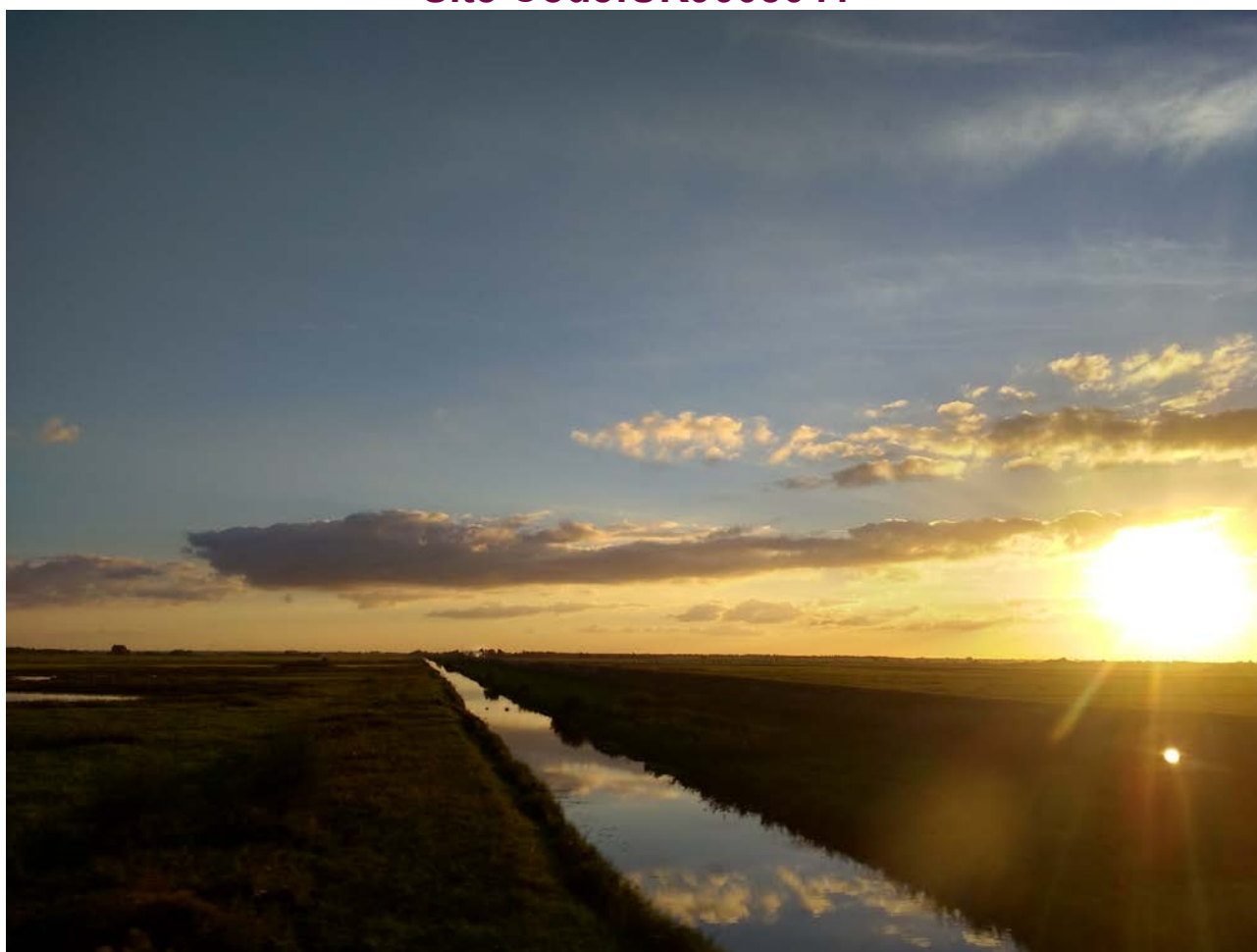




## **European Site Conservation Objectives: Supplementary Advice on conserving and restoring site features**

**Ouse Washes Special Protection Area (SPA)  
Site Code:UK9008041**



Justin Tilley (Natural England) – 'Ouse Washes from the train'

**Date of publication:** 23 March 2019

## **About this document**

This document provides Natural England's supplementary advice for the European Site Conservation Objectives relating to Ouse Washes SPA. This advice should therefore be read together with the section on the SPA Conservation Objectives found [here](#).

Where this site overlaps with other European Site(s), you should also refer to the separate European Site Conservation Objectives and Supplementary Advice provided for those sites.

**This advice replaces a draft version dated January 2019 following the receipt of comments from the site's stakeholders.**

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**

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## About this site

### European Site information

<b>Name of European Site</b>	Ouse Washes Special Protection Area
<b>Location</b>	Cambridgeshire; Norfolk
<b>EU Site Code</b>	UK9008041
<b>Designation Date</b>	5 March 1993
<b>Qualifying Features</b>	See SPA Conservation Objectives section
<b>Designation Area</b>	The designated boundary of this site can be viewed <a href="#">here</a> on the MAGIC website
<b>Designation Changes</b>	None
<b>Feature Condition Status</b>	Condition assessment information relating to this site can be found using Natural England's <a href="#">Designated Sites search tool</a> .
<b>Names of component Sites of Special Scientific Interest (SSSIs)</b>	Ouse Washes SSSI
<b>Relationship with other European or International Site designations</b>	<a href="#">Ouse Washes SAC</a> ; Ouse Washes Ramsar

### General Description of the SPA

The Ouse Washes is a flood storage reservoir, approximately 30 km long and 1 km wide, constructed in the 17<sup>th</sup> century to drain an extensive area of the fens. It encompasses two canalised main river channels of the River Great Ouse that run each side of its length, and an extensive area of wet grassland and field drains in between. It lies between Earith to the south and Downham Market to the north, within the [Fens National Character Area](#) (NCA) of Norfolk and Cambridgeshire.

The site is the largest area of washland habitat remaining in the country, subject to regular winter flooding. The soils of the washes are slightly base-rich deep peats, with a high silt content from floodwaters, which overlie Jurassic clays. In the summer months the low-lying grasslands provide grazing and hay, the frequent field drains both helping to keep groundwater levels high deep into the breeding season and also providing stock control as wet fences. The regular winter flooding and the continuance of traditional management of cattle grazing and hay cutting maintains the nature conservation value of the area. It is of particular note for the large numbers of wintering wildfowl and breeding waders it supports, for the large area of unimproved neutral grassland communities which it holds, and for the richness of the aquatic fauna and flora within the associated ditches and drainage channels. Wildfowling takes place across parts of the Ouse Washes.

The Ouse Washes SPA was designated in 1993 under the EU Directive on the Conservation of Wild Birds. The boundary of the SPA largely follows that of the Ouse Washes SSSI, and overlaps with the Ouse Washes SAC, notified for spined loach, which is a strip covering two watercourses on the north-western edge.

The nature reserves at WWT Welney and RSPB Ouse Washes form part of the SPA.

## **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.

This SPA has been classified by reason of the following qualifying features;

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

During the breeding season the SPA regularly supports:

- **A151 Ruff *Philomachus pugnax* (breeding)**

The SPA citation states that an average of 57 individuals had been recorded lekking 'in recent years', but RSPB and WWT breeding bird counts suggest that breeding numbers were lower (mean of 6 during the 10 years immediately prior to notification). No confirmed breeding attempts have been made at the Ouse Washes since 1999. Although lekking still occurs nearby, there have only been four confirmed breeding records in the country between 2006 and 2015 (Holling *et al.* 2015). While the habitat at the Ouse Washes may well no longer be suitable, research into ruff migration has shown that there is another likely cause for the decline of breeding ruff in Britain unrelated to habitat suitability of the breeding sites.

There has recently been a large increase in the population breeding in Siberia and a corresponding decrease in the population breeding in western Europe. Rakhimberdiev *et al.* (2011) have inferred from this a large-scale redistribution of breeding ruff due to the diminished quality of staging posts in Europe, where birds go to feed after travelling from their wintering sites in West Africa before carrying on to their breeding sites, rather than diminished quality of breeding sites (Verkuil *et al.* 2012). Although the recent research suggests that ruff are able to make large changes to their migration routes and breeding sites within a relatively short space of time (the likely change in migration route documented by Rakhimberdiev *et al.* (2011) and Verkuil *et al.* (2012) involved tens of thousands of individuals within two decades) breeding ruff are unlikely to return to Britain in such numbers as before unless there is restoration of good quality wet grassland that can be used for feeding by migrating ruff in the Netherlands.

During the non-breeding season the SPA regularly supports:

- **A037 Bewick's Swan *Cygnus columbianus bewickii* (Non-breeding)**

The site supported 4980 individuals at notification, 29% of the north-west European wintering population. The peak 5 year mean from 2013/14 – 2017/18 was 1897. Both the north-west European population and numbers occurring within Britain have declined substantially during the last 20 years (Holt *et al.* 2015, Rees & Beekman 2010, Worden *et al.* 2006), and the majority of British SPAs show short, medium and long term WeBS alerts for Bewick's swan (Holt *et al.* 2015). The declines are thought to be at least in part due to milder winters causing fewer birds to travel as far west as in previous years (Rees and Beekman 2010). Other influences on population dynamics have been identified in the African Eurasian Waterbird Agreement (AEWA) Single Species Action Plan (Nagy *et al.* 2012), including climate change, disease, illegal/accidental shooting and a diminished food resource and human disturbance on overwintering sites. While deeper and more persistent winter flooding may affect and inhibit foraging opportunities, evidence suggests that Bewick's swans have always roosted on the Ouse Washes but foraged mainly on the surrounding agricultural land (Rees *et al.* 1997). Numbers of Bewick's swans on the Ouse Washes have actually held up well in comparison with the national and international trends (Nagy *et al.* 2012).

