European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)

Second Report by the United Kingdom under Article 17

on the implementation of the Directive from January 2001 to December 2006

Conservation status assessment for :

H91A0: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Audit trail compiled and edited by JNCC and the JNCC Woodland Lead Coordination Network

This paper and accompanying appendices contain background and data used to complete the standard EC reporting form (Annex D), following the methodology outlined in the document entitled "Assessment, monitoring and reporting under Article 17 of the Habitats Directive, Explanatory Notes & Guidelines, Final Draft 5, October 2006." The superscript numbers below cross-reference to the headings in the corresponding Annex D reporting form. This supporting information should be read in conjunction with the UK approach for habitats (see 'Assessing Conservation Status: UK Approach').

1. National-Biogeographic Level Information

1.1 General description and correspondence with NVC and other habitat types

Table 1.1.1 provides a summary description of H91A0 old sessile oak woods and its relations with UK classifications. The habitat corresponds broadly to the western or upland oakwoods described in previous accounts of UK woodland. It encompasses most occurrences of the following types within the NVC (Rodwell 1991): W10e, W11a-d, W16b, W17a-d. Birch-dominated woodlands which contain at least some oak and which either: (a) occur as part of an intimate mosaic with oak-dominated stands; or (b) are clearly successional stages which are reverting to oak woodland; are included in the Annex I definition. However, birch woodlands in Scotland that lie beyond the present-day natural distribution of oak, and also those within this range for which there is no historical evidence for the presence of oak, are excluded. Similarly, comparable lowland stands in southern and eastern areas of Britain are excluded.

H910A old sessile oak woods are a widespread woodland type found across much of the upland landscape of the UK. The habitat type comprises a range of woodland types dominated by mixtures of oak (*Quercus robur* and/or *Quercus petraea*) and birch (*Betula pendula* and/or *Betula pubescens*). The more frequently encountered associated trees and shrubs are holly *Ilex aquifolium* and rowan *Sorbus aucuparia*. It is characteristic of acidic, base-poor soils in upland areas with at least moderately high rainfall.

Frequently, this oak woodland occurs as part of a mosaic of woodland types (including other Annex I habitats, such as H9180 *Tilio-Acerion* forests and H91E0 Alluvial forests) that varies with position on the slope, occurrence of streams or other waterbodies, and local soil enrichment. These transitions are important in maintaining the structure and function of the habitat type and differ across the country.

Within itself, H91A0 shows considerable variation across its range, in terms of the associated ground flora and the richness of bryophyte communities. There is also a continuous spectrum of variation between oak-dominated and birch-dominated stands. Often these local variations reflect factors such as rainfall, slope, aspect, soil depth, and past and present woodland management (e.g. coppicing, planting, grazing).

The most distinctive forms of the habitat have a ground flora dominated by bryophytes, such as *Dicranum majus*, *Hylocomium splendens*, *Isothecium myosuroides*, *Plagiothecium undulatum*, *Rhytidiadelphus loreus*, *Bazzania trilobata* and *Plagiochila spinulosa*. Other variants include stands in which the ground flora is characterised by the prominence of dwarf shrubs, such as bilberry *Vaccinium myrtillus*; grasses, such as wavy hair-grass *Deschampsia flexuosa*, common bent *Agrostis capillaris* and sweet vernal-grass *Anthoxanthum odoratum*; and plants indicative of more mesophytic conditions, including bluebell *Hyacinthoides non-scripta*, bramble *Rubus fruticosus*, scaly male-fern *Dryopteris affinis*.

A key feature of European importance is the rich Atlantic bryophyte communities that are often well-developed within this Annex I type. These include numerous rare species, such as *Campylopus setifolius*, *Sematophyllum demissum*, *Adelanthus decipiens*, *Leptoscyphus cuneifolius* and *Plagiochila atlantica*. Fourteen different bryophyte zones have been identified in the UK (Ratcliffe 1968), with distinct differences in the bryophyte assemblages within them. The richest zones are in the western Scottish Highlands. Stands of old sessile oak woods in eastern Britain tend to be much smaller and less distinctive in their species composition, particularly their bryophyte assemblages. In addition to the bryophyte zones, there are distinct differences in higher plant and animal communities in the south compared with the north. Some woods hold rich lichen floras, especially epiphytic assemblages such as the *Lobarion* community.

Rodwell and Dring (2001) reported on the European context of British H91A0 old sessile oak woods. These represent the most strikingly Atlantic of a sequence of European acidophilous *Quercion* communities found on acidic impoverished soils outwith the zone of beech dominance. They are confined to the UK and Eire and are especially distinctive in the very humid and equable climate towards their west coasts, where the fern and bryophyte flora brings a unique level of enrichment. Sub-Atlantic plants such as *Ilex aquifolium, Lonicera periclymenum, Corydalis claviculata* and *Galium saxatile* become more consistent with the shift to the Atlantic biogeographic zone. *Hyacinthoides non-scripta* is also a very characteristic vernal herb in this climatic zone though, in *Quercion* woodlands in this region, it is limited to better quality mull brown earths. The more consistent humidity also sustains a richer and often winter-green fern flora. The other increasingly prominent and striking floristic element in these woodlands is the array of bryophytes. Along the north-west coast of the Scottish mainland and at a few sites in the Lake District and north-west Wales, this enrichment reaches an extraordinary peak. Such richness is seen nowhere else along the west European coast although certain Atlantic or sub-Atlantic/Mediterranean elements increase in the few *Quercion* woodlands that still occur in western France. More strikingly, in the foothills and mountain valleys of Portugal and northern Spain, there is a parallel series of associations to those found in the British Isles.

Table 1.1.1 Summary description of habitat H91A0 and its relations with UK vegetation/habitat classifications.

