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

Lower Bostraze and Leswidden Special Area of Conservation (SAC) Site Code: UK0030064

Lower Bostraze (photo credit D. T. Holyoak)

Date of Publication: 11 February 2019

About this document

This document provides Natural England's supplementary advice about the European Site Conservation Objectives relating to Lower Bostraze and Leswidden 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	Lower Bostraze and Leswidden 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	01/04/2005
Qualifying Features	See section below
Designation Area	2.33 ha
Designation Changes	N/A
Feature Condition Status	Details of the feature condition assessments made at this site can be found using Natural England's Designated Sites System
Names of component Sites of Special Scientific Interest (SSSIs)	Lower Bostraze & Leswidden SSSI
Relationship with other European or International Site designations	N/A

Site background and geography

Lower Bostraze and Leswidden SAC comprises two closely adjacent sites situated on either side of the A3071, located approximately 8 km west of Penzance and 1.5 km east of St Just. They are underlain by the Land's End granite, part of the /Cornubian batholith. Zones within the granite were altered by kaolinisation (a process of decomposition). Granite is composed of three main minerals; feldspar, quartz and mica. Decomposition of the white feldspar component of the granite produces kaolinite, the main constituent of china clay. The history of china clay extraction in this area has not been documented in detail but china clay was extensively worked here from the 1870s when Leswidden pit first opened. China clay winning ceased at Leswidden pit before 1965, while Bostraze was the last pit in the area to close in 1991.

Lower Bostraze and Leswidden support important populations of the internationally rare liverwort *Marsupella profunda* western rustwort, which were first discovered at Lower Bostraze and Leswidden in 1996.

Lower Bostraze is located in the southern half of a disused china-clay pit (partially flooded), with benches/terraces, spoil tips and granitic debris. At Lower Bostraze *Marsupella profunda* is generally found growing on micaceous clay waste substrates on the quarry floor and benched terraces which are flat or gently sloping, with some patches on soft or crumbling granite boulders.

At Leswidden *Marsupella profunda* occurs on a bund of china clay spoil and granitic debris which was created in 1982 to screen a coal yard and fuel depot. The bund was formed from waste material taken from an adjacent china clay pit/quarry.

The SAC lies within the West Penwith National Character Area (NCA Profile 156)

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 Species:

- **S1390 Western rustwort *Marsupella profunda***

The site supports important populations of *Marsupella profunda* western rustwort, an internationally rare liverwort endemic to western Europe. *Marsupella profunda* is threatened throughout its range. It has a strongly oceanic distribution, and is known only from a small number of sites in Portugal, the Azores, Madeira and south-west Britain where it is restricted to Cornwall. The UK population of *Marsupella profunda* is important in a European context and Cornwall may be the World stronghold for this species.

Marsupella profunda is a pioneer species, it requires open clay substrates and micaceous waste, weathered granitic material (boulders, rock outcrops) which are bare or in the early stages of colonisation by filamentous algae and other small bryophytes. *Marsupella profunda* often occurs intermixed with the similar species, *Marsupella sprucei*. As natural succession progresses and vascular plants and scrub increase, *Marsupella profunda* is outcompeted and disappears.

Marsupella profunda functions as a typical 'meta-population', and conservation measures for this species must take onto account this specialist type of population dynamics. The survival strategy of a 'meta-population' is to colonise new sites as they become available, disappearing from its' former sites as conditions become unsuitable due to competition from vascular plants and shading.

A metapopulation is the overall population within a general area, consisting of a number of, subpopulations which may be temporary in nature, with a balance between local extinctions and colonisation of new sites. Regular pro-active management of existing sites is required to prolong their suitability for this species.

Marsupella profunda is a poor competitor which is soon shaded out as other plants become established. *Marsupella profunda* freely produces wind-blown spores, a typical reproductive strategy of a pioneer species. Factors influencing the success of colonisation are spore production, dispersal distance, rates of establishment and survival, and most importantly, the availability, proximity and spatial distribution of habitats suitable for colonisation.

