ISSN 2009-4086

# **National Parks and Wildlife Service**

**Conservation Objectives Series** 

## The Murrough SPA 004186



National Parks and Wildlife Service, Department of Housing, Local Government and Heritage,

90 King Street North, Dublin 7, D07 N7CV, Ireland.

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Citation:

NPWS (2024) Conservation Objectives: The Murrough SPA 004186. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

> Series Editors: Maria Long and Colin Heaslip ISSN 2009-4086

### 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

004186	The Murrough SPA
A001	Red-throated Diver Gavia stellata
A043	Greylag Goose Anser anser
A046	Light-bellied Brent Goose Branta bernicla hrota
A050	Wigeon Anas penelope
A052	Teal Anas crecca
A179	Black-headed Gull Chroicocephalus ridibundus
A184	Herring Gull Larus argentatus
A195	Little Tern Sterna albifrons
A999	Wetlands

Please note that this SPA is overlaps The Murrough Wetlands SAC (002249) and Wicklow Reef SAC (002274). See map 2. The conservation objectives for this site should be used in conjunction with those overlapping sites as appropriate.

### Supporting documents, relevant reports & publications

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

### **NPWS Documents**

Title :A review of the SPA network of sites in the Republic of IrelandAuthor :NPWSSeries :Published ReportYear :2018Title :The seasonal distribution and abundance of seabirds in the western Irish Sea 2016Author :Jessopp, M; Mackey, M; Luck, C; Critchley, E; Bennison, A; Rogan, E.Series :Report to Department of Communications, Climate Action and Environment, and National Parks & Wildlife Service, Department of Culture, Heritage & the Gaeltacht, IrelandYear :2019Title :Irish wetland bird survey: waterbird status and distribution 2009/10-2015/16Author :Lewis, L.J.; Burke, B.; Fitzgerald, N.; Tierney, T.D.; Kelly, S.Series :Irish Wildlife Manuals No. 106Year :2022Title :Greylag and pink-footed geese in Ireland 2017/18-19/20Author :Burke, B.; Fitzgerald, N.; Kelly, S.; Lewis, L.J.Series :Unpublished report to NPWSYear :2022Title :Kilcoole Little Tern Conservation Project Report, 2022Author :Determining the use of coastal waters by breeding Little Terns in Kilcoole through boat-based site aut atxing and line transectsAuthor :Determining the use of coastal waters by breeding Little Terns in Kilcoole through boat-based site aut atxing and line transectsAuthor :Ower, A.; O'Connor, I.; Berrow, S.; O'Meara, S.; Acampora, H.; Monaghan, J.; Clarke, D.; Tierney, T.D.Series :Unpublished report by NPWS and ATUYear :2023Title :Kilcoole Little Tern Conservation Project Report 2023Author :	Year :	2013
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### A001 Red-throated Diver *Gavia stellata*

### To maintain the Favourable conservation condition of Red-throated Diver in The Murrough SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	Long term SPA population trend is stable or increasing	The SPA boundary was extended in 2023 to include a large area of marine waters. Prior to this, divers in the SPA were monitored via the Irish Wetland Bird Survey (I-WeBS). I-WeBS mean of peak counts for North Wicklow Coastal Marshes for the recent period 2017/18-2021/22 was 85 birds, with a peak of 215 in 2019/20. Aerial surveys were conducted in the Irish Sea as part of the ObSERVE programme, based on strip transects and conducted on three occasions (Jessopp et al., 2018). This dataset does not distinguish between diver species; it is likely that diver records off the Wicklow coast were primarily Red-throated Diver given the relative rarity of Great Northern Diver ( <i>Gavia immer</i> ) in the area. Based on ObSERVE data, estimated abundances of this species in September and November/December 2016 was 91 and 131 birds respectively (NPWS internal files). At present there are insufficient data available to produce trend data for this species at this site over the non-breeding period
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 population and its availability for use. The suitability and availability of habitat areas may vary throughout the seasons. Dierschke et al. (2017), citing various sources, noted that: its winter habitat has been described as nearshore, sandy, shallow marine waters; in the Baltic Sea, the greatest densities occurred within a water depth zone of 5m to 30m; core use areas of this species wintering offshore from the mid-Atlantic U.S. had a mean water depth of 12m and ranged up to 42m; around the UK, they tend to occur over sandy substrates of depth less than 20m; and that selective use of relatively shallow and sandy habitats indicates divers are feeding on the sea bed
Disturbance across the 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 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. Compared to most marine birds, Red-throated Diver are considered to be particularly vulnerable to marine-based anthropogenic sources of disturbance/displacement (see SNCB, 2022)
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the site 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	The diet of this piscivorous diver is poorly known outside of the breeding season but one study from the German Bight indicates that Red-throated Diver is a generalist opportunistic feeder but pelagic schooling fish that have a high energetic value might be favoured (Kleinschmidt et al., 2019)
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. Red-throated Diver typically roost in similar habitats to where they forage, preferring shallow coastal waters, especially sheltered bays, estuaries and nearshore waters (Dierschke et al., 2017). 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 (e.g. via increased energy expenditure travelling to/from roost sites), or reduction in site use; this would ultimately affect the achievement of targets for population trend and/or spatial distribution

