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Conservation Objectives Series

Lough Mask SPA 004062

National Parks and Wildlife Service,
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Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

004062	Lough Mask SPA
A061	Tufted Duck *Aythya fuligula*
A179	Black-headed Gull *Chroicocephalus ridibundus*
A182	Common Gull *Larus canus*
A183	Lesser Black-backed Gull *Larus fuscus*
A193	Common Tern *Sterna hirundo*
A395	Greenland White-fronted Goose *Anser albifrons flavirostris*
A999	Wetlands

Please note that this SPA overlaps with Lough Carra/Mask Complex SAC (001774). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping site as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	2013
Title :	A review of the SPA network of sites in the Republic of Ireland
Author :	NPWS
Series :	Published Report
Year :	2021
Title :	Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network
Author :	Power, A.; McDonnell, P.; Tierney, T.D.
Series :	Published NPWS report
Year :	2022
Title :	Rockabill Tern Report, 2022
Author :	Allbrook, D.; Dunne, S.; Fink, A.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS

Other References

Year :	1900
Title :	The Birds of Ireland: An Account of the Distribution, Migrations and Habits of Birds as Observed in Ireland, with All Additions to the Irish List
Author :	Ussher, R.J.; Warren, R.
Series :	Gurney and Jackson
Year :	1978
Title :	Population models for common terns in Massachusetts
Author :	Nisbet, I.C.T.
Series :	Bird-banding, 49(1), 50-58
Year :	1978
Title :	A survey of gulls breeding inland in the west of Ireland 1977 and 1978 and a review of the inland breeding habit in Ireland and Britain
Author :	Whilde, A.
Series :	Irish Birds 1: 134-160
Year :	1980
Title :	Population dynamics of a Common Tern colony
Author :	DiCostanzo, J.
Series :	Journal of Field Ornithology, 51(3), pp.229-243
Year :	1991
Title :	The status of seabirds in Britain and Ireland
Author :	Lloyd, C.; Tasker, M.L.; Partridge, K.
Series :	Poyser Monographs Volume: 50
Year :	1995
Title :	Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds
Author :	Walsh, P.; Halley, D.J.; Harris, M.P.; del Nevo, A.; Sim, I.M.W.; Tasker, M.L.
Series :	JNCC, Peterborough

Year :	1995
Title :	Impacts of hunting disturbance on waterbirds - a review
Author :	Madsen, J.; Fox, A.D.
Series :	Wildlife Biology 1(4):193-207
Year :	1997
Title :	The status and distribution of breeding sandwich, roseate, common, arctic and little terns in Ireland in 1995
Author :	Hannon, C.; Berrow, S.D.; Newton, S.F.
Series :	Irish Birds, 6: 1-22
Year :	2003
Title :	Implications for seaward extensions to existing breeding seabird colony Special Protection Areas
Author :	McSorley, C.A.; Dean, B.J.; Webb, A.; Reid J.B.
Series :	JNCC Report No. 329
Year :	2004
Title :	Seabird populations of Britain and Ireland
Author :	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
Series :	Poyser, London
Year :	2006
Title :	A survey of the Lough Mask Breeding Gull population
Author :	Hunt, J.; Heffernan, M.L.
Series :	Report to the Heritage Council
Year :	2014
Title :	A review of Greenland white-fronted geese in Ireland 1982/83 – 2011/12
Author :	Burke, B.; Egan, F.; Norriss, D.; Wilson, H.J.; Walsh, A.J.
Series :	Unpublished report
Year :	2014
Title :	The Lesser Black-backed Gull *Larus fuscus* in England: how to resolve a conservation conundrum
Author :	Ross-Smith, V.H.; Robinson, R.A.; Banks, A.N.; Frayling, T.D.; Gibson, C.C.; Clark, J.A.
Series :	Seabird, 27 (October), pp.41-61
Year :	2016
Title :	Assessing connectivity with Special Protection Areas (SPAs)
Author :	Scottish Natural Heritage
Series :	Guidance Series Version 3 - June 2016
Year :	2019
Title :	Desk-based revision of seabird foraging ranges used for HRA screening
Author :	Woodward, I.; Thaxter, C.B.; Owen, E.; Cook, A.S.C.P.
Series :	BTO Research Report No. 724
Year :	2019
Title :	Report of the 2018/19 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A; Norriss, D.
Series :	Unpublished report

