



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

**Arun Valley Special Protection Area (SPA)
Site Code: UK9020281**

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About this document

This document provides Natural England's supplementary advice for the European Site Conservation Objectives relating to Arun Valley SPA.

This advice should therefore be read together with the SPA Conservation Objectives available [here](#).

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

This advice replaces a draft version dated February 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

HDIRConservationObjectivesNE@naturalengland.org.uk

About this site

European Site information

Name of European Site	Arun Valley Special Protection Area (SPA)
Location	Surrey, East and West Sussex
Site Map	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	31 May 2000
Qualifying Features	See section below
Designation Area	530.42 ha
Designation Changes	N/A
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Amberley Wild Brooks SSSI, Pulborough Brooks SSSI and Waltham Brooks SSSI
Relationship with other European or International Site designations	The site overlaps with Arun Valley SAC (UK0030366) and Arun Valley Ramsar (UK11004). Conservation Objectives for the SAC can be found here ; Conservation Objectives for the RAMSAR are not currently available.

Site background and geography

The Arun Valley in West Sussex is located just north of the South Downs escarpment about 15 km inland from the south coast of England. It consists of low-lying grazing marsh, largely on alluvial soils, but with an area of peat derived from a relict raised bog. Variation in soils and water supply lead to a wide range of ecological conditions and hence a rich flora and fauna. Southern parts of the Arun Valley are fed by calcareous springs, while to the north, where the underlying geology is Greensand, the water is more acidic.

The history of management of fields, and their water levels, determines the plant communities present, with drier fields dominated by meadow grasses, Crested Dog's-tail *Cynosurus cristatus* and Perennial Rye-grass *Lolium perenne*. In wetter areas, rushes, sedges and Tufted Hair-grass *Deschampsia cespitosa* are more frequent. Ungrazed fields have developed into fen, scrub or woodland. Fen areas consist of Common Reed *Phragmites australis*, Reed Sweet-grass *Glyceria maxima* and Greater Tussock-sedge *Carex paniculata*, often with scattered elder *Sambucus* sp. and willow scrub. On firmer ground, there is Alder *Alnus glutinosa*, Willow *Salix* sp., Birch *Betula* sp., and willow, with Oak *Quercus robur* and Hazel *Corylus avellana* woodland on the driest ground. The ditches and margins between grazing marsh fields have an outstanding aquatic flora and invertebrate fauna. The Arun Valley supports important numbers of wintering waterbirds, which feed in the wetter, low-lying fields and along ditches.

The Arun Valley SPA is situated within the South Downs National Character Area ([NCA Profile 125](#)). The South Downs area consists of dramatic white chalk cliffs and downland which create a sense of openness, whilst both enclosure and remoteness can be found in woodland and even in close proximity to urban areas. The Arun, Adur, Cuckmere and Ouse Rivers in the area dissect the chalk ridge in its eastern half, separating it into blocks, as they drain south to the sea.

About the qualifying features of the SPA

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

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

- A037 *Cygnus columbianus bewickii*, Bewick's swan (non-breeding)

During the time of site notification, the SPA supported 115 individuals representing at least 1.6% of the wintering population in Great Britain (5 year peak mean 1992/93 - 1996/97).

Qualifying assemblage of species (Article 4.2)

During the non-breeding season the SPA regularly supports an assemblage of waterfowl with the area regularly supporting 27,241 individual waterfowl (5 year peak mean for 1992/93 to 1996/97) including: Shoveler *Anas clypeata*, Teal *Anas crecca*, Wigeon *Anas penelope*, Bewick's Swan *Cygnus columbianus bewickii*.

Broad habitat types present within Arun Valley SPA which support wintering non-breeding birds include:

- MG5 *Cynosurus cristatus*-*Centaurea nigra* lowland meadows
- MG13-related; Inland wet grassland
- S5 *Glyceria maxima* (Reed Sweet-grass) swamp
- S22 *Glyceria fluitans* (floating-sweet grass) water-margin vegetation
- Network of ditch systems

Site-specific seasonality of SPA features

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

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

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

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

Feature	Season	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Site-specific references where available
Bewick's Swan	<i>Non-breeding</i>	<i>Winter</i>													<i>Includes analysis of data from SPA's WeBS Counts</i>
Waterbird Assemblage	<i>Non-breeding</i>	<i>Winter</i>													

