European Site Conservation Objectives: supplementary advice on conserving and restoring site features

Rutland Water Special Protection Area (SPA)
Site code: UK9008051

View from the recently created Hambleton peninsula to Empingham Church during 1975/76, when Rutland Water was being filled with water for the first time

Publication date: 28 March 2018

1. About this document

This document provides Natural England's supplementary advice for the European Site Conservation Objectives relating to Rutland Water SPA. This advice should therefore be read together with the SPA Conservation Objectives.

You should use the Conservation Objectives, this Supplementary Advice and any case-specific advice given by Natural England, when developing, proposing or assessing an activity, plan or project that may affect this site.

This Supplementary Advice to the Conservation Objectives presents attributes which are ecological characteristics of the designated species and habitats within a site. The listed attributes are considered to be those that best describe the site's ecological integrity and which, if safeguarded, will enable achievement of the Conservation Objectives. Each attribute has a target which is either quantified or qualitative depending on the available evidence. The target identifies as far as possible the desired state to be achieved for the attribute.

The tables provided below bring together the findings of the best available scientific evidence relating to the site's qualifying features, which may be updated or supplemented in further publications from Natural England and other sources. The local evidence used in preparing this supplementary advice has been cited. The references to the national evidence used are available on request. Where evidence and references have not been indicated, Natural England has applied ecological knowledge and expert judgement. You may decide to use other additional sources of information.

In many cases, the attribute targets shown in the tables indicate whether the current objective is to 'maintain' or 'restore' the attribute. This is based on the best available information, including that gathered during monitoring of the feature's current condition. As new information on feature condition becomes available, this will be added so that the advice remains up to date.

The targets given for each attribute do not represent thresholds to assess the significance of any given impact in Habitats Regulations Assessments. You will need to assess this on a case-by-case basis using the most current information available.

Some, but not all, of these attributes can also be used for regular monitoring of the actual condition of the designated features. The attributes selected for monitoring the features, and the standards used to assess their condition, are listed in separate monitoring documents, which will be available from Natural England.

These tables do not give advice about SSSI features or other legally protected species which may also be present within the European Site.

If you have any comments or queries about this Supplementary Advice document please contact your local Natural England adviser or email HDIRConservationObjectivesNE@naturalengland.org.uk

2. About this site

2.1 European Site information

Name of European Site	Rutland Water Special Protection Area (SPA)
Location	Rutland
Site Maps	The designated boundary of this site can be viewed on the **MAGIC** website
Date Notified	4 October 1991
Date Registered	30 January 1996
Qualifying Features	See section below
Designation Area	1,540 ha
Designation Changes	N/A
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Rutland Water SSSI is entirely coincident with, and underpins, the European Site
Relationship with other European or International Site designations	Rutland Water Ramsar site covers an area of 1,360.34 ha and is entirely overlapped by Rutland Water SPA and SSSI. The Ramsar site only includes the areas of open water in the eastern section of the site outside the Nature Reserve area. Within the Nature Reserve, the Ramsar site boundary follows the SSSI and SPA boundary with the exception of Lax Hill and some woodland parcels.

2.2 Site background and geography

Rutland Water SPA is a large public water supply reservoir created in 1975 and located within the county of Rutland in the central lowlands of England. The reservoir is by area the largest water body in England and by capacity, the second largest. Since 1975, it has developed into a major wetland of international importance for waterbirds which are attracted to the large expanses of open water, lagoons, islands, mudflats, reedswamp, marsh, old meadows, pastures, scrub and mature woodland.

The site is located within the Leicestershire and Nottinghamshire Wolds National Character Area (NCA) where the reservoir forms is a significant feature in this rural, open, mixed farmland landscape of undulating hills and steep-sided valleys. The area is skirted by four main truck roads, A606, A6121, A6003 and A1, and there are two moderately sized market towns (Oakham in the west and Stamford in the east) which are the main cultural and economic centres.

The underlying geology is formed of gently dipping Jurassic rocks of limestone, sandstone and ironstone overlain by glacial tills which gives rise to moderately fertile soils composed of loams and clays. As a result, arable farming tends to dominate the plateaux tops while the steep sloping valley sides support more pasture. The prevalence of clays in the Gwash valley helped provide material for the construction of the dam which created Rutland Water.

Rutland Water SPA is also a popular tourist destination as the reservoir is an important venue for water sports, sailing and recreational angling, as well as being very popular with cyclists and walkers. Over 45% of the site is managed by the Leicestershire & Rutland Wildlife Trust and Anglian Water as a nature reserve.