- **A082 Hen Harrier *Circus cyaneus* (Non-breeding)**

The five-year average noted in the 1992 SPA citation was 12 individuals (1982 – 1987). Hen harriers are noted during WeBS counts by the RSPB and WWT, and during the most recent period (from 2013/14 to 2017/18), 1 bird was resident two years out of five. There is no national trend available for wintering hen harriers with which to compare the change in numbers at the Ouse Washes, although Dobson *et al.* (2012) found the wintering population of hen harriers in Britain to be closely allied to the breeding population; the breeding population in the UK is about the same as it was in the 1980s, although the most recent surveys show a decline since 2004 (Wotton *et al.* 2018). Without further investigation it is difficult to judge how much the change in numbers at the Ouse Washes is due to site effects. The displacement of small mammals and few places to perch or roost during deep floods may be causing hen harriers to move elsewhere. A confidential study of wintering hen harriers found roosting opportunities at the Ouse Washes to be plentiful during the winter of 2011/12 (Dobson & Carrington-Cotton 2012), but this was a year with relatively low water levels.

- **A038 Whooper Swan *Cygnus cygnus* (Non-breeding)**

The site supported 590 individuals at SPA notification, 3% of the British population. The peak 5 year mean from 2013/14 – 2017/18 was 6840. The national trend is similar. Like Bewick's swans, whooper swans tend to feed on nearby agricultural land during the day and roost on the washes at night; the location depends on the depth of floodwater and will change through the season.

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

During the breeding season the SPA regularly supports:

- **A156a Black-tailed Godwit *Limosa limosa limosa* (Breeding)**

The site supported 26 breeding pairs at the time of notification, representing 44% of the British population. The population on the Ouse Washes has decreased as the nearby population on the Nene Washes has increased. No nesting has occurred on the Ouse Washes itself since 2013, but the 'lifeboat sites', areas of habitat suitable for breeding waders that have been created adjacent to the boundary of the Ouse Washes close to Manea and the WWT reserve at Welney, have supported a small number of breeding pairs since then. Numbers have been as low as two pairs, but there has been breeding success in the form of fledged chicks, and numbers of breeding pairs are starting to rise. In 2018 there were 8 breeding pairs.

- **A055 Garganey *Anas querquedula* (Breeding)**

The site supported 14 breeding pairs at the time of notification, 20% of the British population. The mean population count in the period 2010-14 was 8 pairs. UK breeding numbers have increased slightly in the last 25 years (Holling and the Rare Breeding Birds Panel, 2017).

- **A051 Gadwall *Anas strepera* (Breeding)**

The site supported 111 breeding pairs at the time of SPA notification, 20% of the British population. The mean population count in the period 2010-14 was 120 pairs. UK breeding numbers have been increasing rapidly recently (Woodward *et al.* 2018).

- **A053 Mallard *Anas platyrhynchos* (Breeding)**

The site supported 850 breeding pairs at the time of SPA notification, 2% of the British population. The mean population count in the period 2010-14 was 381 pairs. Breeding numbers in the UK have risen since notification, although they have been stable since 2000 (Woodward *et al.* 2018).



- **A056 Shoveler *Anas clypeata* (Breeding)**

The site supported 155 breeding pairs at the time of notification, representing 12% of the British population. The mean population count in the period 2010-14 was 121 pairs. Breeding numbers in the UK have been stable since notification (Holling and the Rare Breeding Birds Panel 2017, JNCC SPA Species Account).

Duck species will nest along the whole length of the protected site. The northern end of the site tends to be less affected by flooding within the breeding season, and the vegetation changes that have resulted from that, and will often support a greater density of nests.

**During the non-breeding season the SPA regularly supports:**

- **A704 Eurasian Teal *Anas crecca***

The site supported 4100 individuals at notification, 1% of the north-west European population and 4% of the British population. The peak 5 year mean from 2013/14 – 2017/18 was 6185. Since notification, the national population has increased by approximately a half. Teal prefers shallow water for feeding; feeding and roosting areas will be dependent on water levels and will change throughout the season.

- **A050 Eurasian Wigeon *Anas Penelope***

The site supported 38000 individuals at notification, 5% of the north-west European population and 15% of the British population. The peak 5 year mean from 2013/14 – 2017/18 was 24498. Since notification the British population has increased approximately threefold. Wigeon is a dabbling duck that feeds on rooted vegetation and the increased depth and extent of flooding may be the reason that the population has declined at the Ouse Washes. Natural England (2015) found a strongly significant negative correlation between the annual flooding depth and extent and the peak WeBS counts of wigeon on the Ouse Washes since 1971.

- **A054 Pintail *Anas acuta***

The site supported 1450 individuals at notification, 2% of the north-west European population and 6% of the British population. The peak 5 year mean from 2013/14 – 2017/18 was 667. Numbers have fluctuated, and show a roughly similar pattern to the national trend, but the decline nationally (which is short-term and not understood, although possibly due to an increasing tendency for birds to winter further east) has been smaller than the decline evident at the Ouse Washes. Pintail is a dabbling duck, and even though it feeds predominantly on fruits and seeds (Thomas 1982) that can often be gathered from the water surface during a flood, it seems likely that it will prefer shallower water than is available on the Ouse Washes throughout most winters.

- **A056 Shoveler *Anas clypeata***

The site supported 750 individuals at notification, 2% of the north-west European population and 8% of the British population. The peak 5 year mean from 2013/14 – 2017/18 was 845. Numbers nationally have doubled over the same period.

- **Qualifying assemblage of species (Article 4.2)**

During the breeding season the SPA regularly supports;

- **An assemblage of breeding waders and wildfowl associated with lowland damp grassland.**

Those species mentioned on the citation but which haven't already been covered as individually qualifying species can be seen in table 1. Another waterbird of particular importance not mentioned on the citation is spotted crake.

Table 1. 5 year mean numbers of breeding pairs at SPA notification and the most recent numbers available (2010 – 2014). Those species showing a decline of more than 10% are shown in red, and the species with an increase of more than 10% is shown in green.

	Oystercatcher	Redshank	Snipe	Lapwing	Mute swan	Shelduck
Mean no. breeding pairs at notification	8.1	157.1	550.0	153.0	34	41.4
Mean no. breeding pairs 2010 - 2014	4.8	163.2	96.8	152.8	31.4	23.2

	Teal	Pintail	Pochard	Tufted duck	Moorhen	Coot
Mean no. breeding pairs at notification	15.5	0.75	10	55.5	69.8	74.3
Mean no. breeding pairs 2010 - 2014	26.4	0.8	1.4	19.4	17.4	61

During the non-breeding season the SPA regularly supports;

- **An assemblage of waterfowl of more than 20,000 birds.**

The main component species of this non-breeding waterfowl assemblage which are not already covered in the preceding sections and which are present in either nationally important numbers or comprise 20,000 or more individuals are:

Cormorant *Phalacrocorax carbo*: Like other species, cormorants tend to use the RSPB and WWT reserves over other areas in the wildfowling season. After the wildfowling season they tend to be found in highest numbers close to Earith or close to Welney; this is likely to be due to clusters of fisheries nearby, which the cormorants visit to feed during the day. They can be found in all WeBS sectors of the Washes, however.

Mute swan *Cygnus olor*: Mute swans tend to be fairly evenly distributed over all WeBS sectors of the Washes throughout the wintering period, even within the wildfowling season. They are likely to feed on nearby arable fields during the day.

Gadwall *Anas strepera*: During the wildfowling season, gadwall are mainly found on the reserves where no wildfowling takes place. Once the wildfowling season has ended they are equally distributed across the site. They occur in larger numbers later in the winter.

Pochard *Aythya farina*: During the wildfowling season, pochard are mainly found on the reserves where no wildfowling takes place. Once the wildfowling season has ended they are equally distributed across the site. They occur in larger numbers later in the winter.

Tufted duck *Aythya fuligula*: During the wildfowling season, tufted duck are mainly found on the reserves where no wildfowling takes place. Once the wildfowling season has ended they are equally distributed across the site. They occur in larger numbers later in the winter.

Coot *Fulica atra*: During the wildfowling season, coot are mainly found on the reserves where no wildfowling takes place. Once the wildfowling season has ended they are equally distributed across the site. They occur in larger numbers later in the winter.

The average peak count for numbers of wintering waterfowl in the period 2009/10 – 2013/14 was 79839 (Holt *et al.* 2015), more than the number given in the SPA citation (60950) which is the five-year average from 1986/87 to 1990/91. WeBS trends are not currently available for waterbird assemblage numbers countrywide; an approximation has been made by summing the peak waterfowl numbers from the 50 UK sites with the highest number of waterfowl since winter of 1990/91, taken from the Wildfowl and Wader Counts and the Wetland Bird Surveys produced by the BTO (<http://www.bto.org/volunteer-surveys/webs/publications/webs-annual-report/waterbirds-in-the-uk>), which suggests that over the same period there has been a small increase in numbers nationally.

Table 2. Main component features of the waterbird assemblage that aren't notified for their individual importance: a comparison between the 5 year peak mean at notification, and the most recent.