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: A037. *Cygnus columbianus bewickii*; Bewick’s swan (Non-breeding)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Non-breeding population	Population abundance	Restore the size of the non-breeding population at a level which is at or above 115 individuals (calculated at a 5 year peak mean at time of notification), whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent of 33 (5 year peak mean from 2012/13-2016/17).	<p>This will sustain the site’s population and contribute to a viable local, national and bio-geographic population. Due to the mobility of birds and the dynamic nature of population change, the target-value given for the abundance of 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 abundance has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (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 abundance 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. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, restoration will be needed in this case to accommodate the feature at such higher levels in future should also be taken into account.</p> <p>Maintaining or restoring bird abundance depends on the suitability of the site. However, factors affecting suitability can also determine other demographic rates of birds using the site including survival (dependent on factors such as body condition which influences the ability to breed or make foraging and/or migration movements) and breeding productivity. Adverse anthropogenic impacts on either of these rates may precede changes in population abundance (e.g. by changing</p>	The latest data can be requested via the BTO website: https://www.bto.org/volunteer-surveys/webs/data

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>proportions of birds of different ages) but eventually may negatively affect abundance. These rates can be measured/estimated to inform judgements of likely impacts on abundance targets. Unless otherwise stated, the population size will be that measured using standard methods such as peak mean counts or breeding surveys.</p> <p>This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise on whether the figures stated are the best available.</p> <p>Populations of both the NW European Bewick's and numbers occurring within Britain have declined during the last 20 years. Populations can also fluctuate year to year depending on the harshness of winters in Europe; fewer birds will cross the North Sea during mild winters and might explain recent declines in numbers visiting. It should also be noted that the worldwide population of Bewick Swan has seen a significant decline</p> <p>Although principal reasons for decline in numbers of Bewick's Swan visiting the site are likely to be as a result of off-site issues, a restore target has been set until it has been confirmed there are no onsite issues affecting this species.</p>	
Supporting habitat (both within and outside the SPA): function/ supporting process	Food availability within supporting habitat	Maintain cover/abundance of preferred food plants (e.g. <i>Potamogeton</i> , <i>Ceratophyllum</i> , <i>Zannichellia</i> , <i>Myriophyllum</i> , <i>Chara</i> spp.).	The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population. As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Supporting habitat (both within and outside the SPA): extent and	Extent and distribution of supporting non-breeding habitat	Maintain the extent and distribution of suitable habitat (either within or outside the site boundary) which supports the feature for all necessary stages of the non-breeding/wintering	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 on the nature, age and accuracy of data collection. This target may	Figures for habitat extent are calculated from the Webmap tool using latest Ordnance Survey mapping. More detailed information for

