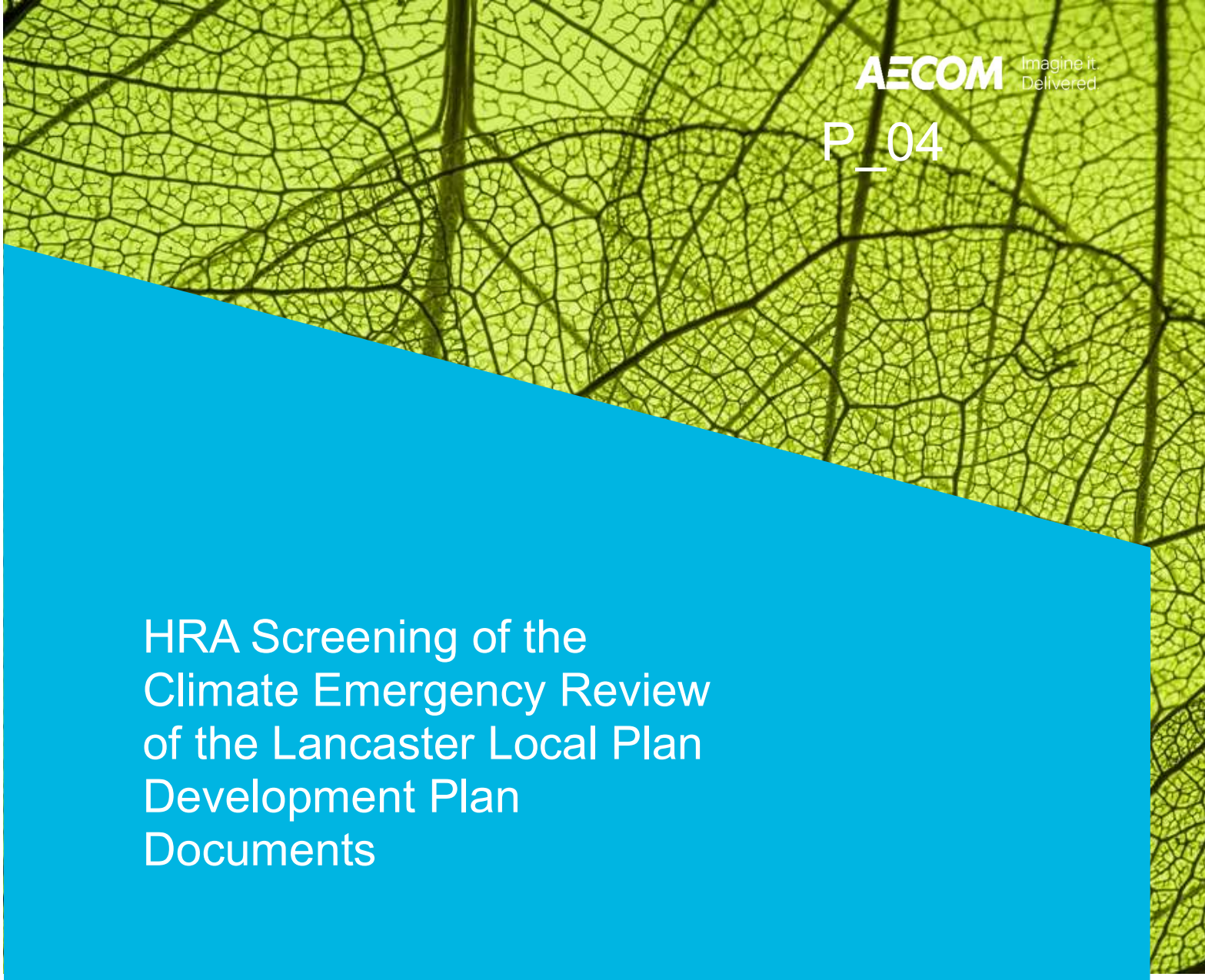

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P_04

HRA Screening of the Climate Emergency Review of the Lancaster Local Plan Development Plan Documents

Lancaster City Council

December 2021

Quality information

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Revision History

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1. Introduction

Background

1.1 Lancaster City Council (LCC) has reviewed their adopted Local Plan in order to identify policy changes to reflect the declared Climate Emergency.

1.2 The Local Plan Review essentially reviews two key documents. The first is the Strategic Policies and Land Allocations Development Plan Document (DPD) which sets out a spatial vision and strategy for the district and establishes what the strategic development needs of the district are; and then describes how those needs will be distributed through a series of land allocations to identify where development needs will be met and where areas that are of specific economic, environmental or social importance will be protected.

1.3 The second is the Development Management DPD, which sets out the planning policies that will be used to determine planning applications.

1.4 Together these two documents make up the adopted Local Plan and guides how the future development needs of Lancaster district are met. It is the policies within these two DPDs that are being revisited as part of the Climate Emergency Local Plan Review.

1.5 LCC has appointed AECOM to carry out a high-level Habitats Regulations Assessment (HRA) screening (Test of Likely Significant Effects (ToLSE)) of the amended policies within the two DPD documents.

1.6 The objective of this screening assessment is to identify any aspects of the amended policies within the DPD documents that would potentially cause an adverse effect on the integrity of 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, and to advise on whether further assessment in the form of an appropriate assessment is required. If an appropriate assessment is required, this is because the amendments to policies could lead to likely significant effects to European Sites if approved and implemented through the evolving Local Plan.

Legislation

1.7 The need for HRA is set out within the Conservation of Habitats & Species Regulations 2017 (as amended) (**Box 1**) and concerns the protection of European sites. European sites can be defined as actual or proposed/candidate Special Areas of Conservation (SAC) or Special Protection Areas (SPA). It is also Government policy for sites designated under the Convention on Wetlands of International Importance (Ramsar sites) to be treated as having equivalent status to European sites.

Box 1: The legislative basis for 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."

1.8 The HRA process applies the precautionary principle to European sites[1]. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects may still be permitted if there are no alternatives to them and there are Imperative

[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".

Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

1.9 This report has been prepared having regard to all relevant case law relating to the Habitats Directive and the European Court of Justice case of People Over Wind, Peter Sweetman v Coillte Teoranta (C-323/17) as it directly concerns the approach to Stage 1 Likely Significant Effects (Screening) under the Habitats Regulations.

1.10 The case held that *"it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site"* (paragraph 40). It is important to note that not all mitigation measures are excluded from consideration – only those *"intended to avoid or reduce the harmful effects of the plan or project on a European site at the screening stage"* (PINS Note 05/2018 Consideration of avoidance and reduction measures in Habitats Regulations Assessment: People over Wind, Peter Sweetman v Coillte Teoranta).

1.11 The UK is no longer part of the European Union. However, the latest amendment to the Conservation of Habitats and Species Regulations 2017 (as amended) make it clear that HRA continues post-Brexit. Moreover, as a precaution, this HRA assumes that European Court of Justice rulings on the HRA process may continue to be considered useful jurisprudence by the UK courts.

Quality Assurance

1.12 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 9001:2015 and 14001:2015 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

1.13 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[2].

[2] CIEEM (2019) Code of Professional Conduct. Chartered Institute of Ecology and Environmental Management (CIEEM) January 2019.

2. Habitats Regulations Assessment Methodology

Introduction

2.1 The HRA is being carried out in the continuing absence of formal central Government guidance on HRA of plans, although general EC guidance on HRA does exist[3] and the UK government published general guidance on HRA in July 2019[4]. The former Department for Communities and Local Government (now the Ministry of Housing Communities and Local Government) released a consultation paper on the Appropriate Assessment of Plans in 2006[5]. Natural England has also produced its own internal guidance[6] as has the RSPB[7]. All of these will be referred to in undertaking this HRA.

2.2 Figure 1 below outlines the stages of HRA according to current Ministry of Housing, Communities and Local Government 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.

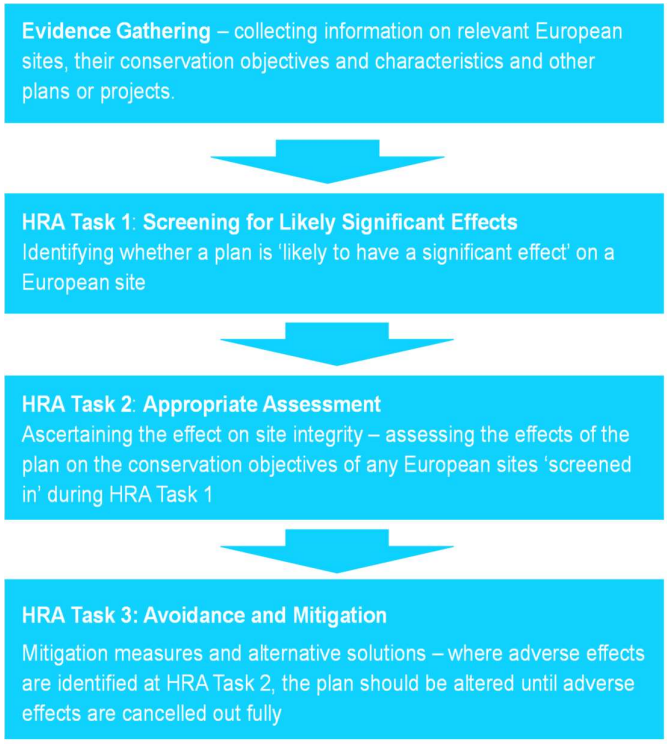


Figure 1: Four Stage Approach to Habitats Regulations Assessment. Source GOV.UK, 2019.

2.3 This report contains Stage 1 only.

Stage 1: Test of Likely Significant Effect (Screening)

2.4 This is essentially a risk assessment, typically utilising existing data, records and specialist knowledge. The process involves identifying the likely impacts of a plan upon a European Site, either alone or cumulatively

[3] 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.
[4] https://www.gov.uk/guidance/appropriate-assessment
[5] CLG (2006) Planning for the Protection of European Sites, Consultation Paper
[6] http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf
[7] Dodd A.M., Cleary B.E., Dawkins J.S., Byron H.J., Palframan L.J. and Williams G.M. (2007) *The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it.* The RSPB, Sandy.

with other plans and projects and considers whether the impacts are likely to be significant. The purpose of the Test is to determine whether an Appropriate Assessment is required.

2.5 Stage 1 has been completed without mitigation intended to avoid or reduce the harmful effects of the plan on a European site. If it can be demonstrated that significant effects are unlikely, no further assessment is required.

'In Combination' Assessment

2.6 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and project that may also be affecting the European site(s) in question.

2.7 The scoping report for the HRA of the Lancaster Local Plan review[8] identified the following plans for consideration in-combination with the Local Plan and will therefore apply to the assessment of the DPD policies:

- Wyre Local Plan
- Ribble Valley Local Plan
- Craven Local Plan
- South Lakeland Local Plan
- Cumbria County Council
- Lancashire County Council
- Yorkshire Dales National Park Authority

2.8 The unchanged policies in the Adopted Lancaster Local Plan will in itself also be reviewed in order to determine whether the amended policies will have an 'in-combination' effect with other Local Plan policies.

2.9 Following consultation on the scoping report for the Local Plan review HRA, Natural England[9] requested the following additional be included:

- Arnside & Silverdale Area of Outstanding Natural Beauty (AONB) Development Plan Document (DPD)[10];
- The Shoreline Management Plan (SMO)[11]; and
- The North West Marine Plan[12] (2020, draft for consultation).

2.10 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e., to ensure that those projects or plans (which in themselves may have minor impacts) are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in-combination assessment is therefore of greatest relevance when the plan or policy would otherwise be screened out because its individual contribution is inconsequential.

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.

2.12 AECOM uses a minimum precautionary buffer of 10km outside of the district boundary when first considering which European sites need assessing within the HRA. However, European sites further afield are also considered where there may be linking impact pathways to development within the district; for example, a European site with a recreational catchment larger than 10km or abstraction and transfer licences.

[8] AECOM (2020) Scoping for the HRA of the Lancaster Local Plan Review
[9] Natural England response letter ref: 332993, dated 19/11/2020
[10] https://www.arnsidesilverdaleaonb.org.uk/wp-content/uploads/2019/04/final-aonb-dpd-adoption-accessible.pdf [accessed 21/04/2021]
[11] https://www.mycoastline.org.uk/shoreline-management-plans/ [accessed 21/04/2021]
[12] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/857301/DRAFT_NW_Marine_Plan.pdf [accessed 21/04/2020]

2.13 The Local Plan HRA scoping report (AECOM, 2020) identified potential impact pathways that might arise from climate change driven policy alterations, and referring to the HRA work that was undertaken for the adopted Local Plan, on the following European sites:

- Morecambe Bay and Duddon Estuary SPA
- Morecambe Bay SAC and Ramsar site
- Calf Hill & Cragg Woods SAC
- Bowland Fells SPA
- Morecambe Bay Pavements SAC
- Leighton Moss SPA and Ramsar site
- Ingleborough Complex SAC
- Witherslack Mosses SAC

2.14 Note that this does not mean it is considered that potential for likely significant effects on these sites necessarily exists, but simply that these are the sites that will be investigated. No potential pathways of impact have been identified linking to other European sites.

2.15 North Pennine Dales Meadows SAC lies 6.5km from the Lancaster District boundary but is 22km from the nearest significant settlement (Lancaster itself). Similarly, Roundsea Woods & Mosses SAC lies 6.8km from the district boundary but 14km from the nearest settlement on the opposite side of Morecambe Bay. It is considered that there are no impact pathways linking the Lancaster Local Plan Review and therefore the Topic Papers to these SACs.

3. Relevant European Sites

Introduction

3.1 The following European sites are those where pathways have been identified by AECOM that could potentially have an adverse impact on the integrity of the European site and so are considered further within this HRA. Their locations in relation to the Lancaster District boundary are shown on Figure 2, Appendix A. The reason for designation, conservation objectives and environmental vulnerabilities of the European sites are detailed below.

Morecambe Bay and Duddon Estuary SPA

Introduction

3.2 The SPA extends between Rossall Point in Lancashire and Drigg Dunes in Cumbria. The site includes the former Morecambe Bay SPA and Duddon Estuary SPA and an extension to include the Ravenglass Estuary and intervening coast and the shallow offshore area off south west Cumbria coast.