Year :	2019
Title :	Report under Article 12 of the Birds Directive Period 2013-2018
Author :	EEA
Series :	European Environment Agency. European Topic Centre on Biological Diversity. Pp 1-9. https://cdr.eionet.europa.eu/Converters/run_conversion?file=ie/eu/art12/envxztxxq/IE_birds_reports_20191031-130157.xml&conv=612&source=remote
Year :	2020
Title :	Report of the 2019/20 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A.; Norriss, D.
Series :	Unpublished report
Year :	2020
Title :	Common tern (*Sterna hirundo*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Arnold, J.M.; Oswald, S.A.; Nisbet, I.C.T.; Pyle, P.; Patten, M.A.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Black-headed Gull (*Chroicocephalus ridibundus*), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors)
Author :	Burger, J.; Gochfeld, M.; Kirwan, G. M.; Christie, D. A; Garcia, E. F. J.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Lesser Black-backed Gull (*Larus fuscus*), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors)
Author :	Burger, J.; Gochfeld, M.; Kirwan, G. M.; Christie,D. A.; de Juana, E
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	Report of the 2020/21 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A.; Norriss, D.; Kelly. S.
Series :	Unpublished report
Year :	2021
Title :	Common Gull (*Larus canus*), version 1.1. In Birds of the World (S. M. Billerman, Editor)
Author :	Moskoff, W.; Bevier, L.R.; Rasmussen, P.C.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2022
Title :	Irish wetland bird survey: I-WeBS national and site trends report 1994/95 – 2019/20
Author :	Kennedy, J.; Burke, B.; Fitzgerald, N.; Kelly, S.B.A.; Walsh, A.J; Lewis, L.J.
Series :	https://birdwatchireland.ie/app/uploads/2022/04/iwebs_trends_report.html
Year :	2022
Title :	Report of the 2021/22 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A; Norriss, D.; Kelly, S.
Series :	Unpublished report
Year :	2023
Title :	Seabirds Count: a census of breeding seabirds in Britain and Ireland (2015-2021)
Author :	Burnell, D.; Perkins, A.J.; Newton, S.F.; Bolton, M.; Tierney, T.D.; Dunn, T.E.
Series :	Lynx Nature Books, Barcelona
Year :	2023
Title :	Report of the 2022/23 international census of Greenland white-fronted geese
Author :	Fox, T.; Francis, I.; Walsh, A; Norriss, D.; Kelly, S.
Series :	Unpublished report

Year :	2024
Title :	Seabird Population Trends and Causes of Change: 1986–2023, the annual report of the Seabird Monitoring Programme
Author :	Harris, S.J.; Baker, H.; Balmer, D.E.; Bolton, M.; Burton, N.H.K.; Caulfield, E.; Clarke, J.A.E.; Dunn, T.E.; Evans, T.J.; Hereward, H.R.F.; Humphreys, E.M.; Money, S.; O'Hanlon, N.J.
Series :	BTO Research Report 771

A061 Tufted Duck *Aythya fuligula*

To restore the Favourable conservation condition of Tufted Duck at Lough Mask SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of wintering Tufted Duck in Ireland has declined by 18% from 1994/95 - 2019/20, as monitored via the Irish Wetland Bird Survey (I-WeBS) (Kennedy et al., 2022). During the baseline assessments to inform SPA designation, 453 Tufted Duck were estimated to be using this SPA (4 year mean of peak counts for the period 1995/96 - 1999/2000; no data for 1998/99; see NPWS, 2013). A population of 432 Tufted Duck were estimated to be using the Lough Mask SPA in recent years (4 year mean of peak counts for the period 2017/18 - 2022/23, excluding 2020/21, from I-WeBS monitoring). This represents an estimated population decline of 5% since the baseline period, less than the national trend
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas are likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact
Forage spatial distribution, extent and abundance	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species is omnivorous and forages primarily in open freshwater or brackish waterbodies up to c.15m depth. Molluscs are the main food source but the species also consumes fish, insects, amphibians and various plant materials (leaves, shoots, tubers, seeds). Tufted Duck feed primarily by diving, but to a lesser extent will also feed at the surface of waterbodies, wade in shallows, and forage onshore (e.g. for cereal grain). Utilised habitats include lakes, rivers, ponds, reservoirs, marshes, estuaries, lagoons, and (less so) coastal areas. In winter, individual Tufted Duck can forage alone or as part of large aggregations

Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	When roosting overnight, the species uses a range of waterbodies, as noted for foraging habitat. Roosting is a critical ecological requirement for the wintering population. Daytime roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution

A179 Black-headed Gull *Chroicocephalus ridibundus*

To restore the Favourable conservation condition of Black-headed Gull in Lough Mask SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number of Apparently Occupied Nests (AON)	Long term SPA population trend is stable or increasing	An estimated 425 pairs of Black-headed Gull were recorded at this site in 1977 (Whilde, 1978) and there have been multiple counts since. Subsequent surveys in 1988 and 1993 saw a population increase with 1,325 pairs in 1993 being the highest recorded for this site (Lloyd at al., 1991; Hunt and Heffernan, 2006). The population fluctuated in the following two surveys in 1999 and 2006 when breeding numbers dropped to 329 but rose back to 1,200 pairs (Mitchell et al., 2004; Hunt and Heffernan, 2006). However, since then the population has been more stable with similar records of 790, 641 and 797 recorded across surveys in 2018, 2021 and 2022 (NPWS internal files). The most recent population estimate of 354 pairs in 2023 is notably lower and represents a population decrease of 17% since 1977. However, overall the population does appear to be stable. The national population has increased by 84% between surveys in 1998 - 2002 and 2015 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	Hunt and Heffernan (2006) reported that the mean productivity of Black-headed Gull from this SPA was 0.7 chicks fledged per pair in 2006 (1,200 pairs). Productivity values for both coastal and inland nesting Black-headed Gull in Britain have fluctuated markedly since 1986 and it is difficult to determine what a sustainable productivity rate for this species is. Differences in productivity likely reflect site level differences such as predation, food supply, and weather conditions. In 2023, 0.46 chicks fledged per pair in Scotland but this was 0.22 for the United Kingdom. Productivity rates reached over 1.0 for some years between 1996 - 2004 (Harris et al., 2024)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Black-headed Gull. Black-headed Gull nests in a variety of habitats such as freshwater lakes and marshes, salt marshes, settling ponds, clay pits and coastal dunes, and offshore islands (Burger et al., 2020)
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of Black-headed Gull varies according to location, but often includes large quantities of aquatic and terrestrial insects and earthworms (Burger et al., 2020). Woodward et al. (2019) provide estimates of Black-headed Gull foraging ranges from the nest site during the breeding season and estimate a mean foraging range of 7km and a maximum foraging range of 19km for this species (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity, and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Inland breeding gulls may use freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Inland breeding gulls require regular and efficient access to freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Woodward et al. (2019) provide estimates of Black-headed Gull foraging ranges from the nest site during the breeding season, and estimate a mean foraging range of 7km and a maximum foraging range of 19km for this species (see Power et al., 2021)