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
distribution		<p>period (moulting, roosting, loafing, feeding)</p> <p>Open Water and land within the SPA: 530.42ha.</p> <p>The grassland community types throughout the SPA and within each component SSSI are a complex mosaic of species-rich & species-poor neutral grassland, floodplain, open water transition and valley fens</p>	<p>apply to supporting habitat which also lies outside the site boundary. Supporting habitat includes improved pasture, autumn-sown crops, over-wintered stubbles and oil seed rape outside the SPA.</p> <p>Bewick's swan is an overwintering species on the Arun Valley and regularly occur in nationally and internationally important numbers in the area, and whilst not restricted to using this habitat, they will feed on species-poor wet grassland, probably to maximise their intake of the most productive grasses and their associated invertebrates, to maintain their food reserves during the cold winter months.</p> <p>Principle habitats within and surrounding the site include; Grazing marsh, water fen and reedbeds, mesotrophic – species rich and poor grasslands, surrounding arable land, open water, rivers and ditches.</p> <p>In the Arun Valley, Bewick's swans tend to roost overnight on disturbance-free floodwaters at Pulborough Brooks, Amberley Wildbrooks or the Arundel WWT Reserve. They then feed during the day on pastures within the SPA or at a range of sites to the south of the SPA, between Arundel and Amberley (Thomas, 2014, and data supplied by the Sussex Ornithological Society). However, Bewick's swans will fly up to 10km from their roost sites to feed (Stroud et al, 2016). This distance, plus suitable habitat, has been used to define impact risk zones for foraging Bewick's swans in the Arun Valley. Any losses of habitat within these zones may impact the ecological integrity of this species</p>	<p>each component part of the SPA may be available from Natural England.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p> <p>Thomas (ed.). 2014. Birds of Sussex</p> <p>Stroud et al (eds) 2016. The status of UK SPAs in the 2000s: the Third Network Review. JNCC. Peterborough.</p> <p>Impact risk zones can be found on www.magic.gov.uk</p>
Supporting habitat (both within and outside the SPA): function/ supporting process	Connectivity with supporting habitats	Maintain the safe passage of birds moving between roosting and feeding areas	The ability of the feature to safely and successfully move to and from feeding and roosting areas is critical to the adult fitness and survival. This target will apply within the site boundary and where birds regularly move to and from off-site habitat where this is relevant.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): function/supporting process	Food availability within supporting habitat	Maintain the availability of cereal grains, rape, potatoes and sugar beet, where these sources are locally important to feeding flocks,	The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population. As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Supporting habitat (both within and outside the SPA): function/supporting process	Food availability within supporting habitat	Maintain cover/abundance of preferred food plants (e.g. <i>Lolium perenne</i> , <i>Glyceria fluitans</i> , <i>Phleum pratense</i> , <i>Rorippa amphibia</i> , <i>Alopecurus geniculatus</i>).	The availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population. As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Supporting habitat (both within and outside the SPA): function/supporting process	Hydrology/flow	Maintain the hydrology of a waterbody used as a feeding site such that water levels continue to fluctuate by 5-15% each month. Generally, in wet ditches water depth at least 0.5 m in minor ditches and 1 m in major drains. 90% of channel length should reach this target	Changes in source, depth, duration, frequency, magnitude and timing of water supply or flow can have important implications for this feature. Such changes may affect the quality and suitability of habitats used by birds for nesting, drinking, preening, rearing, feeding or roosting. 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. Within the ditch systems the levels characteristic of the site, in relation to both freeboard and water depth, should be maintained. High water levels are particularly important in spring and early summer for semi-aquatic riparian invertebrates. Bewick's Swan and the majority of water bird assemblage species for which the site is classified require large bodies of in field water and water levels maintained within the ditch systems.	More detailed information for each component part of the SPA may be available from Natural England. Arun Valley SPA Site Improvement Plan , Natural England (2014) This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Supporting habitat (both within	Water depth	Maintain the availability of standing water of <1 m deep, over at least 50% of the total	This feature is known to require extensive areas of water in which to feed. Birds are visual predators, with some having the ability to dive or to feed from the surface. As they will rely on	More detailed information for each component part of the SPA may be available from Natural

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
and outside the SPA): function/ supporting process		standing water area. Generally, in wet ditches water depth at least 0.5 m in minor ditches and 1 m in major drains. 90% of channel length should reach this target	detecting their prey within the water to hunt, the depth of water at critical times of year may be paramount for successful feeding and therefore their fitness and survival.	England.
Supporting habitat (both within and outside the SPA): function/ supporting process	Water quality/ quantity	Where the supporting habitats of the SPA feature are dependent on surface water ensure water quality and quantity is restored to a standard which provides the necessary conditions to support the feature Total phosphorus <0.1 mg L-1;	For many SPA features which are dependent on wetland habitats supported by surface water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year during key stages of their life cycle. Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of breeding, rearing, feeding and roosting habitats. Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the SPA Conservation Objectives but in some cases more stringent standards may be needed to support the SPA feature. Further site-specific investigations may be required to establish appropriate standards for the SPA. There's a risk that undetected deterioration in the quality of water entering the ditch systems is impacting upon SPA/SCI/Ramsar species. An important food source for Bewick's swan is <i>Potamogeton</i> spp. (pond weeds), which also requires good water quality, as do the majority of aquatic plant species. The rivers Arun and Stor are failing on phosphate levels. There may also be a risk of increased levels of nutrients entering the site through flooding, especially if the river banks are not maintained (see issue of changes in water levels). The classified bird species are also vulnerable to increased levels of nutrient enrichment as there is an increased likelihood of certain disease. Increase in growth of vegetation from sustained nutrient enrichment can make the habitat unsuitable for many bird species.	Natural England (2014) Site Improvement Plan, Arun Valley

