



## MORECAMBE BAY AND DUDDON ESTUARY SPA

# (SHADOW) HABITATS REGULATIONS ASSESSMENT: APPROPRIATE ASSESSMENT (REGULATION 63) THE CONSERVATION OF HABITATS AND SPECIES REGULATIONS 2017 (AS AMENDED)

*For:*

**CUMBERLAND COUNCIL**

*Site:*

**THE IRON LINE,  
HODBARROW NATURE RESERVE AND ADJACENT LAND,  
MAINSGATE RD, MILLOM**

*Ref:*

**J217/RP02**

*Date:*

**June 2023**

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**The Iron Line, Hodbarrow Nature Reserve and adjacent land, Mainsgate Rd, Millom**

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#### MORECAMBE BAY AND DUDDON ESTUARY SPA CONSERVATION OBJECTIVES

#### MORECAMBE BAY AND DUDDON ESTUARY SITE CITATION

<b>Author</b>	<b>Date</b>
Lucy Gibson (nee Monhemius) MSc MCIEEM	9 <sup>th</sup> June 2023

## **INTRODUCTION**

1. This is the second part of the shadow Habitats Regulations Assessment (sHRA) on European Sites, the shadow Appropriate Assessment. The assessment has been undertaken for the proposed Iron Line project on Hodbarrow RSPB Reserve, Mainsgate Road, Millom, to comply with The Conservation of Habitats and Species Regulations 2017 (as amended) (previously The Conservation (Natural Habitats &c) Regulations 1994), in particular Regulations 63 and 64. Reference has been made to the guidance provided on gov.uk, 'Habitats regulations assessments: protecting a European Site' (<https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site#screening>).
2. This Shadow Appropriate Assessment (sAA) follows on from the initial stage of the sHRA; the Shadow Assessment of Likely Significant Effect (sALSE) undertaken for the Iron Line (authored by Lucy Gibson Consulting, J217/RP01, 2023), and should therefore be read in conjunction with the sALSE. The sALSE concluded that it was not possible rule out likely significant effects on interest features of the Morecambe Bay and Duddon Estuary Special Protection Area during construction (noise and vibration) and operation (recreational disturbance) in the absence of mitigation measures; therefore, it was necessary to take this to the second stage of the HRA process and undertake a Shadow Appropriate Assessment of the proposed Iron Line on the SPA interest features.

### ***Type of Application:***

3. Full Planning Permission; the case has not been decided yet.

### ***Planning Application Reference Number:***

4. TBC

### ***Applicant:***

5. Cumberland Council

### ***European Sites' Name and Status of Relevance to this sAA:***

6. Morecambe Bay and Duddon Estuary Special Protection Area (SPA). As a whole, this report also covers the Duddon Estuary Ramsar Site.

### ***Qualifying Features of European Importance (SPA):***

7. *Qualifying Features:*
  - *Anas acuta*; Northern pintail (Non-breeding)
  - *Calidris canutus*; Red knot (Non-breeding)
  - *Tringa totanus*; Common redshank (Non-breeding)
  - *Sterna sandvicensis*; Sandwich tern (Breeding)
  - Waterbird assemblage (over 20,000)\*

- *Egretta garzetta*; Little egret (Non-breeding)
  - *Cygnus cygnus*; Whooper swan (Non-breeding)
  - *Anser brachyrhynchus*; Pink-footed goose (Non-breeding)
  - *Tadorna tadorna*; Common shelduck (Non-breeding)
  - *Haematopus ostralegus*; Eurasian oystercatcher (Non-breeding)
  - *Charadrius hiaticula*; Ringed plover (Non-breeding)
  - *Pluvialis apricaria*; European golden plover (Non-breeding)
  - *Pluvialis squatarola*; Grey plover (Non-breeding)
  - *Calidris alba*; Sanderling (Non-breeding)
  - *Calidris alpina alpina*; Dunlin (Non-breeding)
  - *Philomachus pugnax*; Ruff (Non-breeding)
  - *Limosa limosa islandica*; Black-tailed godwit (Non-breeding)
  - *Limosa lapponica*; Bar-tailed godwit (Non-breeding)
  - *Numenius arquata*; Eurasian curlew (Non-breeding)
  - *Arenaria interpres*; Ruddy turnstone (Non-breeding)
  - *Larus melanocephalus*; Mediterranean gull (Non-breeding)
  - *Larus fuscus*; Lesser black-backed gull (Non-breeding)
  - *Larus fuscus*; Lesser black-backed gull (Breeding)
  - *Larus argentatus*; Herring gull (Breeding)
  - *Sterna hirundo*; Common tern (Breeding)
  - *Sterna albifrons*; Little tern (Breeding)
  - Seabird assemblage (over 20,000)
8. 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 (Morecambe Bay and Duddon Estuary SPA Citation).
9. 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, Eurasian spoonbill, light-bellied brent goose (Nearctic origin), Eurasian wigeon, Eurasian teal, green-winged teal, mallard, ring-necked duck, common eider (non-breeding), common goldeneye, red-breasted merganser, great cormorant, northern lapwing, little stint, spotted redshank, common greenshank, black-headed gull, common (mew) gull and European herring gull (non-breeding) (Morecambe Bay and Duddon Estuary SPA Citation).

\*All qualifying species are included in the SPA waterbird assemblage as main components. There are a further 19 species listed as main components: Black-headed Gull, Brent Goose (Light-bellied Nearctic), Common Gull, Cormorant, Eider (non-breeding), Goldeneye, Great White Egret, Greenshank, Green-winged Teal, Lapwing, Little Stint, Mallard, Red-breasted Merganser, Ring-necked Duck, Spotted Redshank, Teal, Wigeon. There are an additional 63 species that make up the rest of the waterbird assemblage: Arctic Tern, Avocet, Barnacle Goose, Bean Goose, Bean Goose (Tundra), Bewick's Swan, Bittern, Black Tern, Black-necked Grebe, Black-throated Diver, Bonaparte's Gull, Brent Goose, Brent Goose (Black Brant), Brent Goose (Dark-bellied),

Common Sandpiper, Common Scoter, Coot, Curlew Sandpiper, Gadwall, Garganey, Glaucous Gull, Glossy Ibis, Goosander, Great Black-backed Gull, Great Crested Grebe, Great Northern Diver, Green Sandpiper, Grey Heron, Greylag Goose, Grey Phalarope, Iceland Gull, Jack Snipe, Kingfisher, Kittiwake, Lesser Yellowlegs, Little Grebe, Little Gull, Little Ringed Plover, Long-billed Dowitcher, Long-tailed Duck, Moorhen, Night-heron, Pectoral Sandpiper, Pochard, Purple Sandpiper, Red-necked Grebe, Red-throated Diver, Roseate Tern, Sabine's Gull, Scaup, Shag, Shoveler, Slavonian Grebe, Smew, Snipe, Spoonbill, Tufted Duck, Velvet Scoter, Water Rail, Whimbrel, White-fronted Goose (European), White-fronted Goose (Greenland), Wood Sandpiper, Woodcock and Yellow-legged Gull.

