



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

**Polruan to Polperro Special Area of Conservation (SAC)
Site Code: UK0030241**



Photo credit: David Hazlehurst

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About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Polruan to Polperro SAC.

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

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

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

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

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

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

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

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

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

About this site

European Site information

Name of European Site	Polruan to Polperro Special Area of Conservation (SAC)
Location	Cornwall
Site Map	The designated boundary of this site can be viewed here on the MAGIC website
Designation Date	1 April 2005
Qualifying Features	See section below
Designation Area	213.39 hectares
Designation Changes	Not applicable
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Polruan to Polperro SSSI
Relationship with other European or International Site designations	Not applicable

Site background and geography

This site comprises approximately 10 km of largely south-facing coastal cliff along the south coast of Cornwall between Polruan in the west, and Polperro to the east. Located within the [Cornish Killas Natural Character Area \(NCA\)](#) and Cornwall Area of Outstanding Natural Beauty (AONB) access to the site is provided by the South-West Coast Path National Trail, which runs for its entire length.

The cliff habitats are influenced by the complex variation in rock types and structure at this location and support a variety of maritime rock crevice and ledge communities with transitions to maritime grasslands, dense scrub and heathy vegetation.

Shingle beaches and unimproved pastures add to the site's diversity supporting a wide range of characteristic and uncommon plants and other wildlife. In places the lower cliffs and backshore are influenced by freshwater seepages, flushes and springs which support an important population of shore dock *Rumex rupestris*.

A 'Site Improvement Plan' (SIP) has been produced for this SAC and is available [here](#).

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:

- **H4030 European dry heaths**

Areas of vegetation dominated by Western gorse *Ulex gallii* are present on Pencarrow Head and at Lansallos Cliff. This species is normally associated with several heathland communities but at these locations it occurs in the absence of Bell heather *Erica cinerea* and heather *Calluna vulgaris* - two ericoid species that with *Ulex gallii* form H8 *Calluna vulgaris* – *Ulex gallii* heath. Although these species occur very locally within the site, there are no examples of vegetation with these species and vegetation that can be assigned to this NVC community. These species are also associated with H4 *Ulex gallii* – *Agrostis curtisii* heath, along with Bristle bent *Agrostis curtisii*, Purple moor-grass *Molinia caerulea*, Cross-leaved heath *Erica tetralix* and Tormentil *Potentilla erecta*. Although *Molinia caerulea* and *Potentilla erecta* occur locally in the area *Erica tetralix* and *Agrostis curtisii* are not recorded.

It does seem therefore, that if heathland once occurred, it has either been lost to invasion by European gorse *Ulex europaeus*, repeated burning or other unknown factors. It may also be the case that H8 or H4 have never been present.

As identified in the SIP the extent and presence of European dry heaths therefore needs to be reviewed, and where appropriate an assessment made of its potential for restoration with appropriate management. **Supplementary Advice for this feature is therefore not currently included until this exercise has been completed.**

- **H1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts**

This site, on the south coast of Cornwall represents a range of cliff habitats influenced by the complex lithological variation and tectonic structure at this location. The cliffs and slopes are particularly important for their assemblage of plants and support a variety of maritime rock crevice and ledge communities that are characterised by a sparse vegetation cover of thrift *Armeria maritima*, English stonecrop *Sedum anglicum*, wild carrot *Daucus carota*, rock samphire *Crithmum maritimum* and sea campion *Silene maritima*. Tree mallow *Lavatera arborea* and wild cabbage *Brassica oleracea* also occur locally. In places the lower cliffs, backshore and cliff crevices are influenced by freshwater seepages, flushes and springs. These locations are particularly important for supporting the Annex II species 1441 shore dock *Rumex rupestris*.

Transitions to maritime and sub-maritime grasslands are found alongside or amongst areas of scrub and bracken *Pteridium aquilinum*, and the species composition reflects the variation in the calcareous influence of the underlying strata. Characteristic species include thrift, wild carrot, sea campion, wild thyme *Thymus polytrichus*, common restharrow *Ononis repens*, sheep's-bit *Jasione montana*, bluebell *Hyacinthoides non-scripta* and salad burnet *Sanguisorba minor*.

Extensive areas of unimproved grassland are present on the cliff tops and headlands. Here slender bird's-foot trefoil *Lotus angustissimus*, hairy bird's-foot trefoil *L. subbiflorus*, autumn lady's tresses *Spiranthes spiralis* and early purple orchid *Orchis masculata* occur locally.

The exposure at this site is less than that experienced on the north coast of Cornwall, and provides an important contrast to the other Cornish sites selected for this feature.

Vegetated Sea Cliffs of the Atlantic and Baltic coasts has been defined as consisting of the following NVCs in Britain: maritime and sea cliff (MC1 to MC7), maritime grassland (MC8 to MC12) and maritime heath (H6 to H8) communities. Of these the following are well represented in the Polruan to Polperro SAC:

MC1 *Crithmum maritimum* – *Spergularia rupicola* maritime rock-crevice community
MC4 *Brassica oleracea* maritime cliff-ledge community
MC5 *Armeria maritima* – *Cerastium diffusum* ssp. *diffusum* maritime therophyte community
MC6 *Atriplex prostrata* – *Beta vulgaris* ssp. *maritima* sea-bird cliff community
MC8 *Festuca rubra* - *Armeria maritima* maritime grassland
MC11 *Festuca rubra* – *Daucus carota* ssp. *gummifer* maritime grassland
MC12 *Festuca rubra* – *Hyacinthoides non-scripta* maritime bluebell community

Qualifying Species:

- **S1441. *Rumex rupestris*; Shore dock**

Shore dock *Rumex rupestris* grows on rocky, sandy and raised beaches, shore platforms and the lower slopes of cliffs, and rarely in dune slacks. Plants can be found growing in isolation on the strand-line, through to tall-herb perennial communities at the base of flushed cliffs. However, it occurs only where a constant source of freshwater, running or static, is available. It is most commonly found growing by the side of streams entering beaches, on oozing soft-rock cliffs, and in rock clefts where flushing occurs. Populations of shore dock are known to fluctuate according to the severity of winter storms and as such it is expected to be especially vulnerable to predicted effects of climate change including increased storm frequency and sea-level rise. .