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): function/supporting process	Conservation measures	Maintain and where necessary restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to maintain and 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 this feature at this site. Other measures may also be required, and in some cases, these measures may apply to areas outside of the designated site boundary in order to achieve this target.</p> <p>Further details about the necessary conservation measures for this site will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, Water Level Management Plans, the Views about Management Statement for the underpinning SSSI and/or management agreements.</p> <p>Conservation management required at this SPA includes; cutting and grazing of hay meadows, control of water levels, reducing the impact of prolonged flooding, upgrading and maintaining water management infrastructure and ditch management. Maintenance of water control structures, within the site and on feeder ditches, is necessary to ensure that water levels in the ditches can be maintained. Ditch maintenance on a long rotation is required to ensure that flows are maintained, and to ensure a range of successional stages of weed growth in the ditches. This maximises the suite of in-channel and marginal flora and their associated species.</p> <p>Management of wet grassland habitat is necessary to maintain a suitable sward height (5-15cm excluding <i>Juncus</i> spp.) and prevent scrub encroachment. This can be achieved by grazing or cutting, as appropriate.</p>	<p>English Nature (2003), Views About Management</p> <p>Natural England (2014) Site Improvement Plan, Arun Valley</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting habitat (both within and outside the SPA): function/supporting process	Hydrology/flow	Maintain hydrological processes to ensure water availability in feeding sites, with visible areas of standing shallow water.	<p>Changes in source, depth, duration, frequency, magnitude and timing of water supply or flow can have important implications for this feature. 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>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): function/supporting process	Water area	Maintain the number of large waterbodies of optimal size (typically >10 ha).	This feature depends on the presence and continuity of open water habitat; often requiring water bodies of a particular size to in order to feed and/or roost. Changes in water area, and associated marginal habitat, can adversely affect the suitability of supporting open water habitat.	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments .
Supporting habitat (both within and outside the SPA): minimising disturbance	Minimising disturbance caused by human activity	Restrict the frequency, duration and/or intensity of disturbance within close proximity of affecting roosting, foraging, feeding, moulting and/or loafing birds so that the feature is not significantly disturbed	<p>The nature, scale, timing and duration of some human activities can result in the disturbance of birds at a level that may substantially affect their behaviour, and consequently affect the long-term viability of the population. Such disturbing effects can for example result in changes to feeding or roosting behaviour, increases in energy expenditure due to increased flight, and desertion of supporting habitat (both within or outside the designated site boundary where appropriate). This may undermine successful feeding and/or roosting, and/or may reduce the availability of suitable habitat as birds are displaced and their distribution within the site contracts.</p> <p>Disturbance associated with human activity may take a variety of forms including noise, light, sound, vibration, trampling, and presence of people, animals and structures.</p>	
Supporting habitat (both within and outside the SPA): structure	Landscape	Maintain open and unobstructed terrain within and around roosting and feeding areas, with no overall decrease in field sizes	This feature is known to favour large areas of open terrain, largely free of obstructions, in and around its roosting and feeding areas. Often there is a need to maintain an unobstructed line of sight within feeding and roosting habitat to detect approaching predators, or to ensure visibility of displaying behaviour. An open landscape may also be required to facilitate movement of birds between the SPA and any off-site supporting habitat.	
Supporting habitat (both within and outside the SPA): structure	Vegetation characteristics	Maintain The extent and distribution of predominantly short (<10 cm) grassland swards in areas used for feeding	<p>The height, cover, variation and composition of vegetation are often important characteristics of habitats supporting this feature which enable successful foraging. 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</p>	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments

Attributes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		adversely affect the feature.	
<p>Version Control Advice last updated: 22 March 2019 following stakeholder feedback. Additional explanatory text added to Extent and distribution of supporting non-breeding habitat clarifying types of supporting habitat and how the species use the SPA and surrounding landscape. Additional detail added to Conservation Measures attribute regarding ditch management.</p>			
<p>Variations from national feature-framework of integrity-guidance: The attribute for Air Pollution has been removed as there are currently no critical loads available for this feature. There are no expected negative impact on species due to impacts on the species' broad habitat.</p>			

