in the Alt Estuary. Lesser black-backed gulls have two known main breeding areas at Banks and Hesketh Marshes, which are both managed by the RSPB. In contrast, the breeding locations of ruff are unknown, but it is thought that this species preferentially breeds in lowland hay meadows subject to grazing regimes, particularly in the Ribble Estuary.
- 4.18 Both common and little terns forage within the shallow coastal waters of the Liverpool Bay SPA amidst recreational boats, ships and personal watercraft. The Liverpool Bay was designated as an SPA due to its essential function in supporting foraging seabirds. A significant increase in water-based recreation (jet-skiing, sailing, kayaking) has the potential to affect the ability of the site to fulfil this supporting role.

Trampling Damage, Nutrient Enrichment and Wildfires

- 4.19 Most terrestrial habitats (especially dune systems, heathland and woodland) can be affected by trampling and other mechanical damage, which in turn dislodges individual plants, leads to soil compaction and erosion. This is relevant to the Sefton Coast SAC which is coincident with the Ribble & Alt Estuaries SPA / Ramsar in Sefton. The following studies have assessed the impact of trampling associated with different recreational activities in different habitats:

- Wilson & Seney⁶² 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.

⁶⁰ For a review of disturbance in relation to terns see: Liley D. (2008). Little terns at Great Yarmouth. Disturbance to birds and implications for strategic planning and development control. Unpublished report by Footprint Ecology for Great Yarmouth Borough Council and the RSPB. 14pp

⁶¹ Pakanen V-M., Hongell H., Aikio S. & Koivula K. (2014). Little tern breeding success in artificial and natural habitats: Modelling population growth under uncertain vital rates. *Population Ecology* **56**: 581-591.

⁶² Wilson, J.P. & J.P. Seney. 1994. Erosional impact of hikers, horses, motorcycles and off-road bicycles on mountain trails in Montana. *Mountain Research and Development* **14**:77-88

- Cole et al⁶³ conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each trampled between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. The cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.
 - Cole⁶⁴ conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampling 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 the effect on cover.
 - Cole & Spildie⁶⁵ experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.
- 4.20 Sand dunes are dynamic systems that are shaped by factors such as the supply of sand and prevailing wind direction. 80% of dunes in the UK are currently subject to coastal erosion, diminishing the dune itself and creating bare ground. Natural England's Access and Nature Conservation Reconciliation guidance note states that light levels of trampling can increase plant diversity, but medium to high levels of trampling promote bare ground, increase soil compaction, reduce plant diversity and change vegetation height. The type of dune habitat also influences its response to recreational pressure. For example, in fixed decalcified dunes the relationship between levels of access and impact is linear (i.e. proportionate relationship). In other dune types (e.g. embryonic shifting dunes), the relationship is curvilinear, suggesting that a small increase in trampling has a disproportionately strong effect, with a flattening of the impact curve at higher trampling damage⁶⁶.
- 4.21 A major concern for nutrient-poor terrestrial habitats such as dune systems is nutrient enrichment associated with dog fouling, which has been addressed in various reviews (e.g.⁶⁷). 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 spread-out distribution of urine. For example, in Burnham Beeches National Nature Reserve it is estimated that 30,000 litres of urine and 60 tonnes of dog faeces are deposited annually⁶⁸. While there is little information on the chemical

⁶³ Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* **32**: 203-214

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

⁶⁴ 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.

⁶⁵ 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

⁶⁶ Coombes E.G. (2007). The effects of climate change on coastal recreation and biodiversity. School of Environmental Sciences. University of East Anglia, Norwich.

⁶⁷ Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. 2005. Dogs, access and nature conservation. English Nature Research Report, Peterborough.

⁶⁸ 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.

constituents of dog faeces, nitrogen is one of the main components⁶⁹. Nutrient levels are the major determinant of plant community composition and the effect of dog defecation in sensitive habitats is comparable to a high-level application of fertiliser, potentially resulting in the shift to plant communities that are more typical of improved grasslands.

Typical Mitigation Measures

- 4.22 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 Authorities (in their role as Competent Authorities) can set out frameworks for improved habitat and access management, in collaboration with other adjoining Local Planning Authorities. Provision of alternative recreational space can help to attract recreational users away from sensitive European sites and reduce pressure on the sites. However, the location and habitat type of such alternative destinations must be carefully selected to be effective.

Conclusion

- 4.23 The available baseline information suggests that the following European sites within 15km of West Lancashire are sensitive to recreational pressure due to the presence of waterfowl, waders and seabirds at different times throughout the year (**the sites in bold are taken forward into the following chapters**):

- **Martin Mere SPA / Ramsar (located centrally in West Lancashire)**
- **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**
- **Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)**
- **Sefton Coast SAC (at its closest point lies approx. 431m to the west of West Lancashire)**
- **Dee Estuary SAC (at its closest point lies approx. 9km to the south-west of West Lancashire)**
- Liverpool Bay SPA (at its closest point lies approx. 3.6km to the west of West Lancashire)

- 4.24 The Liverpool Bay SPA, partly designated for disturbance-sensitive red-throated diver and common scoter, lies some distance offshore from Sefton, with its landward boundary at the line of Mean Low Water. Regarding coastal recreation, these birds are likely to be most affected by water-based activities, such as sailing, kayaking or jet skiing. However, it is considered that only a small fraction of visitors from West Lancashire would engage in these activities. Therefore, the Liverpool Bay SPA is not considered further in relation to this impact pathway.

Background to Atmospheric Pollution

Table 2: Main sources and effects of air pollutants on habitats and species⁷⁰

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO ₂)	<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</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>

⁶⁹ 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.

⁷⁰ Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>)

Pollutant	Source	Effects on habitats and species
	likely to become one of the most important contributors to SO ₂ emissions in the UK.	However, SO ₂ background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.
Acid deposition	<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 (NH ₃)	<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 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>The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation.</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>In contrast to the steep decline in Sulphur dioxide emissions, nitrogen oxides are falling slowly due to control strategies being offset by increasing numbers of vehicles.</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	The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO _x) or reduced (e.g. NH ₃) nitrogen emissions (described separately above). While oxidized nitrogen mainly	All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.

Pollutant	Source	Effects on habitats and species
	<p>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>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>
Ozone (O ₃)	<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>

- 4.25 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂) and are summarised in Table 2. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges⁷¹. NO_x can also be toxic at high concentrations (far above the annual average critical level). High levels of NO_x and NH₃ are likely to increase the total N deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication. This often has adverse effects on community composition and the quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats^{72 73}.
- 4.26 Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping⁷⁴. Ammonia emissions primarily originate from agricultural practices⁷⁵, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO₂ or NH₃ emissions will be associated with the West Lancashire Local Plan. NO_x emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion to its overall NO_x footprint (92%) through the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison⁷⁶. Emissions of NO_x could therefore be reasonably expected to increase as a result of the additional commuter traffic associated with the West Lancashire Local Plan.
- 4.27 According to the World Health Organisation, the critical NO_x concentration (critical threshold) for the protection of vegetation is 30 µgm⁻³; the threshold for sulphur dioxide is 20 µgm⁻³. In addition,

⁷¹ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

⁷² 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

⁷³ 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

⁷⁴ http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.

⁷⁵ 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

⁷⁶ 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>

ecological studies have determined 'critical loads'⁷⁷ of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃).

- 4.28 According to the Department of Transport's Transport Analysis Guidance, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant⁷⁸. Therefore, this distance has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development outlined in the Local Plan.

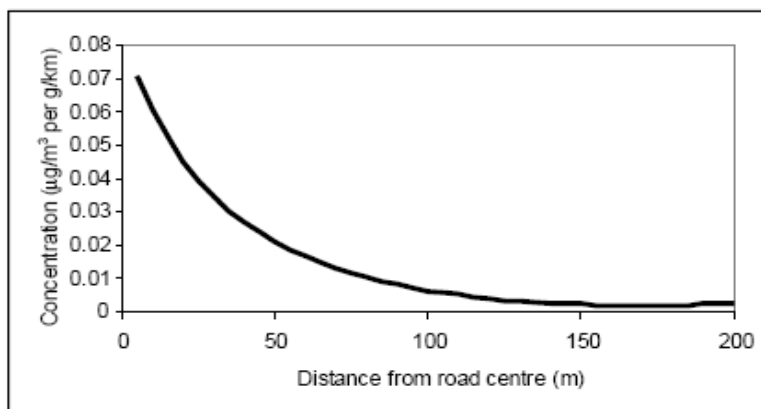


Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT⁷⁹)

- 4.29 Atmospheric nitrogen deposition from vehicle exhaust emissions has the potential to affect a variety of habitats, particularly nutrient-poor habitats such as dune systems. Both the Sefton Coast SAC and the Dee Estuary SAC lie within 15km of West Lancashire and are designated for dune features (the most sensitive of which are fixed coastal dunes with herbaceous vegetation). Furthermore, breeding terns (qualifying species of the Ribble & Alt Estuaries SPA / Ramsar and the Mersey Narrows & North Wirral Foreshore SPA / Ramsar) rely on bare ground to build their scrapes. A significant increase in nitrogen deposition has the potential to increase the abundance of graminoids, obstructing the ability of terns to successfully breed. An increase in the population and employment sector in the Borough of West Lancashire could result in increased commuter traffic flowing past these sites, depending on their locations in relation to major roads and other authorities.
- 4.30 The following European sites within 15km of West Lancashire are sensitive to atmospheric pollution (sites in bold are taken forward into the following chapters):
- **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**
 - **Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)**
 - **Sefton Coast SAC (at its closest point lies approx. 431m to the west of West Lancashire)**
 - **Dee Estuary SAC (at its closest point lies approx. 9km to the south-west of West Lancashire)**
 - Martin Mere SPA / Ramsar (located centrally in West Lancashire)
 - Liverpool Bay SPA / Ramsar
- 4.31 The Martin Mere SPA / Ramsar is a freshwater site that is primarily phosphate- rather than nitrogen-limited, meaning that phosphate is the primary fuel for plant growth. Agricultural land is important for the bird populations but has no critical load and is generally high in nitrogen and

⁷⁷ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

⁷⁸ <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013>; accessed 12/05/2016

⁷⁹ <http://www.dft.gov.uk/ha/standards/dmr/vol11/section3/ha20707.pdf>; accessed 13/07/2018

phosphorus. Phosphate does not derive from vehicle exhaust emissions and as such the SPA / Ramsar is excluded from further assessment. APIS highlights that none of the habitats of its qualifying species within this site are sensitive to atmospheric nitrogen deposition (saltmarsh is the only habitat associated with the species present in the SPA in which nitrogen deposition could result in effects on the bird population, but there is no saltmarsh within the SPA / Ramsar).

- 4.32 Being a marine site, the Liverpool Bay SPA / Ramsar, while potentially sensitive to atmospheric nitrogen deposition, lies far away from any major road. Therefore, it is not considered further in relation to this impact pathway.

Background to Loss of Functionally Linked Habitat

- 4.33 While most European sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not necessarily the case. A diverse array of qualifying species including birds, bats and amphibians are not always confined to the boundary of designated sites.
- 4.34 For example, the highly mobile nature of both wader and waterfowl species implies that areas of habitat of crucial importance to the integrity of their populations lie outside the physical limits of European 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. Therefore, land use plans that may affect such functionally linked habitat require further assessment.
- 4.35 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 land⁸⁰. 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 would have been potentially affected by development while on functionally linked habitat, 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.
- 4.36 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 records centres) to be firmly established. In many instances (with the Solent Waders and Brent Goose Strategy being a notable exception), data may not be available at all, requiring further survey work.
- 4.37 West Lancashire lies in the vicinity of one inland freshwater European site (Martin Mere SPA / Ramsar) and several coastal / estuarine European sites that are designated for mobile waterfowl and waders. Therefore, it is possible that the allocation of greenfield sites (i.e. parcels of land without any existing development) would result in the loss of functionally linked habitat. The primary concern would be the loss of greenfield sites in the more rural western part of West Lancashire, which mostly constitutes agricultural land. Many SPA / Ramsar birds (particularly golden plover, geese and swans) forage in agricultural stubble in winter. Notably, the Ribble & Alt Estuaries SPA / Ramsar, the site that lies closest to West Lancashire, is designated for pink-footed geese, which are known to travel long distances to foraging patches in agricultural fields.
- 4.38 The Appropriate Assessment of the withdrawn West Lancashire Preferred Options document sourced bird survey data from the Lancashire Environment Record Network (LERN) and the Lancashire and Cheshire Fauna Society (LCFS). Data from LERN provided 193 records of SPA / Ramsar species across West Lancashire Borough, of which only 35 records were obtained post-2005 and in turn only 14 related to overwintering birds. For example, the HRA evaluated that three records of pink-footed goose (over 1% of the SPA / Ramsar population) were present in the

⁸⁰ 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

tetrads of proposed garden villages to the west of Skelmersdale. Overall, the West Lancashire development options clearly have the potential to affect functionally linked habitat use of SPA / Ramsar birds. Given that previous data searches were undertaken with regard to different site allocations, a new bird data search will need to be carried out for the Reg. 19 HRA.

- 4.39 It is to be noted that only two of the north-western coastal / estuarine SPAs / Ramsars are included here, with the Mersey Estuary SPA / Ramsar and the Dee Estuary SPA / Ramsar lying beyond the 15km impact zone typically considered in HRAs⁸¹. Both these sites are also designated for mobile bird species. It is well established that there is likely to be movement of qualifying birds between all SPAs / Ramsars along the north-western coastline. Therefore, an assessment of LSEs and potential adverse effects (including mitigation) will also ensure that the integrity of the European sites in the wider coastal network is protected.
- 4.40 The Sefton Coast SAC is partly designated for great-crested newts, a species that requires different habitat types in its life cycle. Individuals that breed in ponds in the SAC's dune systems are likely to travel beyond the site boundary to forage or over-winter in terrestrial habitats. During the breeding season, their breeding ponds are of primary importance. Conversely, in winter, good-quality terrestrial habitat up to 250m away from the ponds (and potentially beyond the site boundary) is of high value to newts. A wide range of semi-natural habitats might be used for shelter, dispersal and foraging, including meadows, tussocky grassland, scrub, woodland, low-intensity farmland and brownfield sites. Newt dispersal in the terrestrial environment is highly dependent on habitat connectivity and habitat fragmentation must therefore be avoided. Similarly, the natterjack toad population of the Ribble & Alt Estuaries Ramsar is known to make use of sand dune habitat beyond the SAC boundary, such as the golf courses around Sefton.
- 4.41 Overall, the available baseline information suggests that the following European sites are sensitive to the loss of functionally linked habitats due to the presence of mobile waterfowl, waders, great-crested newts or natterjack toad (**the sites in bold are taken forward into the following chapters**):
- **Martin Mere SPA / Ramsar (located centrally in West Lancashire)**
 - **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**
 - **Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)**
 - **Sefton Coast SAC (at its closest point lies approx. 431m to the west of West Lancashire)**

Background to Water Quality

- 4.42 The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:
- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
 - Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment,

⁸¹ The Natural England document 'Impact Risk Zones Guidance Summary Sites of Special Scientific Interest Notified for Birds Version 1.1' (dated March 2019) identifies that for SSSIs designated for wintering waterfowl and waders other than golden plover and lapwing) a maximum of 2km is appropriate for the identification of potential functionally-linked land for development with the exception of wind energy (3km) and airports (10km). For golden plover a zone of up to 10km is identified as being significant. Pink-footed goose can travel up to 15km from their roosting sites to feed.

nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen.

- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.
- 4.43 The most notable issue in relation to the West Lancashire Local Plan is the discharge of treated sewage effluent, which is likely to increase the concentration of nutrients in European sites that are dependent on the input of water of sufficient quality. In marine and estuarine European sites (e.g. the Ribble & Alt Estuaries SPA / Ramsar, Mersey Narrows & North Wirral Foreshore SPA / Ramsar, Liverpool Bay SPA and Dee Estuary SAC) nitrogen is the main limiting nutrient and an increase in the volume of treated sewage effluent may lead to eutrophication. Given that West Lancashire (and the WwTWs serving it) lies in the vicinity of several marine / estuarine sites, WwTWs discharge requires further assessment. The Martin Mere SPA / Ramsar, located centrally in West Lancashire, encompasses a large freshwater body and is phosphate limited. While the Site Improvement Plan for this site does not highlight point-source pollution from WwTWs as a threat / pressure to site integrity, potential water quality impacts on the site will also require consideration.
- 4.44 Depending on the location of development sites in the emerging Plan, impacts of surface water runoff from hardstanding on water quality will also require consideration. Water from overflowing sewage systems and from industrial leakages and / or spillages may contribute nutrients or industrial pollutants to these sites.
- 4.45 West Lancashire lies in the sewage catchment served by United Utilities, responsible for the public water supply and wastewater treatment in this part of north-west England. The potential HRA implications of treated sewage discharge for European sites associated with residential and industrial development allocated in the West Lancashire Local Plan are outlined in Table 3.

Table 3: Wastewater Treatment Works⁸² serving West Lancashire Borough, the potential growth accommodated and its HRA implications.

WwTW Catchment	Development allocated in the West Lancashire Local Plan	HRA implications
Wigan (Hoscar), Skelmersdale, Burscough, Mere Brow, Hesketh, Southport, Holmes Wood, Halsall, Haskayne, Dark Lane, Hill House, Barrow Nook, Bispham, Tarlescough and Croston WwTWs (operated by United Utilities)	Not available at this point, but development will likely focus on the three settlements of Skelmersdale, Ormskirk and Burscough	Discharge of treated sewage effluent and industrial pollutants into local freshwater bodies, ultimately draining into the identified European sites

- 4.46 The following European sites within 15km of West Lancashire are sensitive to a deterioration in water quality (**sites in bold are taken forward into the following chapters**):

- **Martin Mere SPA / Ramsar (located centrally in West Lancashire)**
- **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**

⁸² Note that this is not an exhaustive list of the major WwTWs in West Lancashire. This list will be updated when the quantum and distribution of growth is identified, and serving WwTWs have been confirmed.

- **Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)**
- **Sefton Coast SAC (at its closest point lies approx. 431m to the west of West Lancashire)**
- **Dee Estuary SAC (at its closest point lies approx. 9km to the south-west of West Lancashire)**
- **Liverpool Bay SPA (at its closest point lies approx. 3.6km to the west of West Lancashire)**

Background to Water Quantity, Level and Flow

- 4.47 The water level, its flow rates and the mixing conditions are important determinants of the condition of European sites and their qualifying features. Hydrological processes are critical in influencing habitat characteristics in wetlands and 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, and often interact with coastal squeeze.
- 4.48 Coastal habitats rely on hydrological connections with other surface waters, such as rivers, streams and lakes. A constant supply of freshwater is fundamental to maintaining the ecological integrity of coastal marine areas. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause the water level to be outside of the required range of qualifying birds, invertebrate or plant species. In extreme cases, this might lead to the loss of the structure and functioning of marine ecosystems. There are two mechanisms through which urban development might negatively affect freshwater supply to European 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 decrease freshwater input to European sites sharing the same catchment.
 - The proliferation of impermeable surfaces in urban areas increases the volume and speed of surface water runoff. As traditional drainage systems often cannot cope with the volume of stormwater, sewer overflows are designed to discharge excess water directly into watercourses. This can contribute to so-called flash floods and increased water flow into European sites. Some of the knock-on impacts of surface water runoff include increases in sedimentation, turbidity and anthropogenic pollutants.
- 4.49 Water abstraction for the potable water supply is of particular concern in areas with little rainfall (and limited recharge potential) or where water resources are already depleted. In 2013 the Environment Agency published a map of water-stressed areas, highlighting that both West Lancashire Borough and the wider north-west of England are identified as areas of low water stress (see Figure 4 below). While this part of England is highly populated, the high annual rainfall appears to be sufficient to replenish groundwater levels over the course of the year.

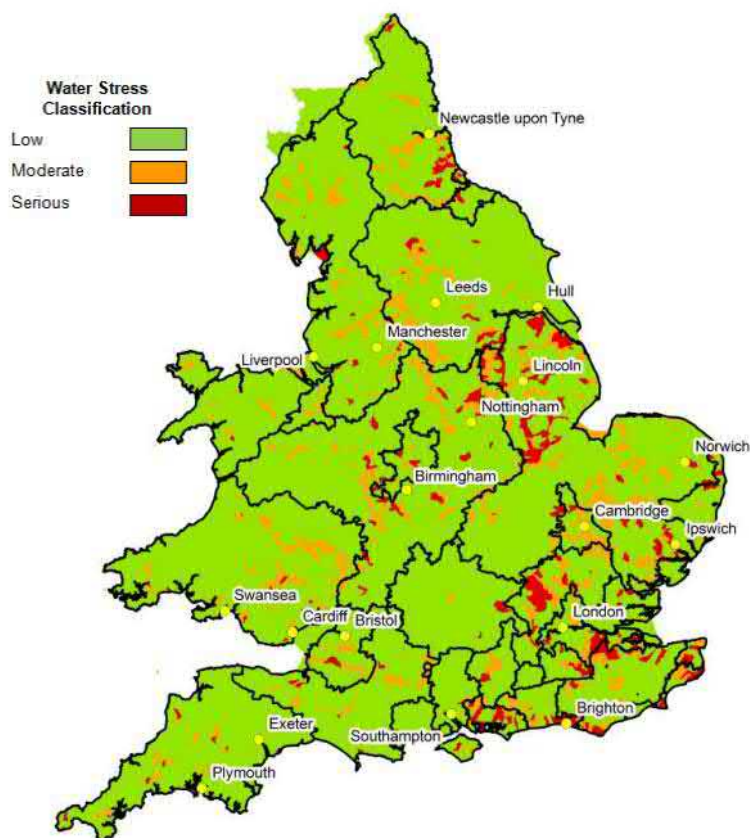


Figure 4: Areas of water stress in England and Wales⁸³.

- 4.50 An initial investigation indicates that West Lancashire lies within United Utilities' Strategic Resource Zone which currently serves approximately 7 million people in south Cumbria, Lancashire, Greater Manchester, Merseyside, most of Cheshire and a small part of Derbyshire. This zone supplies around 1,706 Ml/d of potable water, which includes water imports from Wales, Cumbria, and other parts of north-west England. It constitutes a large integrated supply network that enables substantial flexibility in distributing supplies within the zone with the 'west to east link' further aiding this flexibility. This has broken the traditional division in which Greater Manchester received water from Cumbria and Merseyside received water from the River Dee (which lies partly in England and partly in Wales) and from purely Welsh sources (e.g. Lake Vyrnwy).
- 4.51 The Martin Mere SPA / Ramsar and several estuarine sites (e.g. the Ribble & Alt Estuaries SPA / Ramsar) around West Lancashire depend on sufficient freshwater input. Furthermore, the Sefton Coast SAC, partly designated for its population of great-crested newts, relies on the water table to maintain the hydrological regime in its breeding ponds.
- 4.52 The following European sites within 15km of West Lancashire are sensitive to changes in water quantity, level and flow (**sites in bold are taken forward into the following chapters**):
- **Martin Mere SPA / Ramsar (located centrally in West Lancashire)**
 - **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**
 - **Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)**

⁸³ Figure adapted from Environment Agency. 2013. Water stressed areas – final classification https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf.

- **Sefton Coast SAC** (at its closest point lies approx. 431m to the east of West Lancashire)
- **Dee Estuary SAC** (at its closest point lies approx. 9km to the south-west of West Lancashire)

Visual and Noise Disturbance During Construction (both in European sites and Functionally Linked Habitats)

- 4.53** Development schemes can result in disturbance to qualifying SPA / Ramsar bird species in European sites or functionally linked habitats through several mechanisms. Noise and visual disturbance arising from construction activities may result in behavioural changes (e.g. flight from the nest, cessation of foraging) in birds. Furthermore, post-construction disturbance from site usage, road traffic and operational lighting might also arise. Three of the most important factors determining the magnitude of disturbance appear to be species sensitivity, proximity of the disturbance source and timing / duration of the disturbance. Generally, the most disturbing visual and auditory stimuli are likely to involve irregular, infrequent, unpredictable loud noise events, movements or vibrations. Birds are least likely to be disturbed by activities that involve regular, predictable and quiet patterns of sound or movement. The likelihood of disturbance to SPA / Ramsar birds diminishes with distance from the source of stimuli.
- 4.54** An increasing amount of research on visual and noise disturbance of waterfowl from construction (and other activities) is now available. Both visual and noise stimuli may elicit disturbance responses, potentially affecting the fitness and survival of waterfowl and waders. Noise is a complex disturbance parameter requiring the consideration of multiple parameters, including the fact that it is not described on a linear scale, its nonadditive effect and the 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 if other stressors are present (e.g. cold weather, food scarcity).
- 4.55** 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 behaviour⁸⁴. These two thresholds are therefore considered useful as defining two extremes. The same authors have shown that regular noise levels should be below 70dB at the bird, as birds will habituate to noise levels below this level⁸⁵. Generally, noise is attenuated by 6dB with every doubling of distance from the source. Impact piling, the noisiest construction process of approx. 110 dB at 0.67m from source, will therefore reduce to 67-68dB by 100m away from the source. However, the relative change in noise levels compared to the baseline can also be of relevance. For example, a 10dB increase (effectively a doubling of perceived loudness) may well be disturbing while a change of less than 3dB is unlikely to even be perceptible. Even using a 'degree of change' metric rather than the 70 dB parameter, the loudest construction noise (i.e. that arising from impact piling) is likely to have fallen to below disturbing levels by 100m, and certainly by 200m, away from the source even without mitigation. That is not to say that development more than 200m from an SPA / Ramsar site will not require consideration of noise impacts, but 200m can be a useful threshold to identify those developments most likely to result in noise disturbance without mitigation.
- 4.56** Visual disturbance is generally considered to have a higher impact than noise disturbance as, in most instances, visual stimuli will elicit a disturbance response at much greater distances than noise⁸⁶. 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 large machinery. Several species are particularly sensitive to visual disturbance⁸⁷, including curlew (taking flight at

⁸⁴ Cutts N & Allan J. 1999. Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency).

⁸⁵ Cutts, N., Phelps, A. and 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.

⁸⁶ 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 01/12/2020]

⁸⁷ Ibid. Response distances to visual stimuli are given in the Estuarine & Coastal Studies report.

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.

- 4.57** Disturbance can also result post-construction, although substantial changes in traffic flow are generally needed for significant noise disturbance to arise from roads. For example, a 25% increase in road traffic (e.g. through a road scheme) will result in only a 1dB(A) increase at the roadside, with a 100% increase needed to result in a 3dB(A) increase – the lowest increase in noise that is thought to be even perceivable by humans and birds. In contrast, the introduction of operational lighting of schemes into areas that are not currently lit can result in disturbance of animal species within European sites or those that rely on functionally linked habitats. Parts of West Lancashire are relatively rural, meaning that lighting for new developments may affect the usage of SPA / Ramsar habitats by birds.
- 4.58** Large structures (e.g. new bridges, offshore and onshore wind turbines), have the potential to alter bird flight paths (e.g. hunting flight paths for raptors, bird migratory paths, regular flight paths between roosting and feeding sites, and foraging routes for bats etc.). This may result in a collision risk barrier effect or displacement which could make birds either vulnerable to predation or loss of vital energy stores.
- 4.59** Animals can also be disturbed by the movement of ships. For instance, a DTI study of birds of the North West coast noted that: *“Divers and scoters were absent from the mouths of some busier estuaries, notably the Mersey... Both species are known to be susceptible to disturbance from boats, and their relative scarcity in these areas... may in part reflect the volume of boat traffic in these areas”*⁸⁸.
- 4.60** It is noted that visual and noise disturbance is relevant not only to designated sites themselves, but also to habitat that is functionally linked to such sites. Because qualifying species depend on linked habitats for foraging and roosting (see earlier impact pathway), any visual and noise disturbance effects will also apply to supporting habitats. For West Lancashire, visual and noise disturbance is most likely to be relevant to potential greenfield sites allocated in the vicinity of the Martin Mere SPA / Ramsar, the Ribble & Alt Estuaries SPA / Ramsar and functionally linked habitats.
- 4.61** The following European sites within 15km of West Lancashire are sensitive to visual and noise disturbance during construction (**sites in bold are taken forward into the following chapters**):
- **Martin Mere SPA / Ramsar (located centrally in West Lancashire)**
 - **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**
 - Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)
- 4.62** The Mersey Narrows & North Wirral Foreshore SPA / Ramsar lies approx. 8.9km from the boundary of West Lancashire. This is far beyond the distance at which visual and noise disturbance results to disturbance of waterfowl and waders. Therefore, in relation to this impact pathway, this site is excluded from further assessment.

Coastal Squeeze

- 4.63** Coastal squeeze⁸⁹ is a term that originates from coastal management, whereby intertidal habitats used by SPA / Ramsar birds are lost as the sea level rises and inland brownfield development (e.g. a sea wall or an industrial complex) prevents the inland migration of habitats (e.g. saltmarsh) and its associated species. As a result, habitat is ‘squeezed’ and reduces in size. This is a significant process, particularly in geographic areas that are highly urbanised or that are rapidly transitioning from an undeveloped to a developed state.

⁸⁸ DTI (2006). Aerial Surveys of Waterbirds in Strategic Wind Farm Areas: 2004/05 Final Report.

⁸⁹ For a comprehensive review of coastal squeeze please see: Doody J.P. (2013). Coastal squeeze and managed realignment in southeast England, does it tell us anything about the future? *Ocean & Coastal Management* **79**: 34-41.

- 4.64 Additionally, as development frequently takes place immediately inland from the sea wall, flood defences generally cannot be moved landwards to accommodate managed retreat of threatened habitats. This may result in gradually reducing areas of saltmarsh and mudflat habitats adjacent to built-up areas. In areas where sediment availability is low, coastal squeeze also includes an increasingly steep beach profile and foreshortening of the seaward zones.
- 4.65 By allocating residential and employment sites, Local Plans have the potential to exacerbate coastal squeeze. Generally, development sites should not add urban surfaces inland of sensitive intertidal habitats and be in line with the Shoreline Management Plan (SMP) covering given areas. SMPs determine the management approaches along specific parts of coastlines, through policies such as 'no active intervention' or 'hold the line'. In areas where 'no active intervention' is proposed, it is deemed that coastal defences and other urban structures should be avoided to allow the natural evolution of the coastline and intertidal habitats.
- 4.66 Overall, the available baseline information suggests that the following European site within 15km of the borough may potentially be impacted by coastal squeeze associated with the West Lancashire Local Plan (**the site in bold is taken forward into the following chapters**):
- **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**

Impacts from Tall Structures (e.g. Telecommunications Infrastructure or Wind Farms)

Collision Mortality

- 4.67 There is a large body of research linking wind energy developments to bird displacement and mortality. A joint report by Natural England and the RSPB⁹⁰ highlights that poorly sited wind farms can have negative impacts on birds, with such impacts varying depending on the species involved, season, weather, habitat type and individual site characteristics (e.g. topography). Wind energy is still a relatively new technology and the evidence base has increased dramatically in recent years. Generally, the two predominant effects on birds associated with wind turbines are direct collision, and disturbance displacement (which includes a phenomenon known as the 'barrier effect').
- 4.68 Generally, onshore wind farms in the UK have not been associated with high bird collision rates because they tend to be constructed in areas with little bird activity. This is in contrast to wind farms in the US and Spain, for which a high number of annual fatalities (particularly for birds of prey) have been recorded. Different species vary in their susceptibility to collision, with raptors⁹¹, gulls⁹², terns⁹³ and geese⁹⁴ appearing to be associated with particularly high collision risks. One potential explanation is that larger, less manoeuvrable species are more likely to be collision victims than, for example passerines (although this clearly does not explain the sensitivity of some species, e.g. terns which are highly manoeuvrable).
- 4.69 The statutory process of Environmental Impact Assessment (EIA) employs a method referred to as the 'Band' Collision Risk Model, which estimates the number of collision fatalities associated with specific wind energy schemes, based on parameters such as turbine height, blade width and turbine avoidance rates. While clearly helpful in estimating the impact of a scheme, many of the model parameters (e.g. turbine avoidance rate) are poorly quantified. Furthermore, collision

⁹⁰ Bright J.A., Langston R.H.W. & Anthony S. (2009). Mapped and written guidance in relation to birds and onshore wind energy development in England. A report by the Royal Society for the Protection of Birds. RSPB Research Report No. 35, 173pp.