3.3 Morecambe Bay is the second largest embayment in Britain after The Wash, at over 310 km2, and has four estuaries – the Wyre, Lune, Kent and Leven. It contains the largest continuous area of intertidal mudflats and sandflats in the UK which supports a variety of infaunal communities including cockle beds. Morecambe Bay supports a wide range of other habitats including large areas of saltmarsh and transitional habitats as well as sand dune systems and coastal lagoons. Within the Bay there are areas of stony reef (known locally as scars or skears) which also support blue mussel beds and honeycomb worm *Sabellaria alveolata* reefs. Extensive eelgrass beds are present around Foulney Island and in the south Walney Channel, the only examples in the North West of England.

3.4 The Duddon and Ravenglass Estuaries support saltmarsh, intertidal mud and sand communities and sand dune systems with small areas of stony reef. The intermediate coast comprises extensive shingle and sand beaches.

3.5 The parts of the SPA away from the coast are sandy and shallow, mostly less than 15 metres deep.

Reasons for Designation[13]

3.6 Qualifying individual species listed in Annex I of the Wild Birds Directive that are supported by the site are:

- Whooper swan *Cygnus Cygnus* (non-breeding)
- Little egret *Egretta garzetta* (non-breeding)
- European golden plover *Pluvialis apricaria* (non-breeding)
- Bar-tailed Godwit *Limosa lapponica* (non-breeding)
- Ruff *Calidris pugnax* (non-breeding)
- Mediterranean gull *Larus melancephalus* (non-breeding)
- Little tern *Sternula albifrons* (breeding)
- Sandwich tern *Sterna sandvicensis* (breeding)
- Common tern *Sterna hirundo* (breeding)

3.7 The site supports the following regularly occurring migratory species (other than those listed in Annex I) in any season:

[13] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/641980/morecambe-duddon-citation.pdf [accessed 21/04/2021]

- Pink-footed goose *Anser brachyrhynchus (*non-breeding)
- Common shelduck *Tadorna tadorna (non-breeding)*
- Northern pintail *Anas acuta* (non-breeding)
- Eurasian oystercatcher *Haematopus ostralegus* (non-breeding)
- Grey plover *Pluvialis squatarola* (non-breeding)
- Common ringed plover *Charadrius hiaticula* (non-breeding)
- Eurasian curlew *Numenius arquata* (non-breeding)
- Black-tailed godwit *Limosa limosa* (non-breeding)
- Ruddy turnstone *Arenaria interpres* (non-breeding)
- Red knot *Calidris canutus* (non-breeding)
- Sanderling *Calidris alba* (non-breeding)
- Dunlin Calidris *alpina alpine* (non-breeding)
- Common redshank *Tringa tetanus* (non-breeding)
- Lesser black-backed gull *Larus fuscus* (non-breeding)
- Lesser black-backed gull *Larus fuscus graellsii* (breeding)
- European herring gull *Larus argentatus argenteus* (breeding)

3.8 Assemblage qualifications:

- At time of the 1997 citation of Morecambe Bay SPA, the area supported 40,672 individual seabirds including: herring gulls, lesser black-backed gulls, sandwich terns, common terns, and little terns.
- During the period 2009/10 – 2013/14, the site held a five year peak mean value of 266,751 individual birds. The main components of the assemblage include all of the qualifying features listed above, as well as an additional 19 species present in numbers exceeding 1% of the GB total and / or exceeding 2,000 individuals: great white egret *Ardea alba,* Eurasian spoonbill *Platalea leucorodia,* light-bellied brent goose (Nearctic origin) *Branta bernicla hrota*, Eurasian wigeon *Anas penelope*, Eurasian teal *Anas crecca*, green-winged teal *Anas carolinensis*, mallard *Anas platyrhynchos*, ring-necked duck *Aythya collaris*, common eider (non-breeding) *Somateria mollissima*, common goldeneye *Bucephala clangula*, red-breasted merganser *Mergus serrator*, great cormorant *Phalacrocorax carbo*, northern lapwing *Vanellus vanellus,* little stint *Caliddris minuta*, spotted redshank *Tringa erythropus*, common greenshank *Tringa nebularia*, black-headed gull *Chroicocephalus ridiundus*, common (mew) gull *Larus canus* and European herring gull (non-breeding).

Conservation Objectives[14,15]

3.9 *"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."*

[14] http://publications.naturalengland.org.uk/publication/6242841537806336 [accessed 21/04/2021]
[15] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9020326&SiteName=morecambe&SiteNameDisplay=Morecambe+Bay+and+Duddon+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=25 [accessed 21/04/2021]

Current Pressures and Threats

3.10 The Site Improvement Plan[16] identifies the following pressures and threats to the SPA:

- Public access/ disturbance
- Air pollution: risk of atmospheric nitrogen deposition
- Water pollution
- Inappropriate pest control
- Fisheries: Commercial marine and estuarine
- Fisheries: Aquaculture
- Invasive species
- Energy production
- Changes in species
- Direct impact from 3rd party i.e., egg collecting

Morecambe Bay SAC

Site description

3.11 At low tide vast areas of intertidal sandflats are exposed, with small areas of mudflat, particularly in the upper reaches of the associated estuaries. The sediments of the bay are mobile and support a range of community types, from those typical of open coasts (mobile, well-sorted fine sands), grading through sheltered sandy sediments to low-salinity sands and muds in the upper reaches. Apart from the areas of intertidal flats and subtidal sandbanks, Morecambe Bay supports exceptionally large beds of mussels *Mytilus edulis* on exposed 'scars' of boulder and cobble, and small areas of reefs with fucoid algal communities. Of particular note is the rich community of sponges and other associated fauna on tide-swept pebbles and cobbles at the southern end of Walney Channel.

3.12 Extensive saltmarshes and glasswort *Salicornia* spp. beds are present in the Lune estuary, contrasting with the fringing saltmarshes and more open intertidal flats of the Leven and Kent estuaries. Most of the saltmarshes are grazed, a characteristic feature of north-west England. In the upper levels of the saltmarshes there are still important transitions from saltmarsh to freshwater and grassland vegetation.

3.13 Walney Island is a barrier island fringed by shingle with a partial sand covering. Two areas of exposed vegetated shingle occur at the extremes of the barrier. The southern area has been highly modified by eutrophication from a large gull colony, resulting in communities that are unusually species-rich for pioneer shingle vegetation. Perennial rye-grass *Lolium perenne*, common chickweed *Stellaria media* and biting stonecrop *Sedum acre* are constant elements, with dove's-foot crane's-bill *Geranium molle* an unusual and important feature.

3.14 Shifting dune vegetation forms a major component of the active sand dune systems at the entrance to Morecambe Bay on Walney Island and the Duddon Estuary at Sandscale Haws. Sandscale supports a mosaic of shifting communities, which form a continuous block around the seaward edge of this site. There are transitions to embryonic shifting dunes. The shingle spits at either end of Walney Island support dune systems at South End and North End Haws. Species associated with these shifting dunes include sea holly *Eryngium maritimum*, sea spurge *Euphorbia paralias*, Portland spurge *Euphorbia portlandica* and sea bindweed *Calystegia soldanella*. Sandscale supports the largest area of calcareous fixed dunes in Cumbria, which contrast with the acidic dunes at the adjacent North End Haws. South End Haws supports a smaller area of fixed dunes. The fixed dunes support a rich plant diversity including wild pansy *Viola tricolor*, lady"s bedstraw *Galium verum*, common restharrow *Ononis repens* and the uncommon dune fescue *Vulpia membranacea* and dune helleborine *Epipactis dunensis.* Dune slacks are particularly well-represented at Sandscale, where they support several uncommon species including marsh helleborine *Epipactis palustris*, dune helleborine and coralroot orchid *Corallorhiza trifida* occur. Sandscale contains both permanent and

[16] http://publications.naturalengland.org.uk/publication/6708495835463680 [accessed 21/04/2021]

ephemeral waterbodies and man-made scrapes supporting breeding colonies of great-created newts *Triturus cristatus*. The newts forage widely over the foreshore, dunes, dune-heath and scrub.

Reasons for Designation[17]

3.15 Qualifying Annex I habitats:

- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*). (Coastal dune heathland)*
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Coastal lagoons*
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*). (Dunes with creeping willow)
- Embryonic shifting dunes
- Estuaries
- Fixed dunes with herbaceous vegetation ("grey dunes"). (Dune grassland)*
- Humid dune slacks
- Large shallow inlets and bays
- Mudflats and sandflats not covered by seawater at low tide. (Intertidal mudflats and sandflats)
- Perennial vegetation of stony banks. (Coastal shingle vegetation outside the reach of waves)
- Reefs
- Salicornia and other annuals colonising mud and sand. (Glasswort and other annuals
- colonising mud and sand)
- Sandbanks which are slightly covered by sea water all the time. (Subtidal sandbanks)
- Shifting dunes along the shoreline with *Ammophila arenaria.* ("White dunes")

3.16 Qualifying Annex II species:

- Great crested newt

3.17 Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[18, 19]

3.18 *"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;*

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

- *The extent and distribution of the habitats of qualifying species*
- *The structure and function of the habitats of qualifying species*
- *The supporting processes on which the habitats of qualifying species rely*

[17] http://publications.naturalengland.org.uk/publication/5314736417669120 [accessed 21/04/2021]
[18] Ibid
[19] https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK9020326&SiteName=morecambe&SiteNameDisplay=Morecambe+Bay+and+Duddon+Estuary+SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=25 [accessed 21/04/2021]

- *The populations of qualifying species, and,*
- *The distribution of qualifying species within the site."*

Current Pressures and Threats

3.20 The Site Improvement Plan[20] identifies the following pressures and threats to the SAC:

- Public access/ disturbance
- Air pollution: risk of atmospheric nitrogen deposition
- Water pollution
- Invasive species
- Fisheries: Aquaculture
- Fisheries: Commercial marine and estuarine
- Biological resource use i.e., appropriate grazing regime
- Change in land management i.e., improved grazing regime
- Hydrological changes
- Physical modification
- Energy production

Morecambe Bay Ramsar

Site Description

3.21 Representing the largest continuous intertidal area in Britain, the site comprises the estuaries of five rivers, intertidal mud and sandflats, associated saltmarshes, shingle beaches, and other coastal habitats. It is part of a series of west coast estuaries of outstanding importance for numerous species of passage, breeding and wintering waterbirds. The site supports the third largest number of wintering wildfowl in Britain. Breeding birds include gulls and terns. Human activities include recreation, hunting, fishing, and livestock grazing.

Reasons for Designation[21]

3.22 The site is designated as a Ramsar for the following Criteria:

Criterion 4: The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover.

Criterion 5: **Assemblages of international importance** - Species with peak counts in winter, 223709 waterfowl (5 year peak mean 1998/99-2002/2003).

Criterion 6: **species/populations occurring at levels of international importance.**

- Species regularly supported during the breeding season: lesser black-backed gull, herring gull, sandwich tern.
- Species with peak counts in spring/autumn: great cormorant, common shelduck, northern pintail, common eider, Eurasian oystercatcher, ringed plover, grey plover, sanderling, Eurasion curlew (breeding), common redshank, ruddy turnstone, lesser black-backed gull.
- Species with peak counts in winter: great crested grebe *Podiceps cristatus cristatus,* pink-footed goose, Eurasian wigeon, common goldeneye, red-breasted merganser, European golden plover, northern lapwing, red knot, dunlin, bar-tailed godwit.

[20] http://publications.naturalengland.org.uk/publication/6708495835463680 [accesed 21/04/2021]
[21] https://jncc.gov.uk/jncc-assets/RIS/UK11045.pdf [accessed 21/04/2021]

Factors (Past, Present or Potential) Adversely Affecting the Site's Ecological Character

3.23 The Information Sheet on Ramsar Sites[22] did not specify any pressures and threats to the Ramsar site.

Calf Hill & Crag Woods SAC

Site Description

3.24 These old sessile oak Quercus petraea woods occupy north- and south-facing slopes of a valley on millstone grit. Oak dominates in the canopy with birch *Betula* sp., rowan Sorbus aucuparia and holly *Ilex aquifolium.* The ground flora ranges from areas of abundant bilberry *Vaccinium myrtillus*, through grassy areas, to rich moss carpets. Small areas of alder *Alnus glutinosa* flushes also occur.

Reasons for Designation[23]

3.25 Qualifying Annex I habitats:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*). (Alder woodland on floodplains)*
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. (Western acidic oak woodland)

3.26 Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[24]

3.27 *"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;*

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

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

Current Pressures and Threats

3.29 The Site Improvement Plan[25] identifies the following pressures and threats to the SAC:

- Air pollution: risk of atmospheric nitrogen deposition

Bowland Fells SPA

Site Description

3.30 The Bowland Fells SPA encompasses the main upland block within the area of Lancashire known as the Forest of Bowland. This is an outlier of the Pennine Range situated in the north of the county and to the east of the M6 motorway.

3.31 Most of this land, stretching from Clougha and Whitray Fell in the north to Parlick in the south, is over 250m Ordnance Datum (OD) and rises sharply to a stream dissected plateau with the highest point being Ward's Stone at 561m. The underlying rock is Millstone Grit beneath which lies Carboniferous Limestone. These

[22] Ibid
[23] http://publications.naturalengland.org.uk/publication/6242063209201664 [accessed 22/04/2021]
[24] Ibid
[25] http://publications.naturalengland.org.uk/publication/6651611074002944 [accessed 22/04/2021]

extensive upland fells support the largest expanse of blanket bog and heather moorland in Lancashire and provide suitable habitat for a diverse upland breeding bird community.

3.32 The most extensive plant communities within the site are dry heather dominated heathland, generally found on the steeper slopes, and heather *Calluna vulgaris* and cotton grass *Eriophorum vaginatum* dominated blanket bog which covers the tops of the ridges and shallow slopes.