Culverting of streams, coastal defence, and boat-ramp construction on beaches have altered many of the shore dock's former localities, making them unsuitable for its survival by separating perennial vegetation at the bases of cliffs from the strand-line community and interfering with the natural geomorphological processes of slumping cliffs and streams entering beaches. Visitor pressure appears to be a significant factor in the decline of shore dock at several sites. A high proportion of the UK localities for this plant are owned by conservation bodies or public authorities, so favouring the maintenance and enhancement of populations at these localities. Other measures to promote species recovery have also been undertaken, including its attempted reintroduction at three sites in Devon and Cornwall.

Rumex rupestris is one of Europe's most threatened endemic vascular plants. Outside the UK, it is restricted to the coastal margins of Normandy and Brittany in France and Galicia in Spain, where it is declining and in low numbers. The UK is the world stronghold for this species but even here it is currently considered Endangered on the GB Vascular Plant Red List.

In the UK, *Rumex rupestris* is currently known from about 40 locations in south-west England and Wales. The species is extinct in the former easternmost part of its range in Dorset. Several new colonies have been found in recent years as a result of systematic surveys of coastlines with suitable habitat in south-west England and south and west Wales. Population size varies greatly between sites, with the largest colonies supporting 50-100 individuals, most others (especially those on rocky shores) generally holding fewer than ten individuals, and several sites comprising single plants. The total UK population is estimated to comprise <650 plants, although surveys carried out as recently as 2017 estimate the UK population to currently comprise of 317 plants.

This site is an important rocky-shore site for this species, near to the centre of its UK distribution. In 1999 the site supported 13 widely scattered colonies and at least 30 plants, along with numerous small pockets of additional suitable habitat; by 2017 this had decreased to just 15 plants in five locations with four recent locations searched with no plants found.

Table 1: Supplementary Advice for Qualifying Features: H1230. Vegetated sea cliffs of the Atlantic and Baltic coasts