⁹¹ Anderson, R., Neumann, N., Tom, J., Erickson, W. P., Strickland, M. D., Bourassa, M., Bay, K. J. and Sernka, K. J. (2004). Avian Monitoring and Risk Assessment at the Tehachapi Pass Wind Resource Area. Period of Performance: October 2, 1996 - May 27, 1998. National Renewable Energy Laboratory, Colorado. www.nrel.gov/publications Last accessed 12/01/2021.

⁹² Hötter, H., Thomsen, K.-M. and Jeromin, H. (2006). Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats - facts, gaps in knowledge, demands for further research, and ornithological guidelines for the development of renewable energy exploitation. Michael-Otto-Institut im NABU, Bergenhusen. <http://bergenhusen.nabu.de/bericht/englische%20windkraftstudie.pdf> Last accessed 11/01/2021.

⁹³ Everaert, J. and Stienen, E. W. M. (2006). Impact of wind turbines on birds in Zeebrugge (Belgium) - Significant effect on breeding tern colony due to collisions. *Biodiversity and Conservation* 16: 3345-3359.

⁹⁴ Moorehead, M. and Epstein, L. (1985). Regulation of small-scale energy facilities in Oregon: Background report. Volume 2. Oregon Department of Energy, Salem, USA.

models assume that collision rate relates to bird abundance, which is not necessarily the case. The RSPB recommends that *estimates of annual collision rates and avoidance rates should be treated with caution, and used as comparative rather than absolute measures*'.

Disturbance Displacement and Impacts on Flightlines

- 4.70 Wind turbines may also result in disturbance displacement, rendering habitats currently used by birds unsuitable for future use. In a review across 129 wind farms, Hoetker et al. (2006) found that disturbance displacement effects were most common in the overwintering period, with highest impacts on waders and wildfowl⁹⁵. One potential explanation for this is that overwintering birds display lower site fidelity, moving to alternative sites more readily than breeding birds when disturbed. Notwithstanding this, further work has evidenced disturbance displacement from wind energy schemes in breeding golden plover of at least 200m and other breeding waders of between 0 – 800m^{96,97}. Disturbance displacement can affect bird species in several ways, including the direct loss of habitat (e.g. for foraging, resting, moulting or nesting) or by affecting productivity. The latter could be the result of high energetic costs associated with the displacement or displacement to potentially less plentiful foraging grounds. While it is frequently suggested that birds may habituate to wind turbines over time, research indicates that bird abundances decline over time and that there is in fact little empirical evidence for a strong habituation effect.
- 4.71 Related to this is a process known as the 'barrier effect', whereby larger scale wind farms prevent birds from using their established foraging / migratory flightlines. This can provide a barrier to bird movements, resulting in significant additional energetic costs as birds must circumvent the area of development. This effect is likely to be more pronounced offshore because seabirds travel greater return distances between their colonies and foraging grounds, such that the increased energetic requirements are likely to become disproportionately impactful. Research has shown that wind farms lead to avoidance behaviour in migrating birds. For example, common eiders had greater trajectory curvatures post wind farm construction, resulting in an additional 500m travelled⁹⁸. However, in relation to migration episodes of 1,400km, the further energetic costs were considered to be trivial. In another study it was established that the overall energetic costs of avoiding wind farms were highest for species with high wing loadings, such as shag, cormorant, guillemot, and puffin, which typically only undertake short provisioning flights⁹⁹. For all species the extra flight costs to avoid wind energy developments were lower than those associated with food shortages or adverse weather. However, it is to be noted that pressures from wind farms are additive to those of other stressors and a cumulative effect with other schemes requires consideration.
- 4.72 Figure 5 below shows a map of areas known for their European bird interest that are sensitive to wind energy development schemes. The map is based on the distributional data of twelve susceptible bird species (ten of the species listed on Annex I of the EU Birds Directive) and the geographic location of statutory SPAs. It can be seen that the coastal areas around West Lancashire are identified as being highly sensitive.

⁹⁵ Hötter, H., Thomsen, K.-M. and Jeromin, H. (2006). Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats- facts, gaps in knowledge, demands for further research, and ornithological guidelines for the development of renewable energy exploitation. Michael-Otto-Institut im NABU, Bergenhusen.
<http://bergenhusen.nabu.de/bericht/englische%20windkraftstudie.pdf> Last accessed 11/01/2021.

⁹⁶ Pearce-Higgins, J. W., Stephen, L., Langston, R. H. W. and Bright, J. A. (2008). Assessing the cumulative impacts of wind farms on peatland birds: A case study of golden plover *Pluvialis apricaria* in the UK. *Mires and Peat* 4: 1-13.

⁹⁷ Pearce-Higgins J.W. Stephen L., Langston R.H.W., Bainbridge I.P. & Bullman R. (2009). The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology* 46: 1323-1331.

⁹⁸ Masden E.A., Haydon D.T., Fox A.D., Furness R.W., Bullman R. & Desholm M. (2009). Barriers to movement: Impacts of wind farms on migrating birds. *ICES Journal of Marine Science* 66: 746-753.

⁹⁹ Masden E.A., Haydon D.T., Fox A.D. & Furness R.W. (2010). Barriers to movement: Modelling energetic costs of avoiding marine wind farms amongst breeding seabirds. *Marine Pollution Bulletin* 60: 1085-1091.

Sensitivity rating

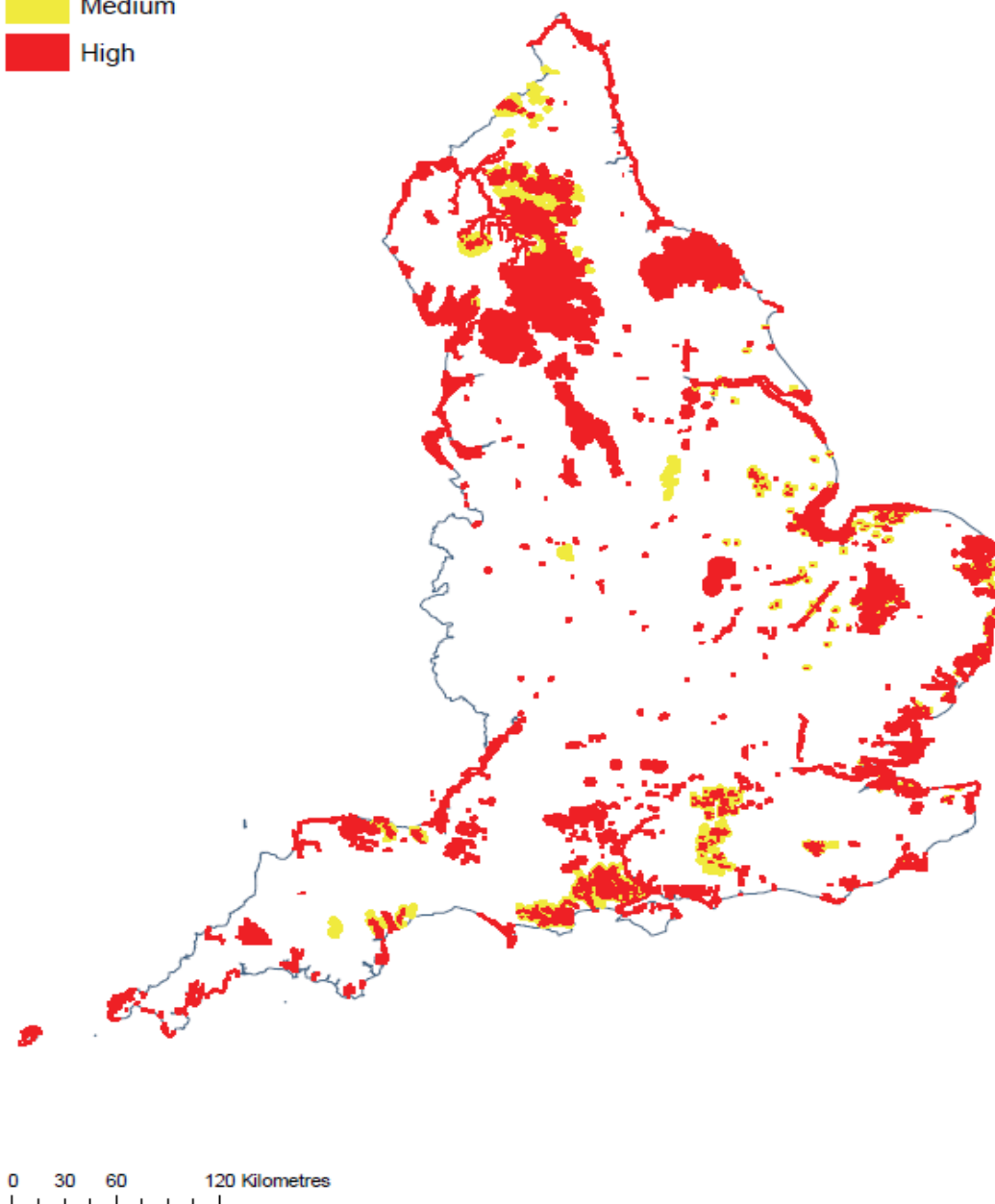
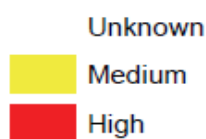


Figure 5: Map of sensitive bird areas in relation to onshore wind farms in England. Note that this map is based on the highest sensitivity rating for any of the species or sites included, in each constituent 1-km square. (reproduced from Bright et al., 2009¹⁰⁰).

4.73 The following European sites within 15km of West Lancashire are sensitive to the development of tall structures (e.g. telecommunications infrastructure and wind farms), which could lead to collision mortality, disturbance displacement and altered flightlines (**sites in bold are taken forward into the following chapters**):

- **Martin Mere SPA / Ramsar (located centrally in West Lancashire)**

¹⁰⁰ Bright J.A., Langston R.H.W. & Anthony S. (2009). Mapped and written guidance in relation to birds and onshore wind energy development in England. A report by the Royal Society for the Protection of Birds. RSPB Research Report No. 35, 173pp.

- **Ribble & Alt Estuaries SPA / Ramsar (located in the northern part of West Lancashire)**
- **Mersey Narrows & North Wirral Foreshore SPA / Ramsar (at its closest point lies approx. 8.9km to the south-west of West Lancashire)**
- **Liverpool Bay SPA (at its closest point lies approx. 3.6km to the west of West Lancashire)**

4.74 While the qualifying birds in the Liverpool Bay SPA and Mersey Narrows & North Wirral Foreshore SPA / Ramsar are potentially sensitive to the impacts from tall structures, the sites lie too far away from the boundary of West Lancashire for there to be any disturbance displacement effects. However, birds from this site travelling within the wider network of north-western SPAs / Ramsar, may be at risk from collision mortality arising from wind farms built in West Lancashire. Therefore, in relation to this impact pathway, these sites are included for further assessment.

5. Test of Likely Significant Effects (LSEs)

Overview of policy approaches with the potential to cause LSEs

- 5.1 The following section provides an overview of policy options that provide for residential and employment growth and detail the outcome of the Likely Significant Effects assessment. This identifies policies and site allocations that (prior to considering the role of mitigation) have a potential to result in LSEs upon European sites.
- 5.2 The full Likely Significant Effects assessment of policy options within the West Lancashire Local Plan can be found in Appendix 2.

Preferred Policy Approaches

- 5.3 The following policy approaches have been identified as providing for residential and employment growth within West Lancashire, or otherwise having a potential to cause LSEs on European sites (see Appendix 2 for screening table). These policy approaches therefore present potential impact pathways through which Likely Significant Effects (LSEs) on European sites might arise, prior to the consideration of mitigation measures:
- Delivering Sustainable Development – identifies the settlement hierarchy in West Lancashire, which will determine the distribution and quantum of growth across the borough
 - Housing and Employment Land Requirements – stipulates the quantum of housing and employment development, which is a key determinant of the magnitude of impact pathways
 - Strategic Development Sites – details of strategic development sites will come forward at the next stage of the Local Plan, so cannot be screened out for LSEs at this stage.
 - Preserving and enhancing the Borough's Landscape and Land Resources – prevents land use changes in vulnerable landscapes, but supports flood protection and tourism developments in coastal areas
 - Where housing can go – determines the geographic distribution of housing across West Lancashire and provides detail on individual housing allocations, both with likely implications for impact pathways (e.g. recreational pressure, water quality)
 - Gypsies and Travellers and Travelling Showpeople – provides potential additional allocations for gypsy and traveller sites, which would result in a population increase
 - Accommodation for Temporary Agricultural Workers – supports non-permanent accommodation for agricultural workers in the countryside, with impacts similar to those of housing allocations
 - Providing and Managing Employment Areas – details the protection of strategic employment areas and support for new employment uses across West Lancashire, which is connected to various impact pathways such as atmospheric pollution (via an increase in commuter traffic) and loss of functionally linked habitat
 - Developing the Rural and Visitor Economy – protects existing non-residential uses in the countryside, while also allocating specific rural development sites that may be linked to several impact pathways, such as atmospheric pollution and loss of functionally linked habitat

- Adapting our Town and Local Centres – this preferred policy approach specifies the hierarchy of town and local centres, which will in turn influence the distribution of new non-residential growth across West Lancashire
- Communications and Digital Connectivity Infrastructure – supports digital and communications infrastructure with the potential to impact SPA / Ramsar birds
- Low Carbon and Renewable Energy – designates specific opportunity areas for wind and energy developments, with potential impacts on SPA / Ramsar birds

Local plans to be considered ‘in-combination’

- 5.4 It is obligatory to not only assess LSEs of a proposed plan alone, but also to investigate whether there might be ‘in-combination’ effects with plans proposing development in other authorities surrounding a European protected site. In practice, such an ‘in-combination’ assessment is of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential.
- 5.5 For the purposes of this HRA, several relevant authorities have been identified that have developed their own Local Plans and Core Strategies, outlining residential and / or employment growth within their own boundary. These include Fylde, Central Lancashire, Wigan, St Helens, Knowsley and Sefton. Table 4 summarises the proposed residential and employment growth allocated within the respective Plans of these authorities.

Table 4: Overview of the extent of residential and employment development to be delivered in authorities adjoining West Lancashire Borough, according to adopted Core Strategies and Local Plans.

Local Authority	Number of Dwellings	Total Employment Space (ha)
Fylde (2011 – 2032) ¹⁰¹	8,715	62
Central Lancashire (2010 – 2026) ¹⁰²	22,158	454
Wigan (2011-2026) ¹⁰³	18,365	200
St Helens (2020-2035) ¹⁰⁴	9,234	265
Knowsley (2010-2028) ¹⁰⁵	8,100	164
Sefton (2012-2030) ¹⁰⁶	11,520	81.6
Total	78,092	1,226.6

- 5.6 In 2019, Natural England advised that the Alt Crossens scheme also required consideration in relation to the West Lancashire Local Plan. The Alt Crossens pumping stations are two of the largest in Europe and are operated in conjunction with several satellite pumping stations. The Environment Agency’s proposal to switch off these pumping stations could lead to the flooding of low-lying agricultural land in their proximity, including in parts of West Lancashire. However, it is concluded that there is no potential interaction with development proposed across West Lancashire since the key population centres are remote from the area that will be permanently wet. Therefore, the Alt Crossens scheme is excluded from further consideration in this HRA.