Reasons for Designation[26]

3.33 Qualifying individual species listed in Annex I of the Wild Birds Directive that are supported by the site are:

- Hen harrier *Circus cyaneus*
- Merlin *Falco columbarius*

3.34 The site supports the following regularly occurring migratory species (other than those listed in Annex I) in any season:

- Lesser black-backed gull

Conservation Objectives[27]

3.35 *"With regard to the SPA and potential SPA, and the individual species and/or assemblage of species for which the site has been or may be classified (the 'Qualifying Features' including the 'Additional Qualifying Features' listed below), and subject to natural change;*

3.36 *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."*

Current Pressures and Threats

3.37 The Site Improvement Plan[28] identifies the following pressures and threats to the SPA:

- Low breeding success/ poor recruitment/ juvenile and adult survival
- Game management: grouse moors
- Managed rotational burning
- Changes in species distributions
- Change in land management
- Hydrological changes
- Public access/ disturbance
- Air pollution: risk of atmospheric nitrogen deposition
- Invasive species

[26] http://publications.naturalengland.org.uk/publication/5922368258048000 [accessed 22/04/2021]
[27] Ibid
[28] http://publications.naturalengland.org.uk/publication/5876088022499328 [accessed 22/04/2021]

Morecambe Bay Pavements SAC

Site Description

3.38 This site is the best British example of lowland limestone pavements that range from low to moderate altitudes. Some of the pavements form woodland clearings that are sheltered and warm up quickly in spring. The pavement flora is here at its most diverse and, where stock grazing is absent, can be seen at its best because plant growth is not confined to the grikes (spaces between the limestone blocks that form the pavement). Trees and shrubs, including yew *Taxus baccata*, juniper *Juniperus communis*, buckthorn *Rhamnus catharticus*, hazel *Corylus avellana,* small-leaved lime *Tilia cordata* and ash *Fraxinus excelsior,* grow above the pavement surface. Ferns are well represented on the pavements and include rustyback *Ceterach officinarum* and the nationally scarce rigid buckler-fern *Dryopteris submontana* and limestone fern *Gymnocarpium robertianum.* These pavements also support strong populations of a number of distinctive species, characteristic of the habitat in its lowland setting. These include dark-red helleborine *Epipactis atrorubens,* angular Solomon's-seal *Polygonatum odoratum*, dropwort *Filipendula vulgaris,* rustyback and fingered sedge *Carex digitata*.

3.39 Calcareous grasslands dominated by blue moor-grass *Sesleria caerulea* have an overall northern character but are also rich in southern lowland species. There is a wide range of structural variation associated with intensity of grazing and the presence of cliffs, screes, and limestone pavements on the margins of the grassland stands. There are important transitions to calcareous scrub (including juniper scrub) and ash-lime woodlands. Heather *Calluna vulgaris* is a frequent component of the grassland sward and where the soils are deeper a heathland community occurs in an intricate mosaic with the grassland.

3.40 Although close to the northern limit of lime distribution, the ash-dominated woodland around Morecambe Bay contains many patches of small-leaved lime, which survive sometimes with elm *Ulmus* spp., often along outcrop edges. There is a rich assemblage of rare species, including fingered sedge, wood fescue *Festuca altissima* and mezereon *Daphne mezereum*. The habitat type occurs here both on limestone pavements and on loose scree and steep slopes. Yew occurs both as dense groves and as scattered trees in the understorey of ash or ash-elm woodland. Yew woodland here represents the development of long-established stands on scree and rocky slopes. Where the soils are deeper, and more acidic, small stands of oak woodland occur often with a heather dominated understory.

3.41 Hawes Water is a lowland lake on a predominantly Carboniferous limestone foundation, with a substrate of deep lacustrine shell-marl (remains of shells of lake-dwelling animals). The water is highly calcareous and the lake is fed by springs within it. This site is considered to be the best example of a lowland lake with stoneworts *Chara* spp. in England, owing to the clarity, low nutrient status and high calcium content of its water. The rare rugged stonewort *Chara rudis* and scarce species *C. aspera, C. hispida* and *C. pedunculata* occur here. The lake is fringed by a belt of mixed fen. This includes areas of calcareous fen dominated by great fen sedge *Cladium mariscus*, often occurring in single species stands.

3.42 Gait Barrows supports strong populations of the narrow-mouthed whorl snail *Vertigo angustior* on the mossy clint (the limestone blocks which make up pavements) tops of limestone pavements at transitions to woodland, an unusual habitat for the species.

Reasons for Designation[29]

3.43 Qualifying Annex I habitats:

- Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae.* (Calcium-rich fen dominated by great fen sedge (saw sedge))*
- European dry heaths
- Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. (Calcium-rich nutrient-poor lakes, lochs and pools)
- *Juniperus communis* formations on heaths or calcareous grasslands. (Juniper on heaths or calcareous grasslands)

[29] http://publications.naturalengland.org.uk/publication/5945483637817344 [accessed 22/04/2021]

- Limestone pavements*
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. (Western acidic oak woodland)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)
- *Taxus baccata* woods of the British Isles. (Yew-dominated woodland)*
- *Tilio-Acerion* forests of slopes, screes and ravines. (Mixed woodland on base-rich soils associated with rocky slopes)*

3.44 Qualifying Annex II species:

- Narrow-mouthed whorl snail *Vertigo angustior*

3.45 Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[30]

3.46 *"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;*

3.47 *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."*

Current Pressures and Threats

3.48 The Site Improvement Plan[31] identifies the following pressures and threats to the SAC:

- Undergrazing
- Commons management
- Inappropriate scrub control
- Forestry and woodland management
- Deer
- Public access/ disturbance
- Disease
- Game management: pheasant rearing
- Water pollution
- Air pollution: impact of atmospheric nitrogen deposition

[30] http://publications.naturalengland.org.uk/publication/5945483637817344 [accessed 22/04/2021]
[31] http://publications.naturalengland.org.uk/publication/6401957140889600 [accessed 22/04/2021]

- Invasive species
- Fertiliser use
- Change in land management

Leighton Moss SPA

Site Description

3.49 Leighton Moss, situated between Warton Crag and Silverdale on the edge of Morecambe Bay, is a site of outstanding ornithological importance. It contains the largest reedbed in North West England and the only large reedbed in Lancashire; the only other example of any significant size being the nearby Hawes Water Moss.

3.50 The site was originally an extensive peat moss which was drained and brought into agricultural use as arable land in the 19th Century. In 1917, following cessation of pumped drainage, the valley flooded with base-rich water from the surrounding limestone hills and soon developed into a *Phragmites* reedbed. In 1964 Leighton Moss became an RSPB reserve and has since been managed to maintain and diversify the habitats of wetland birds. There are extensive areas of open water in the reedbeds, and areas of willow scrub and mixed fen vegetation. A typical and varied fen flora has developed in some parts and this shows all stages of transition from open water to woodland.

Reasons for Designation[32]

3.51 Qualifying individual species listed in Annex I of the Wild Birds Directive supported by the site:

- Bittern *Botaurus stellaris* (Breeding)

Conservation Objectives[33]

3.52 *"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;*

3.53 *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."*

Current Pressures and Threats

3.54 The Site Improvement Plan[34] identifies the following pressures and threats to the SPA:

- Water pollution
- Inappropriate water levels
- Deer
- Siltation
- Coastal squeeze

[32] http://publications.naturalengland.org.uk/publication/4548734637572096 [accessed 22/04/2021]
[33] Ibid
[34] http://publications.naturalengland.org.uk/publication/5406466903113728 [accessed 22/04/2021]

Leighton Moss Ramsar

Site Description

3.55 Refer to paragraphs 3.49 and 3.50 above.

Reasons for Designation[35]

3.56 The site is designated as a Ramsar for the following Criteria:

Criterion 1: An example of large reedbed habitat characteristic of the biogeogaphical region. The reedbeds are of particular importance as a northern outpost for breeding populations of great bittern *Botaurus stellaris*, Eurasian marsh harrier *Circus aeruginosus* and bearded tit *Panurus biarmicus.*

Criterion 3: Species occurring in nationally important numbers outside the breeding season include northern shoveler *Anas clypeata* and water rail *Rallus aquaticus.*

Factors (Past, Present or Potential) Adversely Affecting the Site's Ecological Character

3.57 The Information Sheet on Ramsar Sites[36] identifies the following pressures and threats to the Ramsar site:

- Sedimentation/ siltation
- Pollution – pesticides/ agricultural runoff

Ingleborough Complex SAC

Site Description

3.58 Ingleborough is Britain's finest karst area, the characteristic limestone landforms having been produced largely under glacial conditions. It is particularly noted for extensive dry-stone pavements, dry valleys and gorges, shakeholes and sinkholes. Associated with the various acidic and basic strata, together with drift and peat which obscure the rocks over large areas, there is a wide range of vegetation types. Where limestone occurs at the surface, there is calcareous grassland dominated by blue-moor grass *Sesleria albicans,* while elsewhere blanket-bog is dominated by hare's-tail cottongrass *Eriophorum vaginatum.* Where flushing occurs the blanket-bog becomes floristically richer with sundew *Drosera rotundifolia,* cranberry *Vaccinium oxycoccos* and bog asphodel *Narthecium ossifragum.*

3.59 It has the most extensive series of limestone pavements in the UK, varying from moderate altitude to montane in character (300-640 m). The pavements range from those where grazing is completely excluded (Colt Park Wood), to some where grazing is restricted (pavements amidst cattle-grazed pastures) and others within common land intensively grazed by sheep. Characteristic species include baneberry *Actaea spicata,* great bellflower *Campanula latifolia,* lily-of-the-valley *Convallaria majalis,* marsh hawk's-beard *Crepis paludosa,* wall lettuce *Mycelis muralis,* lesser meadow-rue *Thalictrum minus* and mountain melick *Melica nutans.* Among the ferns, green spleenwort *Asplenium viride,* brittle bladder-fern *Cystopteris fragilis* and hard shield-fern *Polystichum aculeatum* occur on most pavements. Rigid buckler-fern *Dryopteris* submontana and limestone fern Gymnocarpium robertianum are widespread. Dog's mercury Mercurialis *perennis* and wood sorrel *Oxalis acetosella* occur on most pavements. Amid stands of calcareous grassland it has the only large stands of juniper on limestone pavements at high altitude in the UK. The scrub is of the relatively species-poor type typical of these situations.

3.60 Spring-fed flush fens are extensive across Ingleborough, commonly associated with calcareous grassland types, but also found amidst acid grasslands and heathland communities. They are often species-rich communities, in which rare or locally distributed species such as bird's-eye primrose *Primula farinosa*, black bog-rush *Schoenus nigricans*, few-flowered spike-rush *Eleocharis quinqueflora* and flat-sedge *Blysmus compressus* are frequent. Crevice communities occur on extensive limestone scars and are characteristic of the area. The flora has a mix of northern and southern species, including purple saxifrage *Saxifraga*

[35] https://jncc.gov.uk/jncc-assets/RIS/UK11035.pdf [accessed 22/04/2021]
[36] Ibid

oppositifolia, yellow saxifrage *S. aizoides*, alpine meadow-grass *Poa alpina*, hoary whitlowgrass *Draba incana,* lesser meadow-rue *Thalictrum minus,* wall lettuce *Mycelis muralis* and baneberry.

Reasons for Designation[37]

3.61 Qualifying Annex I habitats:

- Blanket bogs*
- Limestone pavements*
- Petrifying springs with tufa formation (*Cratoneurion*). (Hard-water springs depositing lime)*
- *Tilio-Acerion* forests of slopes, screes and ravines. (Mixed woodland on base-rich soils associated with rocky slopes)*
- Alkaline fens. (Calcium-rich springwater-fed fens)
- Calcareous rocky slopes with chasmophytic vegetation. (Plants in crevices in base-rich rocks)
- *Juniperus communis* formations on heaths or calcareous grasslands. (Juniper on heaths or calcareous grasslands)
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). (Purple moor-grass meadows)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)

3.62 Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[38]

3.63 *"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;*

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

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

Current Pressures and Threats

3.65 The Site Improvement Plan[39] identifies the following pressures and threats to the SAC:

- Hydrological changes
- Air pollution: impact of atmospheric nitrogen deposition
- Overgrazing
- Disease
- Change in land management
- Invasive species

[37] http://publications.naturalengland.org.uk/publication/5091524186472448 [accessed 22/04/2021]
[38] Ibid
[39] http://publications.naturalengland.org.uk/publication/6079707858599936 [accessed 22/04/2021]

- Under-grazing
- Drainage
- Deer
- Climate change
- Forestry and woodland management

Witherslack Mosses SAC

Site Description

3.66 Witherslack Mosses comprises three individual sites – Meathop Moss, Nichols Moss and Foulshaw Moss – that are remnants of a formerly interconnected peat body on the west side of the Kent estuary, on its coastal plain. All retain some of the original dome structure, though each has been at least in part degraded by peat-cutting around the edges and by commercial forestry on Foulshaw Moss. Although restricted in area on Foulshaw Moss, each site contains good examples of cross-leaved heath *Erica tetralix* – *Sphagnum papillosum* (a bog-moss) raised and blanket mire, of the *Sphagnum magellanicum* – bog-rosemary *Andromeda polifolia* sub-community. Degraded raised bog predominates on Foulshaw Moss and is present around the edges of the other two.

Reasons for Designation[40]

3.67 Qualifying Annex I habitats:

- Active raised bogs*
- Degraded raised bogs still capable of natural regeneration

3.68 Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[41]

3.69 *"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;*

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

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

Current Pressures and Threats

3.71 The Site Improvement Plan[42] identifies the following pressures and threats to the SAC:

- Inappropriate water levels
- Hydrological changes
- Inappropriate scrub control
- Invasive species

[40] http://publications.naturalengland.org.uk/publication/6299473500176384 [accessed 22/04/2021]

[41] Ibid

[42] http://publications.naturalengland.org.uk/publication/5314187785928704 [accessed 22/04/2021]

- Air pollution: impact of atmospheric nitrogen deposition

4. Impact Pathways

Introduction

4.1 The European sites that are described Section 3 are located within a 10km radius of the Lancaster District boundary. This distance is chosen since it generally reflects the greatest distance at which adverse effects on the European sites discussed in Section 3 are likely to arise from development.

4.2 Based upon Natural England Site Improvement Plans, there are several impact pathways that require consideration regarding the Topic Papers and said European sites. These are:

- Water quality (surface water runoff);
- Water quality (discharge of treated sewage effluent);
- Hydrological changes, including water abstraction;
- Recreational pressure;
- Air quality;
- Climate change;
- Energy production.

Background to Water Quality and Abstraction

4.3 Water quality includes components such as dissolved oxygen, acidity/alkalinity, levels of other chemicals such as nitrogen and phosphorous, amounts of suspended solids and heavy metals. Dissolved oxygen is affected by the Biochemical Oxygen Demand (BOD); the higher the BOD the lower the dissolved oxygen available in the water for fish and other wildlife. Excess nutrients can lead to various impacts including algal blooms and smothering growth of large algae, while high ammonia concentrations and heavy metals are directly toxic to aquatic life. Each species has its own tolerance range with respect to water quality. For example, fish, such as the salmon, which are totally dependent on water are more sensitive to changes in water quality. Water quality can have other indirect effects, for example high volumes of nitrogen and phosphorous can lead to algal blooms and excessive growth of other water plants.