Consented changes to the water abstraction regime at Rutland Water have resulted in the provision of new wetland habitats for water birds. Most of this provision is within the existing boundary of the SPA but a proportion of the provision (lagoons 4, 5 and 7) is also provided outside of the SPA boundary (i.e. Habitats Regulations compensation). All these areas are being positively managed for water birds and will provide alternative habitats to off-set the negative impacts on the non-breeding water bird assemblage when the new water abstraction regime is implemented.

It is Government policy to treat land identified, or required, as compensatory measures for adverse effects on European sites as though it forms part of a European Site. These areas will therefore need to be considered when determining likely significant effects of a plan or project. **This supplementary advice on conservation objectives therefore take into account and includes these additional compensatory areas which currently adjoin the SPA.**

3. About the qualifying features of the SPA

The following section gives you additional, site-specific information about this SPA's qualifying features. These are the individual species of wild birds listed on Annex I of the European Wild Birds Directive, and/or the individual regularly-occurring migratory species, and/or the assemblages (groups of different species occurring together) of wild birds for which the SPA was classified for.

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

Not applicable.

3.2 Qualifying individual species not listed in Annex I of the Wild Birds Directive (Article 4.2)

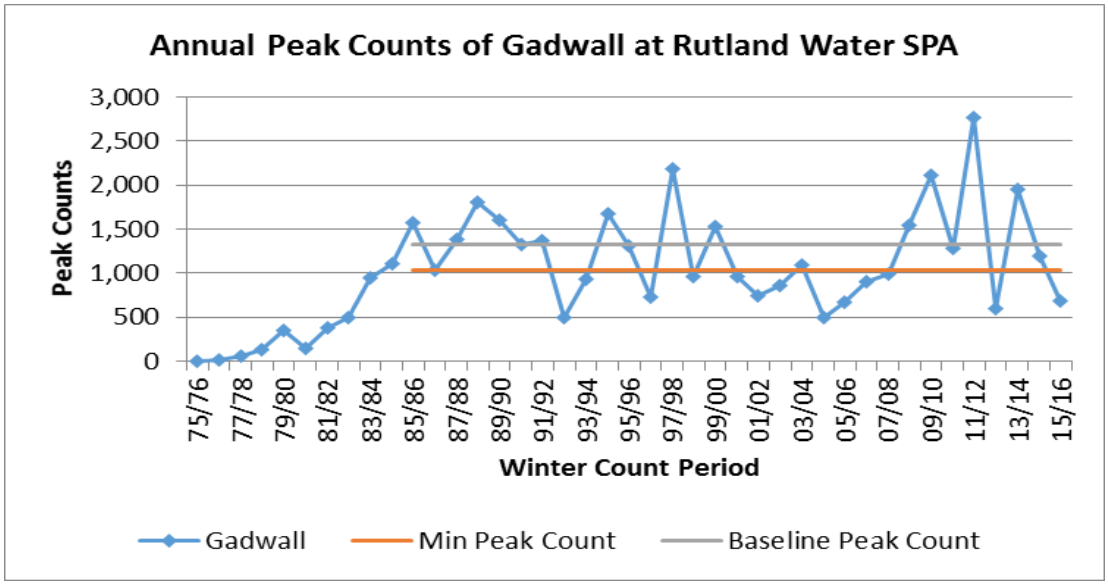
During the non-breeding season the SPA regularly supports the following species:

3.2.1 Gadwall *Anas strepera*

Gadwall are present within the SPA throughout the year and the site supports both breeding and non-breeding populations. However, it is during the passage and winter periods when migrant gadwall visit the site in internationally important numbers. Migrants start to arrive in June and build up in July and August with peak numbers recorded during September to November. During December to February, the numbers of migrants decline but significant numbers still remain within the SPA. The lowest numbers of gadwall are generally recorded during March, April and May.

When the SPA was designated in 1991, there was a baseline population of 1,320 individuals based on the 5-yr mean peak count recorded between 1985/86 and 1989/90. This equated to at least 11% of the NW European flyway population and 22% of the British population. Within this period, a minimum peak count of 1,031 birds was recorded in 1986/87 which sets the monitoring target for determining favourable condition of the SSSI under Common Standards Monitoring (CSM) protocols (Natural England 2016 - Definitions of Favourable Condition for Rutland Water SSSI). This monitoring target allows for natural fluctuations around the baseline. However, favourable conservation status of the SPA requires the baseline population to be maintained which is based on the mean peak count over a 5-year period.