	Cormorant	Mute swan	Gadwall	Pochard	Tufted duck	Coot
Peak 5 year mean at notification	270	490	320	2100	860	2320
Peak 5 year mean 2013/14 – 2017/18	136	397	599	1829	1730	2573



## 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](#).

[illegible]

Feature	Season	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Site-specific references where available
swan	breeding														
Eurasian Teal	Non-breeding	Winter													As above
Eurasian Wigeon	Non-breeding	Winter													As above
Pintail	Non-breeding	Winter													As above
Shoveler	Non-breeding	Winter													As above
Assemblage of water-birds	Non-breeding	Winter/ Passage													As above

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 including:**

- A037 *Cygnus columbianus bewickii*; Bewick's swan (Non-breeding) – Population Targets presented in Table 2
- A038 *Cygnus cygnus*; Whooper Swan (Non-breeding) – Population Targets presented in Table 3.
- A050 *Anas penelope*; Eurasian Wigeon (Non-breeding) – Population targets presented in Table 4
- A051 *Anas strepera*; Gadwall (Breeding) – Population targets presented in Table 5
- A037 *Anas crecca*; Eurasian Teal (Non-breeding) – Population targets presented in Table 6
- A053 *Anas platyrhynchos*; Mallard (Breeding) - Population targets presented in Table 7
- A054 *Anas acuta*; Northern pintail (Non-breeding) - Population targets presented in Table 8
- A055 *Anas querquedula*; Garganey (Breeding) - Population targets presented in Table 9
- A056 *Anas clypeata*; Northern shoveler (Non-breeding) - Population targets presented in Table 10
- A056 *Anas clypeata*; Northern shoveler (Breeding) - Population targets presented in Table 11
- A082 *Circus cyaneus*; Hen harrier (Non-breeding) - Population targets presented in Table 12
- A151 *Philomachus pugnax*; Ruff (Breeding) - Population targets presented in Table 13
- A156a *Limosa limosa limosa*; Black-tailed godwit (Breeding) - Population targets presented in Table 14
- Waterbird assemblage - Population targets presented in Table 15
- Breeding Bird assemblage - Population targets presented in Table 16

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the site): function/ supporting process	Air quality for all species and assemblages	Maintain concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).	<p>The structure and function of the habitats which support this SPA feature may be sensitive to changes in air quality.</p> <p>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.</p> <p>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 (NH<sub>3</sub>), oxides of nitrogen (NO<sub>x</sub>) and sulphur dioxide (SO<sub>2</sub>), and critical loads for nutrient nitrogen deposition and acid deposition.</p> <p>There are currently no critical loads or levels for other</p>	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 at <a href="http://www.apis.ac.uk/">http://www.apis.ac.uk/</a>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>Air quality is currently within acceptable limits for the notified features and their habitats</p>	
<b>Supporting habitat (both within and outside the site): function/ supporting process</b>	<b>Water quality/ quantity for all species and assemblages</b>	<p>Where the supporting habitats of the SPA feature are dependent on surface water, restore water quality and quantity to a standard which provides the necessary conditions to support the feature.</p> <p>Soluble reactive phosphorus &lt; 0.1 mg/l annual mean</p>	<p>For many SPA features which are dependent on wetland habitats supported by surface and/or ground 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.</p> <p>Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of breeding, rearing, feeding and roosting habitats.</p> <p>The Ouse Washes is a designated flood water storage reservoir, and levels of flooding have been increasing for several decades. Over winter, floods are deeper and more extensive. This isn't a problem for wintering species that mainly use the washes for roosting, such as the swans, but those species that require shallow water on the Washes for feeding, such as dabbling ducks, have been negatively affected and numbers have dropped. Flood water also tends to persist into the breeding season, causing unsuitable conditions for nesting, either through standing water itself or increasing graminoid species indicative of waterlogging. Deep, long-lasting floods may also reduce the soil invertebrates that are important food for waders in the breeding season (Ausden et al 2001)</p> <p>Water quality data collected in 2015 shows that the water quality in the field drains is too high in phosphates. Water quality in the Bedford Ouse River supplying the Washes is highly variable, but average phosphorus levels, despite improvements over recent decades, are still several times higher than the target 0.1mg/l. Nitrogen levels are also high. This is important because it affects the macrophyte communities, with</p>	<p>Ouse Washes Water Level Management Plan (2002)</p> <p>The Environment Agency routinely collects water quality data from the main watercourses, which can be found <a href="#">here</a>.</p> <p>This attribute will be periodically monitored as part of Natural England's site condition assessments</p> <p>Natural England (2015)</p> <p>Environment Agency (2007)</p> <p>Black and Veatch (2003)</p> <p>Cathcart (2001)</p> <p>Holdgate (2018)</p> <p>Cadbury et al (2001)</p> <p>Prosser and Wallace (2002)</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>resultant effects on the aquatic invertebrate communities, reducing diversity of forage for birds. It also affects the soil nutrients of the grassland; increased nutrient levels will decrease the forage quality and encourage fast-growing competitive species that don't provide suitable habitat for breeding waders (Prosser and Wallace 2002). Recent evidence looking at phosphorus levels indicates that extended periods of flooding lead to the release of phosphorus from the underlying soils. There is also evidence that phosphorus-rich ditch sediment can cause the elevation of orthophosphate in ditches, particularly close to inlets from the Hundred Foot River, where sediment is particularly high in phosphorus (Holdgate, 2018)</p> <p>Nitrogen levels might also be having a negative effect, both on cover of filamentous algae and the macrophyte community (Cadbury et al 2001, Cathcart, 2001), and on terrestrial vegetation (Prosser and Wallace, 2002). Further evidence is needed before a target level is set.</p> <p>The Water Level Management Plan details the water levels required to maintain good conditions for the breeding bird features. The Water Level Management Plan is due to be reviewed shortly and this document will be updated as appropriate following this review. The current plan includes minimum winter water levels for favourable conditions for wintering species, but doesn't address maximum winter levels for favourable conditions.</p> <p>A review of the Diffuse Water Pollution Plan is also underway. The current plan does not include a target for nitrogen, but does reference work (Graham 2003) indicating that nitrogen levels have affected vegetation change in ditches. Entec (2003) looking at the Review of Consents gives thresholds for total organic nitrogen of 1.6 mg/l and total inorganic nitrogen of 0.8 mg/l.</p>	<p>Ouse Washes and Portholme Diffuse Water Pollution Plan (2010)</p> <p>Graham (2003)</p> <p>Entec (2003)</p> <p>Ausden et al (2001)</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>There is evidence that these levels might not be feasible as targets because of the background levels in the catchment (Entec 2003). Further evidence is needed to define targets, which should be included in the updated Diffuse Water Pollution Plan (when published)</p> <p>Climate change may influence future flooding trends in terms of timing, depth and duration.</p>	
	<b>Conservation measures for all species and assemblages</b>	Restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to restore] the structure, function and/or the supporting processes associated with the feature and its supporting habitats.	<p>Active and ongoing conservation management is often needed to protect, maintain or restore these features at this site.</p> <p>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 can be provided by contacting Natural England.</p> <p>This information 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.</p> <p>Management of this site's habitats include;</p> <p>Livestock grazing and hay cutting to reduce grassland sward height and rank vegetation; partial winter flooding to maintain suitable conditions for wintering birds; water reduction in areas in spring/summer months for breeding birds whilst maintaining some areas of shallow flooding for feeding; flood defence operations and river channel management; minimising disturbance; control of some predators and corvids; removal and control of injurious weeds; removal of sediment in ditches to prevent the accumulation of silt</p>	<p>RSPB Ouse Washes Management plan 2017-2022</p> <p>Ouse Washes Water Level Management Plan (2002)</p> <p>Various agri-environment scheme agreements</p> <p>Management Statement for the Environment Agency Flood and Coastal Risk Management Maintenance Operations 2015 to 2024</p>



Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			and control of dominant plants that out-compete others including invasive non-native species; control of access and recreational activities.	
<b>Supporting habitat (both within and outside the site): predation</b>	<b>Predation</b>	<p>For <i>Philomachus pugnax</i>; Ruff (Breeding) and <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding), <i>Anas strepera</i>; Gadwall (Breeding), <i>Anas platyrhynchos</i>; Mallard (Breeding), <i>Anas querquedula</i>; Garganey (Breeding) and <i>Anas clypeata</i>; Northern shoveler (Breeding) breeding waders and wildfowl as part of the assemblages:</p> <ul style="list-style-type: none"> <li>Maintain or reduce levels of chick and nest predation, increasing levels of predator control if predation increases.</li> </ul>	<p>This will ensure that breeding productivity (number of chicks per pair) and survival are sustained at rates that maintain or restore the abundance of the feature. Impacts to breeding productivity can result directly from predation of eggs, chicks, juveniles and adults, and also from significant disturbance. The presence of predators can influence bird behaviours, such as abandonment of nest sites or reduction of effective feeding. Where evidence suggests predator management is required, measures can include their exclusion through fencing and scaring or by direct control. Any such measures must consider the legal protection of some predators, as well as the likely effects of such control on other qualifying features.</p> <p>Trees and scrub are removed or regularly coppiced to reduce avian predator perches. Anti-predator fencing utilised in some breeding wader areas to reduce terrestrial predation. Crow, fox and mink control are carried out within the SPA.</p>	RSPB Ouse Washes Management plan 2017-2022
<b>Supporting habitat (both within and outside the site): extent and distribution</b>	<b>Extent and distribution of supporting non-breeding habitat</b>	<p>For the following features:</p> <ul style="list-style-type: none"> <li>A037 <i>Cygnus columbianus bewickii</i>; Bewick's swan (Non-breeding)</li> <li>A038 <i>Cygnus cygnus</i>; Whooper Swan (Non-breeding)</li> <li>A050 <i>Anas penelope</i>; Eurasian Wigeon (Non-breeding)</li> <li>A037 <i>Anas crecca</i>; Eurasian Teal (Non-breeding)</li> <li>A054 <i>Anas acuta</i>; Northern pintail (Non-breeding)</li> <li>A056 <i>Anas clypeata</i>; Northern shoveler (Non-breeding)</li> <li>A082 <i>Circus cyaneus</i>; Hen harrier (Non-breeding)</li> <li>Waterbird Assemblage</li> </ul>	<p>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.</p> <p>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.</p> <p>This target will apply to any supporting habitat which is known to occur outside the site boundary.</p> <p>The swans predominantly feed on nearby arable land, returning to the Washes to roost. Wigeon may do the same when water levels are high and there is little</p>	<p>RSPB Ouse Washes Management plan 2017-2022</p> <p>Ouse Washes Water Level Management Plan (2002)</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		<p>Restore the extent, distribution and availability of suitable habitat which supports the feature for all necessary stages of the non-breeding/wintering period (moulting, roosting, loafing, and feeding)</p> <p>During the winter months the habitats within the Washes should be a combination of shallow water (no more than 30 cm deep) and short wet grassland. Deeper water should be confined to scrapes, hollows, pools and ditches, with areas of water greater than 10 ha present across the site.</p>	<p>grass above water to feed on; grassland above water on the flood banks is important forage for wigeon. Teal and pintail are dabbling ducks requiring shallow water for foraging; they have been negatively affected by deeper floods in recent years limiting foraging opportunities. Hen harrier requires perches and habitat that supports small mammals, and both are limited under heavy floods.</p> <p>Reason for restore target: Winter water levels in recent years have been high, so that for much of the winter there is very little of the shallow water required by dabbling ducks or short grassland preferred by grazing wigeon. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat to support features negatively affected by flooding.</p>	
<b>Supporting habitat (both within and outside the site): structure/function</b>	<b>Extent and distribution of breeding habitat within the site</b>	<p>For the following features:</p> <ul style="list-style-type: none"> <li>• A051 <i>Anas strepera</i>; Gadwall (Breeding)</li> <li>• A053 <i>Anas platyrhynchos</i>; Mallard (Breeding)</li> <li>• A055 <i>Anas querquedula</i>; Garganey (Breeding)</li> <li>• A056 <i>Anas clypeata</i>; Northern shoveler (Breeding)</li> <li>• A151 <i>Philomachus pugnax</i>; Ruff (Breeding)</li> <li>• A156a <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding)</li> <li>• Breeding Bird assemblage</li> </ul> <p>Restore the extent, distribution and availability of suitable breeding habitat which supports the features for all stages (courtship, nesting, feeding) of the breeding cycle for the following species:  Gadwall: Water-filled scrapes (for feeding), field drains and swamps  Mallard: Water with abundant invertebrate life (for feeding), tall vegetation nearby (for nesting)  Garganey: Shallow pools (for feeding), tall grass in close vicinity of feeding areas (for nesting)</p>	<p>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 boundary</p> <p>Breeding habitat has been negatively affected by flooding during the breeding season. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat to restore the breeding populations of black-tailed godwit, mallard and garganey. This habitat would also be suitable for ruff, but very few ruff are now making the trip to the UK for other reasons.</p> <p>Reason for restore target: Breeding habitat of the waders in particular has been affected by high water levels that persist into April and affect nesting, but this</p>	<p>Prosser and Wallace (2002)</p> <p>Graham (2008)</p> <p>WWT Consulting (2009)</p> <p>Natural England (2015)</p> <p>Black and Veatch (2008)</p> <p>Entec 2003</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		<p>Shoveler: Water with shallow margins and plenty of macrophytes (for feeding), tall grass (for nesting)</p> <p>Restore suitable habitat for black-tailed godwit and ruff nesting: Wet grassland with a short but variable sward of fine grasses and herbaceous species with a mean height of 5 cm and shallow floods covering 15-20% of the area at the beginning of April, and groundwater table within 20 cm of the surface over 50% of the area between April and June.</p> <p>Target communities are MG9 (at least 76 ha), MG13 (at least 285 ha), with S5 and S28 also present but without defined minimum areas. The total area of MG9, MG13, S5 and S28 should be at least 874 ha. Black and Veatch (2008).</p>	<p>has largely been brought under control through a change to the date of implementing summer water levels. More problematic in recent years have been sudden, short-lived floods that occur during May and June and drown nests. Long lasting bank-to-bank winter floods on the Ouse Washes will also cause community change away from MG9 and MG13 communities (Black and Veatch 2008, Entec 2003), as will insufficient management (which is difficult under wetter conditions). Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat to support features negatively affected by flooding.</p>	
<b>Supporting habitat (both within and outside the site): function/ supporting process</b>	<b>Connectivity with supporting habitats</b>	<p>Maintain the safe passage of birds commuting between roosting and feeding areas for the following features:</p> <ul style="list-style-type: none"> <li>• A037 <i>Cygnus columbianus bewickii</i>; Bewick's swan (Non-breeding)</li> <li>• A038 <i>Cygnus cygnus</i>; Whooper Swan (Non-breeding)</li> <li>• A050 <i>Anas penelope</i>; Eurasian Wigeon (Non-breeding)</li> <li>• A037 <i>Anas crecca</i>; Eurasian Teal (Non-breeding)</li> <li>• A054 <i>Anas acuta</i>; Northern pintail (Non-breeding)</li> </ul> <p>For A050 <i>Anas penelope</i>; Eurasian Wigeon (Non-breeding): Restore the availability of grasslands in close proximity (typically &lt;50m) to open water bodies.</p>	<p>The ability of these features to safely and successfully move to and from nesting, feeding and roosting areas is critical to their breeding success and to the adult fitness and survival.</p> <p>This target will apply within the site boundary and where birds regularly move to and from off-site habitat where this is relevant.</p> <p>Deep winter floods on the Ouse Washes mean that there is very little grassland suitable for wigeon feeding within the protected site, and consequently they are required to commute to feed.</p> <p>The swans feed on surrounding arable land and roost on the Washes and may travel considerable distances. Above ground power lines are a concern and should be fitted with diverters to deter strike.</p>	Natural England (2015)
<b>Supporting habitat (both within and outside the site)</b>	<b>Disturbance caused by human activity</b>	<p>Ensure the frequency, duration and/or intensity of disturbance within close proximity of moulting, loafing, foraging and roosting areas doesn't reach levels which significantly affect the following SPA</p>	<p>The nature, scale, timing and duration of some human activities can result in the disturbance of birds at a level which may significantly affect their behaviour, and consequently impact on the long-term viability of their</p>	RSPB Ouse Washes Management Plan April 2017 March 2022

