



## European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features

Sandwich Bay Special Area of Conservation (SAC)  
Site Code: UK0013077



Lizard orchid, *Himantoglossum hircinum* (courtesy of  
Phil Williams)

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## **About this document**

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Sandwich Bay SAC. This advice should therefore be read together with the SAC Conservation Objectives which are 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.

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>	Sandwich Bay Special Area of Conservation (SAC)
<b>Location</b>	Kent
<b>Site Map</b>	The designated boundary of this site can be viewed <a href="#">here</a> on the MAGIC website
<b>Designation Date</b>	1 <sup>st</sup> April 2005
<b>Qualifying Features</b>	See section below
<b>Designation Area</b>	1137.87ha
<b>Designation Changes</b>	N/A
<b>Feature Condition Status</b>	Details of the feature condition assessments made at this site can be found using Natural England's <a href="#">Designated Sites System</a>
<b>Names of component Sites of Special Scientific Interest (SSSIs)</b>	Sandwich Bay to Hacklinge Marshes Site of Special Scientific Interest (SSSI)
<b>Relationship with other European or International Site designations</b>	The boundary of this SAC overlaps with <a href="#">Thanet Coast SAC</a> , <a href="#">Thanet Coast and Sandwich Bay SPA</a> and <a href="#">Thanet Coast and Sandwich Bay Ramsar</a> . Additionally this SAC is in proximity to the <a href="#">Thanet Coast MCZ</a> .

### Site background and geography

Sandwich Bay is a largely inactive dune system with a particularly extensive representation of fixed dune grassland, the only large area of this habitat in the extreme south-east of England. The vegetation of these dunes and their associated slacks is extremely species-rich. The site includes a number of rare and scarce species, such as fragrant evening-primrose *Oenothera stricta*, bedstraw broomrape *Orobanche caryophyllacea* and sand catchfly *Silene conica*, as well as the UK's largest population of lizard orchid *Himantoglossum hircinum*.

The seaward edge at the northern end of the site displays a good sequence of embryonic shifting dune communities and there is a clear zonation within the extensive dune system, with strandline species on the seaward edge and sand-binding grasses inland. Lyme-grass *Leymus arenarius* is extremely sparse and sand couch *Elytrigia juncea* is the dominant sand-binding species. The shifting dune vegetation contains a good range of characteristic foredune species including sea bindweed *Calystegia soldanella*, sea spurge *Euphorbia paralias* and sea-holly *Eryngium maritimum*.

A small area of dunes with creeping willow *Salix repens* ssp. *argentea* is of interest as it is the only example found in the dry south-east of England and is representative of this habitat type in a near-continental climate.

Sandwich Bay SAC is part of the North Kent Plain National Character Area ([NCA Profile 113](#)). A number of sites within the NCA are internationally designated for habitats and species associated with coastal systems, including Sandwich Bay SAC for extensive dune systems. Sandwich Bay are also designated as a Ramsar site, reflecting the wetland invertebrates and winter populations of ruddy turnstone that they

support. The present functionality of Goodwin Sands, off shore from Sandwich Bay SAC, exerts a large-scale control on the development of Sandwich and Pegwell Bay. Nominally Goodwin Sands supplying fine material (sand) to the foreshore as well as protecting the shoreline against direct incident wave attack.

## About the qualifying features of the SAC

The following section gives you additional, site-specific information about this SAC's qualifying features. These are the natural habitats and/or species for which this SAC has been designated.

### Qualifying habitats:

- **H2110 Embryonic shifting dunes**

The Embryonic shifting dunes at Sandwich Bay are representative of this habitat type in south-east England. The seaward edge of the north of this site displays a good sequence of embryonic shifting dune communities and there is a clear zonation within the dune habitat, with strandline species on the seaward edge and sand-binding grasses inland. Lyme-grass *Leymus arenarius* is extremely sparse and sand couch *Elytrigia juncea* is the dominant sand-binding species.

- **H2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('White dunes')**

Shifting dunes along the shoreline with *Ammophila arenaria* occurs along the seaward edge of the northern half of this extensive dune system. It is representative of shifting dune vegetation in south-east England, a region where the habitat type is very restricted in its distribution. Although the area of this habitat type is small by comparison with other listed sites, the shifting dune vegetation contains a good range of characteristic foredune species including sea bindweed *Calystegia soldanella*, sea spurge *Euphorbia paralias* and sea-holly *Eryngium maritimum*.

- **H2130 Fixed coastal dunes with herbaceous vegetation ('Grey dunes')**

Sandwich Bay is a largely inactive dune system with a particularly extensive representation of fixed dune grassland, the only large area of this habitat in the extreme south-east of England. The vegetation is extremely species-rich and the site has been selected because it includes a number of rare and scarce species, such as fragrant evening-primrose *Oenothera stricta*, bedstraw broomrape *Orobanche caryophyllacea* and sand catchfly *Silene conica*, as well as UK's largest population of lizard orchid, *Himantoglossum hircinum*.

- **H2170 Dunes with *Salix repens* ssp. *Argentea* (*Salicion arenariae*)**

The small areas of dunes with *Salix repens* ssp. *Argentea* found at Sandwich Bay is of interest as it is the only example found in the dry south-east of England and is representative of this habitat type in a near-continental climate.

- **H2190 Humid dune slacks**

Annex 1 habitats present as a qualifying feature, but not a primary reason for selection of this site.

**Table 1: Supplementary Advice for Qualifying Features: H2110 Embryonic shifting dunes**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	Maintain the total extent of the H2110 feature at approximately 1.77ha	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>This is the most dynamic, naturally changing, zone of the dune system. Its extent may vary seasonally and through the years. This natural functioning is critically dependent on no interruption of sand movement to and from the foredunes and the beach. Where beaches are narrow or prevailing winds not onshore, this Annex 1 habitat may be limited in extent. Evidence of natural changes to extent should not justify further loss to development</p>	<p>Dargie (2002)</p> <p>Natural England (2014a)</p> <p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>
<b>Extent and distribution of the feature</b>	<b>Spatial distribution of the feature within the site</b>	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. This zone of shifting dunes occurs between the beach plane and the usually more stable and fully vegetated older dunes. Communities may be dynamic in their distribution and are linked the sedimentary processes	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			operating at the site.  The preferred policies identified in the Isle of Grain to South Foreland Shoreline Management Plan Review 2010 along the sand dune frontage at Sandwich Bay SAC will allow the dunes to function freely for the foreseeable future.	HALCROW GROUP LIMITED 2010.
<b>Extent and distribution of the feature</b>	<b>Future extent of habitat within the site and ability to respond to seasonal changes</b>	Maintain the ability to absorb seasonal and periodic fluctuations in the extent of the habitat	This recognises the need to allow for natural fluctuations in the extent and the distribution of this habitat feature, often during particular seasons and usually as a result of natural coastal processes. This ability depends on a continuing linkage between the beach and this Annex 1 habitat, together with the ability of dune building grasses to respond in periods of net sand input. The sand dunes at Sandwich bay are particularly vulnerable to sea level rise due to their fixed state and inability for the habitat found here to be established elsewhere.  Annual recycling of material from the Sandwich Bay estate to north Deal helps to mitigate losses in north Deal and to prevent shingle ingress into the sand dune habitat to the north of Sandwich	Environment Agency (2017)
<b>Structure and function (including its typical species)</b>	<b>Dune topography</b>	Maintain a natural dune topography, and allow natural change that is wind driven (some change may be necessary to maintain the continuity of slacks).	Dune topography in this zone can change seasonally and through the years due to wind and tidal events. Accumulations of driftline organic material are important for trapping sand and initiating dune formation. See also 'Functional connectivity with wider coastal sedimentary system' and 'Within-site sedimentary processes' component.  North of the Sandwich Bay estate there are no hard defences and the beach progresses from a shingle sand composite beach to a shallow sand beach backed by vegetated dunes of international conservation importance. The dunes are not artificially constrained and there are no impediments of site developing naturally,	Environment Agency (2017)
<b>Structure and function (including its typical species)</b>	<b>Presence of unvegetated surfaces</b>	Maintain an extent of bare sand of varying sizes in a mosaic with the vegetation (up to 50% of the feature extent)	In these developing, dynamic zones, bare sand should be expected. Lack of bare sand would suggest an artificially stabilised system. Blow-throughs are a natural element of this zone.  If extent of sand is towards the upper end of the range, it will	Natural England (2014) Site Improvement Plan - <a href="#">North East Kent (Thanet)</a>  This attribute will be periodically monitored as part