4.4 In addition, water quantity has a significant effect on the biodiversity of a river catchment in numerous ways[43]. The amount of water falling on a catchment and getting into a river, has an effect on water levels (depth) in a river, water table levels in a floodplain, and a flow rate of a river. In turn, these properties influence other important river properties – for example levels of silt and dissolved oxygen in the water.

4.5 Water abstraction (i.e. removal of water for human use) can significantly impact aquatic ecosystems. This is because excessive abstraction can lead to drought conditions for a particular river; while rivers are typically able to recover from natural droughts, prolonged abstraction can cause a river to completely dry out thereby destroying the river ecosystem. The Environment Agency report that 14% of UK rivers are classified as 'over-abstracted', 9% are 'over-licensed' and 24% of aquifers are in 'poor quantities status' (i.e. water is being abstracted faster than it can be naturally replenished)[44]. In addition, studies suggest that climate change will worsen water availability in rivers and aquifers due to drier seasonal conditions[45]. The Governments has previously acknowledged that '*water supplies are already under stress in some parts of the country. Because of pollution and over-abstraction only a quarter of our rivers and lakes are fully functioning ecosystems. In the coming years, the combined effects of climate change and a growing population are likely to put increasing pressure on our river, lakes and acquirers. If new do not act, the security of our water supplies could be comprised'*[46].

[43] Salmon and Trout Association (2017). *Briefing Paper: The Impact of River and Groundwater Abstraction*. Available online at: https://www.salmon-trout.org/wp-content/uploads/2017/09/Abstraction-Literature-Review.pdf [Accessed: 22/04/2021].
[44] WWF (2017). Water For Wildlife: Tackling Drought And Unsustainable Abstraction. Available online at: https://www.wwf.org.uk/sites/default/files/2017-07/Water%20For%20Wildlife_Abstraction%20Report_July%202017.pdf [Accessed 22/04/2021].
[45] UK Committee (2017). *UK Climate Change Risk Assessment 2017*. Available at: www.theccc.org.uk/uk-climate-change-risk-assessment-201 [Accessed 22/04/2021].
[46] Department for Environment Food and Rural Affairs (December 2011) Water for Life. ISBN 9780101823029, Cm 8230.

4.6 Sensitive European Sites that are within Lancaster District catchment include the Morecambe and Duddon Estuary SPA SPA and Morecambe Bay SAC/ Ramsar. Refer to Table 1 for potential impacts pathways of growth in the Lancaster District. Refer to Table 2 for screening assessment of the LCC Topic Papers.

Background to Recreational Pressure

4.7 There is growing 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[47,48]. This applies to any habitat, but the additional recreational pressure from housing growth on destinations with water features is likely to be especially strong and some of the qualifying waterfowl are known to be susceptible to disturbance. Different European Sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of Local Plans tend to focus on recreational sources of disturbance as a result of new residents[49].

4.8 Human activity can affect organisms direct (e.g., loss of habitat or by causing species to flee) and indirect impacts (e.g., by damaging their habitat or reducing their fitness in less obvious ways e.g., stress). The most obvious direct effect is the loss of habitat as a result of increased visitors to a site (i.e., trampling). 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 to species (e.g., an increase in heart rate). While these are less noticeable, they might result in major population-level changes by altering the balance between immigration/birth and emigration/death[50].

4.9 Impacts of bird disturbance is particularly well studied. Much research stems from the fact that birds expend energy unnecessarily when disturbed and the time they spend responding to humans is time that is not spent feeding[51]. Disturbance therefore risks increasing energetic expenditure of birds while reducing their energetic intake, which can adversely affect the 'condition' and ultimately survival of the birds. Additionally, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they then must sustain a greater number of birds[52]. Moreover, the more time a breeding bird spends disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and nightjar[53 54]. Recreation disturbance in winter can be more adverse because birds are more vulnerable at this time of year due to food shortages.

4.10 Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance than hiking[55]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[56]. A UK meta-analysis suggests that important spatial (e.g., the area of a site potentially influenced) and temporal (e.g., how often or long an activity is carried out) parameters differ between recreational activities, suggesting that activity type is a factor that should be taken into account in HRAs[57].

4.11 There is a diversity of European sites that are within or around Lancaster District that support different habitats that have varying levels of susceptibility and impacts from recreational pressures. For example, Witherslack Mosses SAC supports lowland bog that is highly susceptible to impacts of trampling. *Sphagnum*

[47] Liley D, Clarke R.T., Mallord J.W., Bullock J.M. 2006a. The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.
[48] Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. 2006b. Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.
[49] The RTPI report 'Planning for an Ageing Population' (2004) which states that *'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.'* It also states that *'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.*
[50] Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[51] Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279
[52] Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72
[53] 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.0072984.
[54] 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.
[55] Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. Biology Letters 3: 14pp.
[56] Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.
[57] Weitowitz D., Panter C., Hoskin R., Liley D. The spatio-temporal footprint of key recreation activities in European protected sites. Manuscript in preparation.

mosses are keystone species that make up lowland bog, they are highly sensitive to trampling with mortality of individuals directly linked to trampling events[58]. Studies also suggest that tramping impacts can persist for several years after the event[59]; however, this area of ecology is extremely under-researched with conflicting results[60].

4.12 Morecambe Bay SAC/ SPA/ Ramsar is also susceptible to recreational pressure, particularly due to disturbance of wetland birds supported by the saltmarsh[61]. Numerous studies have been published demonstrating that wetland birds can be easily disturbed and displaced by anthropogenic activities (e.g., walking or boating)[62]. Refer to Table 1 for potential impacts of growth in the Lancaster District.

Background to Air Quality

4.13 Development within Lancaster District may lead to changes in air quality compared to a situation without growth, as a result of an increase in the number of vehicles on the road network associated with housing and employment growth. Of most significance to European Sites is the release of pollutants from vehicle emissions. There are two measures of relevance regarding air quality impacts from vehicle exhausts. The first is the concentration of oxides of nitrogen (known as NOx) in the atmosphere. NOx can be directly toxic to vegetation in concentrations above the critical level, but its main importance is as a source of nitrogen, which is then deposited on adjacent habitats[63]. The guideline atmospheric concentration advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (μgm^{-3}), known as the Critical Level.

4.14 The second important metric is a measure of the rate of the resulting nitrogen deposition. The addition of nitrogen is a form of fertilization, which can have a negative effect on woodlands and other habitats over time by encouraging more competitive plant species that can force out the less competitive species that are more characteristic. Unlike NOx in atmosphere, the nitrogen deposition rate below which we are confident effects would not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System (APIS) website (www.apis.ac.uk) and is expressed as a quantity (kilograms) of nitrogen over a given area (hectare) per year ($kgNha^{-1}yr^{-1}$).

Nitrogen oxides, nitrogen deposition and acidification

4.15 Emissions of NOx and resulting deposition can have community level impacts to habitats and European Sites. Habitats that are particularly sensitive to elevated nitrogen levels include heathlands and lowland bog. The routes that nitrogen deposition impacts habitats and vegetation described above are through toxicity and the movement of nitrogen through varying trophic levels. Another route of affect is through nitrogen acidification. A study undertaken by Maskell et al (2010)[64] observed that with increasing acid deposition from NOx there was a decrease in species richness within heathland. Acid deposition can have serious impacts to the health of soil structure and the microbial communities found here. These species carryout a natural decaying process known as nitrification (converting ammonium to nitrate) that generates acidity. However, when in combination with acid deposition from NOx pollution the soil pH may become too acidic for specialised plant communities to survive and result in a net decrease in biodiversity[65]. Acidification tends to be more of an issue for acid substrates, which have poor buffering capacity (i.e., heathland), than neutral or calcareous substrates. Refer to Table 1 for associated potential impacts of growth in the Lancaster District Issues and Options document.

[58] Robroek, B.J., Smart, R.P. and Holden, J., 2010. Sensitivity of blanket peat vegetation and hydrochemistry to local disturbances. Science of the total environment, 408(21), pp.5028-5034.
[59] IUCN (2014). *IUCN UK Committee Peatland Programme Briefing Note No. 7: Grazing and Trampling.* Available online: https://www.iucn-uk-peatlandprogramme.org/sites/default/files/2019-05/7%20Grazing%20and%20trampling%20final%20-%205th%20November%202014.pdf [accessed 22/04/21].
[60] Törn A, Rautio J, Norokorpi Y, Tolvanen A. 2006. Revegetation after short-term trampling at subalpine heath vegetation. *Ann Bot Fenn*, 43, pp. 129–138.
[61] Gill, J.A., Norris, K. and Sutherland, W.J., 2001. The effects of disturbance on habitat use by black-tailed godwits Limosa limosa. *Journal of applied Ecology*, *38*(4), pp.846-856.
[62] Hockin, D., Ounsted, M., Gorman, M., Hill, D., Keller, V. and Barker, M.A., 1992. Examination of the effects of disturbance on birds with reference to its importance in ecological assessments. *Journal of Environmental Management*, *36*(4), pp.253-286.
[63] APIS (2019). *Air pollution information systems*. Available online at: http://www.apis.ac.uk/ [accessed 22/04/2021].
[64] Maskell, L.C., Smart, S.M., Bullock, J.M., Thompson, K.E.N. and Stevens, C.J., (2010). Nitrogen deposition causes widespread loss of species richness in British habitats. Global Change Biology, 16(2), pp.671-679.
[65] Defra (2007) Acid Deposition Processes. Nobel House: London.

Background to Climate Change and Energy Production

4.16 Climate change includes both global warming driven by human emissions of greenhouse gases and the resulting large-scale shifts in weather patterns. Though there have been previous periods of climatic change, since the mid-20th century humans have had an unprecedented impact on Earth's climate system and caused change on a global scale[66].

4.17 The largest driver of warming is the emission of greenhouse gases, of which more than 90% are carbon dioxide (CO_2) and methane. Fossil fuel burning (coal, oil, and natural gas) for energy consumption is the main source of these emissions, with additional contributions from agriculture, deforestation, and manufacturing[67].

4.18 The changing climate is beginning to have an impact on English ecosystems and this impact is expected to increase and accelerate in the future, threatening the conservation of biodiversity. The best available estimates for England are for a warming of 1.5 - 2.5^{o}C by 2050 and a change in the distribution of precipitation through the year. Precipitation in the South East is predicted to decrease by 30 – 40% in summer and increase by 15 – 20% in the winter. Models predict a sea level rise of up to 36cm over the same period[68]. These changes can be both direct and indirect.

Direct impacts of climate change on European sites[69]

4.19 Changes can be summarised into the following categories:

- Changes in phenology (biological lifecycles), which may lead to loss of synchrony between species;
- Changes in species distribution, including the arrival of non-native species and potentially loss of species for which suitable climate conditions disappear;
- Changes in community composition;
- Changes in ecosystem function; and
- Loss of physical space due to sea level rise and increased storminess.

4.20 Of the 32 priority habitats in the UK Biodiversity Action Plan, seven were assessed to be at high risk from the direct impacts of climate change, based on good to moderate evidence; montane habitats, standing waters, floodplain and grazing marsh, saltmarsh, maritime cliffs and slopes, saline lagoons and open seas. Five of these are coastal and marine habitats. A further 14 were assessed to be at medium risk and 11 at comparatively low risk or medium low risk. However, the evidence base was rated as 'poor' for 12 priority habitats.

Indirect Impacts of climate change on European sites[70]

4.21 As the climate changes there will be changes in socio-economic drivers, working practices, policies and resource use:

- Water and wetlands – affected by water resource issues and catchment management. Increased water abstraction, fragmentation by artificial structures such as impoundments, flood control and hydro-electric schemes;
- Woodlands – increased emphasis on carbon sequestration or production of biomass for renewable energy generation. These drivers could promote more intensive management systems or tree planting on semi-natural habitats;
- Towns and cities – negative impacts on European sites may result from the intensification of land use as a consequence of policies for increasing energy efficiency; and

[66] https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_SPM_FINAL.pdf [accessed 22/04/2021]
[67] https://www.epa.gov/ghgemissions/overview-greenhouse-gases [accessed 22/04/2021]
[68] Defra (2007) England Biodiversity Strategy – Towards Adaptation to Climate Change. CR0327
[69] Ibid
[70] Ibid

- Coasts and seas – changes in fisheries policy could have a major impact on qualifying features. Increased tourism development and renewable energy schemes also have the potential for negative impacts.

5. Test of Likely Significant Effect (ToLSE)

Introduction

5.1 LCC is the second largest Lancashire authority in geographic terms covering 576km^2 and 27 wards. The 2019 mid-year population estimate total for the authority was 146,038. Population growth in the district has over the years been under-pinned by strong net-migration results. It is estimated that between 2016 and 2041 the population of Lancaster will increase by 3%. The projected number of households in the authority is estimated to grow by 5.3% between 2016 and 2041[71].

5.2 The district has many transport links. Passenger services run from Heysham Port to the Isla of Man, operated by the Steam Packet Company, and Seatruck Ferries specialise in the carriage of freight operating from Heysham to both Dublin and Warren point in Northern Ireland. The M6 motorway runs through the authority, north to Cumbria and south to central Lancashire while another major route, the A6, runs parallel to it. The A65 in the east of the area in places follows the border with North Yorkshire. Lancaster is the third most important railway station in the country in terms of passenger usage[72].

Potential Impacts associated with changes to planning policy

5.3 Current impacts to European sites within the catchment of Lancaster District require analysis regarding the potential for exacerbation due to changes to planning policy within Lancaster District. These pathways of impact have been identified by each European site's 'Site Improvement Plan' documents produced by Natural England and AECOMs professional experience. Potential impacts arising from changes to planning policy for Lancaster District are listed and discussed in Table 1 and then related to the amended DPD policies on climate change in Table 2.