10. Morecambe Bay and Duddon Estuary SPA supports greater than 1% of the GB population of three Annex I species in the breeding season (little tern, sandwich tern, common tern) and six Annex I species in the non-breeding season (whooper swan, little egret, golden plover, bar-tailed godwit, ruff and Mediterranean gull). In addition, the site supports over 1% of the biogeographical populations of 16 regularly occurring migratory birds – two in the breeding season (lesser black-backed gull and herring gull) and 14 in the non-breeding season (redshank, knot, pintail, ringed plover, pink-footed goose, shelduck, oystercatcher, grey plover, dunlin, curlew, turnstone, black-tailed godwit, sanderling, lesser black-backed gull). The site also regularly supports a breeding seabird assemblage of over 20,000 individuals, including the qualifying breeding features as main components, and a waterbird assemblage of over 20,000, including all non-breeding qualifying features as well as 19 other species as main components. Several of these species occur in nationally and internationally important numbers and it is not uncommon during severe weather for the SPA to attract even greater numbers, with birds attracted from other areas by the relatively mild climate and abundant food resources.
11. In wave sheltered and estuarine areas the intertidal sediment transitions into large and extensive areas of saltmarsh and pioneer saltmarsh, which form an important roosting habitat for many bird species. At high tide the birds then congregate at roost sites on the shore, and very large numbers of birds can be concentrated along the shore at a very limited number of locations.
12. Most of the non-breeding waterbirds and non-breeding waterbird assemblage have 'maintain' targets for population abundance, with the exception of dunlin, grey plover and sanderling, which have 'restore' targets.
13. Common tern, herring gull, lesser black-backed gull, sandwich tern and the seabird assemblage have 'restore' targets for breeding population abundance. Little tern has a 'maintain' target for breeding population abundance.

#### ***Brief Description of Proposal(s):***

14. Please refer to the Iron Line sALSE (authored by Lucy Gibson Consulting, J217/RP01, 2023) for a description of the Iron Line proposal. Please also refer to the Iron Line sALSE for a list of the documents that were prepared for the planning application and were examined (where relevant), along with other information and correspondence, for the sHRA.
15. Reference has also been made to the HRA of England Coast Path Proposals between Silecroft in Cumbria and Cleveleys in Lancashire (Natural England, 2020). This document is relevant as part of the England Coast Path extends through Hodbarrow Reserve, along the sea wall (seaward side) and south-east boundary of the reserve.
16. The Conservation Objectives, Supplementary Advice (Natural England, 2023) and citation for the Morecambe Bay and Duddon Estuary SPA (please refer to Appendix 1 for the SPA Conservation Objectives and site citation) were also examined for this sAA.

**QUALIFYING SPA INTEREST FEATURES THAT ARE LIKELY TO BE SIGNIFICANTLY AFFECTED BY PROPOSALS:**

17. Information regarding the use of Hodbarrow lagoon and tern island by non-breeding SPA birds was provided by the RSPB as follows, ‘outside the breeding season red breasted merganser, eider, tufted duck, goldeneye and coot have all been of importance at the site, with numbers of coot in particular falling greatly over the years. Eider, however, have increased their use of the site dramatically both as a pre-breeding gathering and in breeding numbers. These species can be found anywhere on the lagoon from autumn to spring, but often favour the shallower lobe of the lagoon between the hide to the old seawall to the east. Redshank, knot and dunlin can roost in good numbers at high tide, coming mainly onto the main tern island to roost, mainly autumn to spring again of course – see numbers on spreadsheet.’ (Email from Dave Blackledge, RSPB, dated 8<sup>th</sup> March 2023). The spreadsheet provided by the RSPB shows the most recent peak counts of these species in 2022 as follows: 151 dunlin in January, 540 knot in April and 430 redshank in April. Peak counts of these species included in the RSPB data from between 2010 and 2022 are as follows: 600 dunlin in January 2020, 540 knot in April 2022 and 2500 redshank in January 2020.
18. The most recent RSPB breeding bird data (from 2022) includes the following numbers of pairs of SPA species recorded from the lagoon: common tern (54), herring gull (7), lesser black-backed gull (27), little tern (44), and sandwich tern (589) (data provided by Dave Blackledge in email dated 23<sup>rd</sup> March 2023).
19. Long-term RSPB breeding bird data for Hodbarrow Lagoon between 1988 and 2022 showed the following peak counts of breeding pairs of SPA species: 56 common tern (2018), 37 herring gull (2020), 258 lesser black-backed gull (2009), 48 little tern (2016) and 1950 sandwich tern (2018) (email from Dave Blackledge dated 8<sup>th</sup> March 2022). It is understood that the majority of the gulls breed on/near the old sea wall, and the majority of the terns breed on the man-made island on the south shore of the lagoon.
20. The peak counts for breeding birds in the data provided by the RSPB as included above can be compared with the data included in the SPA Citation for the SPA as a whole over the same period, as shown in Table 1 below.

<b>Species</b>	<b>Data from SPA Citation with dates (peak mean counts from five year period)</b>	<b>Peak Mean Counts from RSPB data for Hodbarrow from same period</b>	<b>Percentage of SPA numbers recorded at Hodbarrow for that five year period</b>
Little tern	84 individuals (2010-2014)	12 individuals (2010-2014)	14%
Sandwich tern	80 individuals (2010-2014)	44 individuals (2010-2014)	55%
Common tern	94 individuals (2010-2014)	84 individuals (2010-2014)	89%
Lesser black-backed gull	9,720 individuals (2011-2015)	896 individuals (2011-2015)	9%
Herring gull	3,192 individuals (2011-2015)	98 individuals (2011-2015)	3%

Table 1: Showing peak mean counts of breeding SPA species from Hodbarrow compared with peak mean counts of the species from the whole SPA for the same period.