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>become important to assess whether recreational pressures are over-riding natural dynamics.</p> <p>Recreational pressure may cause compacting, trampling, erosion and enrichment of sand dunes, particularly where vehicles have access to the sea front.</p>	of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	<p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:</p> <ul style="list-style-type: none"> <li>• SD2 <i>Cakile maritima</i> – <i>Honckenya peploides</i> strandline</li> <li>• SD4 <i>Elytrigia juncea</i> embryo dune</li> </ul>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Vegetation structure: zonation of dune vegetation</b>	Maintain the cover of this feature at or to 95% of the wider dune frontage	<p>The coastal sand dune ecosystem has a characteristic range of natural features, representing different stages of natural succession. The full representation of these stages should be maintained or where appropriate restored. On some sites there may be specific natural factors that limit continuous coverage, related to broader scale sediment budgets. Where <i>Leymus arenarius</i> is present, there can be a continuous floristic transition to marram dominated mobile dunes (Shifting dunes along the shoreline with <i>Ammophila arenaria</i>).</p> <p>Zonation from beach to fixed dune should be intact over at least 95 % of coastal frontage. Points may change because of natural dynamism, but the overall diversity should not diminish. The target will be site- and feature-specific, dependent on the dune features present. If strandline is absent this may be acceptable if due to natural causes. The dune front may be vulnerable to heavy trampling/grazing by stock</p>	Natural England (2014a)



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Structure and function (including its typical species)</b>	<b>Vegetation composition: trees and scrub</b>	Ensure scrub and tree cover is absent or rare.	Dense cover of trees and shrubs can smother and shade out smaller and more characteristic vegetation of this habitat feature, and interrupt naturally occurring dune processes. Usually active management is required to reduce or contain its cover across this habitat feature.  Apart from sea buckthorn (where it is native), other trees and shrubs would usually indicate an artificially stabilised system.	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Vegetation: undesirable species</b>	Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread.  Sea buckthorn <i>Hippophae rhamnoides</i> should be absent from sites where it is not native.  Other non-native species no more than rare.  Undesirable species no more than frequent throughout the sward, or singly or together more than 5%.	Two types of negative species can occur: invasive non-natives, or species indicative of poor condition (e.g. nettle or creeping thistle).  Sea Buckthorn <i>Hippophae rhamnoides</i> is not considered native to Sandwich Bay SAC.  Undesirable species include: <i>Senecio jacobaea</i> , <i>Cirsium arvense</i> , <i>Cirsium vulgare</i> , <i>Urtica dioica</i> , <i>Lolium perenne</i> , and <i>Arrhenatherum elatius</i> .  <i>Urtica dioica</i> and <i>Cirsium</i> species are indicative of poor condition because of enrichment; abundance of <i>Senecio jacobaea</i> indicates overgrazing in summer.	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Soils, substrate and nutrient cycling</b>	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.	Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms.  Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature. This Annex 1 habitat has essentially raw soils with little humus and low nutrient status.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Structure and function (including its typical species)</b>	<b>Key structural, influential and/or distinctive species</b>	<p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature</p> <ul style="list-style-type: none"> <li>The constant and preferential plants of SD2 <i>Cakile maritima</i> – <i>Honckenya peploides</i> strandline and SD4 <i>Elytrigia juncea</i> embryo dune NVC community types which forms a key component of the <b>H2110 Embryonic Shifting dunes</b> feature at this SAC</li> </ul>	<p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> <li><b>Structural</b> species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li><b>Influential</b> species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat)</li> <li><b>Site-distinctive</b> species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC.</li> </ul> <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p>	Natural England (2014a)
<b>Structure and function (including its typical species)</b>	<b>Adaptation and resilience</b>	<p>Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site</p>	<p>This recognises the increasing likelihood of natural habitat features to absorb or adapt to wider environmental changes. Resilience may be described as the ability of an ecological system to cope with, and adapt to environmental stress and change whilst retaining the same basic structure and ways of functioning. Such environmental changes may include changes in sea levels, precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The</p>	<p>NATURAL ENGLAND, 2015. <a href="#">Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England</a></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>vulnerability and response of features to such changes will vary.</p> <p>Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability.</p> <p>The overall vulnerability of this SAC to climate change has been assessed by Natural England (2015) as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats.</p> <p>This means that this site is considered to be the most vulnerable sites overall and are likely to require the most adaptation action, most urgently. A site based assessment should be carried out as a priority. This means that action to address specific issues is likely, such as reducing habitat fragmentation, creating more habitat to buffer the site or expand the habitat into more varied landscapes and addressing particular management and condition issues.</p> <p>Individual species may be more or less vulnerable than their habitat itself. In many cases, change will be inevitable so appropriate monitoring would be advisable.</p> <p>Sea Level Rise is considered to be a threat to the site There is flood defence in the form of a sea wall south of the designated site. Low-lying coastal features and habitats including saltmarsh, mudflats and shingle beaches are liable to be lost to 'coastal squeeze' over the longer term, (policies of Hold the Line are identified along a number shingle beach frontages).</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature relies)	Functional connectivity with wider coastal sedimentary system	Maintain adequate movement of sediment from all key sediment sources (directly from the beach, indirectly from offshore, eroding cliffs etc).	<p>This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features outside of the designated site boundary which are either important for the continuous supply of sediment (such as soft eroding cliffs, dunes, offshore sand banks) or for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site.</p> <p>These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis. This Annex 1 habitat is an integral element of the 'coastal foredune' (the beach-dune sand-sharing system). However, it is also important that sediment transport that feeds the beach from offshore is also not interrupted. In some cases sand may come from marram-dominated dunes landward (Shifting dunes along the shore with <i>Ammophila arenaria</i>).</p> <p>The longshore drift direction at Sandwich is from south to north. As with Deal the annual sediment transport rates are high but decrease towards the north as the foreshore becomes higher and wave energy and incident angle are reduced. Transport rates in the south of the unit are as high as ~11,000m<sup>3</sup> whilst at the northern extent of the sediment budget calculation area it is as little as 2,300m<sup>3</sup>. As the water becomes shallower to the north, the coastline is more sheltered as waves shoal in the shallow water leading to the deposition of sediment. The net erosion accretion suggest that the sediment sub-cells are accreting up to 2,000m<sup>3</sup> per year except in front of Sandwich Bay estate which loses a small volume of 790m<sup>3</sup> per year.</p> <p>Wind and wave direction along this section of the coast is predominantly from the south east, however there is also a</p>	Environment Agency (2017) Halcrow (2010)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>smaller proportion of wind / waves from the north-east and east. As such littoral drift has the potential to move both north and south</p> <p>Environment Agency maintain flood defences which comprise of an embankment fronted by shingle. The Environment Agency redistribute shingle from the northern edge of Sandwich Bay Estate south toward Deal and carry out re-profiling along the full length of the shingle ridge Redistribution and re-profiling is carried out yearly in March and April after the winter storms. Shingle is re-profiled to maintain protection of the embankments.</p>	
<b>Supporting processes (on which the feature relies)</b>	<b>Aeolian (wind-blow) processes</b>	Maintain the natural movement of sand within the site, resulting from wind blow-outs and blow-throughs.	Allowing natural wind-blow (or 'aeolian') processes to operate and to allow active movement of dry sand is important. Blow-throughs are a natural element of the dynamics of this zone. However, excessive recreational pressure can inhibit vegetation growth in sand building phases.	
<b>Supporting processes (on which the feature relies)</b>	<b>Hydrology</b>	At a site, maintain natural hydrological processes to provide the conditions necessary to sustain the feature within the site	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present.</p> <p>This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts. On a few sites, the development of new Embryonic shifting dunes can lead to new primary dune slacks forming.</p>	
<b>Supporting processes (on which the feature relies)</b>	<b>Water quality</b>	Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	<p>For many SAC 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. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Directive (WFD 2000/60/EC) will also be sufficient to support the achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.	
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore as necessary, the 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>This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it.</p> <p>Critical Loads and Levels are recognised thresholds below which such harmful effects on sensitive UK habitats will not occur to a significant 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. There are currently no critical loads or levels for other pollutants such as Halogens, Heavy Metals, POPs, VOCs or Dusts. These should be considered as appropriate on a case-by-case basis.</p> <p>Ground level ozone is regionally important as a toxic air pollutant but flux-based critical levels for the protection of semi-natural habitats are still under development. It is recognised that achieving this target may be subject to the development, availability and effectiveness of abatement technology and measures to tackle diffuse air pollution, within realistic timescales.</p> <p>Nitrogen deposition exceeds site relevant critical loads. Some evidence from sand dune surveys suggesting nitrogen deposition could be contributing to an increase in MG grassland at the expense of SD vegetation, although this is also likely to be the result of over-stabilisation of the dune system.</p>	<p>More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (<a href="http://www.apis.ac.uk">www.apis.ac.uk</a>).</p> <p>Natural England (2014b) Site Improvement Plan - <a href="#">North East Kent (Thanet)</a></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. 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 should consider the structures of and functions of the site as a whole. For these features, direct habitat management is likely to be limited to the management of invasive scrub. Excessive recreational activity can be damaging and may well need to be managed.</p>	
<b>Version Control</b>				
Advice last updated: N/A				
<b>Variations from national feature-framework of integrity-guidance:</b> N/A				