[71] https://www.lancashire.gov.uk/lancashire-insight/area-profiles/local-authority-profiles/lancaster-district/ [accessed 22/04/04/2021]
[72] Ibid

Table 1. Susceptibility of each European site to the above impact pathways due to changes in planning policy

Impact Pathway	Discussion
Water quality (surface water runoff)	Development within Lancaster District could lead to the conversion of previously undeveloped land to hardstanding and therefore increased surface water runoff, which could reach nearby European Sites. Surface water could become contaminated by sediment, plastic and chemicals from development sites and roads. Lancaster District is served by the Lune Catchment. The Lune Catchment encompasses the whole of the river Lune and all its many tributaries. This includes big rivers like the Keer, Rawthey, Clough, Dee, Greta, Roeburn, Conder, Cocker, Hindburn & Wenning as well as the many little streams and becks that flow into the Lune. It covers a varied landscape and supports a wide range of habitats, wildlife and industries. The Catchment spans a huge geographical area from above Tebay in the North to the sea in Morecambe and out to the East including Ingleton Falls and Clapham. Currently, the current ecological classification for the Wenning to Tidal catchment area is 'moderate', with agriculture and rural land management being the main reason for not achieving 'good' status[73]. Therefore, European Sites that are susceptible to surface water runoff are possibly the Morecambe Bay and Duddon Estuary SPA and Morecambe Bay SAC/ Ramsar.
Water quality (discharge of treated sewage effluent)	Development within Lancaster District may lead to increased sewage production, particularly if it is residential. There is therefore a risk that an increase in the volume of treated sewage effluent from the wastewater treatment works that serve Lancaster District could degrade water quality (i.e. through increased phosphorus discharge) of riverine European Sites when in the absence of environmental mitigation and adequate wastewater treatment work permits[74]. A similar effect can occur on coastal European sites through excess nitrogen inputs, although the estuaries of the north-west coast do not generally suffer from excessive macroalgal growth due to a combination of cool water temperatures, high turbidity limiting light penetration and strong wave action. European Sites that could be susceptible to discharge of effluent are Morecambe Bay SAC/ Ramsar and Morecambe Bay and Duddon Estuary SPA via the River Lune and River Kent., although the risk of eutrophication (i.e. smothering macroalgal growth) is considered low.
Water abstraction	Increased development within Lancaster District may lead to increased water use within the area and potentially increased water abstraction, particularly, although not exclusively, associated with increased housing. Increased water abstraction could change the freshwater/saline balance in some parts of Morecambe Bay SAC/ Ramsar and therefore impact their ability to support designated features. Abstraction within the Lune catchment is strategically managed through Catchment Abstraction Management Plans (CAMS). Within the Lune catchment area there are 103 licensed groundwater abstractions and 118 licensed surface water sources. It is noted that the HRA accompanying the latest Water Resource Management for United Utilities concluded that no adverse effect on integrity of any European Sites would occur from delivery of the WRMP. Since the purpose of the WRMP is to set out how the water company intends to meet public water supply requirements up to 2045 it covers the period of the Lancaster District Local Plan. As such a conclusion of no likely significant effect of the Local Plan through this pathway can be drawn.
Recreational pressure/ public access/ disturbance	Recreational pressure is identified in the Site Improvement Plans as a conservation concern for Morecambe Bay and Duddon Estuary SPA, Morecambe Bay SAC, Bowland Fells SPA and Morecambe Bay Pavements SAC. There is a risk that increased residential development within Lancaster District may increase the number of visitors to these European Sites. Generally speaking, recreational pressure for the SACs is likely to arise from habitat destruction via abrasion and vegetation trampling[75] and for the SPAs features (i.e. breeding and wintering birds) are easily disturbed by human presence; reducing SPA capabilities of supporting said features[76] [77]. Key findings of the Morecambe Bay visitor survey[78] recorded that 40% of visitors had undertaken a day trip directly from home; 36% were staying overnight around Morecambe Bay; 85% are likely to visit again; 46% were on a return visit; 57% were visiting from parts of Lancashire and Cumbria, with a further 13% visiting from other parts of the North West region; 1% of visitors were from overseas; 53% were over 55 years old; almost 80% of people use their own motor vehicle to travel to the area. The most popular activities people did whilst in the area was sightseeing/looking at the scenery (64%), eating out (63%) a Thnd walking more than 2 miles (55%).

[73] https://environment.data.gov.uk/catchment-planning/WaterBody/GB112072065980 [accessed 28/04/2021]
[74] Jarvie, H. P., Neal, C., & Withers, P. J. (2006). Sewage-effluent phosphorus: a greater risk to river eutrophication than agricultural phosphorus?.*Science of the total environment*,*360*(1-3), 246-253.
[75] Liddle, M.J., 1975. A selective review of the ecological effects of human trampling on natural ecosystems.*Biological Conservation*, *7*(1), pp.17-36.
[76] Vangansbeke, P., Blondeel, H., Landuyt, D., De Frenne, P., Gorissen, L. and Verheyen, K., 2017. Spatially combining wood production and recreation with biodiversity conservation. *Biodiversity and conservation*, *26*(13), pp.3213-3239.
[77] Morris, A., Burges, D., Fuller, R.J., Evans, A.D. and Smith, K.W., 1994. The status and distribution of Nightjars Caprimulgus europaeus in Britain in 1992. A report to the British Trust for Ornithology.*Bird study*,*41*(3), pp.181-191.
[78] https://www.rspb.org.uk/globalassets/downloads/documents/futurescapes/futurescapes-morecambevisitorsurvey-booklet.pdf [accessed 28/04/2021]

Impact Pathway	Discussion
	Almost 90% of respondents are interested in visiting places where they can see and/or experience wildlife. However only 55% visited a nature attraction or nature rich place on their visit. The survey shows that most of the visitors to the Morecambe Bay area are from further afield. The Site Improvement Plan for Morecambe Bay states "*The scale of recreational disturbance at Morecambe Bay is currently unknown but considered to be both localised and widespread".* This will be considered further in the developing Local Plan HRA, although it must be noted that the specific updates to the Local Plan policy are in response to the Climate Emergency rather than related to delivering additional housing beyond that allowed for in the adopted Local Plan. Bowland Fells SPA and areas of the Morcecambe Bay Pavements SAC are located within the Lancaster District boundary are also considered likely to attract new residents to these European Sites. However, the steep fell nature of the SPA will inherently limit the number of casual recreational visitors (dog walkers etc.) notwithstanding the proximity of Lancaster. Leighton Moss SPA is well-managed by the RSPB with a carefully laid out network of paths and hides and is actively promoted to visitors. As such it has considerable capacity to accommodate recreational visits.
Air quality	Development within the District is likely to increase the number of vehicles operating within the District. As a result, increased air pollution is expected from vehicle emissions relative to a situation without growth[79]. Pollutants released form vehicles may be carried directly by wind currents and deposited to European Sites or pollutants may become soluble and taken up during evaporation and deposited to European Sites at precipitation. This generally occurs within 200m of significant roads, so the potential for development to contribute to traffic to roads within 200m of European Sites alone and in combination with neighbouring authorities is of relevance[80]. Natural England have identified that air quality is a current threat to Morecambe Bay and Duddon Estuary SPA, Morecambe Bay SAC/ Ramsar, Bowland Fells SPA, Morecambe Bay Pavements SAC, Ingleborough Complex SAC and Witherslack Mosses SAC. This is based on the fact that all of these sites currently exceed their critical loads for nitrogen deposition, although it should be noted that local road traffic will only be one contributory source to total nitrogen deposition on a site and the relative importance of local traffic will be related to the number of significant roads within 200m of each site. Many of these sites are relatively remote from (i.e. well over 200m from) major roads that are likely to form journey to work routes for residents of Lancaster. No sites are definitively screened out at this point given the high-level nature of the Topic Papers, but the following observations are made: • The Site Improvement Plan for the Morecambe Bay and Duddon Estuary SPA and Morecambe Bay SAC/ Ramsar does not identify air pollution and nitrogen deposition as a key concern but does flag it for further investigation. The SPA and SAC/ Ramsar are within 200m of the A589 at Morecambe but according to aerial photography and the MAGIC website the SPA and SAC/ Ramsar at this location do not contain any habitats (notably saltmarsh) that are potentially vulnerable to nitrogen deposition, with the principal intertidal habitat being sandflats. As such traffic arising from the developing Lancaster District Local Plan is unlikely to affect these sites; • The Site Improvement Plan for the Bowland Fells SPA does not identify air pollution and nitrogen deposition as a key concern but does flag it for further investigation. Bowland Fells SPA does not lie within 200m of any significant roads that might form major journey to work routes for residents of the Lancaster District. Therefore, this site will not be investigated further for this pathway at this stage; • The Site Improvement Plan for the Morecambe Bay Pavements SAC identifies air pollution and nitrogen deposition as a key concern and calls for action to *"Control, reduce and ameliorate atmospheric nitrogen impacts".* A small section of the SAC (Site of Special Scientific Interest (SSSI) Unit 11) is adjacent to the A5074. The remaining areas of the SAC do not lie within 200m of any significant roads that might form major journey to work routes for residents of the Lancaster District. The habitat within Unit 11 is broadleaved woodland and is currently in favourable condition[81] however the nitrogen deposition exceeds site-relevant critical loads for all features except fen, lake (n/a) and the Vertigo snail (unknown). Lichens in woodland are poorly represented which could be due to this factor. Greatest inputs according to APIS are from UK Agriculture (mainly at distance) and European Imports[82]. As such traffic arising from the developing Lancaster District Local Plan is unlikely to affect this site; • The Site Improvement Plan for the Ingleborough Complex SAC identifies air pollution and nitrogen deposition as a key concern and calls for action to "*Control, reduce and ameliorate atmospheric nitrogen impacts*". The SAC does not lie within 200m of any significant roads that might form major journey to work routes for

[79] Litman, T. and Colman, S.B., 2001. Generated traffic: Implications for transport planning.*ITE journal*,*71*(4), pp.38-46.
[80] Natural England (2016). *The ecological effects of air pollution from road transport: an updated review*. Didcot: Oxfordshire
[81] https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1016111 [accessed 27/04/2021
[82] http://www.apis.ac.uk/srcl/source-attribution?submit=Source+Attribution&sitetype=SAC&sitecode=UK0014777&sitename=Morecambe+Bay+Pavements [accessed 27/04/2021]

Impact Pathway	Discussion
	residents of the Lancaster District and the greatest inputs according to APIS are from UK Agriculture (mainly at distance) and European Imports[83]. The SAC does not lie within 200m of any significant roads that might form major journey to work routes for residents of the Lancaster District As such traffic arising from the developing Lancaster District Local Plan is unlikely to affect this site; • The Site Improvement Plan for the Witherslack Mosses SAC identifies air pollution and nitrogen deposition as a key concern and calls for action to *"Control, reduce and ameliorate atmospheric nitrogen impacts"* but also states that any effects are currently masked by unfavourable hydrology/effects of management. The greatest inputs according to APIS are from UK Agriculture (mainly at distance) and European Imports[84]. As such traffic arising from the developing Lancaster District Local Plan is unlikely to affect this site.
Climate change	Recreational pressure/ public access/ disturbance is identified in the Site Improvement Plans as a conservation concern for Ingleborough Complex SAC. Climate change may be leading to the loss of key species associated with the more upland and montane elements of calcareous rocky slopes and limestone pavement. Ingleborough has examples through the lowland/ upland transition but over time only the former may remain. Certain key species cannot retreat as the habitat is fixed to the limestone band at circa 650 metres. There is no higher niche and only the north west aspect ameliorates any warming. The historic 'lowest altitude site in England' for purple saxifrage in Crummackdale appears lost, which is possible evidence that calcareous rocky slope habitat is affected. This will be considered further in the developing Local Plan HRA. The Topic Papers have been prepared in response to the Climate Emergency Local Plan Review (CELPR) therefore this will be considered further in the developing Local Plan HRA.
Energy production	Energy production is identified in the Site Improvement Plans as a conservation concern for Morecambe Bay SAC. Licences for wind farm cabling/ oil and gas pipelines etc. have previously been granted in a number of areas within Morecambe Bay which have required both terrestrial and marine permissions/licenses for the development. There is a need for better consideration/awareness of marine and coastal impacts during assessment of planning applications (terrestrial element of development) to prevent mixed messages regarding the impacts of the development and potential oversight of issues prior to the marine license being assessed. This will be considered further in the developing Local Plan HRA. Wind turbines in particular could have impacts on wintering waterfowl associated with the SPA/Ramsar site or breeding raptors or lesser black-backed gull associated with Bowland Fells SPA, if they are poorly situated in relation to key flightlines. The Policy changes have been prepared in response to the Climate Emergency Local Plan Review (CELPR) therefore this will be considered further in the HRA.

[83] http://www.apis.ac.uk/srcl/source-attribution?submit=Source+Attribution&sitetype=SAC&sitecode=UK0012782&sitename=Ingleborough+Complex [accessed 27/04/2021]
[84] http://www.apis.ac.uk/srcl/source-attribution?submit=Source+Attribution&sitetype=SAC&sitecode=UK0030302&sitename=Witherslack+Mosses [accessed 27/04/2021]

Assessment of Amended DPD Policies

5.4 In Table 2 overleaf each amended DPD policy is analysed for its effect on European sites. Green shading in the final column indicates that the policy has been deemed not to lead to a likely significant effect on any European Sites due to the absence of any mechanism for an adverse effect. Orange shading indicates that a pathway of impact potentially exists, and further investigation will be required as the Local Plan evolves.

5.5 Note that the purpose of the Local Plan Review, is to amend existing adopted policies. With that in mind, the likely significant effect test documented overleaf does not revisit the assessment of the entire policy as that was undertaken for the adopted Local Plan and a conclusion of no adverse effects on integrity was drawn. Rather than assessment focusses on whether the changes in response to the Climate Emergency will result in likely significant effects on European sites. Policies that have been previously screened (refer to version 2 of this report, titled 'HRA Screening of the Lancaster Local Plan Topic Papers – May 2021) and remain unchanged or have had previous recommendations added have not been included in this screening exercise as the outcome of the adopted Local Plan HRA still applies. These policies are shown in Table 1B, Appendix B.