21. As shown in Table 1 above, the populations of breeding terns at Hodbarrow are of particular significance, as they constitute a large proportion of the total number of individuals that depend on the SPA for successful breeding, in particular sandwich tern and common tern.
22. During the breeding season terns are dependent on limited areas of shingle habitat. Breeding gulls also have limited breeding habitat available, although they will use coastal grasslands as well as shingle. During the breeding season (mid-March to mid-August) terns and gulls are at risk from disturbance by people and dogs. Disturbance can lead to eggs or chicks chilling, trampling of nests, eggs and chicks, desertion, or direct predation of nest or young by dogs. There is also a risk of increased predation of eggs and chicks, due to adults being disturbed from the nest leaving the nest more vulnerable to predation. Terns and gulls are colonial nesting species where one disturbance event may lead to multiple breeding failures.
23. All of the breeding SPA species in Table 1 and the non-breeding SPA species that roost in good numbers at high tide in Hodbarrow Lagoon (knot, dunlin and redshank) are listed as SPA features threatened by public access/disturbance in the Site Improvement Plan (SIP) for Morecambe Bay that includes Duddon Estuary (2014).
24. The nature, scale, timing and duration of some human activities can result in bird disturbance (defined as any human-induced activity sufficient to disrupt normal behaviours and/or distribution of birds in the absence of the activity) at a level that may substantially affect their behaviour, and consequently affect the long-term viability of the population. Such disturbing effects can for example result in changes to feeding or roosting behaviour, increases in energy expenditure due to increased flight, abandonment of nest sites and desertion of supporting habitat (both within and outside the designated site boundary where appropriate). This may undermine successful nesting, rearing, feeding and/or roosting, and/or may reduce the availability of suitable habitat as birds are displaced and their distribution within the site contracts.
25. Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling, presence of people, animals and structures. 'Significant' disturbance is defined by AEWA (The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), 2016):

"Disturbance should be judged as significant if an action (alone or in combination with other effects) impacts on (water)birds in such a way as to be likely to cause impacts on populations of a species through either:

  - I. changed local distribution on a continuing basis; and/or
  - II. changed local abundance on a sustained basis; and/or
  - III. the reduction of ability of any significant group of birds to survive, breed, or rear their young."

(Fox and Madsen, 1997).
26. The SPA Supplementary Advice (Natural England, 2023) includes the following information regarding breeding SPA species and disturbance. The common tern within the SPA have been recorded nesting at Hodbarrow and Foulney, both of which are nature reserves managed by the RSPB and Wildlife Trust respectively, thus restricting the amount of disturbance that can occur from anthropogenic sources. Currently on sites where little tern and sandwich tern breed, such as Hodbarrow, there are also management measures in place to reduce disturbance. There is the potential that expansion of the species' breeding range to new nest sites within the SPA may be restricted by human disturbance although other factors may also play a part in this. There is evidence from survey or monitoring of Morecambe Bay (Liley et al., 2015) that shows the lesser black-backed gull and herring gull features to be in a good condition and/or currently un-impacted by anthropogenic activities.

27. With regard to non-breeding SPA species at Hodbarrow, the SPA Supplementary Advice (Natural England, 2023) states that there is evidence from surveying and monitoring (Liley et al., 2015) to suggest that redshank are regularly disturbed at a number of roost sites, and that dunlin and knot are disturbed at roost sites by dogs, walkers and vehicles on a regular basis.
28. Disturbance of breeding and non-breeding birds by recreational activities, such as dog walking, kite surfing and jet skiing has been identified as having a detrimental impact on the SPA features. For most of the features, according to the SPA Supplementary Advice (Natural England, 2023) the target for attribute 'disturbance caused by human activity', is to: 'restrict the frequency, duration and/or intensity of disturbance affecting roosting, breeding, foraging, feeding, moulting and/or loafing birds so that they are not significantly disturbed'.
29. Research has been undertaken on the distances that birds are sensitive to disturbance during breeding and non-breeding seasons (Goodship & Furness, 2022). Of the non-breeding SPA species that use Hodbarrow as a high tide roost, disturbance distances have been identified as follows: redshank 200-300m, knot 100-300m and dunlin 150-300m. Recommended buffer distances for human disturbance for tern species during the breeding season is considered to range from 100 – 400m. As stated in the SPA Supplementary Advice, lesser black-backed gull and herring gull features appear to be in a good condition and/or currently un-impacted by anthropogenic activities.

**PROPOSED MITIGATION FOR LIKELY DISTURBANCE IMPACTS ON SPA FEATURES:****Construction Phase**

30. Some of the Iron Line works on Hodbarrow Reserve will be undertaken in close proximity to the lagoon and tern island, well within the recommended buffer distances from the research discussed above. The works will include the movement of ground materials, creation of bunds along the old sea wall and installation of roped pathways to allow habitats to recover. The exact machinery is yet to be determined, but the use of excavators, compressors, generators and other plant is likely, which will cause noise and vibration. It is possible that noise levels of such works/machinery may range between 109.4dBA – 111.5dBA at source.
31. Studies undertaken by Wright *et al.* (2010), Dooling and Popper (2007) and Cutts *et al.* (2009) suggest changes in bird behaviour and flight abandonment can begin to occur at chronic noise levels of 55-65dBA, with sudden irregular noise above 50dBA causing the most disturbance. The studies also showed that ambient construction noise levels should be restricted to below 70dBA as birds will habituate to regular noise below this level.
32. As stated in the sALSE and the Iron Line EclA (Greengage, 2023), works along the sea wall BOAT have potential to disturb the qualifying breeding tern and gull populations. The closest point between the tern island and the BOAT is approximately 80m, which is under the recommended buffer zone of 100m for motorboats (which produce levels of up to 85 dBA) (Burger, 1998). The tern species that breed at Hodbarrow have disturbance distances ranging from 100 – 400m.
33. At its closest point, the Iron Line path lies within 15m from the lagoon edge with varying buffer vegetation in the form of scrub and trees between. The construction works that will likely have the highest impact on over-wintering species are considered to be the formalisation of the path and BOAT along the sea wall. The SPA species most likely to be impacted by these works are knot, dunlin and redshank, which have non-breeding disturbance distances of between 100 – 300m.
34. Therefore, in the absence of mitigation, behavioural changes and flight abandonment of the site by all qualifying bird species present may be caused by the following site activities, depending on the location of the noise generation in relation to the birds:
  - De-vegetation activities and any required clearance activities
  - excavation, handling, removal and treatment of any arisings
  - activities using plant or loud hand tools
  - activities that cause sudden, loud noises.
35. To minimise impacts on over-wintering birds, it is recommended that a higher effort of works takes place along the sea wall avoiding the sensitive period for overwintering birds, which is 31st October – 31st March. Considering the nesting bird season constraints in addition to the international importance of the qualifying bird species present in this area of the site, works along the sea wall shall therefore only take place between September and October.
36. The use of acoustic screens or enclosures for stationary or semi-stationary plant (e.g. generators) can reduce noise levels by up to 30dBA and activities that cause sudden loud noises (above 50dBA) are to be avoided as much as is feasible.
37. As stated in the EclA, a number of mitigation measures have been included in the proposals to minimise the impacts of noise and vibration on SPA bird species during construction of the Iron Line on the reserve. These will be secured by inclusion in a Construction Environmental Management Plan (CEMP) to be conditioned should planning permission be granted, which will include the following measures:

- Timed works along the lagoon, in particular along the sea wall, to avoid the most sensitive period for breeding birds (March to August).
- Timed works along the lagoon to avoid the most sensitive period for overwintering birds (November to March) unless additional measures to mitigate/reduce noise and vibration are in place, such as acoustic screens.
- Works in the most sensitive areas (e.g., along the sea wall) are only undertaken in September and October to avoid the nesting and over-wintering periods.
- Prioritise works within the centre of the sea wall (therefore occurring closest to the tern island within the lagoon) to ensure that works in this highly sensitive area are completed as early as possible within the September - October window.
- Ahead of works starting in September, a Suitably Qualified Ecologist (SQE) should check that terns are no longer nesting.
- Should the work along the sea wall be delayed or take longer than anticipated, suitable acoustic screening shall be installed to minimise the impacts of noise disturbance on the qualifying bird species; acoustic screens can minimise noise disturbance by up to 30 dBA as well as screen movement of vehicles and workers from the birds, thereby reducing visual disturbance.
- A SQE will be present during the works along the sea wall, who will supervise and direct works, making an assessment of works on qualifying bird species to advise on whether works can continue or should wait until the following September-October window.
- Good practice noise and vibration mitigation measures in line with Best Practicable Means (as set out in BS 5228:2009) will be utilised throughout the construction phase. Examples are provided below:
  - Selection of quiet and low vibration equipment;
  - Good maintenance of plant to ensure that excessive noise levels are not generated;
  - Regular integrity checks of noise mitigation measures fitted to items of plant;
  - Acoustics screens or enclosures for stationary or semi-stationary plant (e.g. welding sets, generators) will be considered;
  - Equipment will be switched off when not in use; and
  - Where reasonably practicable, fixed items of construction plant will be electrically powered in preference to diesel or petrol driven.

38. Upon successful implementation of the avoidance and mitigation measures, such as those outlined above, the development is considered to have a **Neutral Residual Impact** on the designated site during the construction phase.

### ***Operational Phase***

39. The sALSE determined that recreational disturbance caused by the proposed Iron Line project is likely to have a significant effect on the interest features of the SPA in the absence of mitigation. Recreational disturbance is recognised as one of the key drivers of species decline in the Morecambe Bay and Duddon Estuary SPA.
40. Current visitor numbers to Hodbarrow Reserve have been estimated by the RSPB to be approximately 40,000 visitors per year. This equates to an estimated 50 visitors per hour during peak periods (e.g., bank holidays). The Iron Line project seeks to increase visitor numbers to 150,000 per year, which

would equate to 150 visitors per hour during peak periods. Due to the ecological sensitivities of the site, the Iron Line project has been designed very sensitively, with a focus on using and reinforcing existing paths and desire lines rather than creating new ones and closing off desire lines through/to the more ecologically valuable areas to reduce trampling and disturbance impacts. The BOAT will be narrowed along most of its length in order to discourage vehicles from driving along it, and to give land back to nature.

41. A number of other mitigation measures will be implemented during the operational phase to reduce the impact of disturbance on SPA features, such as those included in the EclA and described below. These measures will be secured through conditioning a long-term (at least 30 years) Landscape and Ecological Management Plan (LEMP) should planning permission be granted.
42. The proposals will reinforce and extend the existing bund along the sea wall BOAT, narrow the existing path and BOAT and move the BOAT 1m further away from the tern island. Despite a significant increase in visitors, the bund will ensure that people and dogs remain visibly unnoticeable to the terns. Additionally, in narrowing the BOAT, the proposals are likely to reduce the occurrences of behaviour likely to disturb the terns, such as anti-social driving of vehicles along the BOAT and kayakers and paddleboarders entering the lagoon from the RSBP reserve side.
43. The proposals also include the addition of signage and education boards across the reserve and on the welcome building/car park site, to raise awareness of the international importance of the tern and gull colonies on site. This should increase the level of respect and understanding of site visitors and is considered an effective way of reducing disturbance caused by visitors at unmanaged wildlife sites (Allbrook & Quinn, 2020).
44. The tern island is surrounded by anti-predation fencing, which gives breeding terns an additional level of protection against dog predation. The site is an RSPB reserve and therefore there should be an existing level of understanding about the sites' importance for birds, and signage will be introduced around the site to remind visitors to keep dogs on leads.
45. The continued presence of a tern warden during the breeding season will help prevent disturbance to the terns. Visitor numbers and any impacts on terns will be closely monitored by the warden and remedial actions will be undertaken if necessary, such as controlling visitor numbers to the most sensitive areas during the busiest times.
46. Many of the mitigation actions for operational impacts on breeding SPA species also apply to the non-breeding SPA species. The reinforcement and extension of the bund will protect the birds using the lagoon and island over the winter from visual disturbance by shielding site visitors. The narrowing of the existing BOAT and the reduction in lagoon access points will reduce human activities, such as anti-social vehicle driving and kayaking that have high disturbance potential. The addition of interpretation and education boards will raise awareness of the international importance of the overwintering bird assemblages and increase the respect and understanding of the "rules" on site.
47. In addition to the mitigation measures outlined above, the Iron Line Visitor and Access Management Plan (Appletons, 2023) also recommends that a steering/working group is formed involving stakeholders including RSPB, NE and Cumberland Council, to assess and monitor the capacity of habitats to absorb visitors without inflicting irreversible harm to the integrity of the designated sites. This will need regular ecological monitoring survey data to keep it up to date and to be able to feed into any site habitat management plans. Any mitigation measures need to be monitored for their effectiveness, and assessment undertaken for the effectiveness of positive interventions such as land-based management regimes.
48. The VAMP recommends that regular ecological monitoring surveys of the site to evaluate any impacts that may be occurring by visitor access and behaviour as set against the baseline surveys undertaken in

2021/2022 (and the 2022 RSPB data of breeding/over-wintering SPA bird species at Hodbarrow) should be programmed over a 25 year period. Whilst this may have cost implications, it is important to establish that the statutory designation of the reserve as a SSSI and the interest features of the SPA/SAC/Ramsar site are not being compromised in any way.