¹⁰¹ Fylde Local Plan to 2032, adopted in October 2018. Available at: <https://new.fylde.gov.uk/wp-content/uploads/2019/09/2-Fylde-Local-Plan-to-2032.pdf> [Accessed on the 28/06/2021]

¹⁰² Central Lancashire Core Strategy, adopted in July 2012. Note that this includes the authorities of South Ribble, Chorley and Preston. Available at: <https://centrallocalplan.lancashire.gov.uk/media/1032/central-lancashire-core-strategy-july-2012-v1.pdf> [Accessed on the 28/06/2021].

¹⁰³ Wigan Local Plan Core Strategy, adopted in September 2013. Available at: <https://www.wigan.gov.uk/Docs/PDF/Council/Strategies-Plans-and-Policies/Planning/Adopted-Core-Strategy.pdf> [Accessed on the 28/06/2021]

¹⁰⁴ St Helens Borough Local Plan, draft submitted in 2019. Available at <https://www.sthelens.gov.uk/planning-building-control/planning-policy/local-plan/> [Accessed on the 28/06/2021]

¹⁰⁵ Knowsley Local Plan Core Strategy, adopted in January 2016. Available at: <https://localplanmaps.knowsley.gov.uk/documents/knowsley-local-plan-adopted-core-strategy.pdf> [Accessed on the 28/06/2021].

¹⁰⁶ Sefton Local Plan, adopted in April 2017. Available at: <https://www.sefton.gov.uk/media/1133/a-local-plan-for-sefton-for-adoption-final.pdf> [Accessed on the 28/06/2021]

Recreational Pressure

Martin Mere SPA / Ramsar

- 5.7 The Martin Mere SPA / Ramsar is designated for several waterfowl species, including Bewick's swan, whooper swan, pink-footed goose, Eurasian teal and northern pintail. All these bird species are sensitive to recreational pressure to some extent. The relatively secluded habitats within the site (open standing water, damp grassland and swamp / tall herb fen) are crucial in providing refuge from human disturbance. The Martin Mere Wetland Centre (which encompasses the SPA / Ramsar) is owned and managed by the Wildfowl & Wetlands Trust (WWT). The Wetland Centre comprises a network of well-established paths and hides, which enable visitors to observe wildlife with minimal disturbance. The marshy nature of the site encourages visitors to stick to paths and any sensitive areas are fenced off from public access. Overall, given the adequate visitor management that is in place, it is concluded that LSEs of the West Lancashire Local Plan on the Martin Mere SPA / Ramsar regarding recreational pressure can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Ribble & Alt Estuaries SPA / Ramsar

- 5.8 The qualifying waterfowl and waders of the Ribble & Alt Estuaries SPA / Ramsar are sensitive to recreational disturbance from activities carried out in both supralittoral and intertidal zones (e.g. dog walking or horse riding) as well as on the water (e.g. kayaking, windsurfing and sailing). Depending on the distance to the receptor species, any of these activities can impact the natural roosting and foraging behaviours displayed by qualifying birds. For example, allocation of significant residential growth, especially in the northern part of West Lancashire, will lead to an increase in recreational pressure in estuarine sites. Natural England's Site Improvement Plan indicates that public access / disturbance from both terrestrial and marine-based recreation is a current threat to the site¹⁰⁷ and this is confirmed by the Supplementary Advice on the Conservation Objectives. Furthermore, disturbance impacts are likely to be exacerbated by the growth in nearby urban centres, such as Preston, resulting in cumulative effects on birds. Recreational pressure is a well-established impact pathway for the wider Liverpool City Region, with many authorities developing interim strategic approaches to recreation in order to ensure compliance with the Habitats & Species Regulations 2019 (as amended). Overall, LSEs of the West Lancashire Local Plan on the Ribble & Alt Estuaries SPA / Ramsar regarding recreational pressure cannot be excluded. The site is screened in for Appropriate Assessment.

Sefton Coast SAC

- 5.9 The Sefton Coast SAC is partly designated for several types of dune habitats. All types of dunes are sensitive to erosion and shifting of sediments arising from recreational trampling. This also applies to associated plant species such as creeping willow and petalwort. Furthermore, an increase in the number of dog walkers can lead to localised nutrient enrichment, potentially resulting in changes in plant community composition. Natural England's Site Improvement Plan that covers the SAC, highlights dog fouling as a current threat to its dune systems¹⁰⁸. A review of the evidence base available on recreational pressure shows that at some sites within the SAC (e.g. Ainsdale-on-sea) dog walkers account for up to 88% of all visitors. At its closest point, the Sefton Coast SAC lies only 431m to the west of West Lancashire, meaning that most parts of the borough lie well within the typical catchment of a coastal site, albeit the main population centres are at a considerably greater distance. Overall, LSEs of the West Lancashire Local Plan on the Sefton Coast SAC regarding recreational pressure cannot be excluded. The site is screened in for Appropriate Assessment.

¹⁰⁷ Available at: <http://publications.naturalengland.org.uk/publication/6274126599684096> [Accessed on the 23/06/2021]

¹⁰⁸ Available at: <http://publications.naturalengland.org.uk/publication/6274126599684096> [Accessed on the 23/06/2021]

Mersey Narrows & North Wirral Foreshore SPA / Ramsar, Dee Estuary SAC and Mersey Estuary SPA / Ramsar

- 5.10 The Mersey Narrows & North Wirral Foreshore SPA / Ramsar, the Dee Estuary SAC and the Mersey Estuary SPA / Ramsar lie approx. 8.9km, 9km and 15.1km respectively to the south-west boundary of West Lancashire. The two SPAs / Ramsars are designated for several overwintering bird species as well as breeding common tern. Natural England's Site Improvement Plan for the Mersey Narrows and North Wirral Foreshore SPA / Ramsar indicates that recreation and resulting direct disturbance to birds is the primary threat / pressure for the site¹⁰⁹. The SAC is partly designated for several aquatic habitats (e.g. intertidal sand- and mudflats) and botanic assemblages (e.g. *Salicornia* and Atlantic salt meadows). These features are all sensitive to physical damage from abrasion, resulting in destabilisation of sediments, changes in habitat structure as well as community composition. While housing growth in the wider Liverpool region clearly is a concern for these sites, several points should be considered in relation to West Lancashire. While the borough lies within a typical recreational catchment for coastal sites (up to 10km), the actual by-road distance equates to roughly 14km (and further to the Dee Estuary SAC and Mersey Estuary SPA / Ramsar) and would involve a crossing of the Kingsway Tunnel (toll). A disturbance and recreation study undertaken by Footprint Ecology, shows that 75% of all visitors to the Mersey Narrows and North Wirral Foreshore SPA / Ramsar (in this case the Leasowe Breakwater survey point) travel 2.2km from home, placing West Lancashire well outside its catchment¹¹⁰. The core recreational catchment for survey points in the Dee Estuary SAC was even smaller. This may partly be explained by the presence of similar habitats and sceneries (e.g. in the Ribble & Alt Estuaries SPA / Ramsar and Sefton Coast SAC) much closer to conurbations in West Lancashire. In a meeting to inform the HRA of the withdrawn West Lancashire Local Plan¹¹¹, Natural England advised that 5.2km measured from coastal European sites was an appropriate Zone of Influence (Zoi) to consider.
- 5.11 Considering the above, it is concluded that LSEs of the West Lancashire Local Plan on the Mersey Narrows & North Wirral Foreshore SPA / Ramsar, the Dee Estuary SAC and the Mersey Estuary SPA / Ramsar regarding recreational pressure can be excluded. These sites are screened out from Appropriate Assessment in relation to this impact pathway.

Atmospheric Pollution

Ribble and Alt Estuaries SPA / Ramsar

- 5.12 The Ribble & Alt Estuaries SPA / Ramsar is designated for several species of waterfowl (e.g. Eurasian wigeons and curlews) that are dependent on Atlantic salt meadows in the littoral zone. Furthermore, the site is also designated for common terns, which depend on bare sediment in the supralittoral zone (for example in coastal stable dune grasslands and shifting coastal dunes) for building their nests. APIS identifies the following nitrogen Critical Loads (CLs) for the supporting habitats of these species:
- Saltmarsh – CL of 20-30 kg N/ha/yr
 - Coastal stable dune grassland (acidic type) – CL of 8-10 kg N/ha/yr
 - Shifting coastal dunes – CL of 10-20 kg N/ha/yr
- 5.13 Exceedances of the CLs may lead to changes in the composition of these botanic communities, including an increase in tall grasses and late successional species, as well as a decrease in prostrate plants. For common terns in particular, a significant increase in nitrogen deposition may reduce the amount of suitable bare habitat for nesting.

¹⁰⁹ Available at: <http://publications.naturalengland.org.uk/publication/6579320399069184> [Accessed on the 23/06/2021]

¹¹⁰ Liley D., Panter C., Marsh P. & Roberts J. (2017). Recreational activity and interaction with birds within the SSSIs on the North-West coast of England. Footprint Ecology report for Natural England. 127pp.

¹¹¹ Meeting between West Lancashire Borough Council (WLBC) and Natural England held at the WLBC offices in Ormskirk on Monday 29th April 2019.

- 5.14 Coastal saltmarsh is concentrated in the northern part of the SPA / Ramsar, along the Ribble estuary. With regard to coastal saltmarsh within the Ribble & Alt Estuaries SPA / Ramsar, the only section of this habitat within 200m of a major road occurs along the A584 in the adjoining authority of Fylde (approx. 163m from the road). However, a review of Census 2011 journey-to-work data indicates that neither Fylde nor Blackpool, the authority to which the A584 connects, are within the top ten sources or destinations of commuter traffic associated with West Lancashire. Therefore, it is concluded that this road will not be a significant journey-to-work route for residents of new development in West Lancashire, particularly given the intention to focus growth on the existing main population centres. LSEs of the Local Plan on saltmarsh habitat within the SPA / Ramsar can be excluded.
- 5.15 The dune habitats (and potential nesting locations for terns) that fall within the SPA / Ramsar, stretch along the coastline in the adjoining authority of Sefton. However, the closest stretch of SPA / Ramsar dune habitat lies further than 500m from the A565. This is beyond the 200m screening distance used for nitrogen deposition effects. Therefore, LSEs of the West Lancashire Local Plan on the dune habitats within the SPA / Ramsar can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway. It is to be noted that some dune habitat outside the SPA / Ramsar (which coincidentally may also support breeding common terns) lies within 200m of the A565. However, this is discussed in the section addressing the Sefton Coast SAC below.

Sefton Coast SAC

- 5.16 The Sefton Coast SAC is primarily designated for a variety of Annex I habitats that are all sensitive to significant increases in atmospheric nitrogen deposition, which may lead to a shift in plant community composition. Furthermore, petalwort is present within the site and may be outcompeted by graminoids under increased nutrient regimes. APIS identifies the following nitrogen CLs for the SAC's qualifying features:
- Fixed coastal dunes with herbaceous vegetation – CL of 8-10 kg N/ha/yr (acid type stable dune grassland)
 - Humid dune slacks – CL of 10-15 kg N/ha/yr (acid type dune slacks)
 - Embryonic shifting dunes – CL of 10-20 kg N/ha/yr
 - Shifting dunes along the shoreline with *Ammophila arenaria* – CL of 10-20 kg N/ha/yr
 - Atlantic decalcified fixed dunes – CL of 10-20 kg N/ha/yr
 - Dunes with *Salix repens* ssp *argentea* (*Salicion arenariae*) – CL of 10-20 kg N/ha/yr
 - Petalwort *Petalophyllum ralfsii* – CL of 10-20 kg N/ha/yr
- 5.17 The Sefton Coast SAC lies in the adjoining authority of Sefton, stretching along the coastline in a north-easterly to south-westerly direction. According to Census 2011 data, Sefton is the most frequent origin (25.1% of commuter journeys) and destination (25.7%) of commuter traffic associated with West Lancashire. Therefore, it must be reasonably assumed that a relatively large portion of future residents would also travel to work in Sefton. The closest point in the SAC encompassing dune habitat, lies approx. 155m from the A565 (Liverpool Road) between Southport and Formby. According to Natural England's Priority Habitat inventory there are Atlantic decalcified fixed dunes and dunes with *Salix repens* in this part of the SAC. However, this road is likely to be little used for journeys to work by residents of West Lancashire. When travelling to Formby or Southport there are direct routes that avoid this stretch of road, while for most journeys between West Lancashire and the LCR more broadly the A59 or M58 are far more likely routes.
- 5.18 Overall, given that the A565 is unlikely to be a significant journey-to-work route, LSEs of the West Lancashire Local Plan on the Sefton Coast SAC regarding atmospheric pollution can be excluded and the site is screened out from Appropriate Assessment (AA) in relation to this impact pathway.

Mersey Narrows & North Wirral Foreshore SPA / Ramsar

- 5.19 The Mersey Narrows & North Wirral Foreshore SPA / Ramsar lies on the Wirral Peninsula, relatively far from West Lancashire. A trip to anywhere near the site would involve crossing multiple authorities (Sefton, Liverpool) and a toll tunnel. Census 2011 data indicate that Wirral is not a top ten origin or destination of West Lancashire commuter traffic. Therefore, a realistic link between the West Lancashire Local Plan and nitrogen deposition to the SPA / Ramsar cannot be drawn. Furthermore, the site is designated for wader species that are not sensitive to nitrogen deposition. Indeed, some of these species could actually benefit from additional 'fertilisation' because they rely on invertebrate prey that is likely to increase in abundance with rising nitrogen concentrations. APIS indicates that the only air-quality sensitive species of the SPA / Ramsar is the breeding common tern. However, there is no coastal vegetated shingle or dune habitat on the Wirral peninsula (the SPA / Ramsar terns nest primarily in the Seaforth Nature Reserve in Sefton). Overall, LSEs of the West Lancashire Local Plan on the Mersey Narrows & North Wirral Foreshore SPA / Ramsar regarding atmospheric pollution can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Dee Estuary SAC

- 5.20 The Dee Estuary SAC largely overlaps with the Mersey Narrows & North Wirral Foreshore SPA / Ramsar, and a commuter journey from or to West Lancashire would require traversing Sefton, Liverpool, and the toll bridge. It encompasses habitats with varying degrees of sensitivity to nitrogen deposition. According to APIS, the most sensitive habitats in the SAC are the fixed coastal dunes with herbaceous vegetation (CL of 8-15 kg N/ha/yr), humid dune slacks (10-20 kg N/ha/yr), embryonic shifting dunes (10-20 kg N/ha/yr) and shifting dunes with *Ammophila arenaria* (10-20 kg N/ha/yr). An exceedance of nitrogen CLs may result in the biomass increase of tall graminoids, soil acidification and a loss of lichen species. However, these habitats occupy a relatively small proportion of the SAC (considerably less than 1% according to the JNCC website). The other main habitat with sensitivity to nitrogen deposition is the Atlantic salt meadows and *Salicornia* vegetation, both with a CL of 20-30 kg N/ha/yr, for which the lower limit is currently exceeded in places. Saltmarsh lies in the south-western part of Wirral, while dune habitat within the SAC is located in the Welsh authorities of Flintshire and Denbighshire.
- 5.21 According to Census 2011 data, none of these authorities are significant sources or destinations of commuter traffic associated with West Lancashire. As such, a realistic link between development in West Lancashire and sensitive habitats within the SAC cannot be drawn. Overall, LSEs on the Dee Estuary SAC regarding atmospheric pollution can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Loss of Functionally Linked Habitat

Martin Mere SPA / Ramsar

- 5.22 The Martin Mere SPA / Ramsar is designated for several non-breeding species of waterfowl, most notably pink-footed goose, whooper swan and Bewick's swan. All these species roost on open water at night and forage in surrounding farmland during the day. Natural England's Site Conservation Objectives Supplementary Advice Note specifies that the maintenance of supporting habitats (both within and outside the designated site boundary) is essential to the bird populations, noting specifically surrounding off-site arable habitat¹¹². Therefore, the allocation of agricultural greenfield sites in the West Lancashire Local Plan could lead to the loss of functionally linked foraging patches for SPA / Ramsar birds. LSEs of the West Lancashire Local Plan on the Martin Mere SPA / Ramsar regarding loss of functionally linked habitat cannot be excluded. The site is screened in for Appropriate Assessment.