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#### A043 Greylag Goose Anser anser

### To restore the Favourable conservation condition of Greylag Goose in The Murrough 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 wild (Icelandic) Greylag Goose wintering in Ireland declined by 21% from 1999 - 2018 (Lewis et al., 2019) as monitored via the Irish Wetland Bird Survey (I-WeBS). During the baseline assessments to inform SPA designation, 300 Greylag Goose were estimated to be using The Murrough SPA (5 year mean peak count for baseline period 1995/96 - 1999/2000; see NPWS, 2013). More recent data showed a population of 197 Greylag Goose used the SPA during the period 2017/18 - 2019/20 (3 year mean of peak counts from Burke et al., 2022). This represents a population decrease of 34% since the baseline period, which is 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 primarily a grazer. Key foraging habitats include marshes, grasslands (particularly wet grasslands) and other wetland habitats, cereal stubble, estuaries, and lakes. Key forage resources are herbaceous plant materials accessible at ground level in terrestrial areas or from the surface of water bodies, including roots (of rushes and sedges, for example), grasses and other leaves, stems, tubers (such as potatoes), and (spilled) grain

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
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

#### A046 Light-bellied Brent Goose Branta bernicla hrota

To restore the Favourable conservation condition of Light-bellied Brent Goose in The Murrough 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 population trend stable or increasing	The national population of wintering Light-bellied Brent Goose in Ireland has increased by 93% from 1994/95 - 2019/20, as monitored via I-WeBS (Kennedy et al., 2022). In a robust statistical analysis of I-WeBS data, Kennedy et al. (2022) determined that the population of Light-bellied Brent Goose that used The Murrough SPA decreased by 56% between winters 1995/96 - 2019/20. This result is contrary to the reported national population trend. In their analyses, Kennedy et al. used indices of the total count of a given species across the entire winter period, providing a more comprehensive assessment of change in the population that used the site, compared to approaches such as a comparison of 5 year mean peak values
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	Light-bellied Brent Goose are mostly found on coastal estuaries during the non-breeding (wintering) period. Light-bellied Brent Goose are grazers and are known for their strong preference for foraging in intertidal areas on eelgrass ( <i>Zostera</i> spp.) (Robinson et al., 2004). When the eelgrass depletes, or where it is unavailable, the geese feed upon green algae (e.g. <i>Enteromorpha</i> spp.) and saltmarsh plants, and subsequently may forage terrestrially in grasslands (including golf courses, parklands, and agricultural grasslands)
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. Light-bellied Brent Goose prefer to roost on the water surface, primarily coastal waters, including estuaries, typically close to land and in calm waters. 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

### A050 Wigeon *Anas penelope*

### To maintain the Favourable conservation condition of Wigeon in The Murrough 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 Wigeon in Ireland has decreased by 18% from 1994/95 - 2019/20, as monitored via I-WeBS (Kennedy et al., 2022). In a robust statistical analysis of I-WeBS data, Kennedy et al. (2022) determined that the population of Wigeon that used The Murrough SPA increased by 5% between winters 1995/96 - 2019/20, suggesting the population is broadly stable. This result is contrary to the reported national population trend. In their analyses, Kennedy et al. used indices of the total count of a given species across the entire winter period, providing a more comprehensive assessment of change in the population that used the site, compared to approaches such as a comparison of 5 year mean peak values
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 dabbling duck feeds primarily on aquatic vegetation, at surface level in waterbodies or at ground level in wetland habitats. Key forage materials include leaves, stems, stolons, roots, rhizomes, and seeds (including cereals). Key wintering habitats are marshes, lagoons, estuaries, coastal bays, lakes, rivers and river floodplains, turloughs and other wetland habitats, as well as pastures

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	Wigeon rely primarily on wetlands or waterbodies for roosting. Roosting is a critical ecological requirement for the wintering population. When roosting, this species typically utilises a similar range of habitats as noted for foraging. 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