49. Upon successful implementation of the mitigation measures as outlined above and in the supporting documents, the increase in visitors as a result of the development is considered to have a **Neutral Residual Impact** on the qualifying features for designation.

#### *In-Combination Test*

50. As stated in the sALSE, Cumberland Council have identified other plans/projects that should be considered in the in-combination impact assessment, as follows (email from Christie Burns dated 12<sup>th</sup> April 2023):

- 4/19/2153/0g1 – Port Haverigg Holiday Village, Haverigg – removal of Condition 10 of planning permission 4/81/1132/086. (No information available).
- 4/19/2298/0e1 – Port Haverigg Holiday Village, Haverigg – lawful development as a caravan site, and land used in conjunction for roads, parking and manoeuvring. Open recreation areas, water sport including boat yard and quay, miniature railway and bbq and landscaping. (No information available).
- 4/22/2402/0b1 - Port Haverigg Holiday Village, Steel Green, Haverigg - amendments to layout and landscaping including relocation of ponds and enlargement of toilet block for planning approval reference 4/10/2387/0f1 - proposed extension of existing holiday village to provide 100 no. static caravan pitches, 20 no. motor home pitches, 30 no. touring caravan pitches, camping area for up to 20 no. tents, communal facilities building, 2 no. shower and toilet blocks, park maintenance compound, tourist information building incorporating cafe & public toilets, associated landscaping and infrastructure works. (Planning application documents available online).

51. A Preliminary Ecological Appraisal of the site was undertaken in August 2022 for application 4/22/2402/0b1 (South Lakes Ecology, 2022), which identified two areas of ecological interest/concern; a breeding pool used by natterjack toads on site and the nearby protected statutory sites (SSSI, SAC and SPA), located within 100m of the proposed development. A number of mitigation and avoidance measures were recommended in the PEA to minimise risks to natterjack toads and to provide continued and enhanced habitat for the species on site, such as timing of works, pre-works checks, method statement for works, and monitoring by an ecologist.

52. This proposed development at Port Haverigg Holiday Village has the potential to act in-combination with the proposed Iron Line project to impact the interest features of the SPA through increased recreational disturbance, as the development will provide additional accommodation for guests in the holiday village and therefore also potentially increase the number of people visiting Hodbarrow Reserve.

53. Regarding the designated sites, it is stated in the PEA report that, 'Duddon Estuary SSSI, Morecambe Bay SAC and Morecambe Bay & Duddon Estuary SPA are all within 100m of the development. There is already a strong precedent to encourage tourists into this area of Morecambe Bay (with existing caravan and camping sites and associated infrastructure), and impacts on the local habitats and bird populations are likely to be manifest already. The wintering bird surveys undertaken for the 2010 report indicate that the area is avoided by wintering waders, gulls and wildfowl – and this pattern is repeated for the breeding bird survey. It is considered unlikely that there will be any cumulative effects from extending the site in this area – but some mitigation to encourage responsible behaviour by visiting tourists should be put in place.'

54. The PEA report also states, 'the proximity of the development to nationally and internationally important wildlife sites could result in increased disturbance pressure on animals and birds, as well as damage to sensitive habitats (such as sand dunes and inter-tidal habitats). Once the development is completed, there should be a reasonable effort made by the owners to inform and educate tourists and regular visitors to the area about the value of the local wildlife sites, and measures they can take to minimise impacts. This can be in the form of information on noticeboards or in welcome packs/ emails. Simple messages are all that is needed;
- Keep dogs under control (preferably on a lead) on the upper shore of the beach and around sand dunes to protect ground nesting birds and high-tide roosts.
  - If a bird is agitated, then it is likely that you are close to its nest. Many ground nesting waders have well camouflaged eggs, so head lower down the beach (below the high tide mark) or follow clear footpaths.
  - Keep to paths and open areas to avoid trampling sensitive vegetation
  - No fires or BBQs near to sand dunes, grassland or scrub habitats.'
55. It is considered unlikely that the proposed development at Port Haverigg Holiday Village would have a significant effect on SPA features through disturbance during construction, taking into account the distance of the proposed development site from the tern island (over 800m) and from the old sea wall (c.600m). On the basis of the information available, is considered that the proposed development at Port Haverigg is unlikely to have any residual effects on SPA interest features due to recreational disturbance when the mitigation measures included in the PEA report are taken into account.
56. The England Coast Path (ECP) is a national Natural England project to improve pathways/access around England's coasts. A small section of the ECP crosses the southern part of Hodbarrow RSPB Reserve, including along the sea wall, and therefore should be considered for the in-combination test. The ECP Habitats Regulations Assessment (Natural England, 2020) includes the following information with respect to potential impacts on breeding SPA species at Hodbarrow Reserve:
- 'Species Present/Baseline Environmental Conditions: common tern, Arctic tern, little tern, sandwich tern, great black backed gull, herring gull and lesser black backed gull nest on islands in Hodbarrow Lagoon (lagoon landward of the proposed ECP at Hodbarrow Nature Reserve). Disturbance by walkers and their dogs of birds nesting on the islands is not currently an issue.
  - Baseline Access Situation/Access Proposal (excluding mitigation)/Predicted Change in Levels and Patterns of Use in the Areas Used by These Species as a Result of the Proposal: The seabirds at Hodbarrow RSPB reserve nest on islands in the lagoon. There is a popular public footpath seaward of the lagoon, which has high levels of use by walkers and is also occasionally used by vehicles. The proposed ECP runs along the seaward edge of Hodbarrow lagoon on the public footpath. Because this area is already so popular, it is expected that there will be a negligible change in access as a result of the proposals.
  - Likely Effects Without Mitigation: None. The lagoon is landward of the ECP, so it will not fall into the Coastal margin. Access to and around the lagoon will be unaffected by the proposals.'
57. The ECP Habitats Regulations Assessment (Natural England, 2020) also includes the following information with respect to potential impacts on non-breeding SPA species at Hodbarrow Reserve:
- 'Species Present and Location of Roost Sites, Feeding Areas and Breeding Sites/Existing Disturbance to Non-Breeding Waterbirds (if known): Roost Sites: Five roosts are recorded around Hodbarrow Lagoon (lagoon landward of the proposed ECP at Hodbarrow Nature