Table 2: Supplementary Advice for Qualifying Features: Waterbird assemblage

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Assemblage of species	Assemblage abundance	Restore the overall abundance of the non-breeding assemblage to a level which is above 27,241 individual waterfowl (based on a 5 year peak mean around time of notification - 1992/93 to 1996/97), whilst avoiding deterioration from its current level as indicated by the latest 5 year peak mean count or equivalent.	<p>This will sustain the assemblage population and contribute to viable local, national and bio-geographic populations of its component species. Assemblage abundance is the annual sum of peak counts of each assemblage component species (at any time of year, though peaks tend to occur in the non-breeding season), unless otherwise stated. Five year peak means are the average of these annual peak sums for the relevant period. An assemblage component is any waterbird using the site.</p> <p>Due to the dynamic nature of assemblage component populations, this target may be subject to periodic review. However, the target assemblage abundance is considered to be the minimum standard for conservation or restoration measures and therefore where at any time the assemblage abundance is greater than the target value given, any measure or impact assessment should take account of the greater abundance. This meets with the obligation to avoid deterioration of a European site or significant disturbance of the species for which the site is classified, and seeks to avoid plans or projects giving rise to the risk of such deterioration or disturbance.</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, restoration will be needed in this case to accommodate the feature at such higher levels in future should also be taken into account.</p> <p>Whether to maintain or restore depends on the overall assemblage abundance (i.e. the peak mean derived from the summed peak counts of components), and should only change in response to this value, excepting natural change. Fluctuations of individual assemblage component species alone should not necessarily change the target.</p> <p>Assemblage abundance is linked to the demographic rates of</p>	The latest data can be requested via the BTO website: https://www.bto.org/volunteer-surveys/webs/data