### A052 Teal *Anas crecca*

## To maintain the Favourable conservation condition of Teal in The Murrough 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 Teal in Ireland has increased by 19% from 1994/95 - 2019/20, as monitored via I-WeBS (Kennedy et al., 2022). In a robust statistical analysis of I-WeBS data, Kennedy et al. (2022) determined that the population of Teal that used The Murrough SPA increased by 3% between winters 1995/96 - 2019/20, suggesting the population is broadly stable. In their analyses, Kennedy et al. used indices of the total count of a given species across the entire winter period, providing a more comprehensive assessment of change in the population that used the site, compared to approaches such as a comparison of 5 year mean peak values
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	Teal utilise a wide range of foraging habitats and have a broad diet. Key food sources are: small seeds of sedges, grasses and aquatic vegetation; aquatic invertebrates, including larvae, such as molluscs and crustaceans; as well as algae (particularly <i>Enteromorpha</i> spp.) (Johnson et al., 2020). Key habitats include shallow water, between depths of 4cm (dabbling) - 24cm (upending) and can be widespread on wetlands with good cover, such as reedbeds. The species uses a wide variety of shallow areas within wetland habitats, both coastal and inland, including estuaries, lagoons, mudlfats, marshes, floodplains, lakes, ponds, turloughs and agricultural areas
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. When roosting, Teal primarily utilise permanent waterbodies, marsh, wide ditches, wet grassland and wetlands (see foraging habitats). 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

#### A179 Black-headed Gull *Chroicocephalus ridibundus*

### To maintain the Favourable conservation condition of Black-headed Gull in The Murrough 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 waterbird monitoring scheme (I-WeBS) does not comprehensively monitor this species and therefore robust national population estimates and trends cannot be generated (Lewis et al., 2019). During the baseline assessments to inform SPA designation, 997 Black-headed Gull were estimated to be using this SPA (5 year mean of peak counts for baseline period 1995/96 - 1999/2000; see NPWS, 2013). As I-WeBS does not typically cover wintering gull species, there are insufficient data available to provide an updated population estimate or population trend for this species within the SPA
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	Black-headed Gull diet can be both broad and opportunistic, with a general tendency towards natural food sources as opposed to anthropogenic food sources. Food items include both aquatic and terrestrial insects, earthworms and plant material (e.g. seeds) (Burger et al., 2020). Key wintering habitats include both wetlands and surrounding agricultural areas, and the species may also utilise grasslands/green areas in urban areas. This species tends to occur more frequently in coastal habitats but is also common inland

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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. Black-headed Gull rely primarily on wetlands or waterbodies for roosting. Open areas adjacent to such areas may also be important. 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

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#### A184 Herring Gull *Larus argentatus*

### To maintain the Favourable conservation condition of Herring Gull in The Murrough 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 waterbird monitoring scheme (I-WeBS) does not comprehensively monitor this species and therefore robust national population estimates and trends cannot be generated (Lewis et al., 2019). During the baseline assessments to inform SPA designation, 506 Herring Gull were estimated to be using The Murrough SPA (5 year mean peak count for baseline period 1995/96 - 1999/2000; see NPWS, 2013). There is insufficient data available to provide an updated population estimate or population trend for this species within the SPA
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	During the non-breeding season, Herring Gull are widely distributed in Ireland and utilise a broad range of habitat types across marine, freshwater and terrestrial environments, from coastal waters (mainly in the littoral and shallow sub-littoral zone) to inland waterbodies, farmland and a range of human-altered habitats. The species is omnivorous and employs a mix of foraging strategies, including predation, scavenging and kleptoparasitism. When foraging, the species can target a range of sources in both marine and terrestrial areas, including natural (e.g. fish, crustaceans, earthworms) and anthropogenic (e.g. refuse in urban areas). During the non-breeding season, the species typically forages within 100km of roost sites (Clark et al., 2016)
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. Similar to foraging habitat preferences, Herring Gull can use a variety of roosting habitats across marine, terrestrial and freshwater environments, including a mixture of anthropogenically modified and natural habitats, e.g. coastal waters, lakes, islands, wetlands, parks, pitches and farmland. 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

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### A195 Little Tern *Sterna albifrons*