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Extent and distribution	Extent of hard or soft cliff capable of supporting sea cliff vegetation	Maintain the total extent of the cliff system which is capable of supporting H1230 sea cliff vegetation to approximately 10 km	<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. The whole system acts to provide the range and variation of vegetation types and mosaics with bare ground. Extent may be measured in different ways but there are issues with measuring area of vertical cliffs. Reduction in extent can include smothering cliff slope, cliff foot or cliff top surfaces by artificial or dumped materials.</p> <p>The target of 10 km is an approximate measure based upon Ordnance Survey (OS) maps. This length is derived by measuring linear sections between significant headlands and embayments rather than the more intricate length of mean high or low water as defined by the OS.</p> <p>The 2001 NVC survey reports a cumulative total of approximately 29 Ha of maritime (MC) communities, but this must be treated as a minimal extent given that it excludes transitional and mosaic stands of vegetation which contain an element of maritime communities.</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p><i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation (cSAC), Cornwall, 2001</i>, Spalding Associates Ltd, 2002 (Available on request from Natural England)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			The 'favourable condition tables' (FCT) for Polruan to Polperro gives an area of 191.01 Ha of supralittoral rock and sediment capable of supporting maritime (MC) communities. This figure should be treated with caution however, as it is ambiguously defined and may include areas of habitat which would not meet the definition for 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts. This figure also appears to be disproportionately high when compared to extent of maritime communities measured in the 2001 NVC survey of the component SSSI.	
Extent and distribution	Spatial distribution of the feature within the site	Maintain the distribution and continuity of the habitat and any associated transitions which reflects the natural functioning of the cliff system	<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 its interior. These conditions may not be suitable for some of the typical and more specialist species associated with the Annex I habitat feature. Transitions include cliff top and cliff foot transitions to terrestrial or marine habitats.</p> <p>This feature has been recorded as being in 'favourable' condition. The 2014 Site Improvement Plan however recommends the provision of further management intervention relating to scrub control and an increase in grazing pressure. Further monitoring is needed to review this requirement.</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p><i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation (cSAC), Cornwall, 2001</i>, Spalding Associates Ltd, 2002 (Available on request from Natural England)</p> <p>Polruan to Polperro Views About Management 2005: Natural England</p> <p>Natural England 2014. Site Improvement Plan – Polruan to Polperro SAC</p>
Extent and distribution	Future extent of habitat within the site and ability to	Maintain active processes such that the system can adjust to longer-term natural change, including landward recession,	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.	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
	respond to seasonal changes	and that fluctuations in the extent of vegetated areas to bare rock occur over time and space within the site.		
Structure and function (including its typical species)	Geomorphological naturalness	Maintain the geomorphological naturalness of the sea cliff system (from cliff top to foreshore connection with the intertidal zone)	The physical landforms associated with this habitat feature, and the processes that shape them, will be a primary influence on sea-cliff habitat. A key criteria for selecting SACs for this habitat feature was that they had no or minimal artificial modification and so demonstrates good geomorphological naturalness. Having a well-developed sea-cliff structure shaped by natural geomorphological processes, will ensure the full range of natural variation can occur.	
Structure and function (including its typical species)	Presence of mosaic of microhabitats	Maintain the diversity and range of microhabitats and bare areas resulting from active coastal processes/landslips	Each site will have a different configuration of geology and hydrology and maritime exposure, which will also change over time and space. The key aim is to maintain the full, naturally expected range of these in as natural a state as possible. NVC surveys and aerial photographs may help identify locations, extent and trends.	
Structure and function (including its typical species)	Vegetation community composition	Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types <ul style="list-style-type: none"> • MC1 <i>Crithmum aritimum</i> – <i>Spergularia rupicola</i> maritime rock-crevice community • MC4 <i>Brassica oleracea</i> maritime cliff-ledge community • MC5 <i>Armeria maritima</i> – <i>Cerastium diffusum</i> ssp. <i>diffusum</i> maritime therophyte community • MC6 <i>Atriplex prostrata</i> – <i>Beta</i> 	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). 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). The presence, composition, location and extent of maritime scrub, heath and/or grassland, plus mosaics of the three, on cliff slopes or cliff tops will be determined by the interaction of natural geomorphological processes with exposure and soil characteristics and management where relevant.	<i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation (cSAC), Cornwall, 2001</i> , Spalding Associates Ltd, 2002 (Available on request from Natural England)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		<p><i>vulgaris</i> ssp. <i>maritima</i> sea-bird cliff community</p> <ul style="list-style-type: none"> • MC8 <i>Festuca rubra</i> - <i>Armeria maritima</i> maritime grassland • MC11 <i>Festuca rubra</i> – <i>Daucus carota</i> ssp. <i>gummifer</i> maritime grassland • MC12 <i>Festuca rubra</i> – <i>Hyacinthoides non-scripta</i> maritime bluebell community 		
Structure and function (including its typical species)	Vegetation: undesirable species	<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><i>Fallopia japonica</i> <i>Disphyma crassifolium</i> <i>Crocsmia x crocosmiiflora</i> <i>Euonymus japonicas</i> <i>Ligustrum ovalifolium</i> <i>Muehlenbeckia complexa</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. There are a range of non-native plants affecting coastal cliffs, and due to difficulties of access, these often pose problems with management. The key objective is to prevent any introductions or planting. This includes the dumping of spoil or organic waste on cliff tops or slopes within or beyond the site boundary which may contain plant seeds or propagules or enrich the site.</p> <p>A small number of non-native species, some potentially invasive, occur close to habitation. These are of low priority for clearance.</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p><i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation (cSAC), Cornwall, 2001</i>, Spalding Associates Ltd, 2002 (Available on request from Natural England)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<p>Structure and function (including its typical species)</p>	<p>Key structural, influential and/or distinctive species</p>	<p>Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat:</p> <ul style="list-style-type: none"> The constant and preferential plants of the MC1, MC4, MC5, MC6, MC8, MC11, and MC12 maritime NVC community types which form a key component of a SAC habitat that is present 	<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"> Structural 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'). Influential 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) Site-distinctive species which are considered to be a particularly special and distinguishing component of an Annex I habitat on a particular SAC. <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. 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 or if our understanding of the term 'typical species' changes.</p> <p>For this feature, typical species may be associated with a variety of different sub-habitats such as rock crevice, splash zone and ledge vegetation; maritime therophyte (annual) vegetation; soft cliff pioneer vegetation; soft cliff flush or wetland vegetation and soft cliff grassland or heathy communities on slopes and/or adjacent cliff tops.</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Structure and function (including its typical species)	Regeneration potential	Maintain semi-natural vegetation on the cliff-top (either, within and beyond the site boundary as appropriate), and its connectivity with the lower cliff slopes.	This is important to ensure that there is a continuous supply of seed-rich semi-natural vegetation material from the clifftops to feed the sea-cliff system below. As the top of the cliff slumps and recedes as a result of natural processes, the vegetation dropping onto the lower slopes should provide suitable material for their re-colonisation with native plant species from adjacent semi-natural habitats above.	Polruan to Polperro Views About Management 2005 : Natural England Natural England 2014. Site Improvement Plan – Polruan to Polperro SAC
Supporting processes (on which the feature relies)	Physical features supporting vegetation: crevices, ledges, isolated stacks etc.	Maintain the associated physical components of the vegetated cliff feature (crevices, ledges, isolated stacks) with changes to them determined by natural processes only	Cliff structure and geomorphological processes are major influences on sea-cliff vegetation. ‘Hard’ cliffs with vertical or very steep faces are characteristic of hard igneous, metamorphic and sedimentary rocks. More mobile ‘Soft’ cliffs have a sloping or slumped profile, often with a distinct ‘undercliff’; these occur on a range of soft rocks, or on hard rocks interspersed with softer deposits and may be subject to mudslides or landslips. These processes all create smaller structural elements such as ledges, crevices and stacks which create complexes of pioneer and more mature vegetation which are typical of this habitat feature.	
Supporting processes (on which the feature relies)	Hydrology/ drainage	At a site, unit and/or catchment level maintain natural hydrological processes 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.	Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England) See Table 3. This attribute will be periodically monitored as part of Natural England’s SSSI Condition Assessments
Supporting processes (on which the feature relies)	Maritime exposure including salt spray effects	Maintain an appropriate degree of exposure to maritime effects, such as salt spray, both from regular inputs and storm events	Excessive exposure to salt spray can cause episodic die-back of sea cliff vegetation in some circumstances, although this may not be applicable to all sites.	
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	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	Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		conditions to support the feature	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.	See Table 3 This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments
Supporting processes (on which the feature relies)	Air quality	Maintain 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 (www.apis.ac.uk).	<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 (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), 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>Vegetated sea cliffs are not considered sensitive to acid deposition. Critical levels for oxides of nitrogen (NO_x) and sulphur dioxide (SO₂) are not exceeded for this habitat type. No critical load / concentration is defined for nutrient nitrogen nor ammonia (NH₃) for this habitat, though it is known to be</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 (www.apis.ac.uk).

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			“sensitive” to nitrogen. Based upon this, the target is set to maintain at or below current levels of air pollutants for this habitat, but its potential sensitivity to nitrogen means this should be kept under review.	
Supporting processes (on which the feature relies)	Cliff morphology, slope and elevation	Maintain the natural processes that determine cliff morphology, slope and elevation	<p>These physical components greatly influence the structure of this habitat type. Allowing natural dynamic processes to operate is important to providing optimal conditions which will allow the long-term conservation of this habitat feature. Interruption of these processes, through partial stabilisation or slowing of cliff erosion and recession rates, with artificial management of cliff slope vegetation, does not produce naturally-occurring conditions which could lead to undesirable changes in characteristic sea cliff vegetation.</p> <p>Natural coastal processes are thought to be generally unhindered within this site.</p>	
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: Reference to chalk cliffs has been removed from the ‘supporting and Explanatory Notes’ for the attribute and ‘Physical features supporting vegetation: crevices, ledges, isolated stacks etc.’ as this rock type is not present at this SAC.				