Since notification, the annual peak counts of non-breeding gadwall have fluctuated widely from winter to winter (see graph below), and have fallen below the minimum population threshold on 13 out of 25 winters from 1991/92 to 2015/16. In comparison, the baseline non-breeding population as measured by the 5-yr mean peak count has fallen below the notification baseline on 3 out of 5 occasions during this period. However, the non-breeding population is not showing signs of a long term decline, with peak counts showing a stable but quite widely fluctuating pattern from year to year.



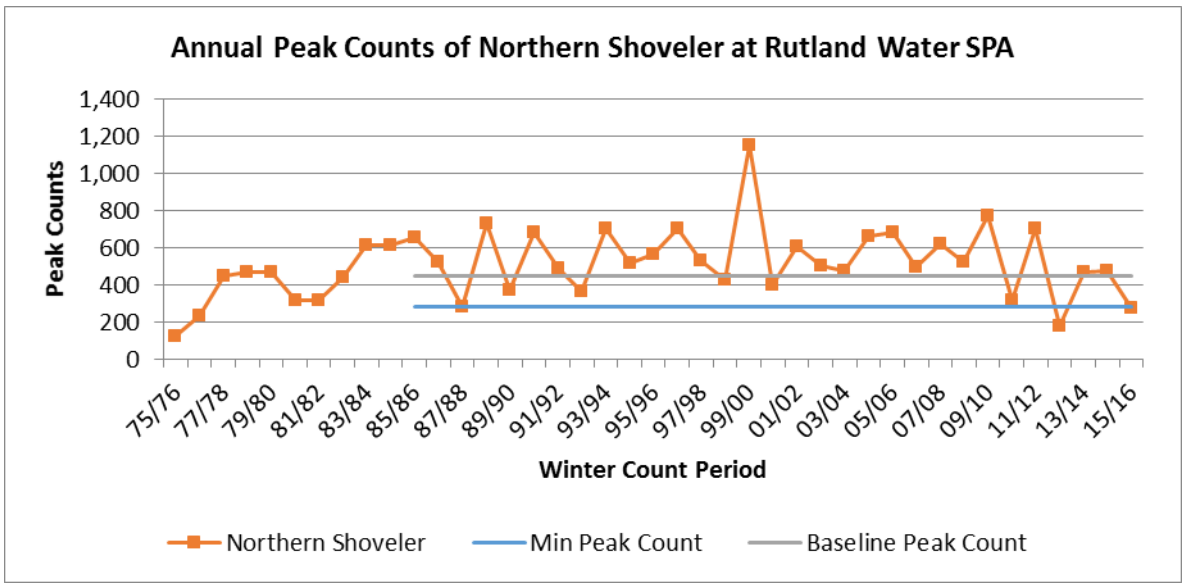
In the winter, up to 95% of the gadwall's diet is made up of submerged aquatic vegetation such as algae, grasses, rushes, sedges, pondweed, and water milfoil, including leaves, stems, roots, and seeds, which this dabbling duck feeds on by up-ending, head-bobbing and by stealing from other birds such as coots. As a result, gadwall favour expanses of shallower water, rich in submerged macrophytes, where there is little or no human disturbance.

At Rutland Water, this favoured aquatic habitat is widespread but is mainly concentrated in the more secluded western inflow areas in the north and south arms and in the associated lagoons, both within and outside of the SPA.

3.2.2 Northern Shoveler *Anas clypeata*

Northern shoveler are present within the SPA throughout the year and the site supports both breeding and non-breeding populations. However, it is during the passage and winter periods when migrants northern shoveler visit the site in internationally important numbers. The numbers of migrants begin to build up in August and achieve peak numbers during September to November. From December, numbers can decline quite markedly through to March depending on conditions, but may pick up a little in April due to some spring passage. The lowest numbers are recorded mainly during May to July.

When the SPA was designated in 1991, there was a baseline population of 450 individuals based on the 5-yr mean peak count recorded between 1985/86 and 1989/90. This equated to at least 1% of the NW European flyway population and 5% of the British population. Within this period, a minimum annual peak count of 285 birds was recorded in 1987/88 which sets the monitoring target for determining favourable condition of the SSSI under Common Standards Monitoring (CSM) protocols (Natural England 2016. Definitions of Favourable Condition for Rutland Water SSSI). This monitoring target allows for natural fluctuations around the baseline. However, favourable conservation status of the SPA requires the baseline population to be maintained which is based on the mean peak count over a 5-year period.