A182 Common Gull *Larus canus*

To restore the Favourable conservation condition of Common Gull in Lough Mask SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number of Apparently Occupied Nests (AON)	Long term SPA population trend is stable or increasing	Records of gulls breeding at Lough Mask exist from as early as 1900 (Ussher and Warren, 1900). An estimated 465 pairs of Common Gull were recorded at this site in 1977 (Whilde, 1978) and there have been multiple counts since. Subsequent surveys in 1988 and 1993 yielded 292 and 371 pairs respectively (Lloyd at al., 1991), the start of a declining trend. The population dropped further between 1999 and 2016 - 2018 when the population ranged between 124 and 210 pairs (Mitchell et al., 2004; Hunt and Heffernan, 2006; Burnell et al., 2023). The population has continued to decline with approximately 57 recorded in 2021, the lowest on record for the site, and 76 pairs in 2022 (NPWS internal files). The most recent population estimate of 59 pairs in 2023 represents a population decrease of 87% since 1977. The national population of Common Gull has increased by 89% between surveys in 1998 - 2002 and 2015 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	Hunt and Heffernan (2006) reported that the mean productivity of Common Gull from this SPA was 0.5 chicks fledged per pair in 2006 (410 pairs across five islands). The highest productivity was at the colony Long Rock which had a productivity of 0.88 (164 pairs). A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this species at the site and at the national level. Common Gull productivity in Scotland between 2000 and 2020 was below 0.6 chicks per breeding pair; in this time period the Scottish population of Common Gull was decreasing (Harris et al., 2024)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Common Gull. Common Gull breeding near marine environments typically nest on small inshore rocky stacks, islets and islands, grassy and rocky slopes, sand dunes, and the foreshore (Moskoff et al., 2021). Common Gull breeding inland can nest in a variety of habitats such as grassy/heather moorland, near lakes, pools, in bogs, on open ground away from water, and cultivated grain fields (Moskoff et al., 2021). Common Gull have nested on multiple islands within the SPA with Annagh Islet being the main colony in recent surveys
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Diet varies by location and season. Common Gull feeding in inland environments typically feed on earthworms and insects such as fly larvae (Moskoff et al., 2021). Based on several studies, Woodward et al. (2019) estimate that the maximum foraging range of a Common Gull from the nest site during the breeding season is 50km (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Inland breeding gulls may use freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Inland breeding gulls require regular and efficient access to freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) estimate that the maximum foraging range of a Common Gull from the nest site during the breeding season is 50km (see Power et al., 2021)

A183 Lesser Black-backed Gull *Larus fuscus*

To maintain the Favourable conservation condition of Lesser Black-backed Gull in Lough Mask SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number of Apparently Occupied Nests (AON)	Long term SPA population trend is stable or increasing	Records of gulls breeding at Lough Mask exist from as early as 1900 (Ussher and Warren, 1900). An estimated 366 pairs of Lesser Black-backed Gull were recorded at this site in 1977 (Whilde, 1978) and there have been multiple counts since. The following surveys in 1988 and 1993 yielded 447 and 361 pairs respectively (Lloyd at al., 1991), indicating a stable population. The population appeared to decline in 1999 and 2006 when breeding numbers dropped to 286 and 282 pairs (Mitchell et al., 2004; Hunt and Heffernan, 2006). However, since then the population has increased with approximately 557 recorded between 2016 and 2018 (Burnell et al., 2023) and 608 and 563 pairs recorded in 2021 and 2022 (NPWS internal files). The most recent population estimate of 668 pairs in 2023 is the highest for the site and represents a population increase of 83% since 1977. The natural-nesting population in Ireland has increased by 163% between surveys in 1998 - 2002 and 2015 - 2021 (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	Hunt and Heffernan (2006) reported that the mean productivity of Lesser Black-backed Gull from this SPA was 0.67 chicks fledged per pair in 2006 (282 pairs across four islands). However, the productivity was very low on two of the islands (below 0.3) but was high on Carrigeendauv (143 pairs) which had a productivity of 1.15. Further monitoring and research work is required in order to identify a minimum productivity rate for this species at this site and at the national level. Ross-Smith et al. (2014) summarise Lesser Black-backed Gull productivity in some UK colonies, and colonies with productivity rates above 1.0 had increasing population trends
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Distribution encapsulates the number of locations and area of potentially suitable nesting habitat for the breeding population and its availability for use. The suitability and availability of habitat across the SPA may vary through time. Lesser Black-backed Gull nests colonially, often with other gull species on offshore islands and coastal cliffs (Mitchell et al., 2004). Lesser Black-backed Gull have nested on multiple islands within the SPA but the majority of the population is found on Carrigeendauv and Ram's Island
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of Lesser Black-backed Gull is diverse and opportunistic. This species can forage over both terrestrial and aquatic habitats. Frequent prey items include small fish, aquatic invertebrates, bird's eggs and chicks, trawler discards, rodents, and berries (Burger et al., 2020). Based on several studies, Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Lesser Black-backed Gull, which are 43km, 127km, and 533km respectively (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure, which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Inland breeding gulls may use freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Inland breeding gulls require regular and efficient access to freshwater and terrestrial habitats ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) provide estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for Lesser Black-backed Gull, which are 43km, 127km, and 533km respectively (see Power et al., 2021)