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
site) : disturbance		<p>features:</p> <ul style="list-style-type: none"> <li>A037 <i>Cygnus columbianus bewickii</i>; Bewick's swan (Non-breeding)</li> <li>A038 <i>Cygnus cygnus</i>; Whooper Swan (Non-breeding)</li> <li>A050 <i>Anas penelope</i>; Eurasian Wigeon (Non-breeding)</li> <li>A037 <i>Anas crecca</i>; Eurasian Teal (Non-breeding)</li> <li>A054 <i>Anas acuta</i>; Northern pintail (Non-breeding)</li> <li>A056 <i>Anas clypeata</i>; Northern shoveler (Non-breeding)</li> <li>A082 <i>Circus cyaneus</i>; Hen harrier (Non-breeding)</li> <li>Waterbird assemblage</li> </ul> <p>Ensure the frequency, duration and/or intensity of disturbance in the vicinity of nesting and foraging areas doesn't reach levels which significantly affect the following SPA features:</p> <ul style="list-style-type: none"> <li>A051 <i>Anas strepera</i>; Gadwall (Breeding)</li> <li>A053 <i>Anas platyrhynchos</i>; Mallard (Breeding)</li> <li>A056 <i>Anas clypeata</i>; Northern shoveler (Breeding)</li> <li>A156a <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding)</li> <li>Breeding Bird assemblage</li> </ul>	<p>populations.</p> <p>Such disturbing effects can for example result in changes to feeding or roosting behaviour, increased energy expenditure due to more frequent flights, abandonment of nest sites, disrupted incubation of eggs and desertion of supporting habitat (both within or outside the designated site boundary where appropriate).</p> <p>Anthropogenic disturbance of birds may in effect reduce the availability to the birds of suitable habitat through temporary or long-lasting displacement of birds from affected areas and may result in their redistribution within the site or displacement from it.</p> <p>Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling and sight of people, animals and structures.</p> <p>Angling occurs on the watercourses within the Ouse Washes, although there are restrictions within the refuge areas during the wildfowling season.</p> <p>Wildfowling occurs throughout the washes, although there are substantial refuge areas in the RSPB and WWT reserves at Manea and Welney. During the wildfowling season, birds are congregate in these refuge areas. After the close of the wildfowling season at the end of January, for the remainder of the wintering season birds of all notified species are found distributed across all WeBS sectors. The location of birds will depend on the flood conditions, with dabbling ducks preferring shallow water for feeding and swans preferring deeper water for roosting. The section closest to Earith tends to be least preferred, probably because of disturbance by walkers and dogs on footpaths along the flood banks.</p>	<p>Management Statement for the Environment Agency Flood and Coastal Risk Management Maintenance Operations 2015 to 2024</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>There are footpaths along the barrier banks. In general these are quiet because of the location of the site and difficult access, but there is significant disturbance immediately north of Earith, particularly from dog walkers.</p> <p>Numbers of visitors to the RSPB reserve at Manea are small and are unlikely to result in disturbance. Numbers of visitors to the WWT reserve at Welney are larger but access is restricted and disturbance is also unlikely there.</p> <p>Land management activities likely to cause disturbance are generally limited to the period between August and October.</p>	
<b>Supporting habitat: function/supporting process</b>	<b>Food availability within supporting habitat</b>	<p>For A037 <i>Cygnus columbianus bewickii</i>; Bewick's swan (Non-breeding) and A038 <i>Cygnus cygnus</i>; Whooper Swan (Non-breeding):</p> <ul style="list-style-type: none"> <li>• Maintain the availability of cereal grains, rape, potatoes and sugar beet, where these sources are locally important to feeding flocks.</li> <li>• Maintain abundance and diversity of aquatic macrophytes and grass fields.</li> </ul>	<p>The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the SPA populations.</p> <p>All inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.</p> <p>Supporting feeding habitat may be provided by land outside the SPA boundary and be regularly used by SPA birds.</p> <p>Swans tend to feed on the surrounding arable land during the day, returning to the Ouse Washes to roost. The arable land is an important source of food.</p>	<p>Graham (2003)</p> <p>Thomas (1978)</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: function/supporting process	Food availability within supporting habitat	<p>For A050 <i>Anas penelope</i>; Eurasian Wigeon (Non-breeding):</p> <ul style="list-style-type: none"> <li>Maintain high cover/abundance of suitable grassland for feeding (short, fine grasses with herbaceous species)</li> </ul> <p>For A051 <i>Anas strepera</i>; Gadwall (Breeding and Non-breeding):</p> <ul style="list-style-type: none"> <li>Maintain the distribution, abundance and availability of preferred food plants (aquatic macrophyte and emergent plants, a variety of seeds).</li> </ul>	<p>The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population.</p> <p>Inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.</p> <p>Supporting feeding habitat may be provided by land outside the SPA boundary and be regularly used by SPA birds.</p>	
		<p>For A037 <i>Anas crecca</i>; Eurasian Teal (Non-breeding):</p> <ul style="list-style-type: none"> <li>Maintain high cover/abundance of preferred food plants (e.g. <i>Polygonum</i>, <i>Eleocharis</i>, <i>Rumex</i>, <i>Ranunculus</i>) and key prey species (e.g. flies, caddisfly, beetles, bugs).</li> </ul>	<p>Deep winter floods on the Ouse Washes mean that there is very little grassland suitable for wigeon feeding within the protected site, and consequently they are required to commute to feed. The habitat exists within the Ouse Washes boundary but is too often covered by deep flood water. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for feeding wigeon.</p>	
		<p>For A054 <i>Anas acuta</i>; Northern pintail (Non-breeding):</p> <ul style="list-style-type: none"> <li>Maintain a high cover/abundance of preferred food plants (aquatic macrophyte and emergent plants).</li> </ul>		
		<p>For A055 <i>Anas querquedula</i>; Garganey (Breeding):</p> <ul style="list-style-type: none"> <li>Maintain the distribution, abundance and availability of key prey items (e.g. snails, chironomids, water beetles, caddisfly larvae, bugs) at preferred prey sizes.</li> <li>Maintain a high cover/abundance of preferred food plants (e.g. <i>Potamogeton</i>, <i>Sparganium</i>, <i>Scirpus</i>, <i>Carex</i>, <i>Glyceria</i>, <i>Rumex</i>, <i>Ranunculus</i>)</li> </ul>		



Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		<p><i>spp.</i>, <i>Ceratophyllum</i>, <i>Najas</i>).</p> <p>For A056 <i>Anas clypeata</i>; Northern shoveler (Breeding and Non-breeding):</p> <ul style="list-style-type: none"> <li>Maintain high cover/abundance of preferred food plants and prey (surface plankton, and also small molluscs, insects and larvae, seeds and aquatic plant material).</li> </ul> <p>The preferred food plants and prey of all other breeding wildfowl part of the assemblage are covered by the above.</p>		
Supporting habitat: function/supporting process	Food availability within supporting habitat	<p>For A151 <i>Philomachus pugnax</i>; Ruff (Breeding), A156a <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding) and all breeding waders as part of the assemblage:</p> <ul style="list-style-type: none"> <li>maintain the distribution, abundance and availability of key prey items (e.g. dipteran flies, beetles, earthworms) at preferred prey</li> <li>Restore the distribution, abundance and availability of key prey items (particularly earthworms in the pre-breeding period, and above-ground terrestrial invertebrates (such as dipteran flies, beetles) thereafter at preferred prey sizes.</li> </ul>	<p>The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population.</p> <p>As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.</p> <p>Reason for restore target: The flooding regime extending into the nesting season has caused plants indicating waterlogging (e.g. <i>Glyceria maxima</i>, large sedges) to increase, resulting in habitat that isn't suitable for black-tailed godwit nesting. In addition, floods in the nesting season are common and can destroy nests. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat to restore the population of black-tailed godwit. This habitat would also be suitable for ruff, but very few ruff are now making the trip to the UK for other reasons.</p>	
Supporting habitat: function/supporting	Food availability within supporting	<p>For A082 <i>Circus cyaneus</i>; Hen harrier (Non-breeding)</p> <ul style="list-style-type: none"> <li>Restore the distribution, abundance and</li> </ul>	<p>The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population.</p>	Marquiss (1980)

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
process	habitat	availability of key prey items (e.g. mammals, birds) at preferred prey sizes (pipits to gamebirds; voles to young rabbit size).	<p>As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.</p> <p>Reason for restore target: The bank-to-bank floods that are common over winter mean that small mammals have been flooded out and birds other than waterbirds are unlikely to find sufficient perches. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.</p>	
Supporting habitat (both within and outside the site): structure	Landform	<p>For <i>Philomachus pugnax</i>; Ruff (Breeding) and <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding), <i>Anas strepera</i>; Gadwall (Breeding), <i>Anas platyrhynchos</i>; Mallard (Breeding), <i>Anas querquedula</i>; Garganey (Breeding) and <i>Anas clypeata</i>; Northern shoveler (Breeding) breeding waders and wildfowl as part of the assemblages;</p> <ul style="list-style-type: none"> <li>Maintain shallow slope gradients to the length/perimeter of ditches, drains, pools and scrapes</li> <li>Maintain an abundance of sufficient wet ditch/drain edges, scrapes and pools of shallow edge gradient (ideally a gradient of 1:10) and the availability of shallow water over the site as a whole (optimal profiles on &gt;75% of waterbodies by area).</li> </ul>	<p>The physical topography and landform of a site will strongly influence the quality and extent of supporting habitats used by these features for nesting/rearing, feeding and/or roosting as appropriate.</p> <p>This will also influence the interactions with underlying supporting processes on which the supporting habitat may rely.</p> <p>Any changes or modifications to site topography may adversely affect the ability of the supporting habitats to support and sustain these features.</p>	
Supporting habitat: structure	Landscape	<p>For A151 <i>Philomachus pugnax</i>; Ruff (Breeding), and A156a <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding), all breeding waders as part of the assemblage:</p> <ul style="list-style-type: none"> <li>Maintain the amount of open and unobstructed</li> </ul>	<p>These features are known to favour large areas of open terrain, largely free of obstructions, in and around its nesting, roosting and feeding areas.</p> <p>Often there is a need to maintain an unobstructed line of sight within nesting, feeding or roosting habitat to</p>	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		<p>terrain in the vicinity of nesting, roost and feeding sites.</p> <ul style="list-style-type: none"> <li>Maintain view lines in feeding and roosting areas. Unrestricted views over 200m and effective field size greater than 10ha</li> </ul> <p>For <i>Cygnus cygnus</i>; Whooper Swan (Non-breeding), <i>Cygnus columbianus bewickii</i>; Bewick's swan (Non-breeding) and <i>Anas penelope</i>; Eurasian Wigeon (Non-breeding):</p> <ul style="list-style-type: none"> <li>Maintain an open and unobstructed terrain in the vicinity of feeding or roosting areas</li> <li>Maintain view lines in feeding and roosting areas. Unrestricted views over 500m and effective field size greater than 5ha</li> </ul>	<p>detect approaching predators, or to ensure visibility of displaying behaviour.</p> <p>An open landscape may also be required to facilitate movement of birds between the SPA and any off-site supporting habitat.</p>	
<b>Supporting habitat (both within and outside the site): structure</b>	<b>Vegetation characteristics</b>	<p>For <i>Anas strepera</i>; Gadwall (Breeding), <i>Anas platyrhynchos</i>; Mallard (Breeding), <i>Anas querquedula</i>; Garganey (Breeding) and <i>Anas clypeata</i>; Northern shoveler (Breeding) and other species part of the breeding wildfowl assemblage:</p> <ul style="list-style-type: none"> <li>Maintain the overall heights of vegetation patches (20-60 cm) within nesting areas that are typically &lt;50m from the water's edge.</li> <li>Maintain a diverse macrophyte community through regular ditch management</li> </ul> <p>For <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding) and A151 <i>Philomachus pugnax</i>; Ruff (Breeding), and other species part of the breeding wader assemblage:</p> <ul style="list-style-type: none"> <li>Maintain grassland sward to a height of approximately 5 cm or less on the 1<sup>st</sup> April, with occasional longer tussocks</li> </ul>	<p>The height, cover, variation and composition of vegetation are often important characteristics of habitats supporting these features which enable successful nesting/rearing/concealment/roosting.</p> <p>Many bird species will have specific requirements that conservation measures will aim to maintain, for others such requirements will be less clear.</p> <p>Activities that may directly or indirectly affect the vegetation of supporting habitats and modify these characteristics may adversely affect these features. The height, cover, variation and composition of vegetation are often important characteristics of habitats supporting these features which enable successful nesting/rearing/concealment/roosting.</p> <p>Sward height in areas important for breeding waders should be managed through grazing the previous summer and through winter grazing of wildfowl. Cattle</p>	RSPB Ouse Washes Management Plan April 2017 March 2022