Table 2. Screening outcome of Lancaster District DPD amended policies

Policy number	Policy Title and Description	Implications on Climate Change	Changes made by LCC	Screening Outcome
Changes made to the Strategic Policies and Land Allocations DPD policies				
CC1	**Responding to Climate Change and Creating Environmental Sustainability** The policy sets out LCCs approach to tackling Climate Change within the developing Lancaster District Local Plan in response to its climate emergency declaration.	Development proposals that otherwise accord with the policies of the development plan will be supported in principle where they can demonstrate that, they have incorporated relevant climate mitigation and adaptation measures into their schemes and address the impacts of Climate Change.	Policy now also recognises the important role that the district's soils provide in mitigating climate change through carbon storage and sequestration. Change recommended by NE.	**No Likely Significant Effect. Screened out.** This policy is a statement of ambition and will drive the aspiration to achieve a reduction of carbon emissions to net zero by 2030. This policy is not expected to have any negative implications on European sites.
SP4	**Priorities for Sustainable Economic Growth** The policy sets out a series of priorities for economic growth in the district that are primarily based on evidence derived from the 'Prospects for Economic Growth' Paper prepared in 2017 and the wider evidence base prepared for the Lancaster District Economy.	The Climate Emergency will seek the Council to support and encourage a wider range of economic opportunities, particularly in the clear energy sector and the delivery of zero carbon homes. This policy could make it clear there is support for the growth of such economic sectors in the district.	Policy wording has been amended to include recognition of the key role that local food supply chains have in local economic prosperity. This will impact on climate adaptation for food supply chains and climate mitigation particularly through reduced food miles. Wording also ensures that climate change impacts and a low carbon economy is adequately considered within the Local Plan and ensures that support for renewable energy projects is made clear and more appropriately considers opportunities in relation to the green economy.	**No Likely Significant Effect. Screened out.** The aim of this policy is to support sustainable economic growth within the district. This includes providing new development opportunities for employment in greenfield locations. Construction of new employment sites have the potential to impact European sites depending upon the precise locations. However, employment allocations were assessed in the HRA of the adopted Local Plan and are unchanged. . The changes to policy are what is being assessed and these are related to greater **clarity** regarding the role that particular types of economic development can play in addressing the climate emergency. The proposed changes will not themselves therefore lead to Likely Significant Effects.
SP8	**Protecting the Natural Environment** The policy provides a strategic approach to protecting the natural environment and provides some specific references to the impacts of Climate Change on the natural environment, particularly in relation to flood risk matters.	This policy does have direction in relation to climate change and therefore is likely to lead to review through this process to reflect wider changes in the Plan – particularly in relation to changes to flood risk policy.	Added to the Policy on the recommendation of NE: *"The Council also recognises the importance of biodiversity net gain and nature recovery, and contributing towards strengthening the National Nature Recovery Network to restore and enhance the natural environment, working with the responsible authority to produce a Local Nature*	**No Likely Significant Effect. Screened out.** This policy specifically looks at protecting the natural environment. The implementation of the changes to this policy is considered to have no adverse impacts and potentially some beneficial effects on European sites as the change strengthens the policy and recognises the existence of the new designation.

Policy number	Policy Title and Description	Implications on Climate Change	Changes made by LCC	Screening Outcome
			Recovery Strategy to deliver these requirements in accordance with the Environment Bill." Change of wording recommended by Lancaster University (CPRE) to explain weight given and how GBI map is not an allocations/designations map. Policy wording changed to include *"stakeholders and communities*" - inclusion will help to increase adaptation potential and local resilience.	
SP9	**Maintaining Strong and Vibrant Communities** The policy looks at the spatial dimensions that planning can play to promote healthy and sustainable communities that can include greater social inclusion, health and well-being and the promotion of neighbourhood planning communities	There are aspects of this policy that relate to Climate Change, the health and well-being of people will be critical in dealing with extreme weather events. There is also an opportunity to make clear that education within the community of the impacts of climate changes and opportunities to mitigation can be important.	Amendment to policy wording recognises a wider range of development which is central to climate mitigation and adaptation and supports community climate resilience.	**No Likely Significant Effect. Screened out.** This policy relates to supporting the long-term sustainability of communities throughout the plan period and beyond through making sure that the aspirations of all sections of the community are met. This policy does not provide for change and the addition of the changes would not lead directly to any impacts on European sites**.**
SG4	**Lancaster City Centre** The policy sets a strategic approach to regeneration across Lancaster City Centre and the movement of vehicles and people into and through the City Centre area.	The Policy has a keen aim of making the city centre a successful and vibrant place. One of the key issues in achieving this will be through the altering the transport movements through the city centre. The Council are working on a movement strategy with Lancashire CC and the outcomes of which will probably be useful in the context updating this policy in regard of Climate Change.	Policy wording has been amended to include recognition of the key role that local food supply chains have in local economic prosperity. This will impact on climate adaptation for food supply chains and climate mitigation particularly through reduced food miles.	**No Likely Significant Effect. Screened out.** This policy outlines the potential development associated with Lancaster City Centre, including enhancements to blue and green infrastructure. There are no likely potential effects on European sites associated with development within Central Lancaster.
SC4	**Green and Blue Corridor and Chains** This policy seeks to identify a range of existing green space networks that are strategically important across the district.	The enhancement and expansion of green infrastructure (including green space networks) is important in addressing Climate Change. Therefore consideration should be given to whether this policy area can be expanded in its scope.	Edited to ensure that the policy addresses all elements which contribute to these GBI corridors and chains and to clarify role of Policy SC4.	**No Likely Significant Effect. Screened out.** This policy is designed to protect, enhance and expand the natural environment and recreation space within the district. The implementation of the changes to this policy is considered to have no adverse impacts and potentially some beneficial effects on the European sites.
T4	**Public Transport Corridors** The policy seeks the promotion of enhancing public transport corridors across the main urban areas of the	The Local Plan Review is based on addressing Climate Change and clearly, an element of addressing this matter will be promoting the use of sustainable forms of transport, for instance improvement of public transport links.	Policy has been reworded. The following has been removed *"Developers will be required to ensure the provision of such new services or enhanced existing services, as necessary, from first occupation of the development for a period of up 10 years, or five years after last occupation,*	**No likely Significant Effect. Screened out.** This policy identifies existing key transportation routes in the district and any opportunity to improve/ promote these existing public transport corridors, specifically in terms of public transport

Policy number	Policy Title and Description	Implications on Climate Change	Changes made by LCC	Screening Outcome
	district, supporting the Lancaster District Highways and Transport Masterplan	This policy is positively worded and seeks to promote principle public transport corridors within the district; however, consideration should be given to how the scope of the policy could be potentially expanded. However, this will have to be in the context of the preparation of the Local Transport Plan 4 (which will be prepared	*whichever comes sooner."* This has been replaced by *"Developers will be required to fund the provision of such new services or enhanced existing services. The commencement of such services and the duration of support will be considered on a case by case basis."* This is in response to viability issues to do with the 10yrs funding contribution.	services. The implementation of the changes to this policy is considered to have no adverse impacts and potentially some beneficial effects on the European sites.
Changes made to the Development Management DPD policies				
DM27	**Open Space, Sports and Recreational Facilities** The policy sets out the presumption towards the protection of public open spaces. The policy also links to the need for new open spaces within new residential development and the enhancement of existing spaces.	The scope of the Local Plan Review looked at how Green Infrastructure (including the POS network) could be enhanced further.	Part II of the policy has been reworded to ensure that any loss of designated open space, sports and recreational facilities can only occur provided that an *'evidence based'* assessment demonstrates that it no longer has an economic, environmental or community value.	**No Likely Significant Effect. Screened out.** This policy protects current open space and recreational facilities from development. It also sees an opportunity to extend green infrastructure through the provision of additional multi-functional areas. Since the following wording in the original policy is retained: *'Development proposals which are within the vicinity of designated open spaces will be required to incorporate design measures that ensure that there are no negative impacts on amenity, ecological value and functionality of the space.',* the inclusion of the changes to this policy is considered to have no adverse impacts and potentially some beneficial effects on the European sites.
DM29	**Key Design Principles** The policy sets out a series of key design principles which new development proposals (of any scale and in any location) should consider	The key design principles have a wide application across all development in the district, regardless of scale, location or nature. This means that amendments to design policy that reflect the Climate Change agenda are considered to be an important consideration through the Local Plan Review process.	The policy has been amended to emphasise the role that site layout has in reducing energy use in buildings. Supporting text also emphasises that layout and design should be optimised for green and blue infrastructure for carbon and heat capture, sustainable drainage, biodiversity enhancement, food production and recreational, modal shift to sustainable transport and facilities to reduce the need to travel.	**No Likely Significant Effects. Screened out.** This policy is associated with the design of new developments. These are statements of intent and aspirations. The addition of the changes to this policy is not expected to have any implications on European sites and potentially some beneficial effects through addressing Climate Change issues.
DM30b	**Sustainable Design and Construction – Water Efficiency**	This policy specifically relates to the sustainable design and construction of new development. The Council, in accordance with national policy and practice guidance, has considered the pressure on	Policy now includes greywater recycling. This will impact mitigation in that less water will go through waste-water treatment plants so emissions associated with water treatment will be reduced.	**No Likely Significant Effects. Screened out.** This policy is associated with the design of new developments. It is a statement of intent and aspirations. The addition of the changes to this

Policy number	Policy Title and Description	Implications on Climate Change	Changes made by LCC	Screening Outcome
		the water supply across the district and has chosen to implement optional water efficiency standards for new residential development.		policy is not expected to have any implications on European sites and potentially some beneficial effects through addressing Climate Change issues.
DM30c	**Sustainable Design and Construction – Materials, Waste & Construction.**	Proposals for major developments should demonstrate how they achieve sustainable and environmentally conscious development, including climate change mitigation and adaptation.	This additions to the policy account for a range of factors, including future-proofing for climate impacts, how uses may change, allowing the addition of mitigation and adaptation features in later stages, considering low carbon materials, preparing for future demolition and how this waste will be processed and so forth. This will contribute to both mitigation and adaptation as emissions can be reduced and climate impacts can be adapted to throughout the development's lifetime	**No Likely Significant Effects. Screened out.** This policy is associated with the design of new developments. It is a statement of intent and aspirations. The addition of the changes to this policy is not expected to have any implications on European sites and potentially some beneficial effects through addressing Climate Change issues.
DM33	**Development and Flood Risk** The policy seeks to address the issues associated with flooding and flood risk in new development in accordance with national planning policy	One of the impacts of Climate Change is the greater occurrence of extreme rainfall events which increase opportunities for flooding which can threaten both life and property. The Policy should be considered for review in the context of National Planning Policy to ensure that the policy is robust and consistent in relation to flood risk matters.	Most of the changes to the policy have been made to improve drafting and consistency within the planning practice guidance. The addition of '*manage peak flows'* to part VII aims to enhance the use of water courses to management peak flows in response to climate change.	**No Likely Significant Effect. Screened out.** This policy is associated with the design of new developments. These are statements of intent and aspirations. The implementation of the changes to this policy is not expected to have any implications on European sites and potentially some beneficial effects through, for example, enhancement and Biodiversity Net Gain.
DM34	**Surface Water Run-Off and Sustainable Drainage** The policy seeks to provide a generic approach towards the role of sustainable drainage within new development to minimise water run-off and provide effective water management on-site via SuDS	The policy sets a supportive approach towards the delivery of Sustainable Drainage Systems (SuDS) however the policy could be reviewed to consider whether the role of the SuDS hierarchy the promotion of the most sustainable forms of drainage can become a requirement rather than merely something which is encouraged	Policy wording has been amended to include arrangements for funding mechanisms to ensure future management and maintenance is addressed; to ensure that source control and conveyance are included; to enhance the way in which watercourses can address climate change and to ensure safety is addressed.	**No Likely Significant Effect. Screened out.** This policy is associated with the design of new developments. These are statements of intent and aspirations. The implementation of the changes to this policy is not expected to have any implications on European sites and potentially some beneficial effects through, for example, setting targets for run-off rates and careful design of SuDS.
DMCCH 2	**Micro-renewables in the Setting or Curtilage of Heritage Assets** Proposals for new micro-renewable systems in the setting or curtilage of Heritage Assets should be supported by an assessment of the contribution the setting and/or curtilage make to the significance of the asset. Proposals will be encouraged where they avoid harm to	The policy provides for instances where micro-renewable systems cannot be accommodated directly on a heritage asset without resulting in a high level of harm and would therefore conflict with existing local and national policy and legislation. The policy will provide guidance which would enable renewable energy generation on a household scale while minimising the associated risks to heritage value.	Supporting text has been amended to improve the sustainability of the Policy.	**No Likely Significant Effect. Screened out.** This policy sets out the specific assessments required for any application for renewable energy generation near to heritage assets. The addition of the changes to this policy is not expected to have any implications on European sites. Micro-renewables pose much less risk of impact on SPA interest features than larger scale renewables such as industrial wind farms.

Policy number	Policy Title and Description	Implications on Climate Change	Changes made by LCC	Screening Outcome
	the significance of the asset, or where harm can be appropriately mitigated. The potential for below ground archaeology should also be assessed where proposals would require breaking ground or cause vibrations.			
DM45	**Protection of Trees, Hedgerows and Woodland** The policy sets out an approach which supports the protection and retention of valuable trees, hedges and woodland.	The policy highlights the climate change mitigation/ adaptation value these features can provide.	Policy DM45 has been reworded to include reference to street trees and consideration of trees through lifetime of development. This change explicitly establishes a requirement for street trees, as per suggestions in the newly updated 2021 NPPF. This contributes to both mitigation and adaptation to climate change through reducing carbon emissions from photosynthesis, providing shade, slowing and improving infiltration and providing new habitats for wildlife.	**No Likely Significant Effect. Screened out.** This policy is designed to protect and enhance the natural environment. The implementation of the suggested changes to this policy is considered to have no adverse impacts and potentially some beneficial effects on the European sites.
DM53	**Renewable and Low Carbon Energy Generation** The policy seeks to identify and support opportunities for renewable sources of energy generation within the district in the context of national planning policy.	Through the Local Plan Review, there will be an opportunity to offer wider support towards a range of sources of renewable energy (at various scale). The policy has been reviewed in relation to the area of search for on-shore wind.	Recognition of potential impacts on the setting of designated sites has been added. Support for battery storage facilities, provided certain conditions are met, has also been added. Supporting text has been amended to reflect forthcoming national guidance/ regulations.	**No Likely Significant Effect. Screened out**. The current policy states that *"'In areas which have been designated for their national importance, as identified in the National Planning Policy Framework, large-scale renewable energy infrastructure will only be permitted where it can be demonstrated that it would be appropriate in scale, located in areas which do not contribute positively to the objectives of the designation, is sympathetically designed and includes any necessary mitigation measures.'* It also goes on to state that *'Developers will be expected to provide evidence to support their proposals including landscape, visual and ecological assessments (including where required an Environmental Impact Assessment (EIA) and Habitats Regulation Assessment (HRA)) and to* *demonstrate that any impacts can be satisfactorily mitigated where negative impacts cannot be solely removed through site selection. Mitigation and compensatory measures should be investigated as part of this process.'*

Policy number	Policy Title and Description	Implications on Climate Change	Changes made by LCC	Screening Outcome
				Large scale renewable energy, particularly wind farms, could pose likely significant effects for European sites but the policy only supports such schemes where they are appropriately sited and the original policy was fully assessed in the HRA of the adopted Local Plan. Only changes to the policy are assessed here. to the addition of text regarding designated sites will not have any implications for European sites.
DM58	**Infrastructure Delivery and Funding** The policy sets out a position on the funding of new infrastructure through planning obligations and the investigation of implementing a Community Infrastructure Levy (CIL).	Impacts of Climate Change can be mitigated (in part) through the provision of new infrastructure. The policy could be clarified that infrastructure to mitigate the impacts of Climate Change will be secured through new development (and set out what these mitigation measures could be).	Policy wording has been amended to include *'S106 Obligations'* to ensure understanding of compliance with changes to NPPF.	**No Likely Significant Effect. Screened out.** This policy details how development will be funded. The addition of the change to this policy will not have any implications on European sites.
DM62	**Vehicle Parking Provision and Electric Vehicle (EV) Charging Points** The policy sets out parking standards for vehicular parking but also includes parking for cycles in new development. The levels of provision are set out in Appendix E of the DPD.	The policy, and corresponding Appendix, could be updated to reflect the latest guidance from the DfT, which sets higher levels of provision	Policy wording has been amended. Whilst promoting delivery of EV charging infrastructure which helps to reduce impact upon air quality, which has climate change mitigation impacts, policy also needs to consider impact upon historic Environment.	**No Likely Significant Effect. Screened out.** This policy provides details of how to ensure that development proposals provide suitable car parking provision within the plans. This policy is statement of intent and would not have any implications on European sites.