Table 1: Supplementary Advice for Qualifying Features: S1390. *Marsupella profunda*; Western rustwort *

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
Population (of the feature)	**Population abundance**	Restore the abundance of the population to a level which is at or above the 2003 population for Lower Bostraze and the 2009 population for Leswidden	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. 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. 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	HOLYOAK D. T. 1996 HOLYOAK D. T. 1997 HOLYOAK D. T. 1998 HOLYOAK D. T. 1999 HOLYOAK D. T. 2003 HOLYOAK D. T. 2009 CALLAGHAN D. 2011

<table>
<tr><th colspan="2">Attributes</th><th>Targets</th><th>Supporting and Explanatory Notes</th><th>Sources of site-based evidence (where available)</th></tr>
<tr><td></td><td></td><td></td><td>natural fluctuations and margins of error during data collection. Whilst we will endeavour to keep these values as up to date as possible, local Natural England staff can advise that the figures stated are the best available.

It is difficult to quantify the size of Marsupella profunda populations, as it commonly grows intermixed with the superficially similar species Marsupella sprucei (microscopic verification of sample material is required for reliable confirmation of field identification).
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Marsupella profunda - population size/cover estimates:
<table><tr><th>Surveys</th><th>Lower Bostraze</th><th>Leswidden</th></tr><tr><td>1996</td><td>4000 cm^2</td><td>200 cm^2</td></tr><tr><td>1997</td><td>6000 cm^2</td><td>150 cm^2</td></tr><tr><td>1998</td><td>5400 cm^2</td><td>120 cm^2</td></tr><tr><td>1999</td><td>5100 cm^2</td><td>45 cm^2</td></tr><tr><td>2003</td><td>7800 cm^2</td><td>30 cm^2</td></tr><tr><td>2006</td><td>6400 cm^2</td><td>240 cm^2</td></tr><tr><td>2007</td><td>≥6400 cm^2</td><td>≥500 cm^2</td></tr><tr><td>2009</td><td>6180 cm^2</td><td>6037 cm^2</td></tr><tr><td>2011</td><td>not measured in the 2011 survey, but assessed as more abundant than the 2009 survey</td><td>none found</td></tr></table></td><td></td></tr>
<tr><td>Supporting habitat: extent and distribution</td><td>Distribution of supporting habitat</td><td>Restore 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</td><td>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</td><td>CALLAGHAN D. 2011

HOLYOAK D. T. 1999</td></tr>
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Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			its interior. These conditions may not be suitable for this feature and this may affect its viability. *Marsupella profunda* habitat requirements: • relatively young, damp bare clay substrates or soft granitic material (boulders, rock outcrops) in well-lit situations (shade is not tolerated) • clay substrates in the early stages of colonisation by filamentous algae and other small bryophytes • sheltered sites with humid conditions (often occurring nearby to open water) with firm substrates in well-drained topographic situations China clay habitats patches exist for relatively short periods, before natural vegetation succession results in local extinctions of *Marsupella profunda* populations. The species relies on its abilities to disperse (windblown spores) and establish new populations, therefore it is critical that new or suitable habitat patches are continually available for re-colonisation. The availability, proximity and spatial distribution of habitats suitable for colonisation appear to be the key factors influencing the success of dispersal and establishment of new colonies. Because of the meta-population nature of this species, as well as restoring the distribution of suitable habitat within the SAC boundary, consideration should be given to the creation and/or restoration of suitable habitat outside of the SAC boundary, where there are opportunities to do so.	
Supporting habitat: extent and distribution	**Extent of supporting habitat**	Restore the total extent of the habitats which support the feature: Baseline values for the extent of suitable habitat will need to be determined; see comments under the 'conservation measures' and 'distribution of supporting habitat' attributes,	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.	CALLAGHAN D. 2011 HOLYOAK D. T. 1999

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		with regard to the presence of significant areas of potential suitable habitat within the currently designated site boundaries and also outside of the SSSI/SAC boundaries.	The **restore** option is used here because of the lack of management and loss of habitat due to the natural successional growth of scrub and heathy vegetation. **Leswidden** Most of the area is scrubbed over and dominated by dense heathy vegetation, since creation of the china clay spoil bund in 1982 and despite surface stripping of vegetation in 1997. Re-exposure of suitable habitat on a significant scale is required for *Marsupella profunda* to re-colonise. The 2011 survey failed to find *Marsupella profunda* at Leswidden. The area of suitable substrate could be significantly extended beyond the existing spoil bund and further enhanced by moving soft granitic rock from the adjacent china clay pit/quarry to provide additional habitat for colonisation. **Lower Bostraze** Despite regular small-scale habitat management a significant part of the floor of the quarry/pit supports dense willow, and in more exposed locations such as the benches/terraces tall, dense heath vegetation is dominant. Management has been carried out by hand as access for machinery is difficult and some parts of the site, such as the terraces/quarry floor, are inaccessible and hazardous. One of the management recommendation is the use of controlled explosives in the quarry bottom, and also fencing to facilitate grazing to assist with long-term management. A significant area of suitable habitat for *Marsupella profunda* occurs in the northern section of the quarry/pit, particularly along the western wall of the quarry/pit, this part of the site is currently outside of the designated site boundary and a recommendation is to extend the SAC/SSSI boundary to include this area.	
Supporting habitat: structure/ function	**Bare ground and vegetation structure**	Ensure the total extent of unshaded, bare ground is at least 80% with other pioneer bryophytes, scattered seedlings	*M. profunda* is readily out-competed by other more vigorous bryophytes, such as *Diplophyllum albicans*, and vascular plants, and thus a sufficiently high level of bare ground should be available for colonisation by this pioneer species.	CALLAGHAN D. 2011