Table 2: Supplementary Advice for Qualifying Features: H4030. European dry heaths

Attributes	Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supplementary advice for this feature on Polruan – Polperro SAC is currently under review			



Table 3: Supplementary Advice for Qualifying Features: S1441. *Rumex rupestris*; Shore dock

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	Flowering /fruiting performance	Ensure some plants should be flowering/fruiting each year. At each site the minimum requirement should be >20 flowering stems present at least once in each 5-year monitoring cycle.	<p>Even just one flowering/fruiting plant will often be found to have 10-15 flowering stems producing potentially prodigious quantities of seed (5,000-20,000 seeds on a large multi-stemmed plant). Weather conditions (winter storms, cold spring, and summer drought) can limit seed production in any one year, but poor fruiting in two or three in every five is unlikely to be a problem.</p> <p>Both flowering and vegetative plants have regularly been observed since 1994.</p> <p>In 2017, 13 mature fruiting plants were found in only 2 groups of sites, but each in one of the two meta-populations - 2 at Lansallos Cliff and 11 at Conical Hill.</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>MCDONNELL, E. J. 1999. <i>Rumex rupestris (Shore Dock) Report on 1998 field work</i>. Report no.128: English Nature; Plantlife.</p> <p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>NEIL, C.J., KING, M.P., EVANS, S.B., PARLOW, R.E., BENNALICK, I.B., & MCDONNELL, E. J. 2001. <i>Shore dock (Rumex rupestris) report on field work undertaken in 2000</i> Report no. 175 English Nature; Plantlife, CCW.</p> <p>BENNALICK, I.J. 2009 <i>Polruan to Polperro whole site species assessment – Rumex rupestris</i>: Natural England</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (Available from Natural England on request.</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
<p>Population (of the feature)</p>	<p>Metapopulation size and structure</p>	<p>Maintain both the geographical extent/limits of each meta-population and the number of colonies/sites contained within it.</p>	<p>Each colony in relation to its nearest neighbours and other colonies will form groups or clusters which function as a larger metapopulation. Some (usually outlying and very small) populations may 'come and go'. Natural losses are acceptable, but the aim should be to ensure that, over the medium to long term, local losses are more or less offset by re/colonisation at other sites.</p> <p>Following their surveys in 1999 and looking at data from previous years, McDonnell & King (2000) noted a pattern of larger meta-populations in South Devon, between Wembury and Bigbury and Bolt Tail and Start Point. King (2006) noted that sites are scattered along the coastline with many miles between some of them, and suggested that the Devon and Cornwall populations could be considered as two metapopulations, one at Penhale Sands and Gear Sands and one occupying locations between Land's End and Start Point.</p> <p>Limited genetic investigations have suggested gene flow between western and eastern populations may be limited, with metapopulations suggested for:</p> <ul style="list-style-type: none"> • Tregiffian and Lamorna • Trebarvah to Stackhouse Cove • Roseland Peninsula • Polruan to Looe • Whitsand Bay • Wembury to Bigbury • Bolt Tail to Start Point <p>Colonies within this SAC would therefore make up the Polruan to Looe population (although no recent analysis has been undertaken).</p> <p>It is only since the 1990s that the exact locations of shore dock have been regularly checked and recorded. Subsequent searches have established that there are four 'groups' of sites which may be easier thought of as two meta-populations. The Watch House Cove and Conical Hill</p>	<p>MCDONNELL, E. J. 1999. <i>Rumex rupestris (Shore Dock) Report on 1998 field work</i>. Report no.128: English Nature; Plantlife.</p> <p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>NEIL, C.J., KING, M.P., EVANS, S.B., PARSLow, R.E., BENNALICK, I.B., & MCDONNELL, E. J. 2001. <i>Shore dock (Rumex rupestris) report on field work undertaken in 2000</i>. Report no. 175 English Nature; Plantlife, CCW.</p> <p>BENNALICK, I.J. 2009 <i>Polruan to Polperro whole site species assessment – Rumex rupestris</i>: Natural England</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (available from Natural England on request.)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			populations being one meta-population and the Lansallos Cliff population and Parson's Cove/Shelf population being the other meta-population.	
Population (of the feature)	Population abundance	Restore as necessary the abundance of the population to a level which is above 28 whilst avoiding deterioration from its current level as indicated by the latest mean peak count or equivalent.	<p>This will ensure there is a viable population of the feature which is being maintained at or increased to a level that contributes as appropriate to its Favourable Conservation Status across its natural range in the UK. Due to the dynamic nature of population change, the target-value given for the population size or presence of this feature is considered to be the minimum standard for conservation/restoration measures to achieve. This minimum-value may be revised where there is evidence to show that a population's size or presence has significantly changed as a result of natural factors or management measures and has been stable at or above a new level over a considerable period (generally at least 10 years). The values given here may also be updated in future to reflect any strategic objectives which may be set at a national level for this feature.</p> <p>Given the likely fluctuations in numbers over time, any impact-assessments should focus on the current size of the site's population, as derived from the latest known or estimated level established using the best available data. This advice accords with the obligation to avoid deterioration of the site or significant disturbance of the species for which the site is designated, and seeks to avoid plans or projects that may affect the site giving rise to the risk of deterioration. Similarly, where there is evidence to show that a feature has historically been more abundant than the stated minimum target and its current level, the ongoing capacity of the site to accommodate the feature at such higher levels in future should also be taken into account in any assessment.</p> <p>Unless otherwise stated, the population size or presence will be that measured using standard methods, such as peak mean counts or breeding surveys. This value is also provided recognising there will be inherent variability as a result of natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>MCDONNELL, E. J. 1999. <i>Rumex rupestris (Shore Dock) Report on 1998 field work</i>. Report no.128: English Nature; Plantlife.