Source: Policy details from Lancaster City Council DPDs

6. In Combination Effects

Overview

6.1 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European sites in question.

6.2 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e., to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis but are evaluated for any significant cumulative contribution they may make to an overall significant effect.

Lancaster Local Plan

6.3 For this high-level screening, in terms of the changes to the policies described in the DPDs, the main in-combination effect at this stage in the process are those that may arise as a result of other policies within the Local Plan. The changes do not alter the quantum or location of development or make new allocations compared to the policies in the adopted Local Plan. Since they do not affect such things as housing numbers or suggest any additional land allocations for development the changes do not themselves lead to likely significant effects and therefore significant 'in combination' effects will not arise when considered alongside the unchanged policies in the adopted Local Plan. The unchanged policies were themselves subject to detailed HRA prior to adoption.

Other Plans and Projects

6.4 In addition to in combination effects of the policies within the Lancaster Local Plan itself described above, there is the theoretical potential for effects to occur upon the European sites in combination with other plans or projects when a Local Plan is reviewed. However, in this case the Local Plan review is targeted to specific policies in order to respond to the Climate Emergency. As such they do not alter the quantum or location of the Local Plan compared to the adopted policies which were themselves subject to an HRA that concluded no adverse effect on integrity would arise in combination with other plans and projects. Since the changes to the Local Plan to reflect the Climate Emergency will not result in likely significant effects on European sites due to the absence of impact pathways caused by the changes, there is no scope for them to result in effects 'in combination' with other projects or plans.

7. Conclusion

7.1 Based upon the screening assessment undertaken in Table 2, the suggested policy changes described in the DPDs will not result in likely significant effects on European sites.

7.2 The following policy facilitates development that could have likely significant effects on European Sites depending upon precise locations and how the development involved is designed and delivered:

- SP4 - Priorities for Sustainable Economic Growth

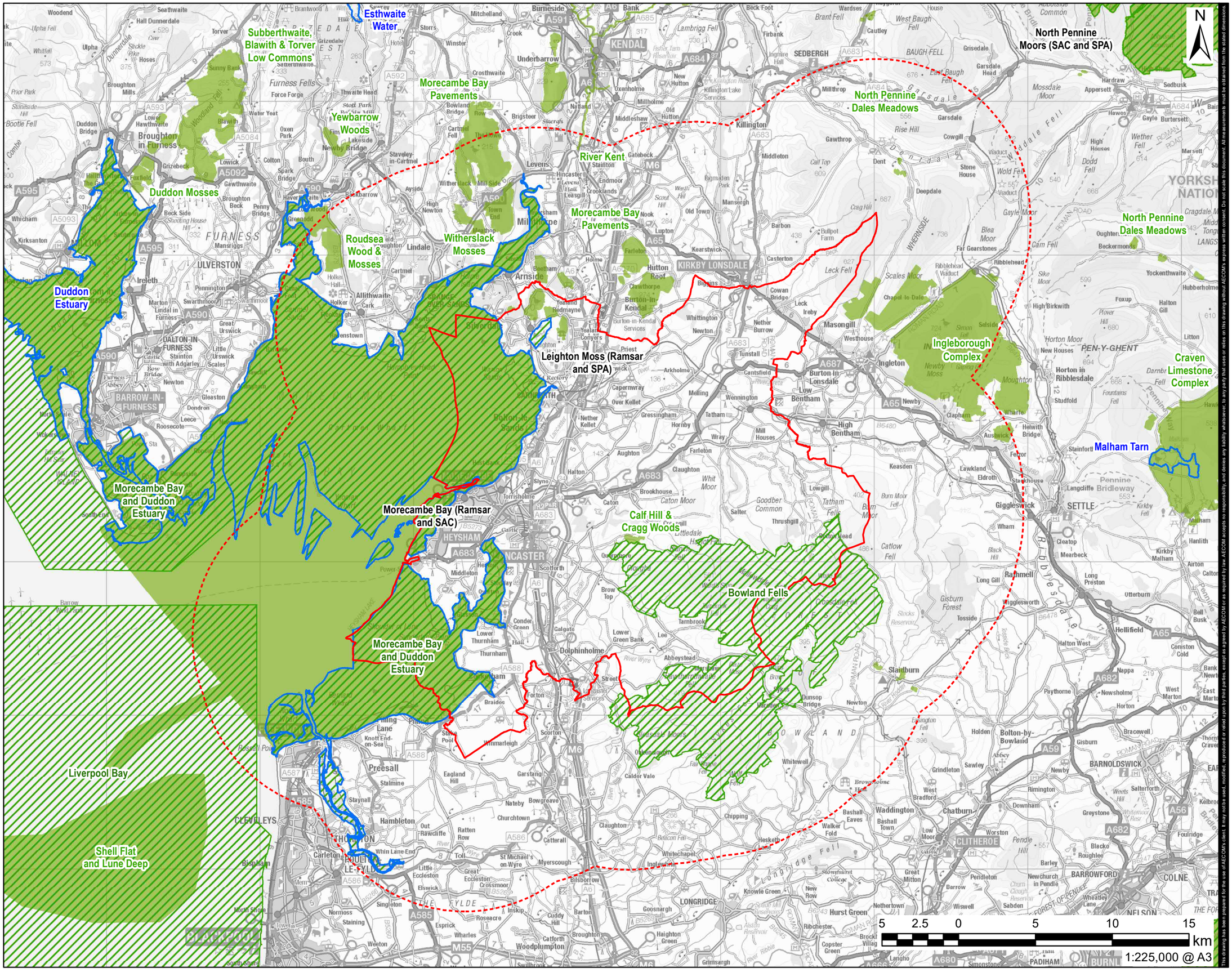
7.3 This therefore requires further consideration as part of application-specific HRAs. However, this policy was assessed as part of the HRA of the adopted Local Plan and a conclusion of no adverse effect on integrity was drawn. No changes to the quantum or location of development are made as part of the Local Plan review to reflect the Climate Emergency. The changes to policy, which is the focus of the Local Plan Review, are related to greater clarity regarding the role that particular types of economic development can play in addressing the climate emergency. The proposed changes will not themselves therefore lead to Likely Significant Effects either alone or in combination with other plans and projects.

Appendix A

Figure 1A – European Sites

Revision: Rev No. Drawn: CN Checked: DH Approved: JR Date: 13/05/2021

Filename: I:\5004 - Information Systems\60642356_Lancaster_SA\02_Maps\HRA\Figure 1 - European Designated Sites.mxd



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LEGEND
- Lancaster District Boundary
- District Buffer - 10km
- Ramsar
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

NOTES
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ISSUE PURPOSE
FINAL

PROJECT NUMBER
60642356

SHEET TITLE
EUROPEAN DESIGNATED SITES WITHIN 10KM

SHEET NUMBER
FIGURE 1

Appendix B

Table 1B – Previously screened policies

Table 1B. Screening outcome of Lancaster District Topic Paper alternative policies

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
TOPIC PAPER 1 - WATER MANAGEMENT: Consideration of Alternative Policy Approaches				
DM35	**Water Supply and Waste Water** The policy identifies the importance of ensuring that new development has adequate and appropriate connections to a water supply and wastewater network.	The demands for water may well increase through changes to the climate and therefore working to secure supplies (in co-ordination with United Utilities) may be part of the Local Plan Review.	Reference to water efficiency has been removed from policy DM35 and included within policy DM30: Sustainable Design	**No Likely Significant Effect. Screened out.** This policy is associated with the design of new developments. This is a statement of intent and aspiration. The implementation of the suggested change to this policy is not expected to have any implications on European sites. Although water efficiency is important for responding to climate change it has not been proposed for deletion but for inclusion in an alternative policy.
DM36	**Protecting Water Resources and Infrastructure** This policy highlights the importance of protecting water resources and infrastructure which is critical to maintaining an effective water supply and wastewater network.	The demands for water may well increase through changes to the climate and therefore working to protect supplies and deliver infrastructure improvements (in co-ordination with United Utilities) may be part of the Local Plan Review.	Cross reference to the role of SUDs in managing pollution.	**No Likely Significant Effect. Screened out.** This policy is associated with the design of new developments. This is a statement of intent and aspiration. The implementation of the suggested change to this policy is not expected to have any implications on European sites
DM43	**Green Infrastructure** The policy sets out and approach to the protection of and improvement of Green Infrastructure within the district.	The policy could be expanded and reinforced to greater promote the role of Green Infrastructure and their networks across the district for the wider benefit of local communities and the environment. (Details are contained within Topic Paper 2).	Greater recognition of blue infrastructure and links made to the Lancaster District Green and Blue Infrastructure Strategy Greater recognition of the role of green and blue infrastructure for climate change adaptation and resilience (and a need to demonstrate how proposals will address this). Stronger wording in relation to the protection and enhancement of blue and green infrastructure.	**No Likely Significant Effect. Screened out.** This policy is designed to protect and enhance (where possible) the natural environment. The implementation of the suggested changes to this policy is not expected to have any implications on European sites
TOPIC PAPER 2 - GREEN-BLUE INFRASTRUCTURE Consideration of Alternative Policy Approaches				
SC5	**Recreation Opportunity Areas** This policy seeks to identify a range of recreational opportunity areas across the district whose delivery should be promoted through the life of the plan.	The enhancement and expansion of recreational areas within the district is important in addressing Climate Change. Therefore consideration should be given to whether this policy area can be expanded in its scope.	Recreation areas must consider the potential for multifunctional use that incorporates blue and green infrastructure	**No Likely Significant Effect. Screened out.** This policy is designed to protect, enhance and expand the natural environment and recreation space within the district. The implementation of the suggested change to this policy is considered to have no adverse impacts and potentially some beneficial effects on the European sites.
TOPIC PAPER 3 - STRATEGIC TRANSPORT Consideration of Alternative Policy Approaches				

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
T1	**Lancaster Park and Ride** This policy seeks the promotion of park and ride options in the Lancaster area, identifying the existing Park and Ride at Junction 34 and the potential for a further facility at Junction 33 (subject to growth in South Lancaster). These are identified on the basis that it ensures the plan is consistent with the County Council's Highways and Transport Masterplan.	The policy identifies opportunities for increasing modal shift and the promotion of public transport to access Central Lancaster. The promotion of sustainable forms of transport does have an influence on Climate Change as it seeks to reduce the need for private car travel. However, the policy already seeks to maximise opportunities for Park and Ride in Lancaster and can only be realistically delivered through third party support (i.e. Lancashire County Council). Ongoing work on Eden North may result in minor revisions to the policy to support potential park and ride for Morecambe however at this stage the need for this is unclear.	No changes made to policy, and therefore no further appraisal necessary.	**No Likely Significant Effect. Screened out.** Policy remains unchanged and has previously been through the HRA process for the adopted Local Plan, which concluded no LSE.
T2	**Cycling and Walking Network** The policy seeks to identify and promote the cycling network in the district through identifying actual cycle routes and aspirational routes. The policy seeks to link with the aspirations of the Highways and Transport Masterplan prepared by the County Council.	The Local Plan Review is based on addressing Climate Change and clearly an element of addressing this matter will be promoting the use of sustainable forms of transport, particularly cycling and walking. This policy is positively worded and promotes these forms of transport but the scope of the policy could be widened to address all forms of cycling and walking infrastructure, not merely routes.	More certainty provided in the support of improvements and expansions to the network, including how developments will contribute to the development of the strategic network Redefining the Superhighway for cycling purposes (instead of walking and cycling) Makes specific reference to the 'local cycling and walking infrastructure plan' to outline the network needs and specific interventions required to meet these needs. Outlines how the 'cycling and walking' Planning Advisory Note (PAN08) links growth with network enhancements. *Further recommendations:* Highlighting the protection of strategic ***pedestrian*** routes would help to mitigate potential negative impacts associated with the cycle superhighway not being a shared user space (acknowledged that this move away from shared spaces is in line with LTN1/20 cycle infrastructure design guidance). This could refer to pedestrian only routes, such as pavements or footpaths. Further policy wording could ensure appropriate supporting infrastructures (bicycle repair stations, locking facilities) are provided at key stopping	**No Likely Significant Effect. Screened out.** This policy relates to promoting and enhancing existing walking and cycling routes, and as such implementation of this policy is unlikely to have adverse impacts on European sites. The implementation of the suggested changes to this policy is considered to have no adverse impacts and potentially some beneficial effects on the European sites.