Since notification, the annual peak counts of non-breeding northern shoveler have fluctuated from winter to winter, but they have only fallen below the minimum population threshold during 1 of the 25 winters between 1991/92 and 2015/16 (see graph below). This pattern is also reflected in the 5-yr mean peak counts where only 1 of 5 mean peak counts fell below the baseline non-breeding population recorded at notification. Overall, the non-breeding population has shown a stable trend since notification. However, in recent years there are signs that the non-breeding population may be declining but at present the longer term population trends are uncertain.

Northern shoveler prefer shallow, muddy-bottomed wetlands that are rich in invertebrate life and which are associated with lowland marshes and open water-bodies. Such habitats are widespread at Rutland Water but the localised concentrations of non-breeding shoveler reflect the most extensive areas of these habitats within the SPA. These include Burley Fishponds, Heron Bay, Manton Bay, Lagoons 1, 2 and 3, as well as the adjacent areas of shallow water in the North and South Arms.

They are specialised feeders which dabble and sift water for seeds of sedges, rushes, pondweeds, algae and duckweeds, as well as aquatic insects, molluscs and crustaceans. They do this by using their elongated, spoon-shaped bills which have about 110 fine projections called lamellae along the edges. These features are specifically adapted for straining food from the water which is taken in at the tip and jetted out at the base.

3.3 Qualifying assemblage of species (Article 4.2)

From the period July to April each year, the SPA regularly supports a waterbird assemblage where peak counts of more than 20,000 waterbirds are achieved.

The species composition of an assemblage may change over time but the following 10 species are listed in the SPA citation as named components of this waterbird assemblage leading up to the time of the SPA's classification:

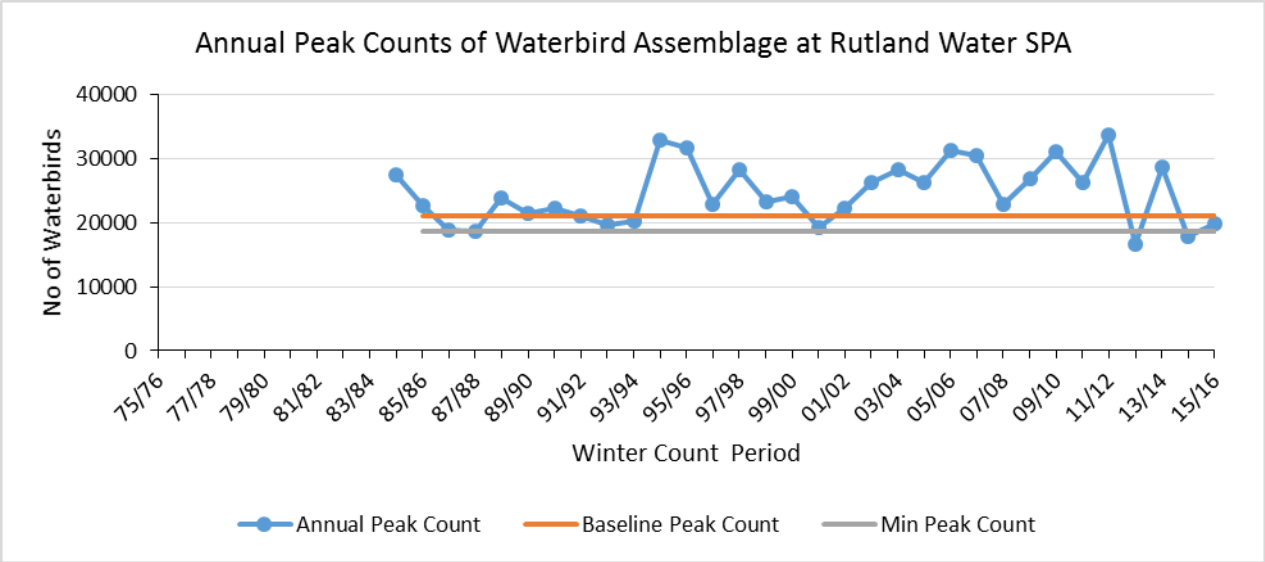
Waterbird Species
Gadwall *Anas strepera*
Shoveler *Anas clypeata*
Coot *Fulica atra*
Goldeneye *Bucephala clangula*
Goosander *Mergus merganser*
Great-crested grebe *Podiceps cristatus*
Mute swan *Cygnus olor*
Teal *Anas crecca*
Tufted duck *Aythya fuligula*
Wigeon *Anas penelope*