### To maintain the Favourable conservation condition of Little Tern in The Murrough 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	In 1985, the Irish Wildbird Conservancy (now BirdWatch Ireland) initiated a part-time nest protection scheme for the site's Little Tern colony. By 1988, a more intensive and annual wardening programme was underway, funded by NPWS (O'Briain and Farrelly, 1989). In 1984 and 1987 the colony size was estimated to be 15 and 25 pairs respectively. This population increased to 32 pairs in 1995 and 40 pairs in 2001 (Hannon et al., 1997, Mitchell et al., 2004). By 2016 the colony was estimated to be 143 pairs (Burnell et al., 2023). Since 2021, further sustained growth has continued with 216, 245, 220 and 274 pairs recorded each year between 2021 and 2024 respectively (Johnson et al., 2023; NPWS internal files). During the mid- 1980s this SPA made up 8% of the national Little Tern population. By 2016, it equated to 43% which reinforces its status as Ireland's most important Little Tern colony
Productivity rate	Number of fledged young per AON	Sufficient to maintain a stable or increasing population	A productivity rate of 0.7 chicks per pair is required for population stability for Little Tern according to an analysis of seabird population by Cook and Robinson (2010). Productivity is monitored at this SPA as part of the conservation project. In 2023, the productivity rate was 1.5 and since 2010 the productivity has been above 1.0 for most years, which is well above the output needed to maintain the population (Johnson et al., 2023)
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. This will affect the spatio-temporal patterns of use of the habitats by Little Tern. Little Tern in this SPA nest on a 400m stretch of shingle beach on the northern section of the SPA (Johnson et al., 2023). Most nesting attempts are concentrated in this area but a smaller subcolony is sometimes established to the south, near a bridge and channel known as "the Breaches". The structure of the shingle is subject to intermittent changes during spring tides and adverse weather (Johnson et al., 2023). In recent years an artificial beach was created in the brackish lagoon to the west of the site. A single pair of Little Tern nested at this new subcolony in 2023 and two pairs nested here in 2024 (Johnson et al., 2023; NPWS internal files)

Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Feeding studies are frequently conducted as part of the conservation project within this SPA. Sandeels ( <i>Ammodytes</i> spp.) accounted for 51% of prey items for chicks in 2022, while Clupeids (likely Sprat ( <i>Sprattus sprattus</i> ) or Herring) accounted for 25% of prey items (Johnson et al., 2022). While marine based prey items such as sandeels and Clupeids are important for Little Tern they also feed in the brackish waters close to the colony. Common Goby ( <i>Pomatoschistus microps</i> ) can be a large part of the diet of Little Tern chicks even a few days old (Phalan, 2000). Based on two studies on a single colony Woodward et al. (2019) summarises the mean foraging range and the mean-maximum foraging range as 3.5 and 5km, respectively. This is supported by a boat-based tracking study of foraging Little Tern breeding in this SPA conducted in 2021 (Power et al., 2022), during which the average distance a Little Tern travelled offshore was 0.8km with a maximum of 4.1km
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 breeding colony can result in a reduction of overall productivity and even lead to the abandonment of the breeding colony. The impact of any significant disturbance 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. Human disturbance can impact on breeding success as colonies are often sited on beaches used by the public (Ratcliffe et al., 2008). The ongoing conservation project limits this pressure on the colony
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	The Little Tern has the smallest foraging range of seabirds breeding in Ireland (Woodward et al., 2019). A boat-based tracking study of foraging Little Tern breeding in this SPA conducted in 2021 (Power et al., 2022) showed that the average distance a Little Tern travelled offshore was 0.8km and that 24% of all foraging events took place within 200m of the colony. Therefore, the waters ecologically connected to the colony provide an important foraging area for this species. Although Little Tern typically site their colonies up from the lower foreshore, this area can be important for Little Tern at this SPA. The majority of adult Little Tern roost along the foreshore in this colony (Johnson et al., 2023). Additionally, older Little Tern chicks tend to aggregate near the water's edge once they have left the nest (Johnson et al., 2023). Exposure to both foreshore and water-based recreational activities may disrupt roosting and foraging birds associated with the colony
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	Seabirds, particularly during the breeding season, require regular and efficient access to marine waters ecologically connected to the colony in order to forage as well as to engage in other maintenance behaviours. Based on two studies on a single colony Woodward et al. (2019) summarises the mean foraging range and the mean-maximum foraging range as 3.5 and 5km respectively. This is supported by a boat-based tracking study of foraging Little Tern breeding in this SPA conducted in 2021 (Power et al., 2022). During this tracking study the average distance a Little Tern travelled offshore was 0.8km with a maximum of 4.1km

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### A999 Wetlands

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To maintain the Favourable conservation condition of Wetland habitats in The Murrough 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





The Murrough SPA 004186



Map version 1 Date: May 2024



### Legend



The Murrough SPA 004186

The Murrough Wetlands SAC 002249 Wicklow Reef SAC 002274



Map version 1 Date: May 2024