A193 Common Tern *Sterna hirundo*

To maintain the Favourable conservation condition of Common Tern in Lough Mask SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number of Apparently Occupied Nests (AON)	Long term SPA population trend is stable or increasing	The Common Tern population in this SPA was surveyed in 1995 as part of the all-Ireland tern survey which recorded 44 pairs (Hannon et al., 1997). The population has been surveyed multiple times since and count totals have been consistent with little fluctuation. Total breeding pairs of Common Tern between 1999 and 2021 have amounted to 39, 36, 42, 35, 55, 48, 41 and 46, indicating a stable population (Hannon et al., 1997; Mitchell et al., 2004; Hunt and Heffernan, 2006; Burnell et al., 2023; NPWS internal files). The most recent population estimate of 46 pairs is similar to the 1995 count, an increase of 5%. The national population has increased by 91% between 1998 - 2002 and 2015 - 2021 (Burnell et al., 2023). The national population trend has seen a significant increase but this can be partially attributed to the growth of the colony at the Rockabill SPA where the population has increased rapidly since the establishment of a wardening project in the 1980s (Burnell et al., 2023)
Productivity rate	Number of fledged young per breeding pair	Sufficient to maintain a stable or increasing population	There was no productivity data available for this species in this SPA. A lack of comprehensive Irish data precludes the identification of a minimum productivity rate for this species at site level. Walsh et al. (1995) set out methods to estimate the productivity rate for this species. A productivity rate of 1.1 young per pair is needed to maintain a colony according to DiCostanzo (1980) and Nisbet (1978). However, it has been noted that colonies with productivity rates of 0.6 and above can have stable or growing tern populations. Colonies such as Rockabill Island have supported a stable/growing Common Tern population with a productivity rate between 0.6 and 1.1 (Allbrook et al., 2022)
Distribution: extent of available nesting options within the SPA	Numbers and spatial distribution	Sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population	Common Tern are ground nesting birds. Typically colonies are found in open areas with loose substrate, such as sand or shingle, with some scattered vegetation to provide cover for chicks (Arnold et al., 2020). Common Tern in this SPA have bred almost entirely on Rialisk Island and Annagh Islet
Forage spatial distribution, extent, abundance and availability	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Common Tern are largely piscivorous, feeding on small fish up to 150mm in length (Arnold et al., 2020). Common Tern feed almost entirely on live, aquatic prey (Arnold et al., 2020) so are dependent on Lough Mask and adjacent freshwater habitats for food. Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Common Tern foraging ranges from the nest site during the breeding season, which are 6.4km, 18km, and 30km respectively (see Power et al., 2021)

Disturbance at the breeding site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on birds at the breeding site	Disturbance events at the nest site/breeding colony level can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing, and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Disturbance at areas ecologically connected to the colony	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact on breeding population	Tern species can make extensive use of the waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003). Additionally, some species may engage in maintenance behaviours outside of the breeding colony but not in the water. For example, terns may roost on rocky islets or beaches away from the breeding colony
Barriers to connectivity	Number, location, shape, and area (ha)	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Terns, particularly during the breeding season, require regular access to waters ecologically connected to the colony in order to forage, as well as to engage in other maintenance behaviours. Based on several studies, Woodward et al. (2019) provide estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of Common Tern foraging ranges from the nest site during the breeding season, which are 6.4km, 18km, and 30km respectively (see Power et al., 2021)