</p> <p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>NEIL, C.J., KING, M.P., EVANS, S.B., PARSLow, R.E., BENNALICK, I.B., & MCDONNELL, E. J. 2001. <i>Shore dock (Rumex rupestris) report on field work undertaken in 2000</i>. Report no. 175 English Nature; Plantlife, CCW.</p> <p>BENNALICK, I.J. 2009 <i>Polruan to Polperro whole site species assessment – Rumex rupestris</i>: Natural England</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (available from Natural England on request).</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>up to date as possible, local Natural England staff can advise that the figures stated are the best available.</p> <p>Small numbers of plants had been present from 1925. The 1998/1999 surveys established that there were at least 28 plants in Units 3 and 5 of the associated SSSI. There are likely to be many other suitable locations but this has been difficult to confirm due to difficulty in accessing the base of cliffs. When the site was designated as an SAC the population target was estimated at 30 plants.</p> <p>During the 2009 survey the shore dock population was assessed as 'favourable' (Natural England 2009) using a revised target of 28 plants. This target has been used as no separate colony of shore dock has ever had more than the nationally used default minimum of at least 25 plants within the SAC, so the target of a single population (overall) with a small number of plants, 'x' with 'x' based on clear evidence of there only ever having been a small population of about 'x' on the site – 'x' being 28 plants (established during 1998/1999 survey) has been used.</p> <p>In 2009, 48 plants were counted, including 7 in a new locality just west of an access path down to Lansallos beach. By 2017 (despite there being a number of suitable niches) only 15 plants were recorded, comprising of 4 at Lansallos Cliff and 11 at Conical Hill.</p> <p>Target set to Restore as necessary because the population is currently below 28 plants and will naturally fluctuate over time due to natural processes – primarily storm and drought events.</p>	
Population (of the feature)	Population structure	Maintain a 'healthy' and viable population as indicated by the presence of plants of different ages, with flowering/fruited plants, vegetative plants, 'youngsters' and seedlings all present.	When censusing for shore dock, separate counts should be kept of flowering/fruited and vegetative mature plants and seedlings/youngsters. Mature plants do not flower/fruit every year, and elderly plants may cease flowering several years before finally succumbing. Plants are said to live for ten or more years, although most are lost some years before they reach old age.	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>MCDONNELL, E. J. 1999. <i>Rumex rupestris (Shore Dock) Report on</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>Both flowering and vegetative plants have regularly been observed since 1994.</p> <p>In 2017, 13 fruiting plants, and 2 vegetative plants were recorded across the SAC. 4 of these were located at Lansallos Cliff (2 fruiting and 2 vegetative) and 11 at Conical Hill (all fruiting).</p> <p>Seedlings have rarely been recorded in the site, but this may be due to identification difficulties. 4 were recorded at Parson's Cove (including Parson's Shelf) and 4 at Conical Hill in 1999 (McDonnell & King 2000).</p>	<p>1998 field work. Report no.128: English Nature; Plantlife.</p> <p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>NEIL, C.J., KING, M.P., EVANS, S.B., PARSLow, R.E., BENNALICK, I.B., & MCDONNELL, E. J. 2001. <i>Shore dock (Rumex rupestris) report on field work undertaken in 2000</i> Report no. 175 English Nature; Plantlife, CCW.</p> <p>BENNALICK, I.J. 2009 <i>Polruan to Polperro whole site species assessment – Rumex rupestris</i>: Natural England</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (available from Natural England on request.</p>
Supporting habitat: extent and distribution	Distribution of supporting habitat	Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the site	A contraction in the range, or geographic spread, of the feature (and its component vegetation) 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. Contraction may also reduce and break up the continuity of a habitat within a site and how well the species feature is able to occupy and use habitat within the site. Such fragmentation may 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	<p>See sources of site based evidence listed above.</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			be suitable for this feature and this may affect its viability. See comments on supporting habitat in 'Extent of supporting habitat' attribute, above.	
Supporting habitat: extent and distribution	Extent of supporting habitat	Maintain the total extent of the habitat(s) which support the feature whilst avoiding deterioration from the current extent.	<p>In order to contribute towards the objective of achieving an overall favourable conservation status of the feature at a UK level, it is important to maintain or if appropriate restore the extent of supporting habitats and their range within this SAC. The information available on the extent and distribution of supporting habitat used by the feature may be approximate depending on the nature, age and accuracy of data collection, and may be subject to periodic review in light of improvements in data.</p> <p>Within the SAC, <i>Rumex rupestris</i> is only marginally associated with an NVC community. It is more closely associated with a very local habitat type that often occurs seaward of the general maritime cliff vegetation zone and which has a poorly defined tall herb community associated with it. Here plants grow at the back of wave –cut platforms and low rocks in crevices usually where there is a little freshwater seeping onto the platform or rocks.</p> <p>These habitat types are present in a number of different locations across the site but their current extent is unknown (Daniels <i>et al.</i> 1995; McDonnell & King 2000). The community is usually too small to map with the result that <i>Rumex rupestris</i> is, at a more general level, associated with the more extensive adjacent NVC community - MC1a. This NVC is a component of the habitat – Vegetated sea cliffs of the Atlantic and Baltic coasts (H1230). There are no similar flush communities described in the NVC system, so for the 2001 NVC survey they were mapped and target noted with MC1a but warrant further investigation.</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>KING, M.P. 1989. <i>An Investigation into the Status and Ecology of the Shore Dock (Rumex rupestris) in Devon and Cornwall</i> (Unpublished MSc, University College, London)</p> <p>MCDONNELL, E.J. 1995. <i>The status of Shore dock (Rumex rupestris Le Gall) in Britain in 1994</i>. Project Report no. 41: Plantlife</p> <p>MCDONNELL, E. J. 1999. <i>Rumex rupestris (Shore Dock) Report on 1998 field work</i>. Report no.128: English Nature; Plantlife.</p> <p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>NEIL, C.J., KING, M.P., EVANS, S.B., PARSLOW, R.E., BENNALICK, I.B., & MCDONNELL, E. J. 2001. <i>Shore dock (Rumex rupestris) report on field work undertaken in 2000</i>. Report no. 175 English Nature; Plantlife, CCW</p> <p><i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation</i></p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