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		<ul style="list-style-type: none"> <li>Maintain scrub to ensure that it isn't used as a perch for predators within areas suitable for wader nesting.</li> <li>Restore vegetation communities in areas important for breeding waders to diverse communities with fine grasses, not dominated by <i>Glyceria maxima</i>, large sedges, or other species indicating waterlogging, through more regular management if necessary.</li> <li>Maintain short/limited vegetation in scrapes so that they continue to hold water over time.</li> </ul> <p>For <i>Anas penelope</i>, wigeon; <i>Anas crecca</i>, Eurasian Teal (Non-breeding); <i>Anas acuta</i>, Northern pintail (Non-breeding); <i>Anas clypeata</i>, Northern shoveler (Non-breeding); other wintering waterfowl as part of the waterbird assemblage;</p> <ul style="list-style-type: none"> <li>Maintain a sward height of 50-150mm by November</li> <li>Maintain a sward height on the barrier banks of &lt;100mm in November.</li> <li>Maintain long sward over 10-15% of individual fields to act as seed collecting area and provide vegetation for feeding in deep flood years.</li> </ul>	<p>grazing usually doesn't occur until the middle of May.</p> <p>Reason for restore target: Sustained flooding during the wintering and growing seasons has affected the grassland community, causing species indicative of water-logging, like <i>Glyceria maxima</i>, to dominate, so that it's no longer suitable for nesting waders. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat to restore the populations of black-tailed godwit and other waders. This habitat would also be suitable for ruff, but very few ruff are now making the trip to the UK for other reasons.</p>	
<b>Supporting habitat (both within and outside the site): function/supporting process</b>	<b>Grazing animals</b>	<p>For A156a <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding) and A151 <i>Philomachus pugnax</i>; Ruff (Breeding), <i>Anas strepera</i>; Gadwall (Breeding), <i>Anas platyrhynchos</i>; Mallard (Breeding), <i>Anas querquedula</i>; Garganey (Breeding) and <i>Anas clypeata</i>; Northern shoveler (Breeding), and all breeding waders and wildfowl as part of the breeding assemblages:</p> <ul style="list-style-type: none"> <li>Maintain stocking densities within breeding areas at no more than 0.75 livestock units per hectare between 01 April and 31 May.</li> </ul>	<p>Grazing by livestock is often necessary for the management of the site in order to maintain the supporting habitats for these SPA features in the right condition.</p> <p>These features are known to be particularly sensitive to livestock density. If livestock numbers are too high during the breeding season, nests may be inadvertently trampled by grazing animals and successful nesting/rearing is undermined.</p> <p>Sward height in areas important for breeding waders</p>	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			should be managed through grazing the previous summer and through winter grazing of wildfowl.	
<b>Supporting habitat (both within and outside the site): function/supporting process</b>	<b>Hydrology/flow</b>	<p>For <i>Anas clypeata</i>; Northern shoveler (Breeding), <i>Anas strepera</i>; Gadwall (Breeding), <i>Anas querquedula</i>; Garganey (Breeding) and <i>Anas platyrhynchos</i>; Mallard (Breeding), <i>Limosa limosa limosa</i>; Black-tailed godwit (Breeding) <i>Philomachus pugnax</i>; Ruff (Breeding), and all breeding waders and wildfowl as part of the breeding assemblages:</p> <ul style="list-style-type: none"> <li>• Restore water control with floods covering no more than 30% of the site by the beginning of April, gradually reducing over the summer months without further flooding</li> <li>• Maintain water levels in ditches, with high summer retention levels achieved in March and continuing through the summer.</li> <li>• Restore the water levels in scrapes and natural depressions so that they are between 0.2 and 0.3 m depth at the beginning of the breeding season (1<sup>st</sup> April) over at least 50% of the area, which gradually reduces over the following two months.</li> <li>• Maintain high water tables, within 20 cm of the surface over at least 50% of the site, providing surface water and damp field conditions between April and June, with 20-30% of the area soggy or flooded overall.</li> </ul>	<p>Changes in source, depth, duration, frequency, magnitude and timing of water supply or flow can have significant implications for this feature.</p> <p>Such changes may affect the quality and suitability of habitats used by birds for nesting, drinking, preening, rearing, feeding or roosting.</p> <p>Unless these have already been undertaken, further site-specific investigations may be required to fully inform conservation measures for this feature and/or the likelihood of impacts on this attribute.</p> <p>Reason for restore target: Inappropriate flooding, both water levels too high at the start of the nesting period and sudden floods that destroy nests, have caused the population numbers of breeding waders, some ducks (particularly mallard, and dabbling ducks in general), moorhen and coot on the Ouse Washes to decline. Inundation over longer periods has also led to habitat change, with the resulting vegetation less suitable for nesting and feeding over the breeding period (Graham 2003). Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.</p>	<p>Natural England (2015)</p> <p>Environment Agency (2007)</p> <p>Mere Oak Ecology (2015)</p> <p>Graham (2003)</p>
<b>Supporting habitat (both within and outside the site): function/supporting process</b>	<b>Water area/water depth</b>	<p>A037 <i>Cygnus columbianus bewickii</i>; Bewick's swan (Non-breeding) and A038 <i>Cygnus cygnus</i>; Whooper Swan (Non-breeding);</p> <ul style="list-style-type: none"> <li>• Maintain the number of large water-bodies of optimal size (typically &gt;10ha).</li> <li>• Maintain the availability of water of &lt;1m deep, over at least 50% of the total water area.</li> </ul>	<p>These features depend on the presence and continuity of open water habitat; often requiring water bodies of a particular size to in order to successfully nest, rear their young, feed, and/or roost.</p> <p>Changes in water area, and associated marginal habitat, can adversely affect the suitability of supporting open water habitat. These features are known to require extensive areas of open water in which to feed. Birds are visual</p>	<p>Natural England (2015)</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		<p>For <i>Anas penelope</i>, wigeon; <i>Anas crecca</i>, Eurasian Teal (Non-breeding); <i>Anas acuta</i>, Northern pintail (Non-breeding); <i>Anas clypeata</i>, Northern shoveler (Non-breeding); other wintering waterfowl as part of the waterbird assemblage;</p> <ul style="list-style-type: none"> <li>• Restore the availability of water of optimal depth, typically 0.1-0.3m deep.</li> <li>• Restore flood conditions so that no more than 80% of the area is covered by water</li> </ul>	<p>predators, with some having the ability to dive or to feed from the surface.</p> <p>Reason for restore target: The high winter water levels appear to be having a negative effect on wintering teal and pintail. These are dabbling ducks, requiring shallow water for feeding, and water levels are often too deep during the wintering period so that population numbers have dropped. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.</p>	
<p><b>Version Control</b>  Advice last updated <b>23 March 2019</b> following stakeholder feedback. <b>Water quality / quantity</b> additional information included within explanatory notes regarding impacts of flood duration and raised nutrient levels. <b>Extent and distribution of supporting non-breeding habitat</b> explanatory notes updated to highlight importance of grassland above water on floodbanks as feeding habitat for wigeon. <b>Extent and distribution of breeding habitat within the site</b> additional information added to target setting out target NVC communities, further information in explanatory notes setting out impacts of winter flooding on changes in breeding habitat. <b>Hydrology / flow</b> additional information included in explanatory notes setting out impact of extended flooding period on vegetation communities.</p>				
<p><b>Variations from national framework of integrity-guidance:</b> N/A</p>				



**Table 2: Population abundance and population structure: A037 *Cygnus columbianus bewickii*; Bewick's swan (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Non-breeding population</b>	<b>Population abundance</b>	Restore the size of the non-breeding Bewick's Swan population at a level which is above an average of 4,980 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>This will sustain the site's population and contribute to a viable local, national and bio-geographic population.</p> <p>Due to the mobility of birds and the dynamic nature of population change, the target-value given for the population size of this feature 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 size 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 (generally at least 10 years). 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.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, 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.</p> <p>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.</p> <p>Unless otherwise stated, the population size will be that measured using standard methods such as peak mean counts or breeding surveys. 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 that the figures stated are the best available.</p> <p>Both the north-west European population of Bewick's swan and numbers occurring within Britain have declined substantially during the last 20 years. The declines are thought to be at least in part due to milder winters causing</p>	<p>1992 SPA citation</p> <p>The most recent data about this feature on this SPA can be derived from WeBs data upon request:  <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a></p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			<p>fewer birds to travel as far west as in previous years (Rees and Beekman 2010). See Nagy et al (2012) for other threats that may be causing numbers to decline at other points in the annual cycle.</p> <p>While deeper and more persistent winter flooding may affect and inhibit foraging opportunities, evidence suggests that Bewick's swans have always roosted on the Ouse Washes but foraged mainly on the surrounding agricultural land (Rees <i>et al.</i> 1997). Numbers of Bewick's swans on the Ouse Washes have actually held up well in comparison with the national and international trends (Nagy <i>et al.</i> 2012). A restore target has been set because numbers are now much lower than at notification, but restoration is unlikely without off-site changes.</p>	
<b>Non-breeding population</b>	<b>Population structure</b>	Maintain overall adult survival and body condition at a level which is consistent with maintaining the abundance of the population at or above its target level	Poor winter body condition may negatively affect a bird's ability to move, forage, migrate and survive, and subsequently affect its ability to reproduce whilst in its summer breeding grounds.	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 3: Population abundance and population structure: A038 *Cygnus cygnus*; Whooper Swan (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Non-breeding population	Population abundance	Maintain the size of the non-breeding Whooper Swan population at a level which is above an average of 590 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in Table 2.	A baseline figure of 590 individuals was present at the time of SPA designation in 1992.  The most recent data about this feature on this SPA can be derived from WeBs data upon request: <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a>
Non-breeding population	Population structure	Maintain overall adult survival and body condition at a level which is consistent with maintaining the abundance of the population at or above its target level		
Version Control Advice last updated: N/A				
Variations from national framework of integrity-guidance: N/A				