The site's ability to support and sustain an assemblage comprising a very large number of birds (in excess of 20,000) made up of a diverse mix of species will be reliant on the overall quality and diversity of the habitats that support them. Four broad supporting habitats are important for sustaining the waterbird assemblage and its component species through the provision of food, shelter and refuge from human disturbance. These habitats are therefore important for the maintenance of favourable conservation status of the waterbird assemblage. The broad habitats are:

- Open standing water associated with the main reservoir and other adjacent waterbodies
- Neutral grassland
- Fen, marsh and swamp associated with the open water
- Broadleaved, mixed and yew woodland, including wet woodland

The waterbird assemblage is present within the SPA throughout the year and includes both breeding and non-breeding waterbird populations. However, the SPA is most important during the passage and winter periods when migrants visit the site in internationally important numbers. Numbers of migrants start to build up mainly in July and each waterbird species can achieve peak numbers at any time between September and January. However, individual waterbird species do not synchronously achieve peak

numbers in the same month and the size of peak counts can vary from year to year between and within species. This should be taken into account when assessing likely significant effects on the waterbird assemblage. This is because some species are more prevalent during the passage periods while others are more common during the winter period but this can vary depending on specific and general factors, both within and outside the site.



When the SPA was designated in 1991, the baseline waterbird assemblage cited in the citation was 21,050 waterbirds based on the 5-yr mean peak count recorded between 1985/86 and 1989/90. Within this period, a minimum peak monthly waterbird assemblage count of 18,560 waterbirds was recorded in 1987/88. This sets the monitoring target for determining favourable condition of the SSSI under Common Standards Monitoring (CSM) protocols (Natural England 2016. Definitions of Favourable Condition for Rutland Water SSSI). This monitoring target allows for natural fluctuations around the baseline. However, favourable conservation status of the SPA requires a baseline assemblage size to be maintained which is based on the mean peak count over a 5-year period.

All habitats within the SPA are utilised by the non-breeding waterbird assemblage. These range from the areas of shallow open water and adjacent wetlands which are favoured by gadwall, shoveler, teal and mute swan. The grassland is favoured by wigeon while the deeper open water is favoured by goldeneye, goosander, tufted duck, coot and great-crested grebe. The most important areas for waterbirds are found at the far western ends of the upper and lower arms of the reservoir where there are also a number of associated lagoons. These also provide important loafing and roosting areas during times when the majority of the deeper open water in the eastern end of the reservoir is used for water sports, fishing and other recreational activities.

4 Site-specific seasonality of SPA features

The table below highlights in grey those months in which significant numbers of each mobile qualifying feature are most likely to be present at the SPA during a typical calendar year. This table is provided as a general guide only.

Unless otherwise indicated, the months shown below are primarily based on information relating to the general months of occurrence of the feature in the UK. Where site-based evidence is available and has been used to indicate below that significant numbers of the feature are typically present at this SPA outside of the general period, the site-specific references have been added to indicate this.

Applicants considering projects and plans scheduled in the periods highlighted in grey would benefit from early consultation with Natural England given the greater scope for there to be likely significant effects that require consideration of mitigation to minimise impacts to qualifying bird features during the principal periods of site usage by those features. The months which are *not* highlighted in grey are not ones in which the features are necessarily absent, rather that features may be present in less significant numbers in typical years. Furthermore, in any given year, features may occur in significant numbers in months in which typically they do not. Thus, applicants should not conclude that projects or plans scheduled in months not highlighted in grey cannot have a significant effect on the features. There may be a lower likelihood of significant effects in those months which nonetheless will also require prior consideration.

Any assessment of potential impacts on the features must be based on up-to-date count data and take account of population trends evident from these data and any other available information. Additional site-based surveys may be required. Non-breeding water bird monthly maxima data gathered for this site through the Wetland Bird Survey ('WeBS') may be available upon request from the British Trust for Ornithology.

Feature	Season	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Site-specific references where available
Gadwall	Non-breeding	Winter and Passage													Includes analysis of data from SPA's WeBS Counts up to 2016 (available from BTO)
Northern Shoveler	Non-breeding	Winter and Passage													Includes analysis of data from SPA's WeBS Counts up to 2016 (available from BTO)
Assemblage of >20,000 non-breeding waterbirds	Non-breeding	Winter and Passage													Includes analysis of data from SPA's WeBS Counts up to 2016 (available from BTO)

Guide to terms:
Breeding – present on a site during the normal breeding period for that species
Non-breeding - present on a site outside of the normal breeding period for that species (includes passage and winter periods).
Summer – the period generally from April to July inclusive
Passage - the periods during the autumn and spring when migratory birds are moving between breeding areas and wintering areas. These periods are not strictly defined but generally include the months of July – October inclusive (autumn passage) and March – April inclusive (spring passage).
Winter - the period generally from November to February inclusive.