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	= H91A0	This covers both British sessile oak woods – acidophilous *Quercus petraea* woods of western Britain, mostly found in Scotland, Wales, Northern England and South Western England – and Irish sessile oak woods – *Quercus petraea* woods of Ireland, particularly rich in evergreen bushes, including *Arbutus unedo*.
National Vegetation Classification (NVC) (see Rodwell 1991, Hall 1997)	H91A0 ≈ the following NVC types: W10e *Quercus robur – Pteridium aquilinum – Rubus fruticosus* woodland, *Acer pseudoplatanus – Oxalis acetosella* sub-community W11a-d *Quercus petraea – Betula pubescens – Oxalis acetosella* woodland, all sub-communities W16b *Quercus* spp. – *Betula* spp. – *Deschampsia flexuosa* woodland, *Vaccinium myrtillus – Dryopteris dilatata* sub-community W17a-d *Quercus petraea – Betula pubescens – Dicranum majus* woodland, all sub-communities	Although most examples of these types are included, lowland stands in the south and east (outside of the oceanic part of Britain) are excluded, as are oak and most northern birch stands (beyond the natural range of oak) in the far north of Scotland (see box below). Locally other W10 sub-communities may be included.

BAP priority habitat type	H91A0 ≈ Upland Oak Woodland priority habitat type, plus part of Northern Birchwoods priority habitat type	Amongst the Northern Birchwoods, only those within the natural range of oak are included and these must be reverting to oak woodland and/or have a history of oak. In the far north of Scotland, any birch or oakwood that lies beyond the native limits of oak is not included (the northerly limit of oak is taken as a line from Loch à Mhuilinn NNR oakwood to Brora). In addition, some transitional oakwoods within the BAP priority type that tend towards lowland types are excluded.

2. Range [2.3]

2.1 Current range

Range surface area [2.3.1]: **143,060 km²**
Date calculated [2.3.2]: **May 2007**
Quality of data [2.3.3]: **Moderate**

Maps 2.1.1 and 2.1.2 show the range and distribution of H91A0 old sessile oak woods in the UK.

The surface area estimate was calculated within alpha hull software, using extent of occurrence as a proxy measure for range (see Map 2.1.1). Alpha was set at 25 km. Comprehensive records were extracted from the JNCC Database of Woodland Community Types. They include all SACs for H91A0, plus all stands that conform to NVC types W11 (including sub-communities W11a-d), W17 (including sub-communities W17a-d), W10e, or W16b within the geographic limits of H91A0. Thus, the following examples were omitted: (i) lowland examples in the south and east beyond the boundaries of Devon, west Somerset (Mendip Hills excluded), Gloucestershire, Worcestershire, Staffordshire, Derbyshire, and Yorkshire (excluding Humberside); and (ii) examples in the far north (see Table 1.1.1 for details).

Woodland of this type is depicted on the maps as widespread throughout western Britain, including much of south-west England, Wales, northern England and Scotland. Some examples are recorded in Northern Ireland, mainly in the west. Although Map 2.1.1 provides a reasonable picture of the broad limits of H91A0, the distribution shown in Map 2.1.2 is probably an over-representation of the true pattern in northern Scotland because birch-dominated stands (that fall outside the scope of H91A0 – see Table 1.1.1) could not be excluded on the basis of NVC community type information alone.

2.2 Trend in range since c.1994

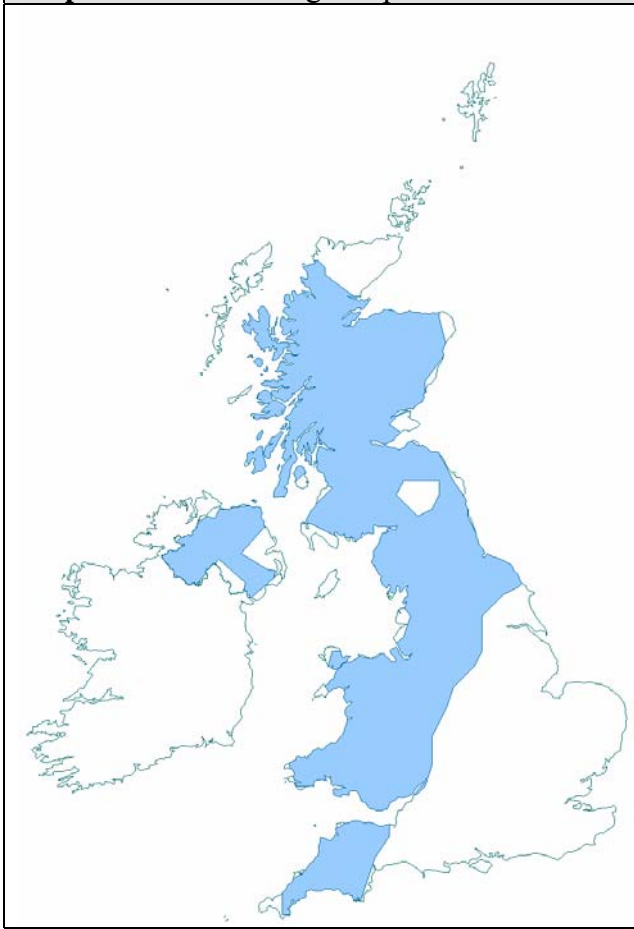
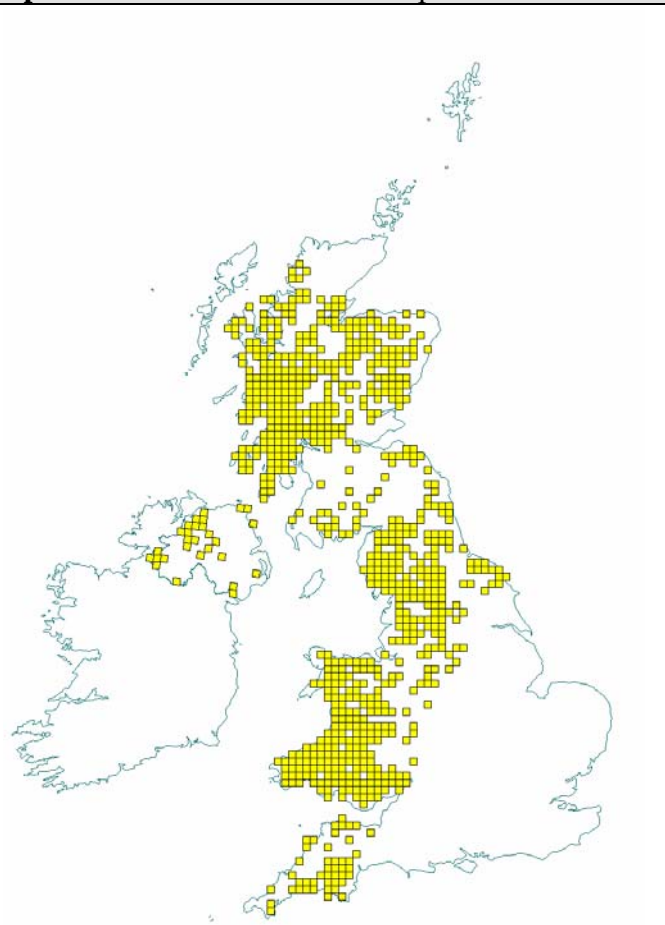
Trend in range[2.3.4]: **Stable**
Trend magnitude[2.3.5]: **Not applicable**
Trend period[2.3.6]: **1994-2006**
Reasons for reported trend[2.3.7]: **Not applicable**

The broad range of H91A0 old sessile oak woods appears to have not changed since 1994.

2.3 Favourable reference range

Favourable reference range[2.5.1]: **Approx. 143,000 km²**

Section 3.2.1.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference range estimates for habitats have been determined in the UK. Based on this approach, the current surface area, c.143,000 km², has been set as the favourable reference area. Reasons for this are discussed below.

Map 2.1.1 Habitat range map [1.1] for H91A0	**Map 2.1.2** Habitat distribution map [1.2] for H91A0
	
Range envelope shown in blue/grey shade in above map is a minimum convex polygon constructed using JNCC Alpha Shapes tool (see Technical Note I for details of methodology)	Each yellow square represents a 10x10km square of the National Grid and shows the known and/or predicted occurrence of this habitat 10-km square count: 798

See Section 7.1 for map data sources

Available evidence suggests that the current range of H91A0 old sessile oak woods is both sufficiently large and compact not to raise any major concerns about the viability of the habitat on these accounts. It certainly includes most of the native range of upland oak woodland, i.e. much of western and northern Britain (see Bennett 1989, Peterken 1993, Rackham 2003, Smout *et al.* 2005). Despite some declines in area during the last century and before, the broad range of H91A0 has probably remained reasonably stable for many centuries.

Some degree of fragmentation is apparent in Map 2.1.2. This is partly a reflection of natural constraints imposed by the availability of suitable acidic substrates: the spread of blanket peat in the uplands has reduced the number of suitable sites. Another consideration is that some suitable ground is now occupied by grass and heath habitats of high conservation value, so any significant spread of oak woodland here could conflict with other conservation priorities. There is a notable 'break' in the range in the southern uplands of Scotland, though some allowance needs to be made for 10 km square records of the habitat that may have not been collated. This pattern appears to reflect very early clearance of forest in this region, combined with the earlier introduction of sheep grazing and the possibility that originally woodland might have not been abundant here. This may be the case in other places, including Northumbria, parts of North Yorkshire, and through the centre of the Devon-Cornwall peninsula. On the other hand, oak has been deliberately favoured in historic times as a source of fuel, timber, tanning bark

and other products (Rackham 2003). Thus, many modern oak-dominated woods may have been derived from more mixed woodland.

The current range of H91A0 old sessile oak woods is therefore taken to be viable and at least equal in area to that of the favourable reference range area.

2.4 Conclusions on range

Conclusion[2.6.i]: Favourable

The habitat range appears sufficiently large and compact not to raise any major concerns as regards viability of the habitat on these accounts. The range has remained stable since 1994 and probably so for many centuries before. It includes most of the native range of upland oak woodland. Some suitable ground is now occupied by open grass and heath habitats of high conservation value: a spread in oak woodland here could conflict with other conservation priorities. Fragmentation within the range partly reflects natural constraints imposed by the availability of suitable sites. Some breaks appear to reflect very early clearance of forest, early introduction of sheep grazing, and possibly a paucity of original woodland cover. Oak has nonetheless been widely promoted as a source of fuelwood, timber, tanning bark, etc., such that the habitat may have been increased. The current range area of H91A0 is therefore taken to be viable and approximately equal in extent to that of the favourable reference range.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: 919km^2
Date of estimation [2.4.2]: May 2007
Method [2.4.3]: 1 = only or mostly based on expert opinion
Quality of data [2.4.4]: Poor

Table 3.1.1 provides information on the area of H91A0 oak woods in the UK. They are estimated to cover almost 92,000 ha. This figure is based mainly on expert opinion, as there is no comprehensive data available on the habitat extent. In most cases, the values given for each country are somewhat less than for BAP upland oakwood priority habitat as this has a somewhat broader scope than H91A0 (see Table 1.1.1). The values represent those produced for the June 2002 ABR Moderation meeting. Previously the habitat area was estimated at 96-111,000 ha (Jackson and McLeod 2002). The new value includes a reassessment by SNH using recent inventory data combined with a predictive model and sample ground-truthing. This was intended particularly to tackle the specific problem in Scotland of excluding birch-dominated woodlands that do not meet the definition of this type (see Table 1.1.1). The revised estimate for Scotland was 31,900 ha (range of 25,270-38,585 ha with 95% confidence limits), compared to the previous estimate of 40-50,000 ha.

Table 3.1.1 Area of H91A0 in the UK

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4.]
England	20,000	1	Poor
Scotland	31,900	2	Moderate
Wales	39,000	1	Poor
Northern Ireland	1,000	1	Poor
Total UK extent	91,900	1	Poor

Method used to estimate the habitat surface area; 2 = based on remote sensing data; 3 = ground based survey. Only the most relevant class is given if more than one applies.
Quality of habitat surface area data: 'Good' e.g. based on extensive surveys; 'Moderate' e.g. based on partial data with some extrapolation; 'Poor' e.g. based on very incomplete data or on expert judgement

3.2 Trend in area since c.1994

Trend in area[2.4.5]: **Stable**
Trend magnitude[2.4.6]: **Not applicable**
Trend period[2.4.7]: **1994-2006**
Reasons for reported trend[2.4.8]: **Not applicable**

Trends in the area of H91A0 since 1994 are not precisely documented. The clearance and conversion of ancient semi-natural oak woodland that was prevalent in earlier decades was largely stemmed in c.1990. After this date some localised, small-scale expansion of upland oak woods took place through natural colonisation and planting of new native woods. Efforts have also been made to start restoring some of the plantations on former upland oakwood sites. Nevertheless the overall extent of the habitat has probably remained more-or-less stable since 1994.

3.3 Favourable reference area

Favourable reference area[2.5.2]: **Approx. 1,010 km^2**

Section 3.2.2.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference area estimates have been determined in the UK. Based on this approach, favourable reference area has been set as greater than the current estimate, but not by a factor greater than 10%. The reasons for this are discussed below.

The current area of H91A0 (c.92,000 ha) seems to be large enough to not raise any major concerns about the viability of this habitat on this account. However, there is a general consensus amongst woodland conservationists that this habitat is too fragmented and isolated to be sure that all of the component species are viable. This is apparent in the UK BAP Habitat Action Plan for upland oakwoods (see http://www.ukbap.org.uk), which aims to further restore and increase the extent of this habitat and to encourage owners to co-operate in the acquisition and management of woods to improve opportunities to reduce oakwood fragmentation and isolation of the species that they contain.

Upland oakwoods have been fragmented for many centuries, but this was substantially increased during the 20th century. This is evident from the statistics for the decline of ancient semi-natural woodland between c.1930-1985 across the core range of H91A0 in northern England (Derbyshire, Lancashire, North-South-West Yorkshire and counties further north), south-west England (Cornwall, Devon, Somerset) and Wales (see Spencer and Kirby 1992). Almost 69,000 ha or 48 % of the total area of such woodland was lost during this period at an average rate of 1.2% per year. The main cause was the conversion of oakwoods to conifer plantations. At the same time the abundance of semi-natural habitats and interconnecting features within the surrounding countryside also declined substantially, though most of the resource still occurs where the extent and diversity of semi-natural vegetation and inter-connecting features is relatively high. Nonetheless, a substantial part of the habitat occurs in small and relatively isolated blocks. Most upland oakwoods in Wales show some degree of isolation and in some cases this appears extreme: around 50% of individual sites are <5 ha and 86% are <10 ha (see Jones *et al.* 2003). The habitat appears less fragmented in Scotland, though 23% of sites are still smaller than 10 ha. In England 25% of sites are thought to be <10 ha in area.

Some recognition needs to be given to the limitations imposed by the natural availability of suitable sites for H91A0 oakwoods (see Jones 1959, Rodwell 1991). The habitat characteristically occupies sites with at least moderate rainfall and acidic brown earth to podsolic soils. It mostly grows around the upland fringes on scarps, valley sides and hill slopes, but rarely occurs above 300m and seldom exceeds 400m in altitude. Oakwoods do not extend onto wet peaty soils associated with upland blanket bog, which have spread in historic times making some former oakwood sites unsuitable, e.g. most of the Dartmoor plateau. On the other hand, oak and oak woodland have been historically favoured: Rackham (2003) points out that many modern oak-dominated stands may have been more mixed in the past; oakwoods may have developed in the Lake District after early medieval clearance of mixed woodland followed by soil erosion and impoverishment (Barker 1998); and the thriving market for oak coppice for charcoal and tanbark in

the early 19th century resulted in some expansion of oakwoods in the uplands. Another consideration is that some of the potential area is currently occupied by open habitats (e.g. upland heath, grass and moor) that are of high nature conservation importance in themselves (some is within SACs for such types).

Fragmentation and isolation are most likely to lead to impoverishment rather complete habitat loss. For H91A0 there are also several mitigating factors that need to be considered (see above). So, although the current area of H91A0 is considered to be inadequate to ensure viability of the habitat and its component species, it is judged that an increase of no more than 10% above the current area is necessary to remedy this situation. The favourable reference area is therefore taken as not more than 10% above the current area.

3.4 Conclusions on area covered by habitat

Conclusion[2.6.ii]: Unfavourable – Inadequate but improving.

Although the habitat has been fragmented for many centuries, this was substantially increased during the 20th century and it still appears to be too fragmented and isolated to ensure viability of all the component species. During c.1930-1985 ancient semi-natural woodland declined across the core range of H91A0 oakwoods (where it forms the main woodland type) by almost half, at an average rate of 1.2% per year. Many individual oakwoods are <10ha in area and occur at some distance from each, albeit that the extent and diversity of semi-natural vegetation and inter-connecting features is relatively high in upland areas. Despite this, it is unlikely that the remedy to the situation requires an increase of more than 10% above the current habitat area, i.e. the favourable reference area can be taken to be not more than 10% above current area. The area of the habitat appears to have somewhat improved since 1994, given that earlier clearance and conversion has largely been stemmed and some recent localised, small-scale expansion and restoration of plantations on former upland oakwood sites has taken place.

4. Specific Structures and Functions **(including typical species)**

4.1 Main pressures [2.4.10]

The main pressures likely to be affecting H91A0 are listed below. These are derived mainly from the UK BAP Habitat Action Plan for upland oakwood and via the adverse features listed in Common Standards Monitoring condition assessments (see Section 4.2.1). The related EC codes are shown in brackets.

- Over-grazing (**140 Grazing**)

Throughout much of its range, H91A0 woodland has and continues to suffer from over-grazing by sheep, other livestock and/or deer. Numbers of sheep and deer have particularly increased in recent decades. Over-grazing impoverishes the ground flora, creates difficulties for regeneration, and may alter the woodland structure with impacts on many components of the woodland flora and fauna. This is the main adverse factor reported via Common Standards Monitoring condition assessments.

- Habitat fragmentation and isolation (**151 Removal of hedges and copses, 164 Forestry clearance, 990 Other natural processes**)

Many H91A0 woods are fragmented and isolated. This limits exchange between sites and limits the capacity for the species community to perpetuate itself over time.

- Invasion by non-native species (**954 invasion by a species, 966 antagonism arising from introduction of species**)

Upland oakwood has been substantially affected by the invasion of non-native species, particularly rhododendron *Rhododendron ponticum* and, in places, sycamore *Acer pseudoplatanus*. Rhododendron was planted into oak woods in the past and has since spread vigorously, sometimes producing extensive dense thickets that have over-run certain woods. The bushes shade out the native ground flora and eliminate much of the conservation interest and chances of natural regeneration.

- Unsympathetic forestry practices (**160 General Forestry management, 161 Planting, 162 Artificial planting, 163 Replanting, 164 Forestry clearance, 165 Removal of undergrowth, 166 Removal of dead and dying trees**)

In some cases unsympathetic forestry practices have impacted on upland oak woodland sites. This includes planting of inappropriate broadleaved species or conifers and methods of working and felling rates that do not yet reflect published guidelines. Many semi-natural oak woods were replaced with planted conifers during the twentieth century, resulting in loss of native trees and associated wildlife. Some effort has already been made to restore such stands.

- Lack of appropriate management (**190 Agriculture and forestry activities not referred to above**)

Cessation of traditional management practices, notably coppicing, is a problem in upland oakwoods because this results in changes to the environmental and structural conditions and the availability of long-standing habitats. Often this leads to a decline in species richness. It can be rectified by opening the canopy by coppicing, selective felling and/or cutting rides. The problem is compounded because there is a lack of interest, expertise and incentives amongst some woodland owners to undertake management.

- Air pollution (**702 air pollution**)

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is considered to be a potentially significant pressure to the structure and function of this habitat. This factor has particularly damaging effects on the epiphytic lichen and bryophyte communities, for which this habitat is of great importance.

4.2 Current condition

4.2.1 Common Standards Monitoring condition assessments

Condition assessments based on Common Standards Monitoring (see http://www.jncc.gov.uk/page-2199) provide a means to assess the structure and functioning of H91A0 in the UK. The following attributes were examined for all CSM assessments relevant to the habitat:

- Extent
- Structure and natural processes
- Regeneration potential
- Composition (trees and shrubs)
- Indicators of local distinctiveness

SAC condition assessments

Table 4.2.1 and Map 4.2.1 summarise the Common Standards Monitoring condition assessments for UK SACs supporting habitat H91A0. These data were collated in January 2007. The maps give an impression of the overall spread of where Unfavourable and Favourable sites exist (summary statistics for the map are given in Section 7.2). The combined assessments show that, of the SACs assessed, 93% of the area and 88% of the number of assessments was Unfavourable. This means that at least 17% of the total UK habitat area for H91A0 was in Unfavourable condition. This is not surprising given the pressures that woodland, even protected sites, have been under during the 20th century. Although some of the Unfavourable area was classed as declining, more than twice this amount was classed as recovering because remedial action was in place.

SSSI/ASSI condition assessments

Table 4.2.2 and Maps 4.2.2 and 4.2.3 summarise the Common Standards Monitoring condition assessments that were judged to be either strongly or weakly indicative of the condition of the Annex I habitat on SSSI/ASSIs (see Technical Note II for details of methodology behind this). These data were collated in January 2007. The maps give an impression of the overall spread of where unfavourable and

Favourable sites exist (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that of the SSSI/ASSI assessments considered 65% of strongly indicative assessments were Unfavourable. As with the SAC assessments, of the Unfavourable assessments more than twice the number were recovering compared to those that were declining.

Table 4.2.1 Common Standards Monitoring condition assessment results for UK SACs supporting H91A0. See notes below table for details. Information on the coverage of these results is given in Section 7.2

Condition	Condition sub-categories	Area (ha)	Number of site features
Unfavourable	Declining	3,759	11
	No change	2,329	13
	Unclassified	1,705	10
	Recovering	7,957	23
	Total	15,751	57
	% of all assessments	***93%***	***88%***
	% of total UK resource	***17%***	***unknown***
Favourable	Maintained	518	4
	Recovered	478	2
	Unclassified	144	2
	Total	1,140	8
	% of all assessments	***7%***	***12%***
	% of total UK resource	***1%***	***unknown***

Notes

1. Data on features that have been partly-destroyed have been excluded from this table because they are not relevant to the consideration of present condition.
2. The data included are from CSM assessments carried out between April 1998 and December 2006. NB: these include additional and some up-date data form those used in the six year report produced by JNCC. (Williams, J.M., ed. 2006. *Common Standards Monitoring for Designated Sites: First Six Year Report*. Peterborough, JNCC)
3. Only assessments made for qualifying interest features on SAC have been included in this analysis.
4. Area figures for CSM assessments have been calculated using the data presented on the standard Natura 2000 data forms submitted to the EU.

Table 4.2.2 Common Standards Monitoring condition assessment results for UK SSSI/ASSIs that were judged to be either strongly or weakly indicative of the condition of H91A0 on SSSI/ASSIs. See notes below table and Technical Note II for further details.

Condition	Condition sub-categories	Number of assessments	
		Strongly indicative assessments (Category 1)	Weakly indicative assessments (Category 2)
Unfavourable	Declining	44	
	No change	86	
	Unclassified	13	
	Recovering	89	
	Total	232	
	% of all assessments	***65%***	
Favourable	Maintained	61	
	Recovered	1	
	Unclassified	65	
	Total	127	
	% of all assessments	***35%***	

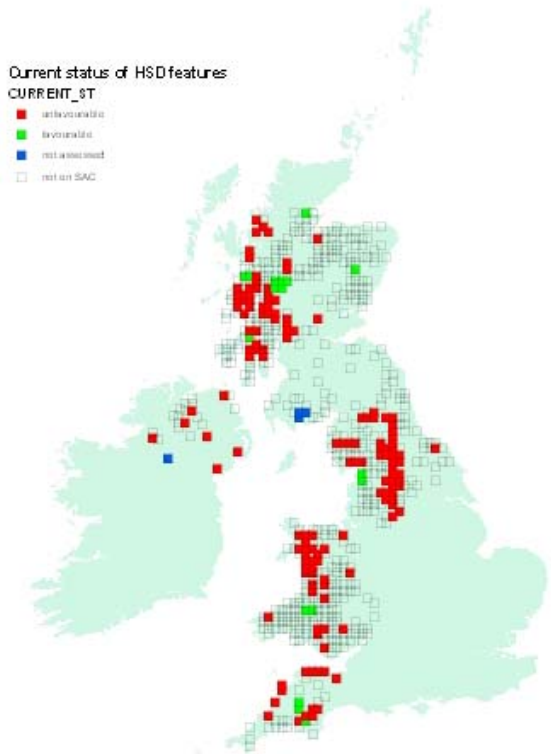
Notes

1. Data on features that have been partly-destroyed have been excluded from this table because they are not relevant to the consideration of present condition.
2. The data included are from CSM assessments carried out between April 1998 and December 2006. NB: these include additional and some up-date data form those used in the six year report produced by JNCC. (Williams, J.M., ed. 2006. *Common Standards Monitoring for Designated Sites: First Six Year Report*. Peterborough, JNCC)

Condition of non-designated sites

There is no formal condition assessment process for the resource outside the protected SAC-SSSI-ASSI series. However there is some qualitative information available as part of the BAP process for upland oak woodland generally. This suggests that there is no reason to assume that the condition of woodland outside the protected site series is likely to be any better than within.

Current Condition of H91A0 based on Common Standard Monitoring condition assessments (See Sections 4.2 and 7.2 for further information)

Map 4.2.1 SAC assessments	**Map 4.2.2** Assessments strongly indicative of the condition on SSSI/ASSIs	**Map 4.2.3** Assessments weakly indicative of the condition on SSSI/ASSIs
		Not applicable
Key Red = Unfavourable, i.e. the square contains at least one SAC where this habitat feature is present and has been judged to be Unfavourable Green = favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been assessed as Favourable but there are no Unfavourable SAC features Blue = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported Transparent = SAC feature not present, i.e. the square contains some examples of the habitat type but none are SAC features	Key* Green – 80 – 100% of assessed features on 10km square are Favourable Yellow - 50 – 80% of assessed features on 10km square are Favourable Orange - 20 – 50% of assessed features on 10km square are Favourable Red - 0 – 20% of assessed features on 10km square are Favourable *This is the same key as was used for JNCC CSM Report 2006	

4.3 Typical species

Typical species[2.5.3]: None used

Typical species assessment[2.5.4]: Not applicable

Characteristic ground plants for this habitat listed in the EU Interpretation Manual or within the synoptic tables types for NVC types W10e, W11, W16b and W17 include *Agrostis capillaris, Anthoxanathm odoratum, Blechnum spicant, Convallaria majalis, Deschampsia flexuosa, Dryopteris dilatata, Galium saxatile, Holcus mollis, Hyacinthoides non-scripta, Oxalis acetosella, Potentilla erecta, Pteridium aquilinum, Pyrola minor, Rubus fruticosus* agg., *Vaccinium myrtillus,* and *Viola riviniana.* Amongst these only *Pyrola minor* shows a moderate degree of faithfulness to H91A0. This species showed a decline in occurrence across the UK during the last 25 years, but of less than 25% (see table below). None of the remaining species are particularly faithful to the habitat, so available trend data at the UK-level or even the GB-woodland-level is not particularly meaningful and has not been utilised here. Without more specific information, no firm conclusions can be drawn about the status of typical species for this habitat.

Table 4.3.1 Trends and faithfulness of selected typical species for H91A0

Typical species [2.5.3]	**Faithfulness to habitat H9120 (based on analysis of NVC synoptic tables)**	**Trend over last 25 years from BSBI atlas – based on change in 10 km square occupancy across UK (see http://www.jncc.gov.uk/page-3254)**
Pyrola minor	Medium	Significant decline, but <25% in 25 years

4.4 Conclusions on specific structures and functions (including typical species)

Conclusion[2.6.iii]: Unfavourable – Bad but improving

The EC Guidance states that where "more than 25% of the area of the habitat is Unfavourable as regards its specific structures and functions", the conclusion should be Unfavourable – Bad. In the UK this was generally taken to mean that more than 25% of the habitat area in Unfavourable condition.

The main pressures are over-grazing, habitat fragmentation and isolation, invasion by rhododendron, unsympathetic forestry practices, lack of appropriate management, and air pollution. Condition assessments for SACs and SSSIs show that a large part of the habitat is in Unfavourable condition: 88-93% of assessed SACs are judged Unfavourable, whilst the level for relevant SSSI/ASSIs is 65%. Much more of that which is in Unfavourable condition is recovering than declining. There is no reason to expect the condition of the non-designated resource to be substantially better. Hence the conclusion is Unfavourable – Bad but improving.

5. Future Prospects

5.1 Main factors affecting the habitat

5.1.1 Conservation measures

Considerable work has recently gone into improving the condition and expanding the area of H91A0 oak woodland. The habitat is part of the UK BAP upland oakwood Habitat Action Plan (available via http://www.ukbap.org.uk/), which has targets to: (i) maintain the current habitat extent and distribution; (ii) improve its condition; (iii) expand its area by planting or natural regeneration; and (iv) restore former upland oakwood that has been converted to non-native plantation on Ancient Woodland Sites. Although new and restored areas of habitat will take time to mature, it is expected that this will make an increasing contribution to the H91A0 resource over the coming decades.

Upland oak woodland is subject to a number of legal instruments, national policy measures and grant-aid schemes. These prevent clear-felling for conversion to other land uses, and aim to maintain and restore their ecological interest and expand remnant and new native woods. All woodland is expected to be

managed according to the UK Forestry Standard, with ancient and semi-natural woodland receiving special provision. Felling of trees and grant aid are controlled by the Forestry Authority and are conditional upon management achieving these aims in accordance with published guidance. The Woodland Grant Scheme provides finance for regenerating, planting and other management activities.

About 20-30% of upland oakwood is estimated to have been notified as SSSI/ASSIs under the Wildlife and Countryside Act 1981 or the Nature Conservation and Amenity Lands Order (Northern Ireland) 1985. Some have been designated as SACs for H91A0 in response to the EC Habitats Directive (see http://www.jncc.gov.uk/ProtectedSites/SACselection/habitat.asp?FeatureIntCode=H91A0). Various other measures and initiatives have been put in place to help conserve such woodland, including published guides on their management and creation, and a series of initiatives aimed at promoting appropriate management of such woodland (e.g. Sylvanus in south-west England, Coed Cymru in Wales, Cumbria Broadleaves and Highland Birchwoods).

5.1.2 Main future threats[2.4.11]

The most obvious major threats to H91A0 over the next 12-15 years are listed below. The related EC codes are shown in brackets.

- Over-grazing (**140 Grazing**)

Over-grazing is likely to remain a major threat to upland oak woodland, at least until livestock and wild deer numbers and impacts can be substantially reduced.

- Habitat fragmentation and isolation (**151 Removal of hedges and copses, 164 Forestry clearance, 990 Other natural processes**)

Fragmentation and isolation are likely to remain as significant threats to the conservation of H91A0 oak woodland, though expansion and restoration of the habitat will help reduce their impact.

- Invasion by non-native species (**954 invasion by a species, 966 antagonism arising from introduction of species**)

Invasion by rhododendron is a continual threat to H91A0 woods, although some major work programmes have been undertaken to remove it.

- Unsympathetic forestry practices (**160 General Forestry management, 161 Planting, 162 Artificial planting, 163 Replanting, 164 Forestry clearance, 165 Removal of undergrowth, 166 Removal of dead and dying trees**)

With improved management guidelines and better appreciation and promotion of the importance and appropriate treatment of semi-natural woodland, the threat from unsympathetic management will continue to diminish. The next ten years provide considerable opportunities to restore damaged stands, particularly those planted with conifers during the 20th century.

- Lack of appropriate management (**190 Agriculture and forestry activities not referred to above**)

Activities and grant-aid to encourage restoration and appropriate management of oakwoods have increased. The next ten years should result in considerable improvements, though it will take longer for the vegetation and associated wildlife to respond positively.

- Air pollution (**702 air pollution**)

Based on an assessment of the exceedence of relevant critical loads (see Technical Note III), air pollution is considered to be a potentially significant pressure to the structure and function of this habitat. This factor has particularly damaging effects on the epiphytic lichen and bryophyte communities, for which this habitat is of great importance.

5.2 Future condition (as regards range, area covered and specific structures and functions)

5.2.1 Common Standards Monitoring condition assessments

The Common Standards Monitoring condition assessments reported in Sections 4.2.1-2 provide a basis to crudely predict the possible future condition of H91A0 in the UK. This involved treating all assessments currently identified as either Favourable or Unfavourable recovering as future-Favourable: remaining categories were treated as future-Unfavourable – see Table 5.2.1.1. There are a number of caveats to this approach, which are set out beneath this table.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the possible future condition of H91A0 on UK SACs. This is based on the approach described above. The maps give an impression of the overall spread of where future-Unfavourable and future-Favourable sites might occur (summary statistics for the map are given in Section 7.2). The combined assessments show that of the SACs assessed 54% of the area and 48% of the number of assessments fall within the future-Favourable category. This means that at least 10% of the total UK habitat area falls within this category.

Table 5.2.2 Predicted future condition of H91A0 on SSSI/ASSIs based on Common Standards Monitoring assessments that were judged to be either strongly or weakly indicative of the condition. See notes below table and Technical Note II for further details.

Future condition	Present condition	Number of assessments	
		Strongly indicative assessments (Category 1)	Weakly indicative assessments (Category 2)
Future-unfavourable	Unfavourable declining	44	
	Unfavourable no change	86	
	Unfavourable unclassified	13	
	Total	***143***	
	% of assessments	***40%***	
Future-favourable	Favourable maintained	61	
	Favourable recovered	1	
	Unfavourable recovering	89	
	Favourable unclassified	65	
	Total	***216***	
	% of assessments	***60%***	

Note that the scenario presented above is based on the same information as used to construct the Table 4.2.2. It is based on the following premises:
(i) the Unfavourable-recovering condition assessments will at some point in the future become Favourable.
(ii) all Unfavourable-unclassified sites will remain unfavourable, which is probably overly pessimistic;
(iii) sympathetic management will be sustained on sites already classified as Favourable and these will not be seriously damaged by any unforeseen events.
IMPORTANT NOTE: we do not have information on the timescale of the predicted recovery, which may be influenced by many past, natural and human related factors. A sustained, sympathetic management regime is more likely to result in 'Favourable' condition being attained.

SSSI/ASSI condition assessments

Table 5.2.2 and Maps 5.2.2 and 5.2.3 summarise the possible potential future condition of H91A0 on UK SSSI/ASSIs. This is based on the approach described above and utilises condition assessments that were judged to be either strongly or weakly indicative of the condition of the Annex I habitat on SSSI/ASSIs (see Technical Note II for details of methodology behind this). The maps give an impression of the overall spread of where future-Unfavourable and future-Favourable sites might occur (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that 60% of strongly indicative SSSI/ASSI assessments fall within the future-Favourable category.

Predicted Future Condition of H91A0 based on Common Standard Monitoring condition assessments (See Sections 5.2 and 7.2 for further information on these maps)

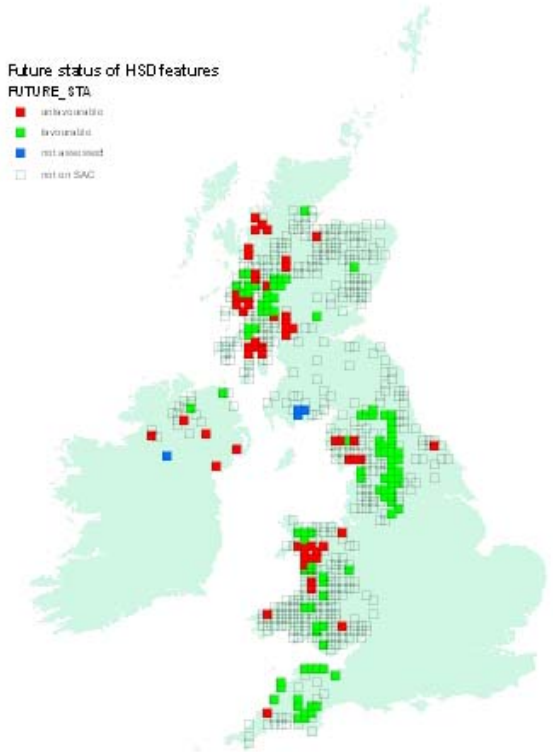
Map 5.2.1 SAC assessments	**Map 5.2.2** Assessments strongly indicative of the condition on SSSI/ASSIs	**Map 5.2.3** Assessments weakly indicative of the condition on SSSI/ASSIs
		Not applicable
Key Red = future-Unfavourable, i.e. the square contains one or more SACs where this habitat feature is present and has been predicted to be future-Unfavourable Green = future-Favourable, i.e. the square contains at least one SAC where this habitat feature is present and has been predicted to be future-Favourable Blue = SAC not assessed, i.e. the square contains at least one SAC supporting this habitat feature but no assessment has been reported Transparent = SAC feature not present, i.e. the square contains some examples of the habitat type but none are SAC features	Key* Green – 80 – 100% of assessed features on 10km square are Favourable Yellow - 50 – 80% of assessed features on 10km square are Favourable Orange - 20 – 50% of assessed features on 10km square are Favourable Red - 0 – 20% of assessed features on 10km square are Favourable *This is the same key as was used for JNCC CSM Report 2006	

Table 5.2.1 Predicted future condition of UK SACs supporting H91A0 based on current Common Standards Monitoring condition assessments. See notes below table for details. Information on the coverage of these results is given in Section 7.2.

Future condition	Present condition	Area (ha)	Number of site features
Future-Unfavourable	Unfavourable declining	3,759	11
	Unfavourable no change	2,329	13
	Unfavourable unclassified	1,705	10
	Total	7,794	34
	% of assessments	***46%***	***52%***
	% of total UK extent	***8%***	***Unknown***
Future-Favourable	Favourable maintained	518	4
	Favourable recovered	478	2
	Unfavourable recovering	7,957	23
	Favourable unclassified	144	2
	Total	9,097	31
	% of assessments	***54%***	***48%***
	% of total extent	***10%***	***Unknown***

Note that the scenario presented above is based on the same information as used to construct the Table in section 4.1. It is based on the following premises:
(i) the Unfavourable-recovering condition assessments will at some point in the future become Favourable.
(ii) all Unfavourable-unclassified sites will remain unfavourable, which is probably overly pessimistic;
(iii) sympathetic management will be sustained on sites already classified as favourable and these will not be seriously damaged by any unforeseen events.
IMPORTANT NOTE: we do not have information on the timescale of the predicted recovery, which may be influenced by many past, natural and human related factors. A sustained, sympathetic management regime is more likely to result in 'Favourable' condition being attained.

5.3 Conclusions on future prospects **(as regards range, area covered and specific structures and functions)**

Conclusion[2.6.iv]: Unfavourable – Bad but improving

The EC Guidance states that where "habitat prospects are bad, with severe impacts from threats expected and long-term viability not assured", the judgement should be Unfavourable – Bad. In the UK, this was generally taken to mean that habitat range and/or area are in decline, and/or less than 75% of the habitat area is likely to be in favourable condition in 12-15 years.

A substantial number of positive conservation measures have been put into place to improve the status of this habitat. The main threats that remain are from over-grazing, habitat fragmentation and isolation, invasion by rhododendron, unsympathetic forestry practices, lack of appropriate management, and air pollution. Condition assessments for the relevant SACs indicate that 48-54% of sites may become Favourable in the foreseeable future. Relevant condition assessments for SSSIs put 60% of sites within this category. Given progress already made and some additional recovery once further conservation measures are put into place, the expectation is that the habitat condition will improve but that more 25% will still be in Unfavourable condition in the next 12-15 years.

6. Overall Conclusions and Judgements on Conservation Status [2.6]

Conclusion[2.6]: Unfavourable – Bad but improving

On the basis that both Structure and Function and Future Prospects are both Unfavourable – Bad but improving, the overall conclusion is Unfavourable – Bad but improving.

Table 6.1 Summary of overall conclusions and judgements

Parameter	Judgement	Grounds for Judgement	Confidence in judgement*
Range	Favourable	Current range is stable and not less than the favourable reference range.	2
Area covered by habitat type within range	Unfavourable – Inadequate but improving	