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>assemblage components, including survival (dependent on factors such as body condition which influences the ability to breed or make foraging and / or migration movements) and breeding productivity.</p> <p>Adverse anthropogenic impacts on either of these rates may precede changes in population abundance (e.g. by changing proportions of birds of different ages) but eventually may negatively affect abundance. These rates can be measured / estimated (particularly for the main or named components) to inform judgements of likely changes to the assemblage and associated impacts on abundance targets. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise on whether the figures stated are the best available.</p> <p>NB Many SPA citations omitted gulls and terns from their assemblage totals. Assessments of abundance should be consistent with the waterbirds included in citation calculations (often limited to waders and wildfowl).</p> <p>5 yr peak mean (2012/13 – 2016/17) – 12540 birds</p>	
Assemblage of species	Diversity of species	Maintain the species diversity of the bird assemblage.	<p>This will ensure the bird assemblage reflects the diversity of species the SPA supports. Assemblage diversity is a product of species richness (the number of different species present), abundance (population size of each assemblage component species) and relative 'importance' (an assessment of the conservation status of each assemblage component, described below).</p> <p>Each component makes a different contribution to the diversity of the assemblage, and changes to some components may be considered to affect diversity more than others. Negative changes to small numbers of relatively important assemblage components may have a similar overall effect to negative changes in larger numbers of less important components.</p> <p>To meet the target, the populations of each of the 'main component' assemblage species to be maintained or restored</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>are i) those present in nationally important numbers ($\geq 1\%$ GB population); ii) migratory species present in internationally important numbers ($\geq 1\%$ biogeographic population); iii) those species comprising $\geq 2,000$ individuals ($\geq 10\%$ of the minimum qualifying threshold for an internationally-important assemblage); and iv) 'named components' otherwise listed on the SPA citation.</p> <p>In addition to the main components, other components should be considered as these contribute collectively to the assemblage diversity, in particular proportionally abundant populations of species of conservation importance. Examples are those 'red-listed' as Birds of Conservation Concern and/or those listed on Sections 41/42 of the Natural Environment and Rural Communities Act 2006.</p> <p>The species composition of an assemblage may change over time. However, to meet this target, the total number of all native waterbird species contributing to the assemblage species richness should not decline significantly.</p> <p>From WeBS counts (12/13 to 16/17), the main component species are (including 12/13-16/17 5yr peak mean for each species):</p> <ul style="list-style-type: none"> • Bewick's swan" – 33 • Wigeon*" - 4541 • Teal*" - 2948 • Shoveler*" - 264 • Pintail " - 289 • Lapwing^ - 4096 • Ruff* - 8 • Black-tailed godwit* - 571 • Green sandpiper* - 13 • Golden Plover – 2 • Kingfisher - 3 <p>* Present in nationally important numbers ^ Population of >2000 individuals " Named component species</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): extent and distribution	Extent and distribution of supporting non-breeding habitat	Maintain the extent and distribution of habitats which support the assemblage feature during all necessary stages (moulting, roosting, loafing, and feeding) of the non-breeding period of the full open water and land within SSSI/SPA areas of 530.42ha.	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 will apply to any supporting habitat which is known to occur outside the site boundary The principal habitats known or likely to support the assemblage feature at this SPA are: grazing marsh, and improved grassland. The location of birds depends on the areas of flooding, which may be outside the SPA boundary.	This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Supporting habitat (both within and outside the SPA): function/ supporting process	Water quality/ quantity	<p>Where the supporting habitats of the SPA feature are dependent on surface water ensure water quality and quantity is maintained to a standard which provides the necessary conditions to support the feature</p> <p>Open Water and land within the SPA: 530.42ha.</p> <p>The grassland community types throughout the SPA and within each component SSSI are a complex mosaic of species-rich & species-poor neutral grassland, floodplain, open water transition and valley fens</p>	<p>For many SPA features which are dependent on wetland habitats supported by surface water, maintaining the quality and quantity of water supply will be critical, especially at certain times of year during key stages of their life cycle. Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of feeding and roosting habitats.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the SPA Conservation Objectives but in some cases more stringent standards may be needed to support the SPA feature. Further site-specific investigations may be required to establish appropriate standards for the SPA.</p>	
Supporting habitat (both within and outside the SPA): function/sup porting process	Conservation measures	Maintain and where necessary restore management or other measures (whether within and/or outside the site boundary as appropriate) necessary to maintain or the structure, function and/or the supporting processes associated with the feature and its supporting habitats.	Active and ongoing conservation management is often needed to protect, maintain or restore this feature at this site. Other measures may also be required, and in some cases, these measures may apply to areas outside of the designated site boundary in order to achieve this target. Further details about the necessary conservation measures for this site will typically be found within, where applicable, supporting documents such as Natura 2000 Site Improvement Plan, Site Management Strategies or Plans, Water Level Management Plans, the Views	<p>English Nature (2003), Views About Management</p> <p>Natural England (2014) Site Improvement Plan, Arun Valley</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>about Management Statement for the underpinning SSSI and/or management agreements.</p> <p>Conservation management required at this SPA includes; cutting and grazing of hay meadows, control of water levels, reducing the impact of prolonged flooding, upgrading and maintaining water management infrastructure and ditch management.</p> <p>Maintenance of water control structures, within the site and on feeder ditches, is necessary to ensure that water levels in the ditches can be maintained. Ditch maintenance on a long rotation is required to ensure that flows are maintained, and to ensure a range of successional stages of weed growth in the ditches. This maximises the suite of in-channel and marginal flora and their associated species.</p> <p>Management of wet grassland habitat is necessary to maintain a suitable sward height (5-15cm excluding <i>Juncus</i> spp.) and prevent scrub encroachment. This can be achieved by grazing or cutting, as appropriate.</p>	
Supporting habitat (both within and outside the SPA): minimising disturbance	Minimising disturbance caused by human activity	Restrict the frequency, duration and/or intensity of disturbance affecting moulting, loafing, feeding and/or roosting birds so that the assemblage feature is not significantly disturbed	<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 population. Such disturbing effects can for example result in changes to feeding or roosting behaviour, increased energy expenditure due to more frequent flights, 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. 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>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat (both within and outside the SPA): structure/function	Quality of supporting non-breeding habitat	<p>Maintain 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>Open Water and land: 530.42ha.</p> <p>The grassland community types throughout the SPA and within each component SSSI are a complex mosaic of species-rich & species-poor neutral grassland, floodplain, open water transition and valley fens</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. The feeding and roosting habitats which support the assemblage will occur within, and in some cases outside, the site boundary. This target is applicable to both circumstances.</p> <p>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. Generally speaking, the specific attributes of each supporting habitat may include vegetation characteristics 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 Natural England on a case by case basis.</p> <p>The main component-species of the assemblage at this SPA include: Shoveler <i>Anas clypeata</i>, Teal <i>Anas crecca</i>, Wigeon <i>Anas Penelope</i> and Bewick's Swan <i>Cygnus columbianus bewickii</i>, lapwing, ruff, green sandpiper, black-tailed godwit, golden plover and kingfisher.</p>	<p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Version Control				
Advice last updated: 22 March 2019 following stakeholder feedback. Additional detail added to Conservation Measures attribute regarding ditch management.				
Variations from national feature-framework of integrity-guidance: The attribute for Air Pollution has been removed as there are currently no critical loads available for this feature. There are no expected negative impact on species due to impacts on the species' broad habitat.				

References

English Nature (2003), Views about Management document for Waltham Brooks SSSI. Available from: <https://designatedsites.naturalengland.org.uk/PDFsForWeb/VAM/1000711.pdf>

Natural England (2014) Site Improvement Plan Arun Valley. Available from: <http://publications.naturalengland.org.uk/publication/5353882309885952>