Reserve). Breeding Sites: Two pairs of ringed plover were recorded as breeding at Hodbarrow Lagoon in 2016. Mediterranean gull has been recorded breeding among black headed gulls on islands in Hodbarrow Lagoon. Current disturbance by walkers and dogs of birds roosting and breeding at Hodbarrow Lagoon is low.

- Existing Recreational Use in the Areas Used by these Species/Access Proposal (excluding mitigation)/Predicted Change in Levels and Patterns of Use in the Areas Used by These Species as a Result of the Proposal: This section's proximity to Millom and Haverigg, with a network of public rights of way and existing walked routes between the two, means it is already well used by local walkers and dog owners. Accessible parts of the margin are already in use (e.g., beaches near Haverigg and Hodbarrow Mains) but other sections are difficult or dangerous to access and awareness locally of the risks tends to minimise use of these areas. The proposed ECP follows PRoWs and existing walked routes. No new circular routes or significant improvements to surfaces are being created on this section, so use by locals is not likely to increase significantly. This area of Cumbria is relatively isolated so it is not expected that the route will attract large numbers of walkers from far afield. Therefore, we expect there to be negligible change in use on the line of the ECP and the margin.
- Risk of Impact of Proposals on Non-Breeding Waterbirds: Low risk. The areas where the birds are roosting and breeding at Hodbarrow Lagoon are landward of the proposed ECP and do not fall within the project area. Therefore, there will be no coastal access rights in the area used by roosting and breeding birds. The proposed ECP will not bring people any closer to the areas at Hodbarrow Lagoon which are used by roosting and breeding birds. In this area the ECP is aligned seaward of a busy public byway, and the sensitive areas are landward of the public byway. Walkers and dogs are not currently disturbing birds roosting and breeding in this area. We expect a negligible increase in use of the proposed ECP and therefore there will be no impacts on the roosting and breeding birds from the proposal. The risk of disturbance to birds feeding on the flats and saltmarshes is low, as levels and patterns of access are not expected to change in these areas as a result of the proposals.'

58. Therefore, as residual impacts have not been identified when the proposed mitigation measures are taken into account for the Iron Line or for the other plans/projects discussed above, it is unlikely that the Iron Line would act in combination with other plans or projects to have an adverse effect on site integrity.



***CONCLUSIONS ON SITE INTEGRITY:***

59. Because the Iron Line project is not wholly directly connected with or necessary to the management of the European site and the sALSE concluded it was likely to have a significant effect on that site in the absence of mitigation (either alone or in combination with other plans or projects), an Appropriate Assessment was required under Regulation 63 of the Habitats Regulations to ascertain whether or not it is possible to conclude that there would be no adverse effect on the integrity of a European Site(s).
60. It can be ascertained, in view of the SPA conservation objectives, that the Iron Line proposal (taking into account any incorporated avoidance and mitigation measures) will not have an adverse effect on the integrity of Morecambe Bay and Duddon Estuary SPA or Duddon Estuary Ramsar site, either alone or in combination with other plans and projects.

## REFERENCES

- Allbrook D.L. & Quinn J.L. (2020) *The effectiveness of regulatory signs in controlling human behaviour and Northern gannet (Morus bassanus) disturbance during breeding: an experimental test*. Journal of Nature Conservation.
- Appletons (2023) *Iron Line Visitor and Access Management Plan*.
- Cutts, N., Phelps, A. & Burdon, D. (2009). *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*. Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull
- Dooling R.J. & Popper A.N. (2007) *The Effects of Highway Noise on Birds*. Environmental BioAcoustics LLC Rockville, MD 20853
- Fox, A. D. and Madsen, J. 1997. *Behavioural and Distributional Effects of Hunting Disturbance on Waterbirds in Europe: Implications for Refuge Design*. Journal of Applied Ecology, 34, 1-13.
- Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022) *Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species*. NatureScot Research Report 1283.
- Greengage (2023) *Iron Line Ecological Impact Assessment*.
- Liley, D., Underhill-Day, J., Panter, C., Marsh, P. & Roberts, J. (2015). *Morecambe Bay Bird Disturbance and Access Management Report*. Unpublished report by Footprint Ecology for the Morecambe Bay Partnership.
- Lucy Gibson Consulting (2023) *Shadow Assessment of Likely Significant Effect (sALSE), Hodbarrow Reserve, Millom (J217/RP01)*.
- Natural England (2023) *Morecambe Bay and Duddon Estuary SPA Supplementary Advice on Conservation Objectives* <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>
- Natural England (2020) *Assessment of England Coast Path proposals between Silecroft in Cumbria and Cleveleys in Lancashire on Morecambe Bay and Duddon Estuary SPA, Morecambe Bay SAC, Morecambe Bay Ramsar Site, Duddon Estuary Ramsar Site*.
- Natural England (2014) *Site Improvement Plan Morecambe Bay*
- South Lakes Ecology (2022) *Preliminary Ecological Appraisal (update to 2010 assessment), Port Haverigg Holiday Village, Haverigg*.
- The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). 2016. Resolution 6.7 - Adoption of guidance in the context of implementation of the AEWA action plan.
- Wright, M.D., Goodman, P., and Cameron, T.C. (2010). *Exploring behavioural responses of shorebirds to impulsive noise*. Journal: Wildfowl (2010) 60, pp 150 -167. Wildfowl and Wetlands Trust

## **APPENDIX 1**

**Morecambe Bay and Duddon Estuary SPA Conservation Objectives (Natural England, February 2019)**

**Morecambe Bay and Duddon Estuary Site Citation EC Directive 79/409 on the Conservation of Wild Birds Special Protection Area (SPA)**

# European Site Conservation Objectives for Morecambe Bay & Duddon Estuary Special Protection Area

Site Code: UK9020326



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

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

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

This document should be read in conjunction with the accompanying Conservation Advice document which provides more detailed advice and information to enable the application and achievement of the Objectives set out above.