				<p>(cSAC), Cornwall, 2001, Spalding Associates Ltd, 2002</p> <p>BENNALICK, I.J. 2009 <i>Polruan to Polperro whole site species assessment – Rumex rupestris</i>: Natural England</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (available from Natural England on request). This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting habitat: structure/function	Habitat structure: regeneration/colonisation niches	<p>Maintain the availability of regeneration niches to aid seedling establishment within a sandy/gravelly/rocky substrate within rooting distance of freshwater trickles and seepages, or close to where streams debouch onto the shore</p>	<p>Suitable habitats include sand, gravel or shingle beach-heads, rocky wave-cut platforms, oozing sea-cliffs and (rarely) dune slacks. Sea-borne seed dispersal aids mobility within and between sites: seed washed into the sea during high spring tides, freshwater 'spate' or winter storms can find itself being thrown up onto patches of suitable but currently unoccupied habitat elsewhere.</p> <p>Comprehensive surveys conducted in 1998, 1999, 2000, 2001, 2009 and 2017 along the South Devon and Cornwall coasts have indicated that there are many suitable locations for shore dock colonisation at this site. Recent severe storms during 2017 and 2018 have scoured out the tops of beaches, scraped away soft cliffs and have caused rockfalls onto existing colonies (as at Parson's Shelf at Lansallos). However, storms have also opened up new places for <i>Rumex rupestris</i> to colonise, and as long as there are supplies of freshwater for new plants to establish from washed up seed, the population should be present at suitable locations along this stretch of coastline (Bennallick 2018).</p> <p>Small numbers of plants had been present from 1925. The</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>MCDONNELL, E. J. 1999. <i>Rumex rupestris (Shore Dock) Report on 1998 field work</i>. Report no.128: English Nature; Plantlife.</p> <p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>NEIL, C.J., KING, M.P., EVANS, S.B., PARSLOW, R.E., BENNALICK, I.B., & MCDONNELL, E. J. 2001. <i>Shore dock (Rumex rupestris) report on field work undertaken in 2000</i> Report no. 175 English Nature;</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>1998/1999 surveys established that most of the population was located in Units 3 and 5 of the associated SSSI. There are likely to be many other suitable locations but this has been difficult to confirm due to difficulty in accessing the base of cliffs. For example McDonnell discovered further colonies in 1998 and a new locality just west of an access path down to Lansallos beach was discovered in 2009 by Bennallick. The 2017 survey established that shore dock was no longer present at either Watch House Cove or Parson's Cove and Parson's Shelf.</p> <p>McDonnell and King (2000) describe the following potential for colonisation at the 5 known key locations associated with this species:</p> <p><u>Penslake Cove</u> – Many rock crevices, and some fresh water seepages.</p> <p><u>Lansallos Cliff</u> – Although there does not appear to be surface seepages here, there are plenty of suitable niches associated with the head cliffs and boulders.</p> <p><u>Parson's Cove (including Parson's Shelf)</u> – Limited scope for expansion into Parson's Cove itself, as it is a bit dry. There are many wet niches on the Parson's Shelf wave-cut platform.</p> <p><u>Conical Hill (NE of Watch House Cove)</u> – There are many suitable niches here, with damp rock crevices, seepages and damp head material.</p> <p><u>Watch House Cove</u> – Reasonable. There are plenty of rock crevices and seepage areas.</p> <p><u>Pencarrow</u> – There are numerous rock crevices and wet areas.</p>	<p>Plantlife, CCW.</p> <p><i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation (cSAC), Cornwall, 2001</i>, Spalding Associates Ltd, 2002</p> <p>BENNALICK, I.J. 2009 <i>Polruan to Polperro whole site species assessment – Rumex rupestris</i>: Natural England</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (available from Natural England on request).</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting habitat: structure/function	Hydrological regime	Maintain presence and supply of freshwater as surface or subsurface seepages, streams or dune-slacks with seasonally high water table.	Note that on some beach-head colonies freshwater may be 'hidden' (i.e. below the surface), meaning that 'surface' conditions could appear unsuitable even though freshwater seepages lie within rooting distance of the plants. A year-round supply of freshwater may be crucial, so anything that limits or removes that supply could be detrimental (e.g.	Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>lowering of water table, re-direction of surface watercourses or flow rate reduction).</p> <p>In 1998, surveyors described the hydrological features at the following sites within the SAC when surveying shore dock:</p> <p><u>Penslake Cove</u> – Rocks appear dry where plant/clump is growing, but fresh water seeps down the rocks nearby.</p> <p><u>Lansallos Cliff</u> – No sign of fresh water seepages at this site.</p> <p><u>Parson's Cove (including Parson's Shelf)</u> – Parson's Cove has a damp rock crevice, Parson's Shelf has shallow fresh water rock pools.</p> <p><u>Conical Hill (NE of Watch House Cove)</u> – Brackish rock pools and seepages.</p> <p><u>Watch House Cove</u> - There are several areas of seepage in the Cove, but the three plants found, were growing in dry rock crevices.</p> <p><u>Pencarrow</u> – Fresh water seepages.</p> <p>During the 2017 surveys prolonged dry spells were found to have reduced the supply of freshwater in seepages or trickles, or small pools on wave-cut platforms and dried up drought-stressed plants were noted. At Parson's Cliff the small trickle of water always usually present was non-existent and consequently no shore dock plants were present where they were found previously (Bennallick 2018).</p>	<p>MCDONNELL, E. J. and KING, M. 2000. <i>Rumex rupestris (Shore Dock) report on field work 1999</i>: English Nature; Plantlife.</p> <p>BENNALICK, I.J. 2018 <i>Polruan to Polperro whole site species assessment 2017 – Rumex rupestris</i>. Unpublished email advice (available from Natural England on request).</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting habitat: structure/function	Soils, substrate and nutrient cycling	Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat	Soil supports basic ecosystem function and is 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 the supporting habitat of this Annex II feature.	National Soil Map of England and Wales – NATMAP See: http://www.landis.org.uk/data/natmap.cfm)