Table 1: Supplementary Advice for Qualifying Features

Attribute	SPA Feature	Target	Sources of site-based evidence (where available)
Population: Abundance	Non-breeding Gadwall	Maintain the size of the non-breeding Gadwall population at a level which is consistently at or above 1,320 individuals, whilst avoiding deterioration from current levels, as indicated by the latest 5-year mean peak count or equivalent.	Rutland Water SPA citation, July 1991.
	Non-breeding Northern Shoveler	Maintain the size of the non-breeding Northern Shoveler population at a level that is consistently at or above 450 individuals, whilst avoiding deterioration from its current level as indicated by the latest 5-year mean peak count or equivalent.	Rutland Water SPA citation, July 1991.
	Non-breeding Waterbird Assemblage	Maintain the overall abundance of the non-breeding waterbird assemblage at a level which is consistently at or above 21,050 waterbirds whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	Rutland Water SPA citation, July 1991.
Population: Species diversity	Non-breeding Waterbird Assemblage	Maintain the diversity of main component species comprising the non-breeding waterbird assemblage at not less than 10 species of waterbird.	BTO WeBS data. Local WeBS counts held by the Leicestershire and Rutland Wildlife Trust.
Supporting habitat: Extent and distribution	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Maintain the extent and distribution of suitable habitats for the features during passage and winter periods. Habitat extent baselines are provided below as a percentage of the component area of the SPA: • Open water – 76% • Neutral grassland – 14% • Fen, marsh swamp – 0.01% • Broadleaved, mixed and yew woodland – 8%	NATURAL ENGLAND, 2016. Definitions of Favourable Condition for designated features of interest, Rutland Water SSSI, Final version, February 2016. Unpublished report, Natural England, York
Supporting habitat: Conservation measures	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Maintain management or other measures necessary to maintain the structure, quality, function and/or the supporting processes associated with the features and their supporting habitats during passage and winter periods.	NATURAL ENGLAND, 2014. Site Improvement Plan: Rutland Water (SIP208) ENGLISH NATURE, 2005. Views about the management of Rutland Water SSSI.

Attribute	SPA Feature	Target	Sources of site-based evidence (where available)
Supporting habitat: Water quality/ quantity	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Where the supporting habitats of the SPA feature are dependent on surface water, ensure water quality and quantity is maintained and managed to a standard which provides the necessary conditions to support the features during passage and winter periods.	No specific site data held.
Supporting habitat: Air quality	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Maintain concentrations and deposition of air pollutants at or below the site-relevant Critical Load or Level values given for the feature at this site on the Air Pollution Information System.	More information about site-relevant Critical Loads and Levels for this SPA is available by using the 'search by site' tool on the Air Pollution Information System.
Supporting habitat: Anthropomorphic disturbance	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Manage the frequency, duration and intensity of human related disturbance affecting areas used by the feature for moulting, loafing, feeding and roosting, so that the overall population of the feature is not significantly affected	Local WeBS counts held by the Leicestershire and Rutland Wildlife Trust.
Supporting habitat: Connectivity	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Maintain the safe passage of the features moving between roosting and feeding areas during the non-breeding period.	No specific site data held.
Supporting habitat: Adaptation and resilience	Non-breeding Gadwall Non-breeding Northern Shoveler Non-breeding Waterbird Assemblage	Maintain the feature's ability, and that of its supporting habitats, to adapt or evolve to wider environmental change, either within or external to the site	NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments (NBCCVAs) for SACs and SPAs in England [Available at http://publications.naturalengland.org.uk/publication/4954594591375360
Supporting habitat: Water depth	Non-breeding Gadwall	Maintain the availability of standing water of optimal depth, typically <0.25 m deep, in Burley Fishponds, Heron Bay, Manton Bay, Lagoons 1 to 8, as well as the adjacent areas of shallow water in the North and South Arms.	No specific site data held.