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
			locations along the strategic routes, as well as key services along the route and at key destinations.	
EN9	**Air Quality Management Areas** This policy applies to the designated Air Quality Management Areas (AQMAs) in Lancaster City Centre, Carnforth Town Centre and Galgate. This policy merely seeks to define the parameters of the AQMAs only.	Given the high-level nature of the designation, it means the scope for amendment is limited. Direction over how air quality can be improved in these areas is covered in other policies within the plan.	No changes made to policy, and therefore no further appraisal necessary.	**No Likely Significant Effect. Screened out.** Policy remains unchanged and has previously been through the HRA process which concluded no LSE.
DM31	**Air Quality Management and Pollution** The policy sets a general approach to air quality matters which seeks to minimise emissions. The Policy also sets an approach to developments located within designated Air Quality Management Areas (AQMAs)	Air Quality matters are a clear consideration to many when addressing Climate Change and with core areas of the district (such as Lancaster City Centre) surrounding from (at times) poor levels of air quality then a strengthened policy position may be beneficial. Any amendments to the policy could be supported through the work on	This adopted 'sound' Local Plan policy remains unchanged as it is operating well and already contributing to climate change mitigation.	**No Likely Significant Effect. Screened out.** Policy remains unchanged and has previously been through the HRA process which concluded no LSE. **Recommendation: Although *Cotoneaster franchetii* is not currently listed under Schedule 9 of the Wildlife & Countryside Act 1981 (as amended), the list is frequently updated. It is recommended that species of Cotoneaster be avoided in planting schemes. Visit https://www.museumoflondon.org.uk/application/files/4915/2604/2216/2018-05-11-phytosensor-final-web-ok-compressed_1.pdf for alternative air quality plants.**
		Further recommendations:	Recommend specific planting within developments which help to mitigate issues relating to particulate matter. Example of *Cotoneaster franchetii* (evidence).	
			Areas which have been identified as 'close' to the objective/limit value could be identified in order to ensure increased certainty in case of potential disputes. In this sense, the word 'close' could also benefit from a clearer definition.	
DM60	**Enhancing Accessibility and Transport Linkages** The policy seeks to promote modal shift and sustainable forms of transport rather than prioritising the private car. The policy also looks at land-use patterns to ensure that sustainable locations are chosen for development with high footfall.	Given a key element of the Climate Change agenda is the reduction of travel movements then promotion of modal shift. Therefore scope of the policy could be expanded.	Rather than 'seeking' to enhance accessibility and transport linkages, changes require such measures to be a part of development proposals	**No Likely Significant Effect. Screened out.** This policy provides details of how new development should minimise the need to travel, and increase the opportunity to access development by walking, cycling or public transport. The implementation of the suggested change to this policy will not have any implications on European sites.
DM61	**Walking and Cycling** The policy seeks to promote the role of cycling and walking to make local journeys and contribute to the agenda	The role of cycling and walking is already important and this is emphasised in the existing policy. However, perhaps more clarity can be	Prioritisation of pedestrian and cycling movements (rather than encouragement of these measures)	**No Likely Significant Effect. Screened out.** This policy aims to ensure that development proposals maintain and enhance walking and cycling linkages. This policy relates to promoting
			Linking pedestrian movements to blue infrastructure, as well as green	

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
	of modal shift. The policy seeks to encourage expansion of the network and other associated infrastructure that would promote greater role for cycling and walking.	provide in relation to how new cycling projects could be delivered. *Further recommendations:*	Ensuring proposals are in accordance with LTN 1/20 guidance It would be beneficial to add wording which provides support to schemes which adopt the principles of low traffic neighbourhoods into their design from the outset Links to green/blue infrastructure should ensure that any biodiversity assets or designations along these spaces are not vulnerable to recreational pressures Wording which ensures any facilities (on or off site) likely to be used by residents of a development are provided with cycle locking facilities	walking and cycling routes, and as such implementation of the suggested changes to this policy is unlikely to have adverse impacts on European sites.
DM63	**Transport Efficiency and Travel Plans** The policy seeks to promote a strategic approach to travel movements within large development through the promotion of travel plans.	The policy could be updated to provide greater clarity on the importance of having strategic thinking in relation to transport matters in large development, particularly in the context of Climate Change.	Slight changes to clarify the role of travel plans in addressing climate change. Clarification that modal shift should be prioritised in travel plans.	**No Likely Significant Effect. Screened out.** This policy sets out how new developments ensure that they contribute toward improving the transport network. Alternative forms of travel, to the private car, are encouraged. Any proposal that will generate high visitor numbers will be required to undertake a Transport Assessment. The policy states that *'proposals should not give rise to traffic volumes which exceed the capacity of the local road network without mitigation measures being agreed, nor cause harm to the character of the surrounding area'* The addition of the suggested change to this policy will not have any implications on European sites.
DM64	**Lancaster District Highways and Transport Masterplan** The policy sets out the key approaches take in the Lancaster District Transport and Highways Masterplan (prepared by Lancashire County Council) and ties them to the growth proposed through the Local Plan.	The County Council are currently amending and updating the direction taken in the Highways and Transport Masterplan (through LTP4) then this policy could be updated to reflect changes arising from this work.	Removal of the rapid transit bus service between Lancaster city centre, Morecambe town centre and the industrial areas of Heysham Added certainty that developments will contribute towards the delivery of the Highways and Transport Masterplan	**No Likely Significant Effect. Screened out.** This policy relates to how key issues in the Lancaster District Transport and Highways Masterplan will be addressed by future schemes. The policy itself will not lead to development, as such, the addition of the suggested changes to this this policy will not have any implications on European sites.
SP10	**Improving Transport Connectivity**	The policy is also relatively positive towards climate change and the promotion of	Active travel promotion emphasised as a key consideration in determining applications	**No Likely Significant Effect. Screened out.**

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
	This sets out a strategic approach towards transport improvements in the district and closely relates to the County Council's Highways and Transport Masterplan and its aims and aspirations. It seeks to encourage the significant infrastructure improvements required to address both current issues and future growth aspirations. It also seeks to encourage modal shift towards more sustainable modes of transport.	sustainable modes of travel. However, there may be further opportunities to expand the scope of the policy to include further issues relating to transport, for example charging infrastructure, which could help promote green forms of transport.	Lancashire County Council's 'movement strategy' a key consideration within Lancaster City Centre developments, placing sustainable travel within Lancaster city centre and whilst accessing Lancaster city centre as key considerations.	This policy relates to promoting the improvement of transport links throughout the district. Lancaster District Council fully supports the Lancaster Highways and Transport Masterplan which encourages sustainable transport. The addition of suggested changes to the policy would not lead directly to any impacts on European sites.
SG12	**Port of Heysham and Future Expansion Opportunities** This policy applies to the Port of Heysham and its operations with port-operating land. The policy seeks to support the Port as a key economic driver within the district. It seeks to support the expansion of port related facilities in the local area and also the diversification of uses at the port, for example the use of the port as a base for serving the offshore wind farms in Morecambe Bay.	There is clearly scope to look again at this policy in relation to climate change to whether the operations at the port can be undertaken in a sustainable manner (there is high HGV usage) and whether greater weight of support can be given to the role of renewable energy generation within the Port (both in generation and facilitation).	Improvements to bus corridor and active travel connectivity from Heysham to both Lancaster and Morecambe. Full consideration must be given to the Council's commitment to addressing climate change in proposals. *Further recommendations:* Reference within this policy to whether the 'bus corridors' are in addition to the 'Bus Rapid Transit' could strengthen the clarity of the policy More specific reference to how proposals are expected to have fully considered the Council's commitment to addressing climate change could be provided. This could be split between construction and operational phases as well as secondary effects (e.g. transport requirements, impact on flood risk etc).	**No Likely Significant Effect. Screened out.** This policy outlines the potential development associated with the Port of Heysham. . Development at the Port of Heysham has the potential to impact European sites depending on how it is delivered and designed, through loss of habitat functionally linked to a European site, and disturbance to species as a result of construction activities/ operational stage. These potential impacts still remain with the addition of the suggested changes although cannot be fully explored and resolved until planning applications come forward. This therefore requires further consideration as part of application-specific HRA. However, the changes to policy are related to greater clarity regarding bus rapid transit and sustainable transport. The proposed changes will not themselves therefore lead to Likely Significant Effects.
TOPIC PAPER 4 - HERITAGE & CLIMATE CHANGE Consideration of Alternative Policy Approaches				
CCH1	**Retrofit of Buildings of Traditional Construction for Energy Efficiency** The Council will seek to encourage the responsible retrofitting of energy efficiency measures and appropriate use of micro-renewables in historic	Responsible Retrofit of existing buildings will allow the district to progress towards carbon neutrality while continuing to reap the benefits of its diverse heritage. The policy will enable adaptation and mitigation measures to be introduced to traditional buildings which will result in improved thermal efficiency and reduce household energy usage, while reducing the risk	Policy in support of energy efficiency measures and certain renewables in solid-walled historic buildings	**No Likely Significant Effect. Screened out.** This policy is associated with improving the energy efficiency of historic buildings. This is a statement of intent and aspiration. The addition of the suggested changes to this policy is not expected to have any implications on European sites

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
	buildings of traditional solid-walled construction.	of harm associated with these measures. The policy encourages a 'Whole Building' approach, which will result in outcomes which are sustainable in the long term.		
		Further recommendations:	Add wording to strengthen links with policy CCH2 and encourage solutions where physical changes to sensitive parts of listed buildings cannot be altered. For example, support for the use of low carbon measures in historic buildings 'and their curtilages'.	
TOPIC PAPER 5 - SUSTAINABLE DESIGN, ENERGY EFFICIENCY & RENEWABLE ENERGY Consideration of Alternative Policy Approaches				
DM2	**Housing Standards** The policy looks at adaptability and in-door space standards and seeks a proportion of new development to achieve these standards.	This adopted 'sound' Local Plan policy remains unchanged. The supporting text was changed to reflect that the District does now need to be aware of water stress and water efficiency will be considered going forward. This is extensively covered now in policy DM30.	An alternative approach considered for this policy was the inclusion of energy and water efficiency standards, however it was considered that adding these matters would create a single policy covering multiple issues which would reduce its clarity.	**No Likely Significant Effects. Screened out.** This policy aims to ensure that the houses built meet standards (National Space Standards and Building Regulation M4 (2)).The addition of the suggested changes to this policy will not affect European sites.
DM30 **Sustainable Design** The policy seeks to support the role of sustainable design and construction methods within new development. The Policy has been sub-divided in to three parts: **DM30a** Sustainable Design and Construction – New Development;		This policy specifically relates to the sustainable design and construction of new development. As with the previous iteration of the Development Management DPD, the policy is more permissive on this matter due to wider viability matters and the general direction of nation policy. However, the policy could clearly be tightened in light of the Climate Emergency declaration.	Climate change adaptation is given a stronger focus	**No Likely Significant Effects. Screened out.** This policy is associated with the design of new developments. These are statements of intent and aspirations. The addition of the suggested changes to this policy is not expected to have any implications on European sites and potentially some beneficial effects through addressing Climate Change issues.
			Stronger wording relating to the need for low carbon and sustainable developments rather than 'encouraging'.	
			Requirement to ensure retrofitting / future proofing with low carbon technologies.	
			10% renewable energy requirement for new development	
			BREEAM excellent for non-residential development	
			Energy statement to ensure audit trail and delivery	
			Reuse of wastes and minerals is much strengthened	
			Introduction of optional water standards	
		Further recommendations:	Consider setting up a carbon offset fund to enable emissions to be 'reduced' offsite should it be more cost effective and on-site measures make the scheme marginally viable	
TOPIC PAPER 6 - MISC. POLICIES Consideration of Alternative Policy Approaches				

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
SG13	**Heysham Gateway, South Heysham** The Heysham Gateway designation reflects a large swathe of land in South Heysham which has historic use in connection with the petro-chemical industry. It is a core focus for regeneration and re-use to facilitate economic growth.	The area is home to a wide range of energy generating uses, including the power station, wind turbines and other smaller sources of generation. This is something which is clearly referred to in this iteration of the Plan but this could be explored further to consider how the Council could provide greater support for the use of the area as a focus for clean energy generation. *Further recommendations:*	Clarification of the need to consider the role of low carbon technology in development. Given the importance of the climate emergency, it is considered that the following text should be removed. ~~***Where possible to do so***~~ *development should explore opportunities aimed at minimising energy use and delivering low-carbon development..*	**No Likely Significant Effect. Screened out.** Delivery of infrastructure and development of the further housing growth has the potential to impact European sites through loss of habitat functionally-linked to a European site, and disturbance to species as a result of construction activities/ operational stage. These potential impacts still remain with the addition of the suggested changes although cannot be fully explored and resolved until planning applications come forward. This therefore requires further consideration as part of application-specific HRA. However, the changes to policy are related to greater clarity regarding the need to consider the role of low carbon technology in development. The proposed changes will not themselves therefore lead to Likely Significant Effects.
DM57	**Health and Well-Being** The policy sets out a position on the funding of new infrastructure through planning obligations and the investigation of implementing a Community Infrastructure Levy (CIL).	Impacts of Climate Change can be mitigated (in part) through the provision of new infrastructure. The policy could be clarified that infrastructure to mitigate the impacts of Climate Change will be secured through new development (and set out what these mitigation measures could be). *Further recommendations:*	Clause added to ensure development promotes resilience to Climate Change Further clarification of the need to support modal shift and prioritise sustainable modes of transport. Is there anything to say about retrofitting/ refurb of existing homes and community facilities? In terms of making them more thermally comfortable and adaptable to climate change impacts? – For example, instead of contributing to new facilities, it might be appropriate to fund refurbishments that encourage energy efficient and resilient to CC.	**No Likely Significant Effect. Screened out.** This policy is a statement of intent and aspiration. The addition of the suggested changes to this policy is not expected to have any implications on European sites
DM59	**Telecommunications and Broadband Improvements** The policy seeks to promote the increased role of the telecommunications and broadband in everyday lives and encourages improvements to the network through new development.	Improving digital connectivity can assist in reducing the need to travel and address issues such as rural isolation. The policy may be able to be tweaked in order to further promote further improvements to wider connectivity within the district *Further recommendations:*	With regards to meaningful choices in relation to 'telecommunications and broadband improvements' no reasonable alternatives have been identified at this stage for this Topic. To provide a 'fallback position' it could be useful to state what the minimum acceptable standards for broadband provision would be where FTTP is not	**No Likely Significant Effect. Screened out** This policy relates to improvement and extension of telecommunication and broadband coverage and broadband speeds, particularly in rural areas. Telecommunications and broadband improvements have the potential to impact European sites through temporary loss of habitat functionally- linked to a European site, and disturbance to species as a result of construction activities. These potential impacts still remain with

Policy number	Policy Title and Description	Implications on Climate Change	Suggested Changes by LCC	Screening Outcome
			deemed practical. For example, the most viable high-speed connection. The requirement for development to be 'future proofed' could be included where FTTP is not deemed practical. For example, the inclusion of ducting for future fibre.	the addition of the suggested change although cannot be fully explored and resolved until planning applications come forward. This therefore requires further consideration as part of application-specific HRA. However, the changes to policy are related to greater clarity regarding improvements to such infrastructure to (for example) maximise opportunities for home working and minimise the need to travel, resulting in a positive effect on emissions. The proposed changes will not themselves therefore lead to Likely Significant Effects.

Source: Policy details from Lancaster City Council Topic Papers

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