Ribble & Alt Estuaries SPA / Ramsar

- 5.23 The qualifying assemblage of the Ribble & Alt Estuaries SPA / Ramsar encompasses a range of waders and waterfowl with varying dependency on functionally linked habitats. Most waders are

¹¹² Available at: <http://publications.naturalengland.org.uk/publication/4833056372293632> [Accessed on the 24/06/2021]

primarily restricted to the SPA boundary, although some species may occasionally roost outside the SPA. Species like teal and widgeon are likely to at least sometimes forage in off-site grassland. As highlighted in relation to the Martin Mere SPA / Ramsar, pink-footed geese and Bewick's swans are more tightly associated with functionally linked habitats, particularly arable land. For example, Barton & Pollock note that surrounding farmland sustains high numbers of roosting and foraging pink-footed geese¹¹³. The northern and western areas of West Lancashire (areas which lie close to the SPA / Ramsar) are relatively rural in nature and the development of greenfield sites here could result in the loss of functionally linked habitat. LSEs of the West Lancashire Local Plan on the Ribble & Alt Estuaries SPA / Ramsar regarding the loss of supporting habitats cannot be excluded. Therefore, this site is screened in for Appropriate Assessment.

Mersey Narrows & North Wirral Foreshore SPA / Ramsar

- 5.24 While the Mersey Narrows & North Wirral Foreshore SPA / Ramsar is designated for mobile waders and seabirds, none of these species are strongly associated with habitats outside the designated site boundary. Bar-tailed godwits and knot primarily roost and forage on the North Wirral Foreshore. While there is regular movement of individuals from this site to the Ribble and Alt Estuaries SPA / Ramsar (as indeed there is with other estuarine sites in north-west England), these movements are unlikely to involve stopovers in off-site habitats. Given the evidence, LSEs of the West Lancashire Local Plan on the Mersey Narrows & North Wirral Foreshore SPA / Ramsar regarding loss of functionally linked habitat can be excluded. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Sefton Coast SAC

- 5.25 The Sefton Coast SAC is partly designated for its mobile great-crested newt population (Annex II species), which is partly dependent on terrestrial habitats outside the established SAC boundary. Outside the breeding season, great-crested newts utilise terrestrial habitats (e.g. meadows, tussocky grassland, scrub, woodland, farmland) for dispersal, shelter and foraging. There are significant inter-individual differences in dispersal distance, but Natural England's Site Conservation Objectives Supplementary Advice Note highlights that the expected core off-site distance travelled by newts around breeding ponds is 500m. The primary newt breeding ponds lie in the Ainsdale Sand Dunes National Nature Reserve (NNR) and Ainsdale Sandhills Local Nature Reserve, in the part of the SAC that lies closest to West Lancashire (approx. 431m). However, in order to use terrestrial habitats in West Lancashire, great-crested newts would need to cross the A565, which is likely to act as a barrier to dispersal. Overall, LSEs of the West Lancashire Local Plan on the Sefton Coast SAC regarding loss of functionally linked habitat can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Water Quality

Martin Mere SPA / Ramsar

- 5.26 The qualifying bird assemblage of the Martin Mere SPA / Ramsar has some sensitivity to negative changes in water quality. While geese and swans, which mainly use the SPA / Ramsar for roosting, are unlikely to be affected by increases in the volume of treated sewage effluent and phosphate concentrations, teal and pintails are more sensitive due to potential cascading effects on the SPA / Ramsar food web. The mere sits amidst a complex network of streams and drainage ditches, which supplies freshwater to the site. But a brief review of the European Commission Urban Waste Water website¹¹⁴, indicates that Burscough Wastewater Treatment Work (WwTW) is located immediately south of the SPA / Ramsar boundary. The WwTW discharges into the Boat House Sluice, which partly runs through the site's marshland habitats. As such, any allocations within the catchment of these works would have the potential to increase phosphate concentrations in the Martin Mere SPA / Ramsar. The likelihood of any impacts will depend on

¹¹³ Barton C. & Pollock C. (2005). Review of overwintering swans and geese in the SEA 6, 7 & 8 areas. Department for Trade and Industry (DTI).

¹¹⁴ Available at: <https://uwatd.eu/United-Kingdom/treatment-plant/ukennwuutp000025/2016>. It is to be noted that while this resource does not show all WwTWs in respective locations, it is a suitable starting point for assessing hydrological linkages.

the distribution of development allocated in the West Lancashire Local Plan, which are not yet available. Therefore, LSEs of the Local Plan on the Martin Mere SPA / Ramsar regarding water quality cannot be excluded. The site is screened in for Appropriate Assessment.

Ribble & Alt Estuaries SPA / Ramsar

- 5.27 The assemblage of overwintering birds in the Ribble & Alt Estuaries SPA / Ramsar, especially waders and seabirds, are sensitive to the input of nitrogen from treated sewage effluent. High nitrogen concentrations in the water can cause phytoplankton and macroalgal blooms, leading to increased turbidity levels and decreased dissolved oxygen concentrations. This can result in knock-on impacts on fish, epifauna and infauna communities, potentially reducing prey availability for SPA / Ramsar birds. Natural England's Site Improvement Plan does not specify water pollution as a threat / pressure to the site and the Environment Agency's Weight of Evidence approach characterises the risk of eutrophication in the site as low. Nonetheless, several water catchments that are linked to West Lancashire drain into the Rivers Ribble and Alt, including the Operational Catchments 'Crossens System', Alt and Douglas. Therefore, development under the West Lancashire Local Plan is likely to contribute additional nitrogen from treated sewage effluent to the SPA / Ramsar. LSEs of the West Lancashire Local Plan on the Ribble & Alt Estuaries SPA / Ramsar regarding water quality cannot be excluded. The site is screened in for Appropriate Assessment.

Liverpool Bay SPA

- 5.28 The main rationale behind the designation of the Liverpool Bay SPA is to protect the foraging grounds of little and common terns, little terns, as well as several seabird species (e.g. red-throated diver, common scoter). These birds all rely on fish species as their main prey sources. Treated sewage discharge from West Lancashire draining into the sea along the Sefton coastline has the potential to affect prey availability through eutrophication effects. However, several factors require consideration in relation to the SPA. At its closest point, the SPA lies approx. 640m from the coast. The long flow path between West Lancashire and the SPA indicates that any nitrogen is likely to be sufficiently attenuated and diluted by the time it arrives in SPA waters. Furthermore, the open nature, mixing conditions and relatively cold water means that the site is at relatively low risk from eutrophication. This is supported by Natural England's Site Improvement Plan, which does not highlight point-source pollution as a threat / pressure to the site. Therefore, LSEs of the West Lancashire Local Plan on the Liverpool Bay SPA regarding water quality can be excluded. The site is screened out from Appropriate Assessment.

Mersey Narrows & North Wirral Foreshore SPA / Ramsar and Dee Estuary SAC

- 5.29 The Mersey Narrows & North Wirral Foreshore SPA / Ramsar and the Dee Estuary SAC, both within 15km of West Lancashire, are sites that are sensitive to water pollution (both from treated wastewater and industrial pollutants). Both the Dee Estuary and the Lower River Dee have problems with nutrient enrichment, failing nitrogen and macroalgal targets. Natural England's Site Improvement Plan highlights that industrial sites are also point-sources of pollutants¹¹⁵. However, while a clear sensitivity to water quality changes is present in these sites, it is very unlikely that West Lancashire would contribute to pollutant loadings. For example, Skelmersdale WwTW, the works serving the most south-westerly conurbations in West Lancashire, discharge into the River Douglas. This river is a tributary of the Ribble Estuary in the northern part of the authority. It is concluded that there is no hydrological linkage between the West Lancashire Local Plan and these two European sites. Therefore, they are screened out from Appropriate Assessment in relation to this impact pathway.

Sefton Coast SAC

- 5.30 Great-crested newts, one of the qualifying features of this SAC, are potentially sensitive to significant changes in water quality. The newts rely on partially vegetated breeding ponds with an adequate supply of freshwater invertebrates. These can be impacted by eutrophication and

¹¹⁵ Available at: <http://publications.naturalengland.org.uk/publication/6579320399069184> [Accessed on the 24/06/2021]

concomitant reductions in dissolved oxygen concentrations. This may primarily be brought about by an increase in treated sewage effluent arising from development, if relevant freshwater bodies are in hydrological continuity with SAC ponds. The hydrology of the dune systems is not fully understood, but it is unlikely that a significant volume of water derives from surface freshwater bodies. It is assumed that the dune breeding ponds are fed by a combination of rain- and groundwater and it is therefore unlikely that treated sewage effluent from West Lancashire will reach the SAC (and in particular the locations of the breeding ponds). Overall, LSEs of the West Lancashire Local Plan on the Sefton Coast SAC regarding water quality can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Water Quantity, Level and Flow

Martin Mere SPA / Ramsar

- 5.31 The qualifying bird assemblage in the Martin Mere SPA / Ramsar is critically dependent on sufficient water levels for both roosting and foraging habitat. This particularly applies to duck species, which are visual predators that forage optimally in given water depths. For example, pintail require a water depth of 0.1-0.3m across 50% of the standing water area. Any deviations from this optimum range may impair their foraging success. Natural England's Site Improvement Plan highlights hydrological changes as the primary threat to the SPA / Ramsar, specifically due to the shrinkage of peat surrounding the site due to agricultural activity and land drainage. Active pump and drainage management is in operation on site to prevent water from draining into surrounding land, lowering the water level in its marshland habitat. Due to the need for supplying new households with potable water, the West Lancashire Local Plan may contribute to a drop in standing water level within the site.
- 5.32 West Lancashire lies in United Utilities' New Strategic Resource Zone, supplying a population of 7 million with an average volume of 1,697 million litres of potable water per day. However, this water company sources its water from reservoirs in the Pennines and the Lake District, Lake Vyrnwy in Wales and from boreholes and streams in the R. Dee catchment. None of these sources are hydrologically connected with the Martin Mere SPA / Ramsar. The company's Water Resources Management Plan 2019¹¹⁶ does not propose future resource options in the catchment of the site. This is in line with Amec Foster Wheeler's HRA of the WRMP¹¹⁷, which did not establish any links between the WRMP and the SPA / Ramsar. Therefore, LSEs of the West Lancashire Local Plan on the Martin Mere SPA / Ramsar regarding water quantity, level and flow can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Ribble & Alt Estuaries SPA / Ramsar

- 5.33 The wildfowl assemblage of the Ribble & Alt Estuaries SPA / Ramsar relies on sufficient water area / water depth for foraging, roosting and loafing. The intertidal nature of the site means that these habitat parameters will be determined by the interplay of sea- and freshwater. Increased abstraction from the catchments of the Rivers Ribble and Alt would have the potential to reduce the volume of freshwater supplied to the SPA / Ramsar. United Utilities, the company responsible for the potable water supply in north-western England, sources the vast majority of water from reservoirs in Cumbria.
- 5.34 A review of United Utilities' WRMP indicates that the Strategic Water Resource Zone (in which West Lancashire lies) is forecast to have a supply-demand balance that enters into a small deficit (approx. 3 Ml/d) towards the end of the planning period. However, as highlighted in the WRMP HRA, this deficit will primarily be addressed through demand management options such as leakage reductions and improvements to the water transport system. There are no suggestions for new resource options or increases in abstraction consents within the catchments of the R. Ribble and R. Alt. Therefore, LSEs of the West Lancashire Local Plan on the Ribble & Alt

¹¹⁶ Available at: <https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/water-resources-management-plan/> [Accessed on the 25/06/2021]

¹¹⁷ Available at: https://www.unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/wrmp-2019---2045/final-water-resources-management-plan-2019-habitats-regulations-assessment.pdf [Accessed on the 25/06/2021]

Estuaries SPA / Ramsar regarding water quantity, level and flow can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Mersey Narrows & North Wirral Foreshore SPA / Ramsar and Dee Estuary SAC

- 5.35 The Dee Estuary SAC and Mersey Narrows & North Wirral Foreshore SPA / Ramsar are considered together due to their partial overlap and the interdependency of their qualifying features. Both sites depend on sufficient freshwater input to maintain the salinity in aquatic habitats and stability in invertebrate communities. For example, the diversity of invertebrates decreases with increasing salinity and waders / waterfowl tend to be more abundant near estuarine freshwater inflows. Therefore, a decrease in the volume of freshwater to these sites (for example through the delivery of the West Lancashire Local Plan) has the potential to impact both SAC and SPA / Ramsar features.
- 5.36 United Utilities' WRMP highlights that the company manages some water abstractions in the R. Dee catchment, including boreholes and stream abstraction points. However, this HRA does not assess the existing consents regime, which would have been addressed in the Environment Agency's Review of Consents process and undergone previous HRA. A review of the WRMP (and its HRA) indicates that the company does not propose new abstractions in the R. Dee and R. Mersey catchments, both of which could influence freshwater volume in the above European sites. Therefore, LSEs of the West Lancashire Local Plan on the Dee Estuary SAC and the Mersey Narrows & North Wirral Foreshore SPA / Ramsar regarding water quantity, level and flow can be excluded. These sites are screened out from Appropriate Assessment in relation to this impact pathway.

Sefton Coast SAC

- 5.37 The Sefton Coast SAC encompasses two features that rely on sufficient freshwater input, including humid dune slacks (low-lying dunes that are seasonally flooded) and great-crested newts, the latter depending on dune pools for reproduction. These features are likely to be primarily supported by rainwater and high water tables, rather than being connected to the deeper aquifer. As such, the threat of potential water abstractions to the ecological integrity of the SAC is likely to be minimal. Furthermore, as highlighted in the previous sections, United Utilities' 2019 WRMP does not propose new resource options in the hydrological catchment of the SAC. Therefore, LSEs of the West Lancashire Local Plan on the Sefton Coast SAC regarding water quantity, level and flow can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Visual and Noise Disturbance (During Construction) – European Sites and Functionally Linked Habitat

Martin Mere SPA / Ramsar

- 5.38 Waterfowl is sensitive to human presence, including visual and auditory stimuli. One of the primary ways in which planning documents can cause visual and noise disturbance to waterfowl, is the construction of new developments (both residential and employment). Construction works may require workers to use loud machinery (e.g. impact piling) or simply be present in the proximity of a European site. The Martin Mere SPA / Ramsar lies centrally in West Lancashire to the north of Burscough. The site is surrounded by agricultural land, some of which may be allocated as greenfield sites in the West Lancashire Local Plan. Given that site allocations are not yet available, this impact pathway will need to be assessed further as the Plan progresses through its stages of development. Currently, LSEs of the West Lancashire Local Plan on the Martin Mere SPA / Ramsar regarding visual and noise disturbance cannot be excluded. The site is screened in for Appropriate Assessment.

Ribble & Alt Estuaries SPA / Ramsar

- 5.39 The Ribble & Alt Estuaries SPA / Ramsar is also sensitive to visual and noise disturbance from construction works. This site borders the northern edge of West Lancashire and is abutted by extensive tracts of farmland. If any of the greenfield sites were to be allocated in the West Lancashire Local Plan, there would be a risk of visual and noise disturbance to the qualifying bird population. Given that site allocations have not been confirmed, LSEs of the Plan on the Ribble & Alt Estuaries SPA / Ramsar regarding visual and noise disturbance cannot be excluded. The site is screened in for Appropriate Assessment.

Mersey Narrows & North Wirral Foreshore SPA / Ramsar

- 5.40 While the qualifying birds in the Mersey Narrows & North Wirral Foreshore SPA / Ramsar are sensitive to visual and noise disturbance, the site lies approx. 8.9km to the south-west of West Lancashire. This is too far for any disturbance to arise from construction processes. However, SPA / Ramsar birds that visit functionally linked habitats in West Lancashire may be disturbed by construction activities. However, all suitable greenfield sites will require assessment with regard to the Martin Mere SPA / Ramsar and the Ribble & Alt Estuaries SPA / Ramsar. This will ensure that the performance of functionally linked habitats for the wider network of SPAs / Ramsars is not impacted. Therefore, this site is screened out from Appropriate Assessment.