Attribute	SPA Feature	Target	Sources of site-based evidence (where available)
	Non-breeding Northern Shoveler	Maintain the availability of standing water at optimal depth, typically <0.3 m deep, at Burley Fishponds, Heron Bay, Manton Bay, Lagoons 1 to 8, as well as the adjacent areas of shallow water in the North and South Arms.	No specific site data held.
Supporting habitat: Food availability	Non-breeding Gadwall	Maintain a high cover/abundance of the food plants preferred by the feature (e.g. *Glyceria fluitans, Agrostis stolonifera, Chara, Potomageton, Ceratophyllum* spp., *Ruppia*).	No specific site data held.
	Non-breeding Northern Shoveler	Maintain a high cover/abundance of food plants preferred by the feature (e.g. rushes *Scirpus, Eleocharis*, sedges *Carex*, pondweeds *Potamogeton*, sweet-grasses *Glyceria*, surface plankton).	No specific site data held.
	Non-breeding Northern Shoveler	Maintain the distribution, abundance and availability of key prey items (e.g. Hydrobia, crustaceans, caddisflies, diptera, beetles) at preferred prey sizes for the feature.	No specific site data held.

Table 2: Supporting and explanatory notes

Attribute	Supporting and Explanatory Notes
Population: Abundance (individual species)	Monitoring of this attribute will assess if the site's populations are being sustained and its contribution to a viable local, national and bio-geographic population. Due to the mobility of birds and the dynamic nature of population change, the target-value given for the abundance of the features is considered to be the minimum standard for conservation / restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's abundance has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period. The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature. Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current abundance of the site's populations, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is classified, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account. Maintaining or restoring bird abundance depends on the suitability of the site. However, factors affecting suitability can also determine other demographic rates of birds using the site including survival (dependent on factors such as body condition which influences the ability to breed or make foraging and/or migration movements) and breeding productivity. Adverse anthropogenic impacts on either of these rates may precede changes in population abundance (e.g. by changing proportions of birds of different ages) but eventually may negatively affect abundance. These rates can be measured/estimated to inform judgements of likely impacts on abundance targets. Unless otherwise stated, the population size will be that measured using standard methods such as peak mean counts or breeding surveys. At the time of classification of the SPA the baseline non-breeding population was based on the 5-yr mean peak count between 1985/86 and 1989/90.This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise on whether the figures stated are the best available.
Population: Abundance (assemblage)	Monitoring of this attribute will assess if the assemblage is being sustained and its contribution to viable local, national and bio-geographic populations of its component species. Assemblage abundance is the annual sum of peak counts of each assemblage component species (at any time of year, though peaks tend to occur in the non-breeding season), unless otherwise stated. Five year peak means are the average of these annual peak sums for the relevant period. An assemblage component is any waterbird using the site. This abundance-objective is based on the 5-yr mean peak counts recorded between 1985/86 and 1989/90. Due to the dynamic nature of assemblage component populations, this target may be subject to periodic review. However, the target assemblage abundance is considered to be the minimum standard for conservation or restoration measures and therefore where at any time the assemblage abundance is greater than the target value given, any measure or impact assessment should take account of the greater abundance. This meets with the obligation to avoid deterioration of a European site or significant disturbance of the species for which the site is classified, and seeks to

Attribute	Supporting and Explanatory Notes
	avoid plans or projects giving rise to the risk of such deterioration or disturbance. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account. Whether to maintain or restore depends on the overall assemblage abundance (i.e. the peak mean derived from the summed peak counts of components), and should only change in response to this value, excepting natural change. Fluctuations of individual assemblage component species alone should not necessarily change the target. Assemblage abundance is linked to the demographic rates of assemblage components, including survival (dependent on factors such as body condition which influences the ability to breed or make foraging and / or migration movements) and breeding productivity. Adverse anthropogenic impacts on either of these rates may precede changes in population abundance (e.g. by changing proportions of birds of different ages) but eventually may negatively affect abundance. These rates can be measured / estimated (particularly for the main or named components) to inform judgements of likely changes to the assemblage and associated impacts on abundance targets. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise on whether the figures stated are the best available. NB Many SPA citations omitted gulls and terns from their assemblage totals. Assessments of abundance should be consistent with the waterbirds included in citation calculations (often limited to waders and wildfowl).
Population: Assemblage diversity	Monitoring of this attribute will assess if the bird assemblage reflects the diversity of species the SPA supports. Assemblage diversity is a product of species richness (the number of different species present), abundance (population size of each assemblage component species) and relative 'importance' (an assessment of the conservation status of each assemblage component, described below). Each component makes a different contribution to the diversity of the assemblage, and changes to some components may be considered to affect diversity more than others. Negative changes to small numbers of relatively important assemblage components may have a similar overall effect to negative changes in larger numbers of less important components. To meet the target, the populations of each of the 'main component' assemblage species to be maintained or restored are i) those present in nationally important numbers (≥1% GB population); ii) migratory species present in internationally important numbers (≥1% biogeographic population); iii) those species comprising ≥2,000 individuals (≥10% of the minimum qualifying threshold for an internationally-important assemblage); and iv) 'named components' otherwise listed on the SPA citation. In addition to the main components, other components should be considered as these contribute collectively to the assemblage diversity, in particular proportionally abundant populations of species of conservation importance. Examples are those 'red-listed' as Birds of Conservation Concern and/or those listed on Sections 41/42 of the Natural Environment and Rural Communities Act 2006. The species composition of an assemblage may change over time. However, to meet this target, the total number of all native waterbird species contributing to the assemblage species richness should not decline significantly.
Supporting habitat: Extent and distribution	Conserving or restoring the extent of supporting habitats and their range will be key to maintaining the site's ability and capacity to support the SPA population. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending to the nature, age and accuracy of data collection. This target may apply to supporting habitat which also lies outside the site. Habitat extent baselines are provided as percentages as calculations of site area varies between Geographic Information Systems, and these systems vary over time.