**Table 2: Supplementary Advice for Qualifying Features: H2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('White dunes')**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	Maintain the total extent of the H2120 feature at approximately 1.18ha	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations.</p> <p>Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p>	<p>Dargie (2002)</p> <p>Natural England (2014a)</p> <p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>
<b>Extent and distribution of the feature</b>	<b>Spatial distribution of the feature within the site</b>	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	<p>A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat.</p> <p>Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to</p>	



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature. For this feature, this strongly relates to the coastal processes (sand deposition by wind, tideline debris to initiate sand trapping and lack of disturbance during growing season) as well as seed/propagule supply that determine the presence of the habitat.</p> <p>Distribution of habitat relates to the availability of blown sand from the beach plain, as well as seed/propagule supply that determine the presence of the habitat. <i>Ammophila arenaria</i> (Marram grass) plants also have a mycorrhizal association.</p> <p>Wind and wave direction along this section of the coast is predominantly from the south east, however there is also a smaller proportion of wind / waves from the north-east and east. As such littoral drift has the potential to move both north and south</p>	
<b>Structure and function (including its typical species)</b>	<b>Adaptation and resilience</b>	Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	See generic text for this attribute in Table 1	
<b>Structure and function (including its typical species)</b>	<b>Dune topography</b>	Maintain a natural topography to the shifting dune feature.	<p>Dune topography may be influenced by the operation of geomorphological processes, which should be allowed to continue in order to maintain the dune system in its naturally dynamic form. Maintaining this zone in a natural form, and as part of the wider dune zonation, will provide optimal conditions for the full range of characteristic flora and fauna.</p> <p>The low shifting dunes on the foreshore provide a vital structural element to any dune system: the varied natural topography provides important means of dune-building and progradation seawards. Key dune-building plants such as <i>Ammophila arenaria</i> (Marram grass) is sensitive to salinities over 1.5‰ so only persists on higher dune ridges.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Structure and function (including its typical species)</b>	<b>Functional connectivity with wider landscape</b>	Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site	<p>This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site.</p> <p>These features may also be important to the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.</p>	
<b>Structure and function (including its typical species)</b>	<b>Key structural, influential and distinctive species</b>	<p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature</p> <ul style="list-style-type: none"> <li>The constant and preferential plants of the SD6 <i>Ammophila arenaria</i> mobile dune NVC community types which forms a key component of the <b>H2120 Shifting Dunes with Marram</b> features at this SAC</li> </ul>	<p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> <li><b>Structural</b> species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li><b>Influential</b> species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat)</li> <li><b>Site-distinctive</b> species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC.</li> </ul> <p>There may be natural fluctuations in the frequency and cover of</p>	Natural England (2014a)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available.</p>	
<b>Structure and function (including its typical species)</b>	<b>Presence of unvegetated surfaces</b>	Maintain the extent of bare sand which typically covers up to 50% of the feature extent, of varying sizes, in a mosaic with the vegetation.	<ul style="list-style-type: none"> <li>In these developing, dynamic zones, bare sand should be expected. Lack of bare sand would suggest an artificially stabilised system. Blow-throughs are a natural element of this zone. If extent of sand is towards the upper end of the range, it will become important to assess whether recreational pressures are over-riding natural dynamics.</li> </ul>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Soils, substrate and nutrient cycling</b>	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms.</p> <p>Soil biodiversity has a vital role to recycle organic matter. Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature. This Annex 1 habitat has essentially raw soils with little humus and low nutrient status.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Supporting off-site habitat</b>	Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support the feature.	<p>The structure and function of the qualifying habitat, including its typical species, may rely upon the continued presence of areas which surround and are outside of the designated site boundary. Changes in surrounding land-use may adversely (directly/indirectly) affect the functioning of the feature and its component species.</p> <p>This supporting habitat may be critical to the typical species of the feature to support their feeding, breeding, roosting, population dynamics ('metapopulations'), pollination or to prevent/reduce/absorb damaging impacts from adjacent land</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			uses e.g. pesticide drift, nutrient enrichment.	
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	<p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type:</p> <ul style="list-style-type: none"> <li>SD6 <i>Ammophila arenaria</i> mobile dune community.</li> </ul>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring the presence, variety and composition of these vegetation types at this site will help to conserve the typical species composition of the SAC feature at this site at appropriate levels (recognising natural fluctuations).</p> <p>The species composition of shifting dunes is constrained by the harsh conditions, but the vegetation is by no means uniform. The most marked floristic variation relates to the degree of instability. Where sand accretion is extremely rapid it is possible to find vegetation that consists only of <i>Ammophila arenaria</i>. As rates of sand deposition decline the Marram is joined by more species.</p> <p>There are a number of sub-communities and there will be natural fluxes in the transition between the mobile dunes and fixed dunes seaward as sand deposition changes.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Vegetation community transitions</b>	Maintain the full natural range of vegetation zones and the transitions between them.	Zonations are seen as indicative of good conservation of structure and function. It is essential that the relationship between this habitat and other elements of the sand dune system are recognised. As much of the dune frontage as possible should have intact zonation to the next stage in succession (generally fixed dunes).	
<b>Structure and function (including its typical species)</b>	<b>Vegetation: undesirable species</b>	<p>Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread.</p> <p>Sea buckthorn <i>Hippophae rhamnoides</i> should be absent from sites where it is not native.</p>	<p>Two types of negative species can occur: invasive non-natives, or species indicative of poor condition (e.g. nettle or creeping thistle).</p> <p>Sea Buckthorn <i>Hippophae rhamnoides</i> is not considered native to Sandwich Bay SAC.</p> <p>Undesirable species include: <i>Senecio jacobaea</i>, <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>, <i>Urtica dioica</i>, <i>Lolium perenne</i>, and <i>Arrhenatherum elatius</i>.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p>Other non-native species no more than rare.</p> <p>Undesirable species no more than frequent throughout the sward, or singly or together more than 5%.</p>	<p><i>Urtica dioica</i> and <i>Cirsium</i> species are indicative of poor condition because of enrichment; abundance of <i>Senecio jacobaea</i> indicates overgrazing in summer.</p>	
<b>Supporting processes (on which the feature relies)</b>	<b>Aeolian (wind-blow) processes</b>	Maintain the ability of wind-blow processes to transport sand from the beach plain to the foredune.	Allowing natural wind-blow (or 'aeolian') processes to shape the topography of this habitat feature is important to its long-term conservation. The beach plain needs to be dry to allow sand to be transported into the dune system.	Halcrow, (2010)
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore as necessary, the 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>See generic text for this attribute in Table 1.</p> <p>Nitrogen deposition exceeds site relevant critical loads. Some evidence from sand dune surveys suggesting nitrogen deposition could be contributing to an increase in neutral grassland at the expense of sand dune vegetation, although this is also likely to be the result of over-stabilisation of the dune system.</p>	<p>More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System. (<a href="http://www.apis.ac.uk">www.apis.ac.uk</a>)</p> <p>Natural England (2014b) Site Improvement Plan - <a href="#">North East Kent (Thanet)</a></p>
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. 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 should consider the structures of and functions of the site as a whole. For these features, direct habitat management is likely to be limited to the management of invasive scrub. Excessive recreational activity can be damaging and may well need to be managed.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting processes (on which the feature relies)	Hydrology	At a site, unit and/or catchment level (as necessary, Maintain the natural hydrological regime to provide the conditions necessary to sustain the feature within the site	Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.	
Supporting processes (on which the feature relies)	Water quality	Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	For many SAC 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. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type.  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 achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.	
<b>Version Control</b> Advice last updated: N/A				
<b>Variations from national feature-framework of integrity-guidance:</b> N/A				

**Table 3: Supplementary Advice for Qualifying Features: H2130 Fixed dunes with herbaceous vegetation ('Grey dunes')**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	Maintain the total extent of the feature at approximately 168.37ha	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations.</p> <p>Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>For this feature if loss (or gain) of area is from natural causes dynamism this is not a decline in condition, but any significant loss due to human interference (e.g. sand extraction, visitor impacts, ploughing or conversion to improved grassland) is to be regarded as unfavourable. Increase in area is favourable unless related to coast protection. In a naturally functioning dune system there is likely to be varying proportions of fixed and mobile dune communities over time.</p>	<p>Dargie (2002)</p> <p>Natural England (2014a)</p> <p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>
<b>Extent and distribution of the feature</b>	<b>Spatial distribution of the feature within the site</b>	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. This may also reduce and break up the continuity of a habitat within a site and how well its	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat.</p> <p>Smaller fragments of habitat can typically support smaller and more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature.</p> <p>For this feature it is also important to maintain transitions between fixed/semi-fixed dunes and other dune/terrestrial habitats to seaward or landward.</p>	
<b>Structure and function (including its typical species)</b>	<b>Adaptation and resilience</b>	Maintain the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the site	See generic text for this attribute in Table 1.	
<b>Structure and function (including its typical species)</b>	<b>Dune topography</b>	Maintain a natural topography to the fixed dune feature.	<p>Dune topography may be influenced by the operation of geomorphological processes, which should be allowed to continue in order to maintain the dune system in its naturally dynamic form. Fixed dunes occur where the dune stabilises and the organic content of the soil increases.</p> <p>Maintaining this zone in a natural form, and as part of the wider dune zonation, will provide optimal conditions for the full range of characteristic flora and fauna.</p>	
<b>Structure and function (including its typical species)</b>	<b>Functional connectivity with wider landscape</b>	Maintain] the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the site	This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features, such as habitat patches, hedges, watercourses and verges, outside of the designated site boundary which are either important for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site. These features may also be important to	