## Qualifying Features

- A026 *Egretta garzetta*; Little egret (Non-breeding)
- A038 *Cygnus cygnus*; Whooper swan (Non-breeding)
- A040 *Anser brachyrhynchus*; Pink-footed goose (Non-breeding)
- A048 *Tadorna tadorna*; Common shelduck (Non-breeding)
- A054 *Anas acuta*; Northern pintail (Non-breeding)
- A130 *Haematopus ostralegus*; Eurasian oystercatcher (Non-breeding)
- A137 *Charadrius hiaticula*; Ringed plover (Non-breeding)
- A140 *Pluvialis apricaria*; European golden plover (Non-breeding)
- A141 *Pluvialis squatarola*; Grey plover (Non-breeding)
- A143 *Calidris canutus*; Red knot (Non-breeding)
- A144 *Calidris alba*; Sanderling (Non-breeding)
- A149 *Calidris alpina alpina*; Dunlin (Non-breeding)

Contd/

A151 *Philomachus pugnax*; Ruff (Non-breeding)  
A156 *Limosa limosa islandica*; Black-tailed godwit (Non-breeding)  
A157 *Limosa lapponica*; Bar-tailed godwit (Non-breeding)  
A160 *Numenius arquata*; Eurasian curlew (Non-breeding)  
A162 *Tringa totanus*; Common redshank (Non-breeding)  
A169 *Arenaria interpres*; Ruddy turnstone (Non-breeding)  
A176 *Larus melanocephalus*; Mediterranean gull (Non-breeding)  
A183 *Larus fuscus*; Lesser black-backed gull (Non-breeding)  
A183 *Larus fuscus*; Lesser black-backed gull (Breeding)  
A184 *Larus argentatus*; Herring gull (Breeding)  
A191 *Sterna sandvicensis*; Sandwich tern (Breeding)  
A193 *Sterna hirundo*; Common tern (Breeding)  
A195 *Sterna albifrons*; Little tern (Breeding)  
Waterbird assemblage  
Seabird assemblage

### **This is a European Marine Site**

This SPA is a part of the Morecambe Bay European Marine Site ('EMS'). These Conservation Objectives should be used in conjunction with the Conservation Advice document for the EMS. Natural England's formal Conservation Advice for European Marine Sites can be found via [GOV.UK](https://www.gov.uk).

### **This is a new combined site**

This SPA replaces two individual sites – Morecambe Bay SPA (UK9005081) and Duddon Estuary SPA (UK9005031).

### **Explanatory Notes: European Site Conservation Objectives**

These Conservation Objectives are those referred to in the Conservation of Habitats and Species Regulations 2017 (as amended) ('the Habitats Regulations'). They must be considered when a competent authority is required to make a 'Habitats Regulations Assessment' including an Appropriate Assessment, under the relevant parts of this legislation.

These Conservation Objectives, and the accompanying Supplementary Advice (where this is available), will also provide a framework to inform the management of the European Site and the prevention of deterioration of habitats and significant disturbance of its qualifying features

These Conservation Objectives are set for each bird feature for a [Special Protection Area \(SPA\)](#).

Where these objectives are being met, the site will be considered to exhibit a high degree of integrity and to be contributing to achieving the aims of the Wild Birds Directive.

**Publication date:** 21 February 2019 (version 6). This document updates and replaces an earlier version dated 7 December 2017 to reflect the consolidation of the Habitats Regulations in 2017.

## Morecambe Bay and Duddon Estuary Site Citation

### EC Directive 79/409 on the Conservation of Wild Birds

### Special Protection Area (SPA)

**Name:** *Morecambe Bay and Duddon Estuary Special Protection Area*

**Counties/Unitary Authorities:** *Cumbria, Lancashire*

#### **Boundary of the SPA:**

The landward boundary of the SPA includes all of the intertidal and terrestrial areas covered by the former Morecambe Bay SPA and Duddon Estuary SPA. It includes areas of adjoining terrestrial coastal habitat at North and South Walney and at Haverigg Point on the Duddon Estuary and the lagoons at South Walney; Cavendish Dock, Barrow and Hodbarrow, Haverigg.

Where the landward boundary extends from Kirksanton Haws to Drigg Dunes, including the Ravenglass Estuary and the west side of Walney Island, it follows Mean High Water.

From Rossall Point to a defined point in central Morecambe Bay (54° 5.732' N 3° 1.325' W) the seaward boundary follows Mean Low Water. From central Morecambe Bay the seaward boundary runs offshore around Walney Island and along the south west Cumbria Coast, reaching a maximum of 8 km offshore opposite Kirksanton Haws, meeting the coast again at Drigg Dunes.

Morecambe Bay and Duddon Estuary SPA supersedes the original Morecambe Bay SPA and Duddon Estuary SPA.

**Size of SPA:** The SPA covers an area of 66,899.97 ha.

#### **Site description:**

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.

Morecambe Bay is the second largest embayment in Britain after The Wash, at over 310 km<sup>2</sup>, 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.

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.

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

#### **Qualifying species:**

SPA site selection guidelines have been applied to the most up to date information for the site. However, this contemporary data reveals that some species are no longer present in qualifying

numbers (either through declines or because the relevant threshold has increased). It is not clear whether anthropogenic influences have affected the populations at the site. Defra policy indicates that in these circumstances the feature should be retained until such time as the reasons for the reduction in population can be established. Natural England therefore considers that these species should be retained on the citation, and the level of ambition set out in the conservation objectives for these species maintained, until such time as we have evidence to support the conclusion that declines are a result of natural processes and that the SPA is no longer suitable for these species.