Attribute	Supporting and Explanatory Notes
Supporting habitat: Conservation measures	Active and ongoing conservation management is often needed to protect, maintain or restore the feature/s at this site. Other measures may also be required, and in some cases, these measures may apply to areas outside of the designated site boundary in order to achieve this target. Further details about the necessary conservation measures for this site will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.
Supporting habitat: Water quality / quantity	For many SPA features which are dependent on wetland habitats supported by surface water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year during key stages of their life cycle. Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of breeding, rearing, feeding and roosting habitats. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the SPA Conservation Objectives but in some cases more stringent standards may be needed to support the SPA feature. Further site-specific investigations may be required to establish appropriate standards for the SPA.
Supporting habitat: Air quality	The structure and function of habitats which support this SPA feature may be sensitive to changes in air quality. Critical Loads and Levels are thresholds below which such harmful effects on sensitive UK habitats will not occur to a noteworthy level, according to current levels of scientific understanding. There are critical levels for ammonia (NH3), oxides of nitrogen (NOx) and sulphur dioxide (SO2), and critical loads for nutrient nitrogen deposition and acid deposition. Exceeding critical values for air pollutants may result in changes to the chemical status of its habitat substrate, accelerating or damaging plant growth, altering vegetation structure and composition and thereby affecting the quality and availability of nesting, feeding or roosting habitats. However, there are no Critical Loads assigned to the meso/eutrophic systems which are present at Rutland Water. These systems are not P limited or N/P co-limited at this site and air pollution impacts may be masked by other sources of N, i.e. discharges to water, diffuse agricultural pollution etc. There are also currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis. Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development.
Supporting habitat: Anthropomorphic disturbance	The nature, scale, timing and duration of some human activities can result in the disturbance of birds at a level that may substantially affect their behaviour, and consequently affect the long-term viability of the population. Such disturbing effects can for example result in changes to feeding or roosting behaviour, increases in energy expenditure due to increased flight, and desertion of supporting habitat (both within or outside the designated site boundary where appropriate). This may undermine successful feeding and/or roosting, and/or may reduce the availability of suitable habitat as birds are displaced and their distribution within the site contracts. Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling, presence of people, animals and structures.
Supporting habitat: Connectivity	The ability of the feature to safely and successfully move to and from feeding and roosting areas is critical to their breeding success and to the adult fitness and survival. This target will apply within the site boundary and where birds regularly move to and from off-site habitat.

Attribute	Supporting and Explanatory Notes
Supporting habitat: Adaptation and resilience	This attribute recognises the increasing likelihood of natural habitat features absorbing or adapting to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability. The overall vulnerability of this particular SPA to climate change has been assessed by Natural England as being low (Natural England, 2015) taking into account the sensitivity, fragmentation, topography and management of its supporting habitats. Individual species may be more or less vulnerable than their supporting habitat itself. In many cases, change will be inevitable so appropriate monitoring would be required.
Supporting habitat: Water depth	The feature is known to require extensive areas of water in which to feed. As a result, the depth of water at critical times of year is paramount for successful feeding and therefore their fitness and survival.
Supporting habitat: Food availability	The availability of an abundant food supply is critically important for adult fitness and survival and the overall sustainability of the population. As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of food plants may adversely affect the population.

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Variations from national feature-framework of integrity-guidance: N/A