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
		and grasses at a low level and not out-competing *M. profunda*. Bare ground includes clay substrates, rocks, stones and thin algal crusts. .	Baseline values for the extent of suitable habitat will need to be determined; the 80% bare ground figure might be appropriate for Leswidden but at Lower Bostraze there is unlikely to be as much as 80% of the site with suitability for *Marsupella profunda* habitat. Also see comments under the 'conservation measures' and 'distribution of supporting habitat' attributes, with regard to the presence of significant areas of potential suitable habitat within the currently designated site boundaries and also outside of the SSSI/SAC boundaries	
Supporting habitat: structure/ function	**Hydrological regime**	Maintain the hydrology of sites at a level appropriate for M. profunda, which favours humid conditions.	*M. profunda* favours moist substrates and humid conditions, for example it is known to favour boulders in flooded disused pits where humidity is permanently high. It may be beneficial to place suitable boulders within such pits as habitats for the species after sites have been worked. *Marsupella profunda* requires sheltered sites with humid conditions in well-drained topographic situations. Lower Bostraze and Leswidden are disused, former china clay workings. Lower Bostraze SAC/SSSI is located immediately to the south of the flooded part of the china clay quarry/pit. Leswidden is nearby to a flooded china clay quarry/pit.	PORLEY R. & HODGETTS n. 2005
Supporting habitat: structure/ function	**Scrub and tree cover**	Restore the total extent of the cover of scrub and trees where *M. profunda* grows, or has the potential to colonise, to less than 10%. Scrub and trees should not directly shade colonies of *M. profunda.*	*M. profunda* is vulnerable to being shaded out by the canopy of scrub and trees. Scrub should be cleared and treated with herbicide at regular intervals. Scrub and tree species which may be of particular concern include gorse, bramble, heather, Rhododendron, sallows (willows) and birch. Tree planting and cultivation should not occur on or near areas colonised by *M. profunda.*	CALLAGHAN D. 2011
Supporting habitat:	**Soils, substrate and**	Restore the properties of the underlying soil types, including	Soil supports basic ecosystem function and is a vital part of the natural environment. Its properties strongly influence the	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
structure/ function	**nutrient cycling**	structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat.	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. *Marsupella profunda* requires bare, soft granitic rock and clayey substrates (acidic) with firm substrates.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Adaptation and resilience**	Restore 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 precipitation and temperature for example, which are likely to affect the extent, distribution, composition and functioning of a feature within a site. The vulnerability and response of features to such changes will vary. Using best available information, any necessary or likely adaptation or adjustment by the feature and its management in response to actual or expected climatic change should be allowed for, as far as practicable, in order to ensure the feature's long-term viability. The overall vulnerability of this 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 [habitats/supporting habitats]. This means that this site is considered to be vulnerable overall but moderately so. 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	PORLEY R. 2007