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			the operation of the supporting ecological processes on which the designated site and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial. Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis.	
<b>Structure and function (including its typical species)</b>	<b>Key structural, influential and/or distinctive species</b>	<p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature</p> <ul style="list-style-type: none"> <li>• The constant and preferential plants of the SD7, SD8, SD9b, SD11 and SD12 NVC community types which forms a key component of the <b>H2130 Fixed dunes with herbaceous vegetation</b></li> <li>• Vascular plant assemblage including: <ul style="list-style-type: none"> <li>○ Narrow leaved birds foot trefoil</li> <li>○ Divided sedge</li> <li>○ Long bracted sedge</li> <li>○ Fragrant evening-primrose</li> <li>○ Sand catchfly <i>Silene conica</i></li> </ul> </li> <li>• Lizard orchid <i>Himantoglossum hircinum</i></li> <li>• Bedstraw broomrape <i>Orobanche caryophyllacea</i></li> </ul>	<p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> <li>• <b>Structural</b> species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li>• <b>Influential</b> species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat)</li> <li>• <b>Site-distinctive</b> species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC.</li> </ul> <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available</p> <p>Lizard orchid <i>Himantoglossum hircinum</i> The bulk of the population occurs on the St Georges golf course, with 1830</p>	<p>Dargie, (2002)</p> <p>Natural England (2014a)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>flowering plants recorded in 2002 and 239 in the local Sandwich area.</p> <p>Bedstraw broomrape <i>Orobanche caryophyllacea</i> The species should be present</p>	
<b>Structure and function (including its typical species)</b>	<b>Presence of unvegetated surfaces</b>	<p>Maintain an appropriate cover of bare ground or sand, which is typically no more than 10% of total area and in patches in a mosaic with vegetated surfaces.</p> <p>Areas of bare sand created by human induced disturbance should not increase.</p>	<p>Patches of bare sand are essential for a wide range of typical dune invertebrates and 'dune annual' plants.</p>	<p>Natural England (2014a)</p> <p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>
<b>Structure and function (including its typical species)</b>	<b>Soils, substrate and nutrient cycling</b>	<p>Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.</p>	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter.</p> <p>Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature.</p>	<p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	<p>Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:</p> <ul style="list-style-type: none"> <li>SD7 <i>Ammophila arenaria</i> – <i>Festuca rubra</i> semi-fixed dune community</li> <li>SD8 <i>Festuca rubra</i> – <i>Galium verum</i> fixed dune grassland</li> </ul>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p>	<p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<ul style="list-style-type: none"> <li>SD9b <i>Ammophila arenaria</i> – <i>Arrhenatherum elatius</i> dune grassland, <i>Geranium sanguineum</i> sub-community,</li> <li>SD11 <i>Carex arenaria</i> – <i>Cornicularia aculeata</i> dune community</li> <li>SD12 <i>Carex arenaria</i> – <i>Festuca ovina</i> – <i>Agrostis capillaris</i> dune grassland.</li> </ul>		
<b>Structure and function (including its typical species)</b>	<b>Vegetation community transitions (range and zones)</b>	Maintain the patterns of natural zonations/transitions, with full zonation from beach inland to fixed dune should be intact over at least 95% of coastal frontage.	<p>Transitions/zonations between adjacent but different vegetation communities are usually related to naturally-occurring changes in soil, aspect or slope. Such 'ecotones' retain characteristics of each bordering community and can add value in often containing species not found in the adjacent communities.</p> <p>Retaining such transitions can provide further diversity to the habitat feature, and support additional flora and fauna. Some dunes are on naturally sediment-deficit coasts: on these there is likely to be less than 95% frontage of strandline and embryo dunes.</p> <p>Zonation from beach to fixed dune intact over at least 95% of coastal frontage. Points may change due to natural dynamism but the overall diversity should not diminish. Mosaics on hindshore systems may make the width of the fixed dune grassland difficult to assess</p>	
<b>Structure and function (including its typical species)</b>	<b>Vegetation structure diversity</b>	Maintain variation to sward structure, so that typically 30-70% of sward comprises species-rich short turf (between 2 and 10cm tall).	<p>A varied vegetation structure and a succession of flowers and seeds through the year are important for maintaining the habitat's diversity. Targets for ratio of short to taller vegetation should be set on a site-specific basis. In addition, a proportion of the short turf area should be &lt;5cm tall.</p> <p>The ratio of short to tall vegetation can be lower (but not &lt;30%) in semi-fixed dune grassland (SD7) where <i>Ammophila arenaria</i></p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			(Marram grass) is still abundant. Levels and timing of stock grazing should be sufficient to allow adequate seed production.	
<b>Structure and function (including its typical species)</b>	<b>Vegetation: undesirable species</b>	<p>Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread:</p> <ul style="list-style-type: none"> <li>• Non-native species, including sea buckthorn <i>Hippophae rhamnoides</i> where introduced, no more than rare.</li> <li>• Other undesirable species no more than occasional throughout the sward, or singly or together the cover of negative indicator species no more than 5%.</li> </ul>	<p>Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants.</p> <p>Undesirable species include: <i>Rosa spp.</i>, <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>, <i>Urtica dioica</i>, <i>Lolium perenne</i>, <i>Arrhenatherum elatius</i> (not SD9), <i>Pteridium aquilinum</i>, <i>Rubus fruticosus</i>, <i>Chamaenerion angustifolium</i>, <i>Cynosurus cristatus</i>, large docks <i>Rumex sp.</i>, <i>Senecio jacobaea</i>,</p> <p>Species such as <i>Urtica dioica</i>, <i>Cirsium arvense</i> and <i>C. vulgare</i> species are indicative of poor condition because of enrichment. <i>Senecio jacobaea</i> is a natural constituent of dune vegetation and should only to be included as a negative indicator where extensive dense stands of robust plants are present.</p> <p>Sea buckthorn <i>Hippophae rhamnoides</i> is not considered native at this site.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Supporting processes (on which the feature relies)</b>	<b>Aeolian (wind-blow) processes</b>	Maintain the ability of wind-blow processes to transport sand from the beach plain to the foredune.	Allowing natural wind-blow (or 'aeolian') processes to shape the topography of this habitat feature is important to its long-term conservation. The beach plain needs to be dry to allow sand to be transported into the dune system. Allowing natural wind-blow (or 'aeolian') processes to operate and to allow active movement of dry sand is important.	
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this	<p>See generic text for this attribute in Table 1.</p> <p>Nitrogen deposition exceeds site relevant critical loads. Some evidence from sand dune surveys suggesting nitrogen deposition could be contributing to an increase in neutral</p>	More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		feature of the site on the Air Pollution Information System ( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ).	grassland at the expense of sand dune vegetation, although this is also likely to be the result of over-stabilisation of the dune system.	( <a href="http://www.apis.ac.uk">www.apis.ac.uk</a> ). Natural England (2014b) Site Improvement Plan - <a href="#">North East Kent (Thanet)</a>
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. 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>Although 'natural processes' are given a high priority in sustaining site and feature integrity in dunes, active management is sometimes required. Management includes reducing nutrient levels to maintain high numbers of species through the management activities of grazing, burning, mowing, sod-cutting and scrub cutting. The reworking of sand through cultivation or sand-drift may help to conserve the dynamic habitat. Management of succession is a critical aspect of management for this habitat, by a combination of active processes and grazing/cutting. A range of invertebrates and plants require bare sand where it is not too frequently disturbed by vehicles or feet. Where damage initiates a blow-out, this can be a positive outcome in over-stabilized dunes, where sea defence concerns or critical infrastructure are not comprised.</p>	Natural England (2014b) Site Improvement Plan - <a href="#">North East Kent (Thanet)</a>
<b>Supporting processes (on which the feature relies)</b>	<b>Hydrology</b>	At a site, unit and/or catchment level (as necessary, maintain the natural hydrological processes to provide the conditions necessary to sustain the feature within the site	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present.</p> <p>This target is generic and further site-specific investigations</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			may be required to fully inform conservation measures and/or the likelihood of impacts. For this feature, hydrology can be influenced by dune topography, vegetation, substrate, flow regimes	
<b>Supporting processes (on which the feature relies)</b>	<b>Water quality</b>	Where the feature is dependent on surface water and/or groundwater, maintain quality and quantity to a standard which provides the necessary conditions to support the feature [adviser to provide site-specific standards where available].	<p>For many SAC 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. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type.</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 achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p>	
<b>Version Control</b>				
Advice last updated: N/A				
<b>Variations from national feature-framework of integrity-guidance:</b> N/A				

**Table 4: Supplementary Advice for Qualifying Features: H2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) and H2190 Humid dune slacks**

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Extent and distribution of the feature</b>	<b>Extent of the feature within the site</b>	Maintain the total extent of the feature at approximately 0.14ha	<p>There should be no measurable reduction (excluding any trivial loss) in the extent and area of this feature, and in some cases, the full extent of the feature may need to be restored. The baseline-value of extent given has been generated using data gathered from the listed site-based surveys. Area measurements given may be approximate depending on the methods, age and accuracy of data collection, and as a result this value may be updated in future to reflect more accurate information.</p> <p>The extent of an Annex I habitat feature covers the sum extent of all of the component vegetation communities present and may include transitions and mosaics with other closely-associated habitat features. Where a feature is susceptible to natural dynamic processes, there may be acceptable variations in its extent through natural fluctuations. Where a reduction in the extent of a feature is considered necessary to meet the Conservation Objective for another Annex I feature, Natural England will advise on this on a case-by-case basis.</p> <p>All humid dune slack communities should be present – from embryonic dune slacks with a high percentage of bare ground to those with more closed vegetation and up to 33% cover of <i>Salix repens</i>. Early dune slack successional stages at least occasional. Dunes with <i>Salix repens</i> is part of a broader dune wetland vegetation community. It is characteristic of older, drier dune slacks. In a naturally functioning dune system some dune slacks will, over time, dry out leading to localised losses of Dunes with <i>Salix repens</i>. However new slacks will be created by sand blow (secondary slacks) or by beach development (primary slacks), some of which in time will develop into Dunes with <i>Salix repens</i>.</p> <p>For this feature if loss (or gain) of area is from natural physical dynamism this is not a decline in condition, but any significant</p>	<p>Dargie (2002)</p> <p>Natural England (2014a)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			loss due to human interference (e.g. sand extraction, visitor impacts, ploughing or conversion to improved grassland) is to be regarded as unfavourable. In a naturally functioning dune system some dune slacks will, over time, dry out but new ones will be created by sand blow (secondary slacks) or by beach development (primary slacks). Evidence of natural changes to extent should not justify further loss to development.	
<b>Extent and distribution of the feature</b>	<b>Future extent of habitat within the site and ability to respond to seasonal changes</b>	Maintain the ability to absorb seasonal and periodic fluctuations in the extent of the habitat	<p>This recognises the need to allow for natural fluctuations in the extent and the distribution of this habitat feature, often during particular seasons and usually as a result of natural coastal processes.</p> <p>Humid dune slacks are buffered from short term natural variations in hydrology including dry seasons. However, artificial drainage or a longer series of dry years with lowered water table will lead to early succession away to non-dune wetland habitat. In the medium term, a degree of dune dynamics is required to create new dune slacks.</p> <p>Dunes with <i>Salix repens</i> are buffered from short term natural variations in hydrology including dry seasons. However, artificial drainage or a longer series of dry years with lowered water table will lead to early succession away to non-dune wetland habitat. In the medium term, a degree of dune dynamics is required to create new dune slacks, some of which over time will develop into Dunes with <i>Salix repens</i>.</p>	
<b>Extent and distribution of the feature</b>	<b>Spatial distribution of the feature within the site</b>	Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation and typical species, plus transitional communities) across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. This may also reduce and break up the continuity of a habitat within a site and how well its typical species are able to move around the site to occupy and use habitat. Such fragmentation can impact on their viability and the wider ecological composition of the Annex I habitat. Smaller fragments of habitat can typically support smaller and	



Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>more isolated populations which are more vulnerable to extinction. These fragments also have a greater amount of open edge habitat which will differ in the amount of light, temperature, wind, and even noise that it receives compared to its interior.</p> <p>These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature. In the short term, dune wetland features are fixed in space determined by dune topography and hydrology. However, in a naturally functioning dune system topography can change leading to localised losses and gains in dune wetlands, including Dunes with <i>Salix repens</i> and humid dune slacks.</p>	
<b>Structure and function (including its typical species)</b>	<b>Dune topography</b>	Maintain a natural dune topography, and allow natural change that is wind driven, some change may be necessary to maintain the continuity of slacks.	<p>It is possible that on some sites there are over-riding constraints that will not allow natural dune dynamics to proceed. On these sites it may be necessary to artificially lower ground surface levels in slacks to extend their lives.</p> <p>See also 'Within-site sedimentary processes' component</p>	
<b>Structure and function (including its typical species)</b>	<b>Key structural, influential and/or distinctive species</b>	<p>Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature:</p> <ul style="list-style-type: none"> <li>The constant and preferential plants of the SD13, SD14, SD15, SD16 and SD17 NVC community types which forms a key component of the <b>H2170 Dunes with <i>Salix repens</i> and H2190 Humid Dune Slacks</b></li> </ul>	<p>Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of an Annex I habitat feature at a particular site. These species will include;</p> <ul style="list-style-type: none"> <li><b>Structural</b> species which form a key part of the Annex I habitat's structure or help to define that habitat on a particular SAC (see also the attribute for 'vegetation community composition').</li> <li><b>Influential</b> species which are likely to have a key role affecting the structure and function of the habitat (such as bioturbators (mixers of soil/sediment), grazers, surface borers, predators or other species with a significant functional role linked to the habitat)</li> <li><b>Site-distinctive</b> species which are considered to be a particularly special and distinguishing component of an Annex I</li> </ul>	<p>Natural England (2014a)</p> <p>This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>habitat on a particular SAC.</p> <p>There may be natural fluctuations in the frequency and cover of each of these species. The relative contribution made by them to the overall ecological integrity of a site may vary, and Natural England will provide bespoke advice on this as necessary.</p> <p>The list of species given here for this Annex I habitat feature at this SAC is not necessarily exhaustive. The list may evolve, and species may be added or deleted, as new information about this site becomes available</p>	
<b>Structure and function (including its typical species)</b>	<b>Presence of unvegetated surfaces</b>	<p>Maintain patches of bare sand of varying sizes in a mosaic with the vegetation (5%-10% of the feature extent)</p> <p>Up to 20% of bare ground or sand may be acceptable in the area of humid dune slacks providing it is as a result of natural processes.</p>	<p>Bare sand is less characteristic of Dunes with <i>Salix repens</i> than of Humid dune slacks. Nevertheless some bare sand should be expected even in this late succession community. Its location can change over time in response to localised dune dynamics and rabbit activity.</p> <p>Patches of bare sand are essential for a wide range of dune invertebrates and colonisation by some bryophytes.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Soils, substrate and nutrient cycling</b>	<p>Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.</p>	<p>Soil is the foundation of basic ecosystem function and a vital part of the natural environment. Its properties strongly influence the colonisation, growth and distribution of those plant species which together form vegetation types, and therefore provides a habitat used by a wide range of organisms. Soil biodiversity has a vital role to recycle organic matter.</p> <p>Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this Annex I feature. As dune slack vegetation succession progresses, soils develop in structure and nutrient status. The soils under Dunes with <i>Salix repens</i> represent some of the more mature natural soils to be found on dunes.</p>	
<b>Structure and function (including its typical species)</b>	<b>Vegetation community composition</b>	<p>Maintain the species composition of component vegetation communities and associated transitions, allowing for</p>	<p>This habitat feature will comprise a number of associated semi-natural vegetation types and their transitional zones, reflecting the geographical location of the site, altitude, aspect, soil conditions (especially base-status and drainage) and</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
species)		<p>successional changes in response to natural processes.</p> <p>SD13 <i>Sagina nodosa</i> - <i>Bryum pseudotriquetrum</i> dune-slack community</p> <p>SD14 <i>Salix repens</i> - <i>Campylium stellatum</i> dune-slack community</p> <p>SD15 <i>Salix repens</i> - <i>Calliargon cuspidatum</i> dune-slack community</p> <p>SD16 <i>Salix repens</i> - <i>Holcus lanatus</i> dune-slack community</p> <p>SD17 <i>Potentilla anserina</i> - <i>Carex nigra</i> dune-slack community</p>	<p>vegetation management. In the UK these have been categorised by the National Vegetation Classification (NVC).</p> <p>Maintaining or restoring these characteristic and distinctive vegetation types, and the range of types as appropriate, will be important to sustaining the overall habitat feature. This will also help to conserve their typical plant species (i.e. the constant and preferential species of a community), and therefore that of the SAC feature, at appropriate levels (recognising natural fluctuations).</p> <p>For this feature it is unlikely that all slack communities will be represented in a single slack. It is more usual for individual slacks to be at different stages in vegetation succession, and to have slightly different hydrological regimes.</p>	
Structure and function (including its typical species)	Vegetation composition: trees and scrub	<p>Maintain scrub and tree cover of locally native species, excluding creeping willow, to between 5% and 10%, scattered and in small groups.</p> <p>Cover of <i>Salix repens</i> not more than 33%.</p>	<p>Dense cover of trees and shrubs can smother and shade out smaller and more characteristic vegetation of this habitat feature, and interrupt naturally occurring dune processes. Usually active management is required to reduce or contain its cover across this habitat feature. Apart from sea buckthorn (where it is native), other trees and shrubs would usually indicate an artificially stabilised system.</p> <p>The 'humid dune slack' community requires soil to be wet enough and not too dominated by creeping willow <i>Salix repens</i> for a diverse range of forbs and some grasses to be also present.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
Structure and function (including its typical species)	Vegetation composition: forb/grass ratio	<p>Maintain a typically low vegetation sward with &gt;30% cover of forbs and &lt;50% cover of grasses, and occasional bryophytes (e.g. <i>Calliargon cuspidatum</i>, <i>Campylium stellatum</i>).</p>	<p>Low swards required by species such as fen orchid. Drying and eutrophication of the slack can be indicated by increase in 'grassiness'.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Structure and function (including its typical species)</b>	<b>Vegetation structural diversity</b>	Maintain a suitable variation in vegetation height across the feature	Even for a vegetation community dominated by <i>Salix repens</i> , a uniform canopy will not be typical. And a wide range of invertebrates in particular depend on both a varied vegetation structure and a succession of flowers and seeds.	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>
<b>Structure and function (including its typical species)</b>	<b>Vegetation structure: zonation of dune vegetation</b>	Restore the cover of these Annex 1 habitats to typically comprise between 10% and 50% of the overall dune wetland resource on the site	<p>The coastal sand dune ecosystem has a characteristic range of natural features, representing different stages of natural succession. The full representation of these stages should be maintained or where appropriate restored. All elements of the wet-dry and early-late succession spectrums should be represented on the site.</p> <p>Not all slack communities will be represented in a single slack. It is more usual for individual slacks to be at different stages in vegetation succession, and to have slightly different hydrological regimes. A mosaic of other wetland vegetation communities are frequently present within dunes (swamp/mire/tall herb fen).</p>	
<b>Structure and function (including its typical species)</b>	<b>Vegetation: undesirable species</b>	<p>Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread</p> <p>Non-native species no more than rare.</p> <p>No more than one other negative indicator species more than frequent or singly or together the cover of negative indicator species no more than 5%.</p> <p>Negative indicator species: <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>, <i>Cirsium palustre</i>, <i>Lolium perenne</i>, <i>Senecio jacobaea</i>,</p>	<p>Undesirable non-woody and woody vascular plants species may require active management to avert an unwanted succession to a different and less desirable state. Often they may be indicative of a negative trend relating to another aspect of a site's structure and function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/acceptable components or even dominants.</p> <p>Undesirable species include: <i>Rosa spp.</i>, <i>Cirsium arvense</i>, <i>Cirsium vulgare</i>, <i>Urtica dioica</i>, <i>Lolium perenne</i>, <i>Arrhenatherum elatius</i> (not SD9), <i>Pteridium aquilinum</i>, <i>Rubus fruticosus</i>, <i>Chamaenerion angustifolium</i>, <i>Cynosurus cristatus</i>, large docks <i>Rumex sp.</i>, <i>Senecio jacobaea</i>,</p> <p>Species such as <i>Urtica dioica</i>, <i>Cirsium arvense</i> and <i>C. vulgare</i> species are indicative of poor condition because of enrichment.</p> <p><i>Senecio jacobaea</i> is a natural constituent of dune vegetation and should only to be included as a negative indicator where extensive dense stands of robust plants are present.</p>	This attribute will be periodically monitored as part of Natural England's <a href="#">SSSI Condition Assessments</a>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p><i>Urtica dioica</i>, <i>Pteridium aquilinum</i>, <i>Arrhenatherum elatius</i> <i>Lolium perenne</i> is indicative of agricultural improvement.</p> <p>If <i>Salix repens</i> covers more than 33% it is likely to become a problem if grazing levels are not sufficient or if scrub control is not being carried out.</p>		
<b>Supporting processes (on which the feature relies)</b>	<b>Aeolian (wind-blow) processes</b>	Maintain the natural movement of sand within the site, resulting from wind blow-outs and blow-throughs.	Allowing natural wind-blow (or 'aeolian') processes to operate and to allow active movement of dry sand is important. Current dune topography, including hollows reaching damp sand where slacks occur, has resulted from past within-site dune movement. Although Humid Dune Slacks and Dunes with <i>Salix repens</i> does not depend in the short term on new dune mobility, their medium/long term survival does. Secondary slacks are created where overlying sand is blown away down to the water table/wet sand.	
<b>Supporting processes (on which the feature relies)</b>	<b>Air quality</b>	Restore as necessary, the 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>See generic text for this attribute in Table 1</p> <p>Nitrogen deposition exceeds site relevant critical loads. Some evidence from sand dune surveys suggesting nitrogen deposition could be contributing to an increase in neutral grassland at the expense of sand dune vegetation, although this is also likely to be the result of over-stabilisation of the dune system.</p>	<p>More information about site-relevant Critical Loads and Levels for this SAC is available by using the 'search by site' tool on the Air Pollution Information System (<a href="http://www.apis.ac.uk">www.apis.ac.uk</a>).</p> <p>Natural England (2014b) Site Improvement Plan - <a href="#">North East Kent (Thanet)</a></p>
<b>Supporting processes (on which the feature relies)</b>	<b>Conservation measures</b>	Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature	<p>Active and ongoing conservation management is needed to protect, maintain or restore this feature at this site. 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</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>management agreements. Although 'natural processes' are given a high priority in sustaining site and feature integrity in dunes, active management (including livestock grazing) is sometimes required.</p> <p>Although 'natural processes' are given a high priority in sustaining site and feature integrity in dunes, active management (including livestock grazing) is sometimes required. Management includes scrub cutting, mowing, grazing, turf-stripping and re-wetting. Mowing can prolong the younger species-rich stage of slack succession but cannot reverse the process. Reverse the fall in water tables (if anthropogenic) and/or removal of trees and scrub combined with follow-up grazing management.</p> <p>Management should focus on creating new successional cycles to provide habitat for early successional species and replace that lost by accelerated succession. Stimulation of germination from the seed bank through management may contribute to the conservation of both characteristic and threatened species typical of dune slacks.</p> <p>Management practices that remove nutrients (N) from the system can mitigate the effects of N inputs but may damage fragile components. A range of invertebrates and plants require bare sand, usually naturally created by wind blow, but sometimes where it is infrequently disturbed by vehicles or feet.</p>	
<b>Supporting processes (on which the feature relies)</b>	<b>Functional connectivity with wider coastal sedimentary system including seed/ propagule dispersal.</b>	Maintain adequate movement of sediment from all key sediment sources (directly from the beach, indirectly from offshore, eroding cliffs etc).	<p>This recognises the potential need at this site to maintain or restore the connectivity of the site to its wider landscape in order to meet the conservation objectives. These connections may take the form of landscape features outside of the designated site boundary which are either important for the continuous supply of sediment (such as soft eroding cliffs, dunes, offshore sand banks) or for the migration, dispersal and genetic exchange of those typical species closely associated with qualifying Annex I habitat features of the site.</p> <p>These features may also be important to the operation of the supporting ecological processes on which the designated site</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>and its features may rely. In most cases increasing actual and functional landscape-scale connectivity would be beneficial.</p> <p>Where there is a lack of detailed knowledge of the connectivity requirements of the qualifying feature, Natural England will advise as to whether these are applicable on a case by case basis. Although Humid Dune Slacks and Dunes with <i>Salix repens</i> does not depend in the short term on continued inputs of sand, its medium/long term survival does. Primary slacks can occur on the beach plane with sufficient input of sand.</p>	
<b>Supporting processes (on which the feature relies)</b>	<b>Hydrology</b>	At a site, unit and/or catchment level (as necessary maintain natural hydrological processes to provide the conditions necessary to sustain the feature within the site	<p>Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. This target is generic and further site-specific investigations may be required to fully inform conservation measures and/or the likelihood of impacts.</p> <p>All dune wetland vegetation communities, including Humid Dune Slacks and Dunes with <i>Salix repens</i>, are influenced by the water table. Each community reflects a particular past and current hydrological regime. Water table monitoring should be present on all sites with dune wetlands. Humid dune-slacks are extremely rich and specialised habitats which are very threatened by the lowering of water tables. They require a period of wetting, with inundation to shallow depth in winter and dry in summer.</p> <p>Permanent pools will sometimes occur in association with dune slacks, and can be hydrologically linked to the humid dune slack feature. There will be a suite of dune slacks within a site, all at different stages in vegetation succession, and although all linked to the same dune aquifer, may have slightly different hydrological regimes due to variations in age, elevation and management.</p>	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<b>Supporting processes (on which the feature relies)</b>	<b>Water quality</b>	Where the feature is dependent on surface water and/or groundwater, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature	<p>For many SAC 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. Poor water quality and inadequate quantities of water can adversely affect the structure and function of this habitat type.</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 achievement of SAC Conservation Objectives but in some cases more stringent standards may be needed. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.</p>	
<b>Version Control</b>				
Advice last updated: N/A				
<b>Variations from national feature-framework of integrity-guidance:</b> N/A				



## **References:**

DARGIE, T. C .D. 2002. *National Vegetation Classification Survey of Sand Dunes at Sandwich Bay Kent*. Kent: English Nature. (Available on request from Natural England)

EARL, G. 2015. *Ecohydrological interactions within a sand dune system in South East England*. PhD. Thesis, Canterbury Christ Church University. (Available on request from Natural England)

ENVIRONMENT AGENCY. 2017. *Regional Beach Management Plan 2015: Oldstairs Bay to Pegwell Bay*. Canterbury City Council.

HALCROW. (2002). *FUTURECOAST*. DEFRA. AVAILABLE AT [HTTP://WWW.COASTALWIKI.ORG/WIKI/FUTURECOAST\\_PROJECT\\_UK](http://www.coastalwiki.org/wiki/FUTURECOAST_PROJECT_UK)

HALCROW. 2010. *The Isle of Grain to South Foreland Shore Management Plan Review*. Halcrow Group Ltd. (Available on request from Natural England)

The North East Kent European Marine Sites Management Group. (2001). *The North East Kent European marine sites Management Scheme. Chapter 6*. Available at <http://www.thanetcoast.org.uk/media/2047993/SECTIONOa.pdf>

Natural England (2014a) Definition of Favourable Condition - Sandwich Bay to Hacklinge Marshes SSSI (Final Version) (Available on request from Natural England)

Natural England (2014b) Site Improvement Plan – North East Kent (Thanet) (SIP240). Available from <http://publications.naturalengland.org.uk/publication/6259686785417216>

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