**Table 4: Population abundance and population structure: A050 *Anas penelope*; Eurasian Wigeon (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Non-breeding population	Population abundance	Restore the size of the non-breeding Wigeon population at a level which is above an average of 38,000 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2.  Since notification the British wigeon population has increased approximately threefold, but the population has declined on the Ouse Washes. Wigeon is a dabbling duck that feeds on rooted vegetation and the increased depth and extent of flooding may be the reason that the population has declined. Natural England (2015) found a strongly significant negative correlation between the annual flooding amount and the peak WeBS counts of wigeon on the Ouse Washes since 1971. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.	A baseline figure of 38,000 individuals was present at the time of SPA designation in 1992 (as part of the waterfowl assemblage).  The most recent data about this feature on this SPA can be derived from WeBs data upon request: <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a>  Natural England (2015)
Non-breeding population	Population structure	Overall adult survival and body condition is at a level which is consistent with maintaining the abundance of the population at or above its target level		
Version Control Advice last updated: N/A				
Variations from national framework of integrity-guidance: N/A				

**Table 5: Population abundance and population structure: A051 *Anas strepera*; Gadwall (Breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Breeding population</b>	<b>Population abundance</b>	Maintain the size of the breeding Gadwall population at a level which is above an average of 111 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2	Baseline value of 111 pairs (SPA designation 1992) is selected based upon the population increase in line with national trends since the 1980s.  Data is provided annually via the British Trust of Ornithology (BTO) breeding bird surveys: <a href="http://www.bto.org/volunteer-surveys/bbs">http://www.bto.org/volunteer-surveys/bbs</a> and the Wildfowl and Wetland Trusts (WWT) breeding bird surveys.
<b>Breeding population</b>	<b>Population structure</b>	Maintain overall breeding productivity and adult survival at a level which is consistent with maintaining the abundance of the population at or above its target level	Changes in the availability of adult birds of breeding age to reproduce, and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 6: Population abundance and population structure: A037 *Anas crecca*; Eurasian Teal (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Non-breeding population</b>	<b>Population abundance</b>	Maintain the size of the non-breeding Teal population at a level which is above an average of 4,100 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2	<p>A baseline figure of 4,100 individuals was present at the time of SPA designation in 1992 (as part of the waterfowl assemblage)</p> <p>The most recent data about this feature on this SPA can be derived from WeBs data upon request:  <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a></p>
<b>Non-breeding population</b>	<b>Population structure</b>	Maintain overall adult survival and body condition at a level which is consistent with maintaining the abundance of the population at or above its target level	Poor winter body condition may negatively affect a bird's ability to move, forage, migrate and survive, and subsequently affect its ability to reproduce whilst in its summer breeding grounds.	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				



**Table 7: Population abundance and population structure: A053 *Anas platyrhynchos*; Mallard (Breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Breeding population</b>	<b>Population abundance</b>	Restore the size of the breeding Mallard population at a level which is above an average of 850 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2.  The high water levels at the start of the breeding season appear to be having a negative effect on breeding mallard, with numbers now much lower than at notification. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.	A baseline figure of 850 pairs was present at the time of SPA designation in 1992.  Data is provided annually via the British Trust of Ornithology (BTO) breeding bird surveys: <a href="http://www.bto.org/volunteer-surveys/bbs">http://www.bto.org/volunteer-surveys/bbs</a> and the Wildfowl and Wetland Trusts (WWT) breeding bird surveys.
<b>Breeding population</b>	<b>Population structure</b>	Maintain overall breeding productivity and adult survival at a level which is consistent with maintaining the abundance of the population at or above its target level	Changes in the availability of adult birds of breeding age to reproduce, and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 8: Population abundance and population structure: A054 *Anas acuta*; Northern pintail (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Non-breeding population</b>	<b>Population abundance</b>	Restore the size of the non-breeding Pintail population at a level which is above an average of 1450 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2.  Numbers of teal on the Ouse Washes have fluctuated, and show a roughly similar pattern to the national trend, but the decline nationally (which is short-term and not understood, although possibly due to an increasing tendency for birds to winter further east) has been smaller than the decline evident at the Ouse Washes. Pintail is a dabbling duck, and even though it feeds predominantly on fruits and seeds (Thomas 1982) that can often be gathered from the water surface during a flood, it seems likely that it will prefer shallower water than is available on the Ouse Washes throughout most winters. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.	A baseline figure of 1,450 individuals was present at the time of SPA designation in 1992 (as part of the waterfowl assemblage)  The most recent data about this feature on this SPA can be derived from WeBs data upon request: <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a>
<b>Non-breeding population</b>	<b>Population structure</b>	Maintain overall adult survival and body condition at a level which is consistent with maintaining the abundance of the population at or above its target level	Poor winter body condition may negatively affect a bird's ability to move, forage, migrate and survive, and subsequently affect its ability to reproduce whilst in its summer breeding grounds.	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 9: Population abundance and population structure: A055 *Anas querquedula*; Garganey (Breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Breeding population</b>	<b>Population abundance</b>	Restore the size of the breeding Garganey population at a level which is above an average of 14 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2.  The high water levels at the start of the breeding season appear to be having a negative effect on breeding garganey, with numbers now much lower than at notification. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.	A baseline figure of 14 pairs was present at the time of SPA designation in 1992.  Data is provided annually via the British Trust of Ornithology (BTO) breeding bird surveys: <a href="http://www.bto.org/volunteer-surveys/bbs">http://www.bto.org/volunteer-surveys/bbs</a> and the Wildfowl and Wetland Trusts (WWT) breeding bird surveys.
<b>Breeding population</b>	<b>Population structure</b>	Maintain overall breeding productivity and adult survival at a level which is consistent with maintaining the abundance of the population at or above its target level	This target is provided to maintain /restore population abundance. Changes in the availability of adult birds of breeding age to reproduce, and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 10: Population abundance and population structure: A056 *Anas clypeata*; Northern shoveler (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Non-breeding population</b>	<b>Population abundance</b>	Maintain the size of the non-breeding Shoveler population at a level which is above an average of 750 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in table 2	<p>A baseline figure of 750 individuals was present at the time of SPA designation in 1992 (as part of the waterfowl assemblage)</p> <p>The most recent data about this feature on this SPA can be derived from WeBs data upon request:  <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a></p>
<b>Non-breeding population</b>	<b>Population structure</b>	Maintain overall adult survival and body condition is at a level which is consistent with maintaining the abundance of the population at or above its target level	This target is provided to maintain /restore population abundance. Poor winter body condition may negatively affect a bird's ability to move, forage, migrate and survive, and subsequently affect its ability to reproduce whilst in its summer breeding grounds.	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 11: Population abundance and population structure: A056 *Anas clypeata*; Northern shoveler (Breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Breeding population</b>	<b>Population abundance</b>	Restore the size of the breeding Shoveler population at a level which is above an average of 155 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	As above in Table 2.  The high water levels at the start of the breeding season appear to be having a negative effect on breeding shoveler, with numbers now much lower than at notification. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.	A baseline figure of 155 pairs was present at the time of SPA designation in 1992.  Data is provided annually via the British Trust of Ornithology (BTO) breeding bird surveys: <a href="http://www.bto.org/volunteer-surveys/bbs">http://www.bto.org/volunteer-surveys/bbs</a> and the Wildfowl and Wetland Trusts (WWT) breeding bird surveys.
<b>Breeding population</b>	<b>Population structure</b>	Maintain overall breeding productivity and adult survival at a level which is consistent with maintaining the abundance of the population at or above its target level	Changes in the availability of adult birds of breeding age to reproduce, and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 12: Population abundance and population structure: A082 *Circus cyaneus*; Hen harrier (Non-breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Non-breeding population</b>	<b>Population abundance</b>	Restore the size of the non-breeding Hen Harrier population at a level which is above an average of 11 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>As above in table 2.</p> <p>Numbers of wintering hen harriers have undergone a decline; it is now unusual for one to be recorded during a winter season. The reason for the decline is not understood; influencing factors may include greater winter flooding depth or impacts on breeding populations.</p> <p>Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels.</p>	The most recent data about this feature on this SPA can be derived from the Cambridgeshire local bird club, WWT and WeBs data. Although not strictly a WeBs species, recorders on the Ouse Washes also count other species during WeBs counts
<b>Non-breeding population</b>	<b>Population structure</b>	Maintain overall adult survival and body condition is at a level which is consistent with maintaining the abundance of the population at or above its target level	Poor winter body condition may negatively affect a bird's ability to move, forage, migrate and survive, and subsequently affect its ability to reproduce whilst in its summer breeding grounds.	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 13: Population abundance and population structure: A151 *Philomachus pugnax*; Ruff (Breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Breeding population	Population abundance	Restore the size of the breeding Ruff population at a level which is above an average of 5 lekking males, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>As above</p> <p>No confirmed breeding attempts have been made at the Ouse Washes since 1999. Although lekking still occurs nearby, there have only been four confirmed breeding records in the country between 2006 and 2015 (Holling <i>et al.</i> 2015). While the habitat at the Ouse Washes may well no longer be suitable, research into ruff migration suggests a large-scale redistribution of breeding ruff due to the diminished quality of staging posts in Europe, where birds go to feed after travelling from their wintering sites in West Africa before carrying on to their breeding sites.</p> <p>A restore target has been set because numbers are now much lower than at notification, but restoration is unlikely unless there is restoration of good quality wet grassland that can be used for feeding by migrating ruff in the Netherlands.</p>	<p>A baseline figure of 5 lekking males was present at the time of SPA designation in 1992. If present, data would be provided annually via BTO and WWT breeding bird surveys. The count unit is lekking males rather than 'breeding pairs'.</p> <p>This species is now thought to be locally extinct on the Ouse Washes as a breeding species.</p>
Breeding population	Population structure	Maintain overall breeding productivity and adult survival at a level which is consistent with maintaining the abundance of the population at or above its target level	Changes in the availability of adult birds of breeding age to reproduce, and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				