Coastal Squeeze

Ribble & Alt Estuaries SPA / Ramsar

- 5.41 The Ribble & Alt Estuaries SPA / Ramsar is the only coastal or estuarine site within West Lancashire, where development immediately inland from intertidal habitats would prevent these habitats from migrating landward to respond to climate change induced sea level rise. The estuarine coastal saltmarsh, essential supporting habitat for SPA / Ramsar bird species, abuts extensive tracts of agricultural in north West Lancashire. At the time of undertaking this screening exercise, site allocations were not available. Overall, LSEs of the West Lancashire Local Plan on the Ribble & Alt Estuaries SPA / Ramsar cannot be excluded. The site is screened in for Appropriate Assessment. The AA would entail an appraisal of sites allocated in the Plan in relation to SPA / Ramsar habitats, while also considering the adopted Shoreline Management Plan for the area.

Impacts from Tall Structures (e.g. Telecommunications Infrastructure or Wind Farms)

Collision Mortality

Martin Mere SPA / Ramsar, Ribble & Alt Estuaries SPA / Ramsar and Mersey Narrows & North Wirral Foreshore SPA / Ramsar

- 5.42 All SPAs / Ramsars along the coastline of north-western England are designated for mobile waders, waterfowl and seabirds. The likelihood of collision varies considerably between species, with body size, wing loading and manoeuvrability all contributing significantly to collision risk. Geese species, qualifying species of several European sites in the wider Liverpool City Region, are bulkier and slower, finding it more difficult to change direction abruptly. The north-west of England is an area of high bird activity with individuals routinely moving between marine, estuarine and inland sites, likely compounding the risk of collision mortality. Therefore, LSEs of the West Lancashire Local Plan on European sites regarding collision mortality cannot be excluded. These sites are screened in for Appropriate Assessment. The AA is likely to involve an assessment of the areas identified for wind energy development in relation to the qualifying bird species and their off-site foraging and roosting habitats.

Disturbance Displacement and Impacts on Flightlines

Martin Mere SPA / Ramsar and Ribble & Alt Estuaries SPA / Ramsar

5.43 Disturbance displacement is an impact pathway whereby tall structures result in the permanent or temporary displacement of sensitive bird species from optimum foraging habitats or preferred roosting sites. Such displacement may occur both within European sites or functionally linked supporting habitats. The risk of disturbance displacement would be highest if telecommunications infrastructure or wind farms were to be allocated in northern and central West Lancashire. Given that the geographic areas identified for renewable energies are not yet available, LSEs of the West Lancashire Local Plan on the Martin Mere SPA / Ramsar and the Ribble & Alt Estuaries SPA / Ramsar cannot be excluded. These sites are screened in for Appropriate Assessment. An AA for this impact pathway is likely to encompass an appraisal of the areas allocated for alternative energy or telecommunications development (where available) and disturbance displacement sensitivities of different qualifying SPA / Ramsar species.

In-Combination Assessment

5.44 It is a requirement of the Habitats Regulations to not only assess the impacts of development plans not solely in isolation, but also in-combination with other plans and projects. This is not relevant for impact pathways for which a realistic direct link cannot be established, but it is designed to capture impacts that may be too small to be relevant individually. The screening table in Appendix 2 provides an assessment of LSEs both alone and in-combination. Given the relatively long distance of West Lancashire Borough to most European sites, it is considered that some policies will primarily present a potential threat to site integrity in-combination. The following are policies that are considered to have an inconsequential impact alone, but may result in cumulative effects when considered in-combination with other plans and projects:

- Policy – Delivering Sustainable Development
- Policy – Preserving and enhancing the Borough's Landscape and Land Resources
- Policy – Gypsies and Travellers and Travelling Showpeople
- Policy – Accommodation for Temporary Agricultural Workers
- Policy – Adapting our Town and Local Centres

5.45 However, the Martin Mere SPA / Ramsar lies in the heart of the borough and the allocation of large strategic housing or employment sites, tall telecommunications infrastructure and wind energy schemes in the vicinity of the site may lead to LSEs alone, particularly in relation to impact pathways such as recreational pressure and loss of functionally linked habitat. Therefore, the following policies have been also screened in for Appropriate Assessment alone:

- Policy – Housing and Employment Land Requirements
- Policy – Strategic Development Sites
- Policy – Where housing can go
- Policy – Providing and Managing Employment Areas
- Policy – Communications and Digital Connectivity Infrastructure
- Policy – Low Carbon and Renewable Energy

5.46 It is to be noted that the detail of any Appropriate Assessment (AA) is unlikely to materially differ between an assessment alone or in-combination. This is because the evidence base for an AA inherently takes cumulative effects into account. For example, Air Quality Impact Assessments (AQIAs) consider the future traffic projections in all adjoining authorities. Visitors surveys, which are used to delineate core recreation catchments, represent a multiple authority approach in their visitor counts and interviews. The in-combination approach is critical because residents from authorities other than West Lancashire (e.g. Sefton, Liverpool City and others) will also each contribute a portion to relevant impact pathways. The Reg. 19 HRA of the West Lancashire Local

Plan will consider the development plans and corresponding HRAs of neighbouring authorities wherever relevant.

6. Screening Conclusions

Impact Pathway: Recreational Pressure

- 6.1 The HRA assessed the potential implications of the West Lancashire Local Plan regarding recreational pressure. Given that the Plan may allocate new residential housing and gypsy and traveller sites within close proximity to several European sites, it was concluded that LSEs on the Ribble & Alt Estuaries SPA / Ramsar and the Sefton Coast SAC cannot be excluded. The Appropriate Assessment (AA) for this impact pathway is likely to encompass a detailed consideration of visitor survey results, the distribution of residential growth in West Lancashire and appraising the Recreation Mitigation and Avoidance Strategy (RMAS) emerging in the wider Liverpool City region.

Impact Pathway: Atmospheric Pollution

- 6.2 The population and employment space increase will lead to an increase in the volume of commuter traffic within the authority. Sefton is the major origin and destination for commuter traffic associated with West Lancashire and the A565 runs within 200m of sensitive dune habitat in the Sefton Coast SAC to the south of Southport. However, it is considered that the A565 is not a major route used by commuter traffic to and from West Lancashire, as there are several other routes connecting to Sefton that avoid this stretch of road. Therefore, there will be no LSEs of the West Lancashire Local Plan on the Sefton Coast SAC regarding atmospheric pollution. The site is screened out from Appropriate Assessment regarding this impact pathway.

Impact Pathway: Loss of Functionally Linked Habitat

- 6.3 The Borough of West Lancashire, particularly its northern and western areas surrounding the Martin Mere SPA / Ramsar and the Ribble & Alt Estuaries SPA / Ramsar, is relatively rural in nature. Both European sites are designated for mobile bird species that rely on functionally linked habitats (e.g. agricultural fields, wet grassland) for foraging and building up their energy reserves. The potential for losing supporting habitats depends on the type, size and habitat of sites allocated in the West Lancashire Local Plan. The AA for this impact pathway is likely to encompass a detailed appraisal of allocated sites, bird records and, potentially, bespoke overwintering bird surveys undertaken at the plan-level.

Impact Pathway: Water Quality

- 6.4 Development outlined in the West Lancashire Local Plan may be associated with negative water quality impacts in one of two ways: The increase in the volume of treated sewage effluent associated with new housing and water surface run-off arising from impermeable surfaces. LSEs of the Plan regarding water quality could not be excluded in relation to the Martin Mere SPA / Ramsar and the Ribble & Alt Estuaries SPA / Ramsar, both of which depend on sufficient water quality. Potential water quality impacts will in the main part be determined by the distribution of growth, the discharge location and permitted headroom of relevant WwTWs and the distance to ecological receptors. The AA would also assess site locations with regard to their potential of causing water quality impacts via surface run-off.

Impact Pathway: Water Quantity, Level and Flow

- 6.5 All European sites within 15km of the West Lancashire Borough boundary depending on sufficient freshwater quantity or level were screened for LSEs. However, it was determined that the West Lancashire Local Plan would not impact the water levels in any of the sites. United Utilities, the company for the potable water supply in West Lancashire, mainly uses water sources in Cumbria and Wales, none of which are in hydrological connection to the relevant European sites. Furthermore, it was determined that the company's WRMP does not encompass future resource options that involve the catchments of these designated sites.

Impact Pathway: Visual and Noise Disturbance (During Construction) – European Sites and Functionally Linked Habitats

- 6.6 Waders, waterfowl and seabirds in the Martin Mere SPA / Ramsar and the Ribble & Alt Estuaries SPA / Ramsar are sensitive to visual and noise disturbance from construction works. This applies to European sites themselves as well as functionally linked habitats, because construction disturbance may impede the ability of birds to forage / roost in key supporting sites. The AA for this impact pathway will assess individual site allocations (which are not yet available) in their geographic relation to the SPAs / Ramsars. Sites beyond 300m are unlikely to result in visual and noise disturbance, but mitigation measures are likely to be required where allocations fall within this buffer zone.

Impact Pathway: Coastal Squeeze

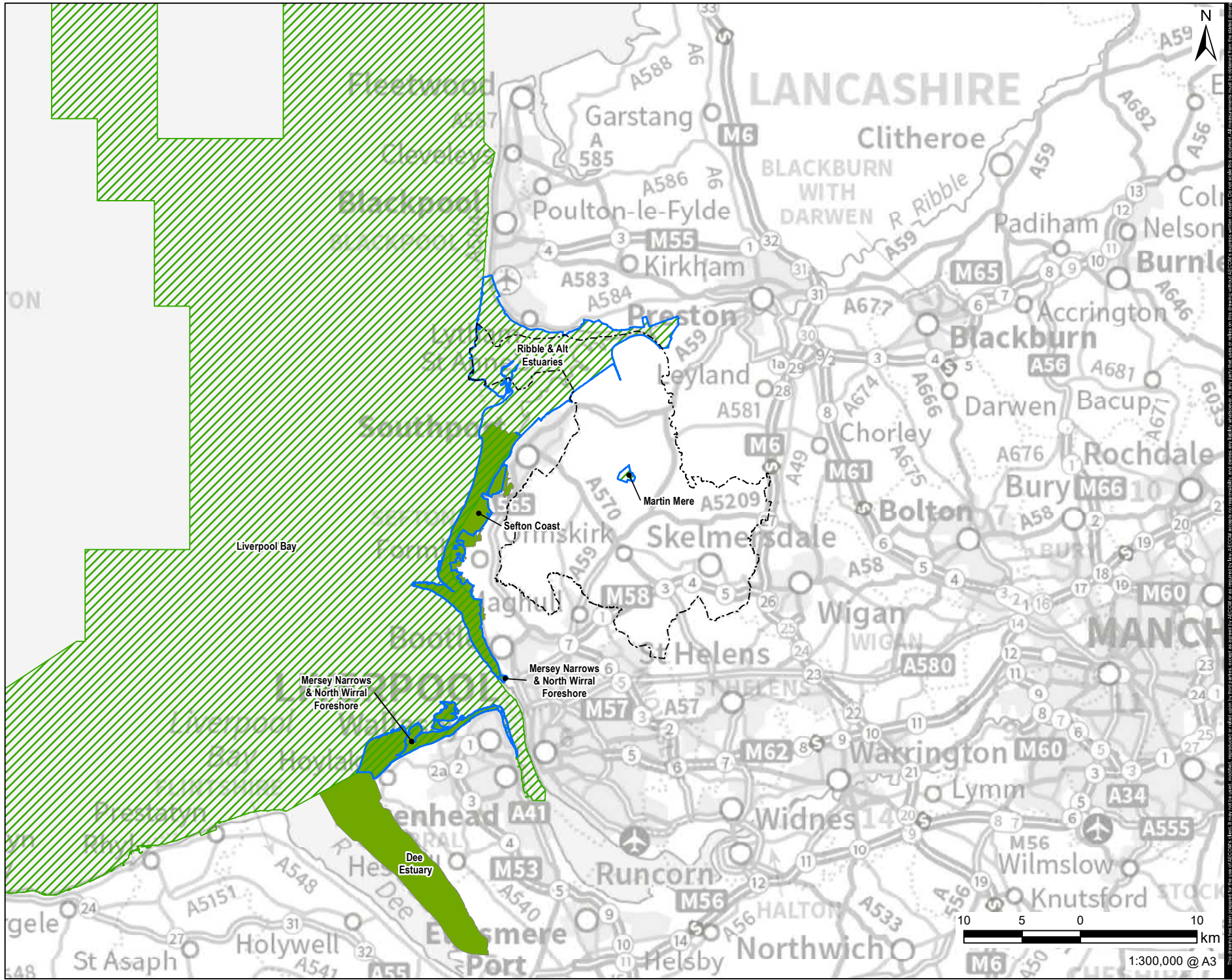
- 6.7 The Ribble & Alt Estuaries SPA / Ramsar in the northern part of West Lancashire is abutted by agricultural land. Allocating any of these agricultural parcels as greenfield sites in the Plan may exacerbate coastal squeeze and could diminish the area of habitat available to SPA / Ramsar birds. This impact pathway will need to be considered further once site allocations are available and assessed in the context of the relevant Shoreline Management Plan.

Impact Pathway: Impacts from Tall Structures (Collision Mortality, Disturbance Displacement and Impacts on Flightlines)

- 6.8 The West Lancashire Local Plan supports the delivery of essential telecommunications infrastructure and wind energy developments, both of which are likely to involve the construction of tall buildings. Any sites delivered across West Lancashire, but particularly in its central, northern and western areas, will be associated with risks of collision mortality, disturbance displacement and impacts of flightlines. The AA for this impact pathway would likely assess the sensitivity of individual species to each of these issues.

7. Appendices

Appendix 1: Map of the European sites within 15km of the West Lancashire Borough boundary.



NOTES

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ISSUE PURPOSE

DRAFT

PROJECT NUMBER

60662021

SHEET TITLE

EUROPEAN SITES WITHIN
15KM OF THE WEST LANCASHIRE
BOROUGH BOUNDARY

SHEET NUMBER

Figure 1

Appendix 2: Screening of Plan Policies

Appendix 2 presents an HRA screening assessment of all preferred policies considered for the West Lancashire Local Plan, alone and ‘in-combination’ with other plans. Where policies have been coloured green in the ‘Test of Likely Significant Effect (LSEs)’ column, this indicates that the policy is not associated with linking impact pathways to European sites and has been screened out from further consideration. Where policies are coloured orange, this indicates that the policy provides for potential impact pathways linking to European sites and has been screened in for Appropriate Assessment.