A395 Greenland White-fronted Goose *Anser albifrons flavirostris*

To restore the Favourable conservation condition of Greenland White-fronted Goose at Lough Mask SPA which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing	The national population of Greenland White-fronted Goose has declined by 13% between 1985 and 2018 (EEA, 2019). The flock (sub-population) of Greenland White-fronted Goose known as the Erriff and Derrycraff river valleys flock is understood to use the Lough Mask SPA (see Burke et al., 2014). During the period of baseline assessments to inform SPA designation, the Erriff and Derrycraff river valleys flock was estimated to comprise 141 geese (4 year mean of peak counts for baseline period 1995/96 - 1998/99; see Burke et al., 2014). In recent years the Erriff and Derrycraff river valleys flock was estimated at 87 geese (5 year mean of peak counts for the period 2018/19 - 2022/23; see Fox et al., 2019, 2020, 2021, 2022 and 2023). This represents an estimated population decline of 38% since the baseline period, greater than the national trend
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas are likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population
Disturbance at wintering site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The impact of any significant disturbance (direct or indirect) to the wintering population will ultimately affect the achievement of targets for population trend and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends (see, for example, Madsen and Fox, 1995). Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the wintering population, and it may require access to other SPAs or sites for certain activities, such as foraging when preferred foraging areas are unavailable due to disturbance, extensive flooding, or other factors

Forage spatial distribution, extent and abundance	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	This species is a grazer, feeding on a wide range of vegetation. Key forage materials include roots, tubers (such as potatoes), shoots (such as winter wheat), stolons, rhizomes, leaves (such as grasses), and seed such as (spilled) grain. Key habitats include peat bogs (including raised bogs and blanket bogs), grasslands (such as wet grassland, callows, semi-improved grassland, and intensive grassland), arable stubble, winter cereal fields, coastal grasslands, and occasionally salt marsh. In general, the foraging distance of wintering Greenland White-fronted Goose from night roosts is estimated at 5km to 8km (Scottish Natural Heritage, 2016), although this will vary depending on site and landscape
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Roosting is a critical ecological requirement for the wintering population. Overnight roosting habitat mainly consists of permanent waterbodies, such as lakes, estuaries, bays, and other open waterbodies. When roosting in waterbodies, this species can roost on above-water features such as sandbanks. Daytime roosting is also a common behaviour, where birds minimise activity levels to conserve energy, while benefitting from the vigilance of other flock members. A lack of sufficient and suitable roosting habitats can result in increased mortality risk, whether indirectly (e.g. via increased energy expenditure travelling to/from roost sites) or directly (e.g. via increased predation risk), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	The wintering population can make extensive use of suitable habitats in important areas outside the SPA, for foraging and roosting. The extent, availability and quality of these supporting habitats may be of importance for the resilience of the SPA population. Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat

Conservation Objectives for : Lough Mask SPA [004062]

A999 Wetlands

To maintain the Favourable conservation condition of Wetland habitats in Lough Mask SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas. This is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Wetland habitat area	Hectares	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	Any significant loss to the wetland habitat within the SPA would likely negatively impact the regularly-occurring migratory waterbirds that utilise this wetland habitat. Such loss of wetland habitat would likely reduce the diversity and abundance of waterbird species that the wetland can support. This, in turn, could negatively impact the Conservation Objectives for waterbird species listed as Special Conservation Interests in the SPA or other regularly-occurring migratory waterbird species
Wetland habitat quality and functioning	Quality and function of the wetland habitat	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	Any significant impact on the quality, functioning and accessibility of the wetland habitat within the SPA would likely negatively impact the regularly-occurring migratory waterbirds that utilise this wetland habitat. Impacts on wetland quality, functioning and accessibility would likely reduce the diversity and abundance of waterbird species that the wetland can support. This, in turn, could negatively impact the Conservation Objectives for waterbird species listed as Special Conservation Interests in the SPA or other regularly-occurring migratory waterbird species

Legend

Lough Mask SPA 004062

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MAP 1:
LOUGH MASK SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