**Table 14: Population abundance and population structure: A156a *Limosa limosa limosa*; Black-tailed godwit (Breeding)**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
Breeding population	Population abundance	Restore the size of the breeding Black-tailed Godwit population at a level which is above an average of 26 pairs, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>As above.</p> <p>No nesting has occurred on the Ouse Washes itself since 2013, but the 'lifeboat sites', areas of habitat suitable for breeding waders that have been created adjacent to the boundary of the Ouse Washes close to Manea and the WWT reserve at Welney, have supported a small number of breeding pairs since then. It has been demonstrated that the flooding at the start of the breeding season has caused the decline (Ratcliffe <i>et al.</i> 2005).</p> <p>Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels, and head starting is being undertaken to boost the numbers using eggs collected from the Nene Washes as part of Project Godwit.</p>	<p>A baseline figure of 26 pairs was present at the time of SPA designation in 1992.</p> <p>Data are provided annually via RSPB and WWT breeding bird surveys.</p>
Breeding population	Population structure	Restore overall breeding productivity and adult survival is to a level which is consistent with maintaining the abundance of the population at or above its target level	Changes in the availability of adult birds of breeding age to reproduce, and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b>  <b>Vegetation Characteristic:</b> Vegetation height of 10cm shorter sward overall as species preference for roosting and feeding, as outlined in site FCT.				

**Table 15: Supplementary Advice for Qualifying features: Waterbird assemblage**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Assemblage of species</b>	<b>Assemblage abundance</b>	Maintain the size of the waterbird assemblage at a level which is above an average of 60,950 individuals, whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>This will sustain the overall size of the site's assemblage and contribute to viable local, national and bio-geographic populations.</p> <p>Due to the mobility of birds and the dynamic nature of population change, the target-value given for the assemblage size of this feature 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 an assemblage's size 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 (generally at least 10 years). 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.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's assemblage, 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.</p> <p>Unless otherwise stated, the assemblage size will be that measured using standard methods such as peak mean counts or breeding surveys. 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 that the figures stated are the best available.</p>	<p>A mean peak count of 60,950 individuals was recorded over the winters of 1986/87 to 1990/91.</p> <p>The most recent data about this feature on this SPA can be derived from WeBs data upon request:  <a href="http://www.bto.org/volunteer-surveys/webs/data/submit-data-request">http://www.bto.org/volunteer-surveys/webs/data/submit-data-request</a></p>
<b>Assemblage of species</b>	<b>Assemblage structure</b>	Maintain overall adult survival and body condition of the birds comprising the assemblage at a level which is consistent with	Poor winter body condition may negatively affect a bird's ability to move, forage, migrate and survive, and subsequently affect its ability to reproduce whilst in its summer breeding grounds.	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
		maintaining the abundance of the assemblage at or above its target level		
<b>Assemblage of species</b>	<b>Diversity of species</b>	<p>To achieve a high degree of species diversity within the water-bird assemblage, restore the overall number of the main assemblage-component species, and the average size of each of their populations.</p> <p>The noted component species of the wintering waterbird assemblage that aren't notified as individual features, all of which were present at nationally important numbers at notification, are:</p> <p>Cormorant (<i>Phalacrocorax carbo</i>), mute swan (<i>Cygnus olor</i>), gadwall (<i>Anas strepera</i>), pochard (<i>Aythya farina</i>), tufted duck (<i>Aythya fuligula</i>), and coot (<i>Fulica atra</i>).</p>	<p>In addition to comprising an exceptionally large numbers of birds, an assemblage of species will often be of value for the overall variety or diversity of different species which are represented and which contribute to the size of the assemblage.</p> <p>This diversity is a product of both species richness (the overall number of different species represented in the assemblage) and the abundance of those species within the assemblage. Maintaining this overall diversity is considered an important element of achieving the SPA Conservation Objective.</p> <p>Conservation priorities should focus on those key species which make the greatest relative contribution to the assemblage. Here the main assemblage-component species of a SPA assemblage are considered to be those species present in either nationally important numbers or those comprising 2,000 or more individuals (ie 10% of the minimum qualifying threshold for an internationally-important assemblage) where present in less than nationally important numbers.</p> <p>Populations that need their numbers restored:</p> <p>Cormorant numbers are now only half what they were at SPA notification. This may be because of nearby fisheries attracting more birds, the cormorant control that those fisheries often employ, deep, long-lasting floodwater causing low oxygen conditions and affecting fish numbers, or deep water leading to fewer perches, or a combination of all these factors. Further investigation is required.</p> <p>Mute swan numbers have declined, but numbers have always fluctuated and the decline is very recent. Mute swans are less likely than whooper or Bewick's swans to feed on arable land, mainly foraging for aquatic plants over winter (Owen and Cadbury 1975), and the greater depths of flood water may have affected feeding potential.</p> <p>The small decline in pochard is similar to the decline seen nationally, and isn't thought to be due to any site specific factors (Natural England</p>	

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			2015). The decline in pintail is thought to be due to deeper flood water. Pintail is a dabbling duck that requires shallow water for feeding.	
<b>Supporting habitat (both within and outside the site): structure/function</b>	<b>Quality of supporting non-breeding habitat</b>	<p>Restore the structure, function and availability of the following habitats which support the main component species of the assemblage feature for all stages (moulting, roosting, loafing, feeding) of the non-breeding period;</p> <p>Habitats likely to be important for the waterbird assemblage are:</p> <p>Offsite arable land Shallow waterbodies Waterbodies larger than 10 ha Short sward wet grassland</p>	<p>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.</p> <p>The feeding and roosting habitats which support the assemblage will occur within, and may in some cases outside, the site boundary. This target is applicable to both circumstances. Due to the large number of species and natural fluctuations in the overall composition of an assemblage, it is not practical to provide specific targets relating to each supporting habitat relevant to the assemblage.</p> <p>Important attributes of each supporting habitat may include vegetation composition and structure, water depth, food availability, connectivity between nesting, roosting and feeding areas both within and outside the SPA. Further advice will be provided by NE on a case by case basis.</p>	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

**Table 16: Population abundance and population structure: Breeding Bird assemblage**

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
<b>Assemblage of species</b>	<b>Assemblage abundance</b>	<p>Restore the presence of the breeding bird assemblage and each of its component species, whilst avoiding deterioration from its current level of abundance as indicated by the latest mean peak count or equivalent.</p> <p>The noted component species of the breeding bird assemblage that aren't notified as individual features are:</p> <p>Oystercatcher (<i>Haematopus ostralegus</i>), redshank (<i>Tringa tetanus</i>), snipe (<i>Gallinago gallinago</i>), lapwing (<i>Vanellus vanellus</i>), mute swan (<i>Cygnus olor</i>), shelduck (<i>Tadorna tadorna</i>), teal (<i>Anas crecca</i>), pintail (<i>A. acuta</i>), pochard (<i>Aythya farina</i>), tufted duck (<i>Aythya fuligula</i>), moorhen (<i>Gallinula chloropus</i>) and coot (<i>Fulica atra</i>).</p>	<p>"This will sustain the site's assemblage and contribute to viable local national and bio-geographic species populations. Due to the mobility of birds and the dynamic nature of population change, the target-value given for the assemblage size of this feature 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 an assemblage's size 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 (generally at least 10 years). 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.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's assemblage, 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.</p> <p>Unless otherwise stated, the assemblage size will be that measured using standard methods such as peak mean counts or breeding surveys. 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 that the figures stated are the best available.</p>	<p>1992 SPA citation</p> <p>Breeding bird surveys are carried by the RSPB and WWT and cover the whole of the Ouse Washes</p>

Attributes		Targets	Supporting and/or Explanatory Notes	Sources of site-based evidence (where available)
			All of the breeding species of not on the SPA citation still breed on the Ouse Washes. However, the most recent average counts of breeding pairs is lower than the average at the time of notification for more than half of the species. The most likely cause is the increase in flooding into the breeding season, which has led to unfavourable habitat changes and often means that the Washes are still under water at the point that the birds would otherwise start to nest. Habitat creation is being undertaken by the Environment Agency adjacent to the Ouse Washes to provide suitable habitat for bird species negatively affected by high water levels	
<b>Assemblage of species</b>	<b>Assemblage structure</b>	Maintain overall breeding productivity and adult survival at a level which is consistent with <i>maintaining</i> the abundance of the assemblage feature at or above its target level	<p>Changes in the availability of adult birds of breeding age to reproduce and the annual productivity or breeding success of the population (i.e. the number of chicks successfully raised per breeding pair per year) may adversely affect the overall size of the breeding population and its long-term viability.</p> <p>Overall breeding success of the SPA assemblage may also be significantly influenced by the scale of predation of eggs and chicks by generalist native species and/or introduced non-native species.</p>	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national framework of integrity-guidance:</b> N/A				

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