Policy number/ name	Policy detail	Test of Likely Significant Effects (LSEs) Alone	Test of LSEs In-Combination
Strategic Policies			
Delivering Sustainable Development	<p>This policy will set the settlement hierarchy for West Lancashire and support a presumption in favour of sustainable development in line with the National Planning Policy Framework. Identification of the hierarchy (with most growth directed to settlements at the top of the hierarchy) will be based on the Sustainable Settlement Study 2021.</p> <p><u>Comment:</u> The alternative policy approach would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded.</p> <p>Given the distances to European sites, it is considered unlikely that this policy would lead to LSEs alone. Impact pathways in the north-west are an in-combination issue (see column to the right).</p>	<p>LSEs of this policy on European sites in-combination cannot be excluded.</p> <p>This policy seeks to deliver sustainable development across the borough in line with the NPPF. While sustainable development is positive, the policy will specify the location of residential and economic development.</p> <p>Proximity to European sites is a key determinant of the magnitude of impact pathways. For example, regarding recreational pressure, residents living closer to designated sites, are more likely to visit for outdoor activities.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Recreational pressure • Loss of functionally linked habitat • Atmospheric pollution

			<ul style="list-style-type: none"> • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Housing and Employment Land Requirements	<p>This policy will detail the quantum of housing and employment floorspace to be delivered in West Lancashire. It will be written once the Housing and Employment Needs Assessment (HEDNA) is complete and requirements have been agreed upon by members</p> <p><u>Comment:</u> Five different spatial distribution options for housing and employment land requirements have been proposed. However, all options are determined to lead to LSEs and would need to be taken forward to Appropriate Assessment.</p>	<p>LSEs of this policy on European sites alone cannot be excluded.</p> <p>Depending on the quantum and location of housing and employment development, this policy could lead to LSEs alone, particularly if delivered in close proximity to the Martin Mere SPA / Ramsar. Please see column to the right for potential impact pathways.</p> <p>Overall, this policy would be screened in for Appropriate Assessment.</p>	<p>LSEs of this policy on European sites in combination cannot be excluded.</p> <p>This policy will set the amount of housing and employment land to be delivered under the Local Plan. The quantum of development is a key factor in determining the potential magnitude of impact pathways.</p> <p>For example, developments will need to be connected to sewerage infrastructure and result in increased volumes of treated sewage effluent being discharged from Wastewater Treatment Works. Such effluent has the potential to result in water quality impacts on freshwater and marine sites (through phosphorus and nitrogen respectively).</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Recreational pressure

			<ul style="list-style-type: none"> • Loss of functionally linked habitat • Atmospheric pollution • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Climate Change and Environmental Sustainability	<p>The preferred policy approach would introduce a new strategic policy covering climate change and environmental sustainability. Development proposals would likely need to achieve net-zero efficiency, while low-carbon and renewable energy generation would also be supported. A shift away from private car travel to active and sustainable travel modes would be encouraged.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy addresses climate change and advocates low-carbon / renewable energies.</p> <p>Therefore, it contains provisions that will be positive for reducing atmospheric pollution, such as the support of active / sustainable transport modes. There are no impact pathways linking to European sites.</p> <p>Overall, this policy would be screened out from Appropriate Assessment.</p>
Settlement Boundaries, Protected Land and Green Belt	This policy will stipulate the permitted development within and outside of settlement boundaries. For example, within settlement boundaries development will be permitted, with preference given to brownfield redevelopment. Outside settlement boundaries, land will be designated as Protected Land or Green Belt, with development permissions following national policy.	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy identifies the type of development that will be permitted within and outside of settlement boundaries.</p>

		<p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>		<p>It contains the positive provision that planning applications will focus on the redevelopment of brownfield sites, rather than utilising greenfield sites. Therefore, any potential loss of functionally linked habitats will be less likely.</p> <p>Overall, this policy would be screened out from Appropriate Assessment.</p>
Strategic Development Sites	<p>As part of the Local Plan some strategic development sites may come forward, in addition to smaller individual sites addressed in housing / employment land allocation policies.</p> <p><u>Comment:</u> Strategic development sites have not yet been identified and no alternative sites have been proposed. Therefore, all Strategic Development Sites will need to be appropriately assessed at the next stage of the Plan.</p>	<p>LSEs of this policy on European sites alone cannot be excluded.</p> <p>Depending on the size and location of strategic development sites, this policy could lead to LSEs alone, particularly if delivered in close proximity to the Martin Mere SPA / Ramsar. The Strategic Development Sites will be assessed at the next Plan stage. Please see column to the right for potential impact pathways.</p> <p>Overall, this policy would be screened in for Appropriate Assessment.</p>	<p>LSEs of this policy on European sites cannot be excluded.</p> <p>This policy identified that some strategic development sites may come forward under the Local Plan. Such sites are likely to encompass larger quanta of residential and / or employment growth, and thus will require special attention in the HRA process. The Strategic Development Sites will be assessed at the next Plan stage.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none">• Recreational pressure• Loss of functionally linked habitat• Atmospheric pollution• Water quality• Water quantity, level and flow• Visual and noise disturbance (during construction)	

			<ul style="list-style-type: none"> Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Environment and Health Policies			
Preserving and Enhancing the Borough's Nature	<p>This policy will continue the approach taken in the adopted West Lancashire Local Plan. Primarily, it will protect and safeguard all sites of international, national and local importance. Furthermore, development will need to ensure that no harm to nature conservation interests will occur and appropriate mitigation measures are secured.</p> <p>All biodiversity resource in the plan area will be conserved or, where possible, enhanced. Biodiversity Net Gain (BNG) will be required for all development sites, securing at least 10% BNG on site or on designated sites.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This is a policy that seeks to protect and safeguard all nature sites of international, national and local importance. It also obliges developers not to cause harm to nature conservation interests and provide for mitigation measures, where potential impacts cannot be excluded.</p> <p>Therefore, this policy provides essential protection to European sites and is not linked to any impact pathways.</p> <p>Overall, this policy would be screened out from Appropriate Assessment.</p>
Preserving and Enhancing the Borough's Landscape and Land Resources	<p>This policy continues the approach of the adopted West Lancashire Local Plan, preserving and enhancing the borough's natural environment, including land resources, coastal zone and landscape character. The policy restricts new development in key zones, such as high quality agricultural land and limits development in Coastal Zones to navigation, recreation, tourism, flood protection, fisheries, nature conservation and agriculture. The North West Marine Plan developed by the Marine Management Organisation will also be considered.</p>	<p>LSEs of this policy on European sites alone can be excluded.</p> <p>Given the distances to European sites, it is considered unlikely that this policy would lead to LSEs alone. Impact pathways in the north-west are an in-combination issue (see column to the right).</p>	<p>LSEs of this policy on European sites in-combination cannot be excluded.</p> <p>This policy will protect vulnerable landscapes and land resources by preventing land-use change on high-quality agricultural land and limiting uses in Coastal Zones.</p>

	<p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>		<p>While preventing residential and employment development in coastal areas is positive, development projects in relation to flood protection or tourism could still lead to impact pathways, such as surface water run-off, coastal squeeze and visual / noise disturbance.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Recreational pressure • Loss of functionally linked habitat • Atmospheric pollution • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Managing Flood Risk and Water Resources	<p>This policy will intend to ensure that development will not result in unacceptable flood risk or drainage problems, primarily by prohibiting proposals in areas of greatest flood risk. Furthermore, developments will be required not to dispose surface water to public foul sewers. Sustainable Drainage Systems (SuDS) should be delivered where possible. The policy will also comprise a section on water quality, water use and resource protection.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This positive policy protects the water quality and water quantity in West Lancashire's waterbodies. Avoiding areas of highest flood risk and installing SuDS are important mitigation measures to prevent adverse water quality effects via surface run-off during flooding events. AECOM considers that this policy is key for the delivery of the</p>

			<p>Local Plan, given that the borough is adjoined by several estuarine European sites.</p> <p>This policy provides essential protection to European sites and is not linked to any impact pathways.</p> <p>Overall, this policy would be screened out from Appropriate Assessment.</p>
Contamination and Pollution	<p>Broadly, this policy aims to minimize contamination and pollution in West Lancashire, especially with regard to human health. Furthermore, proposals should seek to remediate and restore contaminated land. Developers must assess the nature, degree and extent of contamination by carrying out preliminary investigations. Developments that are likely to result in unacceptable levels of pollution or contamination will not be supported.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>An aim of minimizing contamination and pollution is inherently positive. However, the focus of this policy is clearly on human health, which has no direct relevance to European sites. Therefore, there are no linking impact pathways for nature conservation interests.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Air Quality	<p>New developments should be designed to minimise negative air quality impacts and look for opportunities to improve air quality, such as by encouraging a reduction in the use of motor vehicles and supporting renewable energy sources.</p> <p><u>Comment:</u> Not including this policy would imply that no screening would need to be undertaken.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This positive policy aims at improving the air quality in West Lancashire. It obliges developers to employ beneficial measures, such as by promoting green / active travel modes and supporting renewable energy developments.</p>

			<p>Air pollution via atmospheric nitrogen deposition is a key threat to the supporting habitats of many overwintering bird species. For example, dune and saltmarsh habitats support qualifying species in the Ribble & Alt Estuaries SPA / Ramsar. Nitrogen deposition to these habitats can lead to changes in the botanical community composition and may threaten the ability to support SPA / Ramsar bird populations.</p> <p>Supporting sustainable transport modes is a key mitigation approach adopted in many other authorities. This approach is likely to help reduce atmospheric nitrogen deposition to sensitive habitats.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Green Infrastructure and Open Space	<p>Approach 1: An overarching Green Infrastructure (GI) policy that protects and enhances the GI network, while also improving cycling and walking infrastructure. This policy would represent a framework for more detailed policies.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p> <p>Approach 2: This would encompass both open spaces and built leisure facilities. It would protect from the loss of such uses, specifying in which geographic locations,</p>	<p>LSEs of these policy approaches (and their proposed alternatives) on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of these policy approaches (and their proposed alternatives) on European sites in-combination.</p> <p>These policy approaches seek to protect and improve the GI network, open spaces and built leisure facilities. Approach 2 would also set open space requirements in new residential developments. Approach 4 extends protection to trees, woodlands and hedgerows.</p>

	<p>except under certain circumstances. Furthermore, it would provide the open spaces standards in new residential development. Play pitch requirements would also be considered by referring to the West Lancashire Playing Pitch Strategy.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p> <p>Approach 3: This would be a companion policy to Approach 2, identifying the types of residential developments the open space standards would apply to. It would encompass a table of costs for providing and maintaining different types of open spaces, in the case that this cannot be provided on site.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p> <p>Approach 4: Provides protection and enhancement of existing trees, woodlands and hedgerows. It would set out how such features would need to be considered in relation to planning applications and what type of compensation may be required. Furthermore, the protection of ancient woodland and veteran trees would be provided.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>		<p>All policy approaches are positive for the environment and maintain a network of green, open spaces that are publicly accessible. Preserving and / or enhancing open space is a key mitigation approach for recreational pressure, because this helps absorb recreation locally. West Lancashire is adjoined by estuarine sites designated for overwintering birds, which are sensitive to disturbance. There are no linking impact pathways for nature conservation interests.</p> <p>All policy approaches would be screened out from Appropriate Assessment.</p>
Healthy Eating and Drinking	<p>This policy promotes healthy eating and drinking, supported by a Healthy Eating and Drinking Supplementary Planning Document. All drinking establishments and hot food takeaways would need to be supported by a Health Impact Assessment (HIA). Criteria</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p>

	<p>for the locations of these uses in relation to schools and colleges would also be included.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>		<p>The policy aims to support healthy eating and drinking across West Lancashire with regard to drinking establishments and hot food takeaways. While this is a positive aim, it has no relevance for and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Housing and Communities Policies			
Where housing can go	<p>Preferred Approach 1: A policy that would link to Strategic Development Policy (Delivering Sustainable Development), but specifically focusing on housing development. Housing would be allowed in all non-Green Belt settlements. In the Green Belt housing development would only be permitted in line with national policy on Rural Exception Sites.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p> <p>Preferred Approach 1A: An extension to this policy would detail wording in relation to specific sites allocated for housing, with additional text detailing the requirements on each site.</p> <p><u>Comment:</u> Housing sites are not yet available and cannot be screened out at this stage. These will be assessed at the next Plan stage.</p>	<p>LSEs of these policies approaches on European sites alone cannot be excluded.</p> <p>Depending on the location of housing, both policies approaches could lead to LSEs alone, particularly if large numbers of dwellings were to be delivered in close proximity to the Martin Mere SPA / Ramsar. Please see column to the right for potential impact pathways.</p> <p>Overall, these policies would be screened in for Appropriate Assessment.</p>	<p>LSEs of these policy approaches on European sites cannot be excluded in-combination.</p> <p>Together these policy approaches will determine where housing will be delivered in West Lancashire. Housing will be permitted in all non-Green Belt settlements, while restrictions apply in the Green Belt. Furthermore, approach 1A will also provide detail on all individual allocations, most likely the number of homes and on-site requirements to be delivered.</p> <p>Both the quanta and geographic locations of housing allocations are important determinants of likely impacts on European sites. For example, a large number of homes delivered close to a European site will pose a greater threat regarding recreational pressure than a smaller site further away. Each allocation will require assessment</p>

			<p>individually as to whether Likely Significant Effects can be excluded.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Recreational pressure • Loss of functionally linked habitat • Atmospheric pollution • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, these policy approaches would be screened in for Appropriate Assessment.</p>
Using land efficiently	<p>This policy encourages residential development to be prioritised on brownfield sites rather than greenfield sites. A minimum density of 30 dwellings per hectare will be required, with a higher density of 40-50 dwellings to be delivered on urban sites.</p> <p><u>Comment:</u> The alternative policy approaches regarding preference for brownfield land development would not have changed the LSEs screening outcome. However, not prioritising brownfield sites for development would have removed some of the 'in-built' mitigation in the Plan.</p> <p><u>Comment:</u> The alternative policy approaches regarding housing density would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy approach on European sites in-combination.</p> <p>The overall aim of this policy is to set density requirements for new residential developments. Generally, housing density is not a parameter that has a direct relevance to European sites.</p> <p>However, it is considered that directing new homes towards brownfield sites is positive, because this minimises the risk of losing functionally linked habitat for birds. Furthermore, from an HRA</p>

			<p>perspective, requiring higher housing densities would be beneficial as this would reduce the amount of land needed to deliver the Local Plan. There are no linking impact pathways for European sites.</p> <p>All policy options would be screened out from Appropriate Assessment.</p>
Dwelling Sizes	<p>This policy sets the required mix of dwelling sizes in new developments, which will be based on the Council's evidence base. Specifically, the policy will identify the proportion of dwellings with different numbers of bedrooms.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy sets the proportion of different dwelling sizes that will be delivered across West Lancashire. However, dwelling size is not a parameter that has implications to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Affordable Housing	<p>This policy supports the delivery of 100% affordable housing schemes in West Lancashire. Furthermore, in housing sites over 10 dwellings in size, a proportion of affordable homes will be required. Different types of affordable homes (e.g. rented, owned and part-owned) will be supported.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy identifies the approach to affordable housing adopted in West Lancashire. For example, it details that 100% affordable schemes will be supported.</p> <p>However, the delivery of affordable homes in Local Plans has no bearing on and linking impact pathways to European sites.</p>

			This policy would be screened out from Appropriate Assessment.
Housing for Older People	<p>This policy supports the provision of accommodation for older people in settlements. It aims at delivering independent living and mixed communities. This will require that all new properties meet accessibility and adaptability standards in line with the Building Regulation M4(2) and (3). This policy will also support care home accommodation.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy supports the delivery of homes for older people across West Lancashire, including independent living arrangements, mixed communities and care homes.</p> <p>However, the delivery of accessible / adaptable homes in Local Plans has no bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Custom and Self-Build Housing	<p>The policy takes a more positive approach towards Custom and Self-Build Housing than in previous West Lancashire Local Plans. Large housing sites will be required to provide a proportion of plots for Custom and Self-Build Housing. Such plots would be serviced and offered at a reasonable price.</p> <p>Furthermore, several small- to medium-sized sites may be reserved solely for Custom and Self-Build Housing. Such sites may also be permitted on rural exception sites.</p> <p><u>Comment:</u> Not including this policy would imply that no screening would need to be undertaken.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy supports the delivery of custom and self-build housing in large housing sites. Furthermore, a few small- to medium-sized sites may provide 100% custom and self-build homes.</p> <p>However, the delivery of custom and self-build housing has no bearing on and linking impact pathways to European sites.</p>

			This policy would be screened out from Appropriate Assessment.
Accommodation for Students	<p>This policy continues West Lancashire's approach to student Housing in Multiple Occupation (HMOs). A limit on the proportion of HMOs that can be delivered in specific streets will be set. Student accommodation will be permitted on the University campus (in non-Green Belt areas) as well as on a small number of sites near Ormskirk town centre.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy restricts the provision of student accommodations HMOs to the University campus and a small number of sites around Ormskirk town centre.</p> <p>However, the delivery of student accommodation has no direct bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Caravan and Houseboat Dwellers	<p>The current evidence base indicates that there is no significant increase in demand for caravan and houseboat accommodation across West Lancashire. Therefore, no new site allocations or Green Belt release will be required for these uses. The policy approach will continue to support the rural economy and assess expansion or enhancement regarding these uses on a case-by-case.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy identifies that no further site allocations and Green Belt release will be required regarding caravan and houseboat accommodation uses.</p> <p>Given that no new allocations will be delivered for these uses, this policy has no direct bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>