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Supporting habitat: structure/ function	Vegetation structure and composition	Maintain the characteristic vegetation communities which support the features.	<p>Vegetation composition can be very variable, depending on habitat.</p> <p>Typical associates of <i>Rumex rupestris</i> include <i>Agrostis stolonifera</i>, <i>Atriplex</i> spp., <i>Beta vulgaris</i> ssp. <i>Maritima</i>, <i>Carex otrubae</i>, <i>Festuca rubra</i>, <i>Phragmites australis</i>, <i>Potentilla anserina</i>, <i>Pulicaria dysenterica</i>, <i>Raphanus maritimus</i>, <i>Samolus valerandii</i>, <i>Sonchus arvensis</i> and <i>Tripleurospermum maritimum</i> (King 2006).</p> <p>Shore dock does not easily fit into the National Vegetation Classification (NVC), with few consistent affinities (David 1999; King 2006). Shore dock has been found to occur in MC8 '<i>Festuca rubra</i> - <i>Armeria maritima</i> maritime grassland' and in MG12 '<i>Festuca arundinacea</i> grassland' (David 1999; King 2006). The species may also occur in MG11 <i>Festuca rubra</i> – <i>Agrostis stolonifera</i> – <i>Potentilla anserina</i> grassland, particularly MG11b <i>Atriplex prostrata</i> sub-community, which is typical of disturbed and saline environments (King 2006). Within the Polruan to Polperro SAC <i>Rumex rupestris</i> is only marginally associated with an NVC community. It is more closely associated with a very local habitat type that often occurs seaward of the general maritime cliff vegetation zone and which has a poorly defined tall herb community associated with it. The community is usually too small to map with the result that <i>Rumex rupestris</i> is, at a more general level, associated with the more extensive adjacent MC1a NVC community. This sub-community is typically composed of the four community constants of MC1 – <i>Crithmum maritimum</i>, <i>Spergularia rupicola</i>, <i>Festuca rubra</i> and <i>Armeria maritima</i> with scattered very low abundances of a range of salt-tolerant species. Within the site MC1a usually occurs just above the yellow/grey lichen zone on wave-cut platforms, and steep, relatively stable rocky cliffs with high or moderate exposure. It forms an irregular linear zone along almost all the length of coastline from Polruan to Polperro. The community area varies from being only a few centimetres wide with <i>Crithmum maritimum</i> the only constant vascular plant present, to other locations where the four constants mentioned above</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>ENGLISH NATURE, PLANTLIFE 1999. <i>Species Action Plans for plants – Shore dock</i> Shore dock (<i>Rumex rupestris</i>) report on field work undertaken in 2000</p> <p>DANIELS, R.E., MCDONNELL, E.J., MOY, I.L. 1995. <i>Species Recovery Programme – Shore Dock (Rumex rupestris Le Gall) Second Report</i>. Institute of Terrestrial Ecology/ English Nature/ Plantlife</p> <p><i>National Vegetation Survey of Polruan to Polperro candidate Special Area of Conservation (cSAC), Cornwall, 2001</i>, Spalding Associates Ltd, 2002</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>are found as described in the NVC. Other typical associates are rare or absent. <i>Inula crithmoides</i> and <i>Aster tripolium</i> were not seen during the fieldwork carried out in 2001 but <i>Limonium binervosum</i> agg. Occurs very rarely in MC1a on the west and east side of Pencarrow Head SX1450 SX1550.</p> <p>In most places there are transitions of MC1a to MC4a, MC5a, MC6 or MC8b (Bennalick & Neil 2001), but where scrub or underscrub communities, especially W25b, are found along the more sheltered areas of cliff, as at Lantic Bay (SX1451), there can be an abrupt boundary between MC1a and the scrub communities. Very small, but botanically very interesting, areas of perched saltmarsh are also found within this community on wave-cut platforms, as at East Coombe in Lantivet Bay SX1750. Species typically found include <i>Juncus gerardii</i>, <i>J. maritimus</i>, <i>Carex extensa</i>, <i>C. distans</i> and very locally, <i>Phragmites australis</i>. Within the freshwater flushes associated with <i>Rumex rupestris</i> the Nationally Scarce <i>Carex punctata</i> is also found.</p>	
Supporting habitat: structure/ function	Vegetation succession and maintenance of early-succession communities	Maintain supporting habitat in an open, sparsely vegetated early-successional condition.	A range of 'natural' and 'anthropogenic' factors may help in maintaining habitat patches at an early-successional stage. Many factors that may be advantageous 'in moderation' could be detrimental in larger doses, but determining 'safe' and 'unsafe' levels may be difficult and are probably site-specific (dependent on topography, exposure, substrate, etc.). Aim should be to maintain open vegetation, so any shift towards more closed/tall/rank communities should be avoided as far as possible.	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting processes (on which the feature and/or its supporting habitat relies)	Adaptation and resilience	Maintain the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the site	This recognises the increasing likelihood of supporting 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 vulnerability and response of features to such changes will	<p>NATURAL ENGLAND, 2015. Climate Change Theme Plan and supporting National Biodiversity Climate Change Vulnerability assessments ('NBCCVAs') for SACs and SPAs in England [Available at http://publications.naturalengland.org.uk/publication/4954594591375360].</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>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 moderate, taking into account the sensitivity, fragmentation, topography and management of its supporting habitats. This means that this site is considered to be vulnerable overall but moderately so.</p> <p>This means that some adaptation action for specific issues may be required, 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. 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>	
Supporting processes (on which the feature and/or its supporting habitat relies)	Air quality	Maintain or, where necessary, restore 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 (www.apis.ac.uk).	<p>The supporting habitat of this feature 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 (including food-plants) and reducing supporting habitat quality and population viability of this feature.</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 (NH₃), oxides of nitrogen (NO_x) and sulphur dioxide (SO₂), 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,</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 (www.apis.ac.uk)</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			<p>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>The critical load values for shore dock are:</p> <ul style="list-style-type: none"> • Nutrient Nitrogen: 10-20 KG N/ha/yr • NH₃: 3 (2-4µg NH₃ m⁻³) (set for higher plants) • NO_x: 30 (µg NO_x/m³ annual mean) and 75 (µg NO_x/m³ 24-hour mean) (set for all vegetation) • SO₂: 10-20 (µg SO₂/m³ annual mean) (set for all vegetation) <p>The latest recorded values for the site are:</p> <p>Nitrogen deposition: 13.26 kg N/ha/yr</p> <ul style="list-style-type: none"> • NH₃ concentration: 1.1 µg/m³ • NO_x concentration: 6.12 µg/m³ • SO₂ concentration: 0.18 µg/m³ <p>Critical levels for oxides of nitrogen (NO_x) and sulphur dioxide (SO₂) are not exceeded for this habitat type. No critical load / concentration is defined for nutrient nitrogen nor ammonia (NH₃) for this habitat, though it is known to be "sensitive" to nitrogen. Based upon this, the target is set to maintain at or below current levels of air pollutants for this habitat, but its potential sensitivity to nitrogen means this should be kept under review.</p>	
Supporting processes (on which the	Conservation measures	Maintain the management measures (either within and/or outside the site boundary as	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	Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
feature and/or its supporting habitat relies)		appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.	<p>site can be provided by contacting Natural England. 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>Parts of this site are owned by the National Trust and managed by tenants who are aware of the importance of this feature (JNCC 2015). There are several Higher Level Stewardship agreements in place. The most likely threats to the integrity of the site are inadvertent damage resulting from recreational activities (which can be counteracted to some extent by interpretation), and extreme coastal process events which are beyond human control and influence (JNCC 2015).</p> <p>Most of the supporting habitat is primarily threatened by natural processes – primarily slippage and storm damage. The key management principle is to allow the dynamic processes of the cliffs and foreshore, such as erosion and slumping, to proceed freely. <i>Rumex rupestris</i> colonies are often very small, and such processes will sometime lead to local extinctions, but equally they will also help to create new habitat patches suitable for colonisation, allowing the population to move around within a site.</p> <p>The maintenance of coastal flushes and seepages is also vital to the conservation of this species and as a relatively mobile plant, the presence of numerous pockets of suitable, but currently unoccupied habitat is also important in providing colonisation of sites in the future. Several populations have previously been destroyed elsewhere around the UK coastline due to the diverting or culverting of springs, the construction of coastal defences and the building of slipways and boat ramps. Measures may need to be taken to prevent these kinds of activities occurring at this site. Locally, there may also be a need for scrub control at locations susceptible to encroachment.</p>	<p>on request from Natural England)</p> <p>MCDONNELL, E.J. 1995. <i>The status of Shore dock (Rumex rupestris Le Gall) in Britain in 1994</i>. Project Report no. 41: Plantlife</p> <p>ENGLISH NATURE, PLANTLIFE 1999. <i>Species Action Plans for plants – Shore dock</i></p> <p>JNCC, 2015. Natura 2000 Data Form – Polruan to Polperro SAC, UK0030241</p> <p>Polruan to Polperro Views About Management 2005: Natural England</p> <p>Natural England 2014. Site Improvement Plan – Polruan to Polperro SAC</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting processes	Habitat dynamics:	Maintain the operation of natural coastal processes and	Allowing coastal processes with minimal human intervention is probably crucial for this species; anything that tends to	Natural England (2009) Definition of Favourable Condition – Polruan