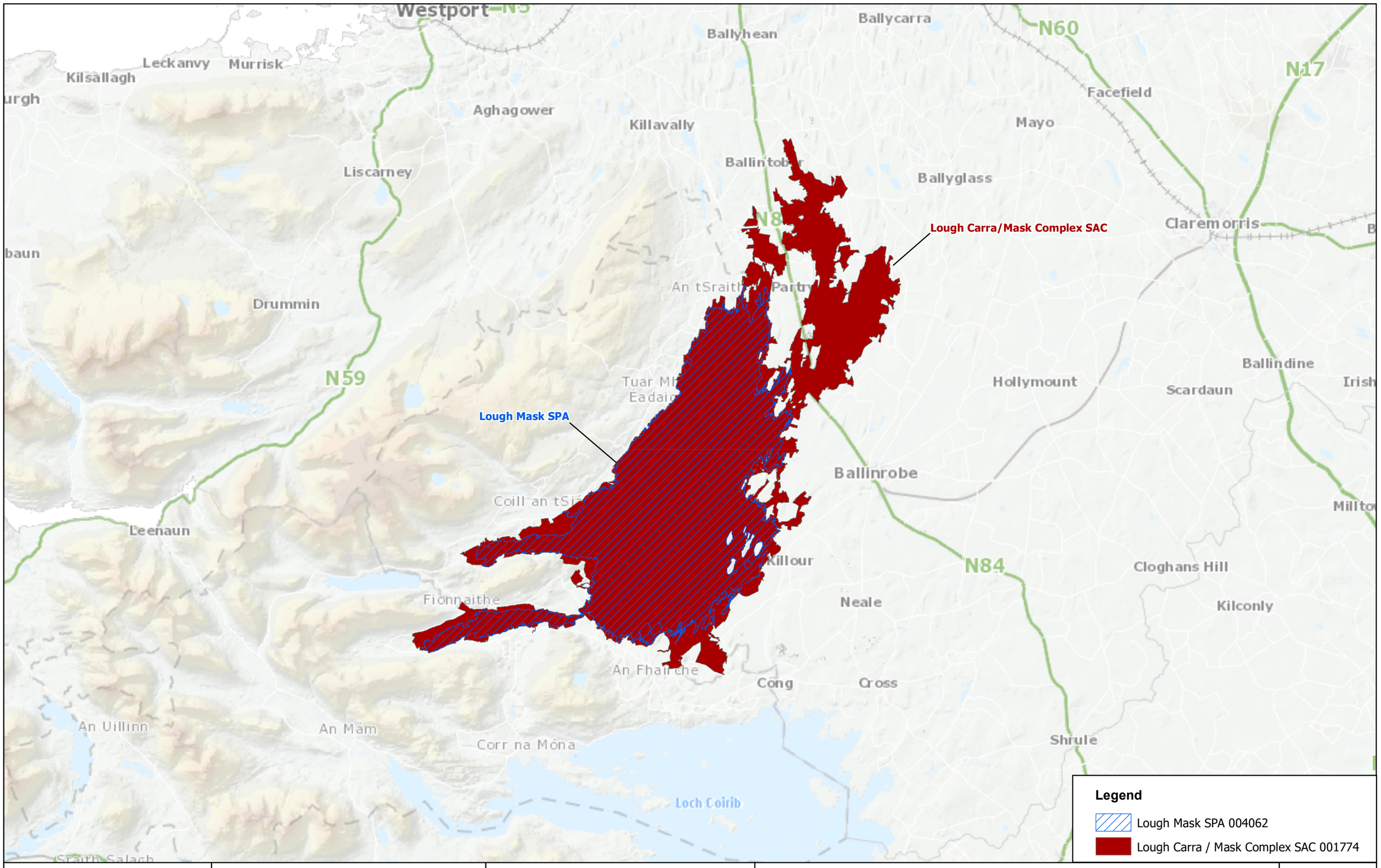
Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004062; version 3
CO. GALWAY, MAYO

0 1 2 4 Kilometres

N

Map version 1
Date: May 2024



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MAP 2:
LOUGH MASK SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES

Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004062; version 3
CO. GALWAY, MAYO

0 1.5 3 6 Kilometres

N

Map version 1
Date: May 2024