<p>Gypsies and Travellers and Travelling Showpeople</p>	<p>This policy will allocate some of the sites where travellers are currently residing. Furthermore, some additional sites on suitable land would be allocated to meet any residual gypsy and traveller demand. Parts of new site allocations may deliver further gypsy and traveller pitches.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded.</p> <p>Given the relatively small quantum of residential growth likely to be delivered as gypsy and traveller sites, it is considered unlikely that this policy would lead to LSEs alone. Many impact pathways in the north-west are an in-combination issue (see column to the right).</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy will allocate new gypsy and traveller sites, which would entail an increase in the local population. Any site allocations that come forward would have to be assessed for Likely Significant Effects and adverse impacts in their own right.</p> <p>As for housing allocations, the following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Recreational pressure • Loss of functionally linked habitat • Atmospheric pollution • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
<p>Accommodation for Temporary Agricultural Workers</p>	<p>This policy will follow the current approach taken in the adopted West Lancashire Local Plan. The re-use of existing buildings in settlements and the countryside for agricultural workers' accommodation will be permitted. Non-permanent accommodation will be supported provided that any impacts are minimized.</p>	<p>LSEs of this policy on European sites alone can be excluded.</p> <p>Given the relatively small quantum of residential growth likely to be delivered as accommodation for temporary agricultural workers (and</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy supports the re-use of existing buildings and the delivery of non-permanent accommodation for agricultural workers.</p>

	<p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>	<p>such accommodation not being permanent), it is considered unlikely that this policy would lead to LSEs alone. Many impact pathways in the north-west are an in-combination issue (see column to the right).</p>	<p>This policy supports the housing of rural workers in temporary accommodation. As such, the policy may temporarily increase the local population in the vicinity of European sites. The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Recreational pressure • Loss of functionally linked habitat • Atmospheric pollution • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
General Policies			
Place-Making	<p>This policy identifies a set of good place-making principles that will apply to both greenfield sites and developments in built-up areas. Planning applications would need to achieve good design, improve general health and wellbeing and enhance the natural environment.</p> <p>A strong focus will be placed on the health of residents with most sensitive uses being directed away from possible threats to health (e.g. busy roads). Active travel modes (e.g. walking and cycling) will be prioritized by encouraging modal shifts for short journeys. Furthermore, natural places (e.g. green spaces, gardens, trees and</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy promotes principles of good place-making in West Lancashire, including the prioritisation of active travel modes and the maximisation of natural spaces (e.g. green spaces, trees, water features).</p> <p>These place-making features are all likely to have positive impacts for</p>

	<p>water features) should be maximized and within easy reach for everyone.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>		<p>European sites. For example, an increase in the number of walking and cycling journeys would have beneficial effects on sites that are sensitive to atmospheric pollution. The provision of green spaces within easy walking distance is an established tool for mitigating recreational pressure in European sites.</p> <p>This policy has no linking impact pathways to European sites.</p> <p>It would be screened out from Appropriate Assessment.</p>
Preserving and Utilising our Heritage	<p>This policy preserves and enhances West Lancashire's cultural and heritage assets in line with national policy requirements. The borough has a long-standing history, which is documented through the wide range of heritage assets across West Lancashire. One means to achieve this is by promoting high-quality design and appropriate uses, which are sensitive to the architecture, design, scale and use of materials of nearby heritage assets.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy protects and enhances West Lancashire's heritage assets by promoting high-quality design and appropriate uses in key locations.</p> <p>However, the protection of heritage assets has no bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Community Facilities	<p>This policy aims at letting the market and community decide on the community facilities to be delivered. However, it will prevent the unnecessary loss of such services, where a need is identified. New community</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p>

	<p>facilities will be supported in sustainable locations with good accessibility.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>		<p>This policy protects against the loss of community facilities and supports new facilities in sustainable locations.</p> <p>However, the provision of community facilities generally has no bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Economy and Employment			
Providing and Managing Employment Areas	<p>This policy will identify the amount and geographic location of new employment land to be provided in West Lancashire. It will consider the factors requiring consideration for employment development. Furthermore, existing Strategic Employment Sites are identified and protected.</p> <p>The number of existing employment sites protected for traditional uses (e.g. offices, research, light industry, storage and distribution) will be reduced. Within the core employment areas, permitted changes of use will also be restricted. Outside core employment areas, a wider range of commercial uses (e.g. shops, financial and professional services, food and drink, health centres, nurseries and gyms) will be supported.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone cannot be excluded.</p> <p>Depending on the location of employment areas, this policy could lead to LSEs alone, particularly if new employment sites were to be delivered in close proximity to the Martin Mere SPA / Ramsar. Please see column to the right for potential impact pathways.</p> <p>Overall, this policy would be screened in for Appropriate Assessment.</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy identifies the amount and location of employment land to be provided across West Lancashire. Furthermore, it will also set the factors that new economic development would need to consider.</p> <p>Both the quantum and location of new employment land may have impacts on European sites. For example, the allocation of a significant amount of employment land could lead to an increase in commuter traffic along major routes within 200m of European sites. The magnitude of this impact pathway is likely to depend on various factors, such as the likely importance of employment sites to residents of adjoining authorities.</p>

			<p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Atmospheric pollution • Loss of functionally linked habitat • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Developing the Rural and Visitor Economy	<p>This policy protects the countryside from new economic development due to its Green Belt designation and quality of agricultural land, except for specific rural development site allocations. In contrast, existing employment uses in rural areas will be protected, provided they are viable. Provided they are proportionate in scale to their rural setting, the expansion of existing rural businesses will be supported.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone cannot be excluded.</p> <p>Depending on the location of rural employment sites, this policy could lead to LSEs alone, particularly if new development was to be delivered in close proximity to the Martin Mere SPA / Ramsar. Please see column to the right for potential impact pathways.</p> <p>Overall, this policy would be screened in for Appropriate Assessment.</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy protects existing employment uses in rural areas, while limiting the amount of new development that can be delivered there. However, it also allows for the expansion of rural businesses. This could lead to an increase in the number of car-based journeys to these areas, although these expansions are likely to be relatively small. The potential impacts of economic development are also assessed as part of the previous policy.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Atmospheric pollution

			<ul style="list-style-type: none"> • Loss of functionally linked habitat • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Adapting our Town and Local Centres	<p>This policy provides the growth strategies for town and local centres, including specific supporting policies for the Burscough, Ormskirk and Skelmersdale town centres. The overarching policy content will specify the hierarchy of centres (thereby indirectly the order of preference for new development) and any required impact assessments. Any proposals would need to be of an appropriate scale in relation to the relevant town centre. Skelmersdale town centre is a particular focus for regeneration. Potential new town centre uses would be assessed against their contribution towards the overall commercial activity in the town centre.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded.</p> <p>Given the distances of most town and local centres to European sites, particularly the Martin Mere SPA / Ramsar, it is considered unlikely that this policy would lead to LSEs alone. Impact pathways in the north-west are an in-combination issue (see column to the right).</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy specifies the hierarchy of town and local centres, which will dictate the geographic distribution and quantum of development to be delivered across West Lancashire.</p> <p>Both the quantum and location of newly allocated land for non-residential uses may have impacts on European sites. For example, the allocation of specific quanta of commercial and employment uses could lead to an increase in commuter traffic along major routes within 200m of European sites. The magnitude of this impact pathway is likely to depend on various factors, such as the likely importance of employment sites to residents of adjoining authorities.</p> <p>The following linking impact pathways to European sites are present:</p>

			<ul style="list-style-type: none"> • Loss of functionally linked habitat • Atmospheric pollution • Water quality • Water quantity, level and flow • Visual and noise disturbance (during and post construction) • Coastal squeeze <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Skills and Education: The future development of Edge Hill University	<p>This policy supports the continued development and improvement of Edge Hill University campus, including the delivery of student accommodation. Any development beyond the campus boundary will require Travel Plans and parking strategies to improve access and minimize impacts on traffic. A companion policy (discussed above) would address the issue of off-site student accommodation (HMOs).</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. While it is noted that an off-site alternative location for student accommodation is proposed under alternative policy 3, this is also unlikely to result in LSEs. Not including this policy would imply that no screening would need to be undertaken.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy supports the development and potential expansion of the Edge Hill University campus, including the delivery of off-site student accommodation. As such, the policy is relatively specific as to where a potential population increase would occur (Ormskirk), except under alternative policy 3.</p> <p>While new residential accommodation is associated with various impact pathways, it is considered that any expansion of student accommodation is likely to be small-scale. Furthermore, the overall population increase would be adequately assessed in the housing policies detailed above.</p>

			<p>Overall, it is considered that this policy has no direct bearing on and linking impact pathways to European sites.</p> <p>It would be screened out from Appropriate Assessment.</p>
Skills and Training	<p>This policy promotes the use of local people and businesses during the construction and implementation of major development proposals. Planning applicants for large development sites will need to provide an employment and skills plan, detailing opportunities and training for local employees.</p> <p><u>Comment:</u> Not including this policy would imply that no screening would need to be undertaken.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy supports the use and training of local employees in large development applications. While positive for the local economy, this policy has no relevance for and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Transport and Infrastructure			
Transport Networks	<p>This policy sets out a list of proposed transport infrastructure improvement schemes across West Lancashire that will be obligatory. Developers will be required to maximise linkage to transport networks, especially via walking and cycling links. There will be strong linkage to the good place-making policy.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy promotes improvements to West Lancashire's transport infrastructure through a series of schemes. Furthermore, developments will need to provide good walking and cycling links to public transport.</p> <p>Improvements to the public transport network and active travel modes are positive for European sites that are sensitive to atmospheric pollution. They</p>

			<p>could help reduce reliance on fossil-fuelled cars, ultimately reducing nitrogen deposition to sensitive habitats.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Parking and Electric Vehicle Charging Points	<p>This policy addresses car parking standards, agreed between all Lancashire authorities, and the minimum number of electric vehicle charging points to be provided in new residential and employment developments. Furthermore, secure, covered cycle parking will be required for apartment buildings.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This positive policy specifies parking standards in new developments, including the number of electric vehicle charging points.</p> <p>Encouraging residents to switch to electric vehicles will be a key mitigation approach to atmospheric pollution. Providing a sufficient number of charging points is key in supporting this modal shift.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Communications and Digital Connectivity Infrastructure	<p>This policy supports the National Policy Planning Framework with regard to communications development and enables additional management of new telecommunications infrastructure. It promotes the sharing and mitigation of adverse impacts of digital infrastructure.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not</p>	<p>LSEs of this policy on European sites alone cannot be excluded.</p> <p>While the highest risk with regard to tall telecommunications infrastructure is likely to arise in-combination, the delivery of several such schemes adjacent to the Martin Mere SPA / Ramsar have the potential to result in LSEs alone.</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy provides support to communications and digital infrastructure across West Lancashire, provided that it is in line with the National Planning Policy Framework.</p>

	including this policy would mean that no screening decision would be taken.	Overall, this policy would be screened in for Appropriate Assessment.	<p>Depending on the nature and location of communications infrastructure, there are potential implications for European sites. For example, the delivery of large telecommunications masts in proximity to European sites designated for birds may lead to collision mortality, disturbance displacement and impacts on flightlines.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Loss of functionally linked habitat • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze • Collision mortality • Disturbance displacement • Impacts on flightlines <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Low Carbon and Renewable Energy	This policy designates specific opportunity areas for low carbon and renewable energy developments, specifically wind and solar energy schemes. It will support delivery of the LCRE, subject to criteria on design and assessments of environmental and landscape impacts. In recognition of net-zero targets, community-led LCRE schemes will also be supported.	<p>LSEs of this policy on European sites alone cannot be excluded.</p> <p>While the highest risk with regard to wind energy schemes is likely to arise in-combination, the delivery of several such schemes adjacent to the Martin Mere SPA / Ramsar have the potential to result in LSEs alone.</p>	<p>LSEs of this policy on European sites cannot be excluded in-combination.</p> <p>This policy designates specific opportunity areas for wind and energy developments in West Lancashire, supporting renewable energies in line with the net-zero target.</p>

	<p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	<p>Overall, this policy would be screened in for Appropriate Assessment.</p>	<p>While the switch to green energy is positive for mitigation of climate change, renewable energy proposals have their own implications for European sites.</p> <p>For example, the delivery of wind farms adjacent to European sites (or habitats that are functionally linked to these) may lead to bird collision mortality, disturbance displacement and impacts on flightlines.</p> <p>The following linking impact pathways to European sites are present:</p> <ul style="list-style-type: none"> • Loss of functionally linked habitat • Water quality • Water quantity, level and flow • Visual and noise disturbance (during construction) • Coastal squeeze • Collision mortality • Disturbance displacement • Impacts on flightlines <p>Overall, this policy would be screened in for Appropriate Assessment.</p>
Energy Efficiency in New Developments	<p>Certain new residential and employment developments will need to deliver energy efficiency standards above national standards to help achieve the net-zero carbon goals. To ensure this, developers will be required to monitor, evaluate and improve energy efficiency in their developments.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy sets energy efficiency standards for certain types of residential</p>

	<p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>		<p>and employment developments above national standards.</p> <p>While this is an important strategy for climate change mitigation and net-zero targets, energy efficiency standards have no direct relevance for and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Water Efficiency in New Developments	<p>This policy introduces tighter local restrictions on water consumption above the minimum optional Building Regulation standards. Increasing the water efficiency in new residential sites will require less water (reducing exploitation of water resources) and help reduce costs, energy use and carbon emissions. Enhanced water efficiency would also reduce the need for movement of water.</p> <p><u>Comment:</u> Not including this policy would imply that no screening would need to be undertaken.</p>	<p>LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.</p>	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This positive policy introduces higher water efficiency standards in new developments than outlined in current regulations, which will reduce the overall amount of water used and treated sewage effluent produced.</p> <p>This will have positive impacts on European sites that are sensitive to changes in water supply and quality. For example, lower water usage will result in a lower volume of treated sewage effluent (and thus phosphorus) discharged to the hydrological catchment of the Martine Mere SPA / Ramsar.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Other Policies			

Sequential Tests	<p>This policy supports the sequential test with regard to town centre use and flood risk. Regarding town centres it guides development to town centre as a priority, then edges of town centres and out-of-centre locations. Regarding flood risk, it prioritises development in sites that are at the lowest risk of flooding.</p> <p>It also sets out the requirements and satisfactory criteria for undertaking successful sequential tests, including the area of search, availability, viability and deliverability of sequentially preferable sites.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome. Not including this policy would imply that no screening would need to be undertaken.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy sets out that sequential tests with regard to town centre uses and flood risk will be required. However, the mere support of sequential tests has no bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Viability	<p>This policy sets out a hierarchy of viability, taking account of the priorities of the Local Plan as a whole. For example, this will encompass the desirable outcomes to be achieved through new housing developments. Housing can provide beneficial knock-on benefits, including improved open space, biodiversity net gain and urban regeneration. Such benefits may be made obligatory for new developments to come forward. General wording regarding the viability of development other than housing will also be set.</p> <p><u>Comment:</u> The alternative policy approaches would not have changed the LSEs screening outcome.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p> <p>This policy specifies a hierarchy of viability that will encompass the desirable outcomes of development sites, including improvements to open spaces and biodiversity net gain. However, the mere identification of a viability hierarchy has no bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
Developer Contributions	<p>This policy obliges certain developments to make financial contributions to new infrastructure requirements, in line with national planning guidance.</p>	LSEs of this policy on European sites alone can be excluded. Please see in-combination column for explanation.	<p>There are no LSEs of this policy on European sites in-combination.</p>

	<p><u>Comment:</u> Not including this policy would imply that no screening would need to be undertaken.</p>		<p>This policy stipulates that developer contributions for new infrastructure projects may be required in line with national policy.</p> <p>However, obligatory developer contributions have no direct bearing on and linking impact pathways to European sites.</p> <p>This policy would be screened out from Appropriate Assessment.</p>
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