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			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. The implications of local and global warming and other aspects of climate change on an oceanic species such as *Marsupella profunda* are not known. It is at the northern limits of its global distribution in Cornwall. Research into the genetic variation within and between sub-populations of *Marsupella profunda* and investigation (modelling) of the functioning of metapopulations in respect of climate change would be valuable in informing the future management of this species.	
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).	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. 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 (NOx) 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. 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	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)
			timescales. It is possible that *Marsupella profunda* could be affected by air pollution.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Conservation measures**	Restore the management measures within and outside the site boundary which are necessary to restore the structure, functions and supporting processes associated with the feature and/or its supporting habitats.	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. 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. Key conservation management requirements; (2011 Callaghan report) **Lower Bostraze**: • Large-scale control of scrub/vegetation (stem injection of herbicide, leaving trees/shrubs to die *in situ*) - dense willow particularly in the quarry floor and the eastern boulder slopes • Removal of tall dense heath vegetation and re-exposure of clay substrates; particularly in more exposed locations such as the quarry benches/terraces • Re-exposure of soft granitic substrates and boulders • Consider major interventional management, to generate fresh rock fall (granitic boulders) and to provide more open ground Consider the introduction of appropriate grazing stock (would require fencing and stock management) NB: access is difficult and potentially hazardous over large parts of Lower Bostraze quarry/pit. **Leswidden:** • Extensive removal of dense heath vegetation and accumulated soil horizon from the china clay spoil bund to re-expose soft granitic substrates • Extend the area of suitable habitat beyond the existing	CALLAGHAN D. 2011 HOLYOAK D. T. 1996 HOLYOAK D. T. 1997 HOLYOAK D. T. 1998 HOLYOAK D. T. 1999 HOLYOAK D. T. 2003 HOLYOAK D. T. 2007 PORLEY R. 2007 HOLYOAK D. T. 2010

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			china clay spoil bund • Importation of soft granitic boulders from the nearby china clay pit/quarry and use this donor material to extend the suitable substrate within the SAC/SSSI boundary The **restore** target is selected for the following reasons: **Lower Bostraze:** 2011 survey (Callaghan D.) found that overall a good population of *Marsupella profunda* continues to be present, but the site is undergoing a long-term and slow decline as vegetation succession proceeds and suitable habitat becomes overgrown. A colony of *Marsupella profunda* (ca 78 cm^2) was found outside of the SSSI/SAC boundary and a significant area of suitable habitat within un-notified parts of Lower Bostraze quarry/pit are likely to support strong populations, hence the recommendation to extend the SSSI/SAC boundary to include the northern section of the china clay pit/quarry **Leswidden**: 2011 survey (Callaghan D.) failed to re-find any *Marsupella profunda* due to vegetation succession and loss of suitable habitat. This was following a record population of over 6000 cm^2 recorded in 2009. Management at Lower Bostraze & Leswidden has been directed at maintaining populations (or sub-populations) in the same locations within the site boundaries, using a combination of herbicide treatment to control scrub/vegetation and mechanical disturbance with hand tools or small mechanical diggers (where access is possible). This small-scale management targeted on existing populations will not secure the long-term survival of a viable metapopulation of *Marsupella profunda.* The aim should be to introduce larger scale and more sustainable intervention management to	

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			provide a much greater extent of suitable habitat. Because of the meta-population nature of this species, as well as restoring the distribution of suitable habitat within the SAC boundary, consideration should be given to the creation and/or restoration of suitable habitat outside of the SAC boundary, where there are opportunities to do so.	
Supporting processes (on which the feature and/or its supporting habitat relies)	**Surface disturbance**	Restore high levels of surface disturbance to provide conditions necessary for colonisation by *M. profunda.*	High levels of surface disturbance may be of benefit by exposing additional areas of bare ground suitable for colonisation by *M. profunda.* Natural vegetation succession causes the habitat to decline and results in local extinctions of *Marsupella profunda*, it is critical that new or suitable habitat patches are available for re-colonisation. *Marsupella profunda.* See also comments under other Attributes (conservation measures and extent of supporting habitat)	CALLAGHAN D. 2011
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 [adviser to provide site-specific standards where available]. Site-specific standards for water quantity/quality are not available	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. *Marsupella profunda* requires sheltered sites with humid conditions in well-drained topographic situations. Open water is present in close vicinity to populations of *Marsupella profunda* at both the Lower Bostraze and Leswidden.	PORLEY R. & HODGETTS N. 2005

Attributes		Targets	Supporting and Explanatory Notes	Sources of site-based evidence (where available)
			Lower Bostraze is located in the southern part of a former china clay pit/quarry, the northern part of which is flooded. Leswidden is located on a bund of a china clay spoil, close to a flooded, former china clay pit/quarry.	
Version Control: Date Advice last updated N/A				
Variations from national feature-framework of integrity-guidance: **Surface Disturbance:** Target for surface disturbance has been changed from 'low levels' to '**high** levels' because of the amount of scrub and loss of habitat for *M. profunda* requires large-scale disturbance to provide sufficient areas of suitable substrate for colonisation.				

References

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