The site qualifies under **Article 4.1** of the Directive (2009/147/EC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I in any season:

Species	Season	Count (Period)	% of population
Whooper swan <i>Cygnus Cygnus</i>	Non-breeding	113 individuals (2009/10 – 2013/14) <sup>1</sup>	1.0% of GB population
Little egret <i>Egretta garzetta</i>	Non-breeding	134 individuals (2009/10 – 2013/14) <sup>1</sup>	3.0% of GB population
European golden plover <i>Pluvialis apricaria</i>	Non-breeding	1,900 individuals (Morecambe Bay SPA citation value 1991) <sup>2</sup>	1.0% of GB population (1991)
Bar-tailed Godwit <i>Limosa lapponica</i>	Non-breeding	3,046 individuals (2009/10 – 2013/14) <sup>1</sup>	8.0% of GB population
Ruff <i>Calidris pugnax</i>	Non-breeding	8 individuals (2009/10 – 2013/14) <sup>1</sup>	1.0% of GB population
Mediterranean gull <i>Larus melancephalus</i>	Non-breeding	18 individuals (2009/10 – 2013/14) <sup>1</sup>	1.0% of GB population
Little tern <i>Sternula albifrons</i>	Breeding	84 individuals (2010 – 2014) <sup>3</sup>	2.2% of GB population
Sandwich tern <i>Sterna sandvicensis</i>	Breeding	1,608 individuals (1988 - 1992) <sup>4</sup>	5.7% of GB population (1992)
Common tern <i>Sterna hirundo</i>	Breeding	570 individuals (Morecambe Bay SPA citation value 1991) <sup>5</sup>	2.0% of GB population (1991)

The site qualifies under **Article 4.2** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed in Annex I) in any season:

Species	Season	Count (Period)	% of population
Pink-footed goose <i>Anser brachyrhynchus</i>	Non-breeding	15,648 individuals (2009/10 – 2013/14) <sup>6</sup>	4.5% of biogeographic population
Common shelduck <i>Tadorna tadorna</i>	Non-breeding	5,878 individuals (2009/10 – 2013/14) <sup>1</sup>	2.0% of biogeographic population
Northern Pintail <i>Anas acuta</i>	Non-breeding	2,498 individuals (2009/10 – 2013/14) <sup>1</sup>	4.2% of biogeographic population
Eurasian oystercatcher <i>Haematopus ostralegus</i>	Non-breeding	55,888 individuals (2009/10 – 2013/14) <sup>1</sup>	6.8% of biogeographic population
Grey plover <i>Pluvialis squatarola</i>	Non-breeding	2,000 individuals (Morecambe Bay SPA citation value 1991) <sup>7</sup>	1.0% of biogeographic population (1991)

<sup>1</sup> Data from Wetland Bird Survey

<sup>2</sup> Current five year peak mean (2009/10 – 2013/14) = 3,494 (0.9% GB population)

<sup>3</sup> Data from RSPB

<sup>4</sup> Summed data from SMP relating to period of original classification for Morecambe Bay SPA and Duddon Estuary SPA (1988 – 1992). Current five year peak mean (2010-2014) = 40 pairs (0.4% GB population).

<sup>5</sup> Current five year peak mean (2010-2014) = 47 pairs (0.5% GB population).

<sup>6</sup> Data from Wetland Bird Survey and Icelandic-breeding Goose Census.

<sup>7</sup> Current five year peak mean (2009/10 – 2013/14) = 1,013 (0.4% biogeographic population).

Species	Season	Count (Period)	% of population
Common ringed plover <i>Charadrius hiaticula</i>	Non-breeding	1,049 individuals (2009/10 – 2013/14) <sup>1</sup>	1.4% of biogeographic population
Eurasian curlew <i>Numenius arquata</i>	Non-breeding	12,209 individuals (2009/10 – 2013/14) <sup>1</sup>	1.5% of biogeographic population
Black-tailed godwit <i>Limosa limosa</i>	Non-breeding	2,413 individuals (2009/10 – 2013/14) <sup>1</sup>	4.0% of biogeographic population
Ruddy turnstone <i>Arenaria interpres</i>	Non-breeding	1,359 individuals (2009/10 – 2013/14) <sup>1</sup>	1.0% of biogeographic population
Red knot <i>Calidris canutus</i>	Non-breeding	32,739 individuals (2009/10 – 2013/14) <sup>1</sup>	7.3% of biogeographic population
Sanderling <i>Calidris alba</i>	Non-breeding	3,600 individuals (Morecambe Bay SPA citation value 1991) <sup>8</sup>	3.0% of biogeographic population (1991)
Dunlin <i>Calidris alpina alpina</i>	Non-breeding	26,982 individuals (2009/10 – 2013/14) <sup>1</sup>	2.0% of biogeographic population
Common redshank <i>Tringa totanus</i>	Non-breeding	11,133 individuals (2009/10 – 2013/14) <sup>1</sup>	4.6% of biogeographic population
Lesser black-backed gull <i>Larus fuscus</i>	Non-breeding	9,450 individuals (2009/10 – 2013/14) <sup>1</sup>	1.7% of biogeographic population
Lesser black-backed gull <i>Larus fuscus graellsii</i>	Breeding	9,720 individuals (2011-2015) <sup>9</sup>	2.7% of biogeographic population
European herring gull <i>Larus argentatus argenteus</i>	Breeding	20,000 individuals (Morecambe Bay SPA citation value 1991) <sup>10</sup>	1.0% of biogeographic population (1991)

#### Assemblage qualification:

The site qualifies under **Article 4.2** of the Directive (2009/147/EC) as it used regularly by over 20,000 seabirds in any season:

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.

The site qualifies under **Article 4.2** of the Directive (2009/147/EC) as it used regularly by over 20,000 waterbirds in any season:

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, Eurasian spoonbill, light-bellied brent goose (Nearctic origin), Eurasian wigeon, Eurasian teal, green-winged teal, mallard, ring-necked duck, common eider (non-breeding), common goldeneye, red-breasted merganser, great cormorant, northern lapwing, little stint, spotted redshank, common greenshank, black-headed gull, common (mew) gull and European herring gull (non-breeding).

#### Principal bird data sources:

Colony counts from JNCC Seabird Monitoring Programme and contributed by colony managers: RSPB (Hodbarrow) and Cumbria Wildlife Trust (Morecambe Bay). Non-breeding bird data from Wetland Bird Survey (WeBS) and WWT's Icelandic-breeding Goose Census (<sup>11</sup>Mitchell 2014).

<sup>8</sup> Current five year peak mean (2009/10 – 2013/14) = 849 (0.7% biogeographic population).

<sup>9</sup> Data from Seabird Monitoring Programme database, RSPB and Cumbria Wildlife Trust

<sup>10</sup> Current five year peak mean (2011-2015) = 3,192 individuals (0.5% biogeographic population).

<sup>11</sup> Mitchell, C. (2014). Status and distribution of Icelandic-breeding geese: results of the 2013 international census. Wildfowl & Wetlands Trust Report, Slimbridge. 20pp.