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
(on which the feature and/or its supporting habitat relies)	coastal erosion and accretion	deliberately accept coastal instability, erosion and accretion to maintain suitable conditions for the feature	<p>lessen the impact of coastal processes, especially if it leads to greater shoreline stability, is likely to be detrimental to its long-term survival. Plants being buried under a cliff-fall or lost following a winter storm might seem damaging to the plant's survival, but it is this very dynamism that helps to maintain and create new colonisation niches.</p> <p>Natural coastal processes are thought to be generally unhindered within this site.</p>	<p>– Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting processes (on which the feature and/or its supporting habitat relies)	Habitat dynamics: coastal erosion and accretion	Maintain the operation of natural coastal processes and deliberately accept coastal instability, erosion and accretion to maintain suitable conditions for the feature	<p>It should be recognised that coastal defence works outside a site could also impact on sedimentary processes within the site. There is some circumstantial evidence to suggest that visitor pressure may be limiting population size on some sites (especially those with beach-head colonies). Proposed tourist developments within or close to existing sites should be carefully scrutinised with regard to potential increase in visitor numbers. There have been instances of plants/colonies being lost due to dried fruiting stems and whole plants being used as kindling for beach bonfires! Bulldozing accumulations of beach litter/seaweed could damage or uproot shore dock plants if this is allowed within areas supporting beach-head colonies.</p>	<p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>
Supporting processes (on which the feature and/or its supporting habitat relies)	Water quality/quantity	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 during key stages of their life cycle. Poor water quality and inadequate quantities of water can adversely affect the availability and suitability of breeding, rearing and feeding habitats.</p> <p>Typically, meeting the surface water and groundwater environmental standards set out by the Water Framework Directive (WFD 2000/60/EC) will also be sufficient to support the SAC Conservation Objectives but in some cases more stringent standards may be needed to support the SAC feature. Further site-specific investigations may be required to establish appropriate standards for the SAC. There is little evidence that water quality is an issue, but it is plausible that a nutrient-enriched water supply could lead to greater growth</p>	<p>Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England)</p> <p>This attribute will be periodically monitored as part of Natural England's SSSI Condition Assessments</p>

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			of more vigorous, taller-growing species, which in turn could out-compete the (lower-growing) shore dock.	
Supporting processes (on which the feature and/or its supporting habitat relies)	Water quantity/quality	Where the feature or its supporting habitat 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 to reflect the ecological needs of the species feature. Further site-specific investigations may be required to establish appropriate water quality standards for the SAC.	Natural England (2009) Definition of Favourable Condition – Polruan – Polperro SSSI (Draft) (Available on request from Natural England) This attribute will be periodically monitored as part of Natural England’s SSSI Condition Assessments
Version Control Advice last updated: N/A				
Variations from national feature-framework of integrity-guidance: The attribute of grazing pressure has been removed in its entirety as this is not relevant to the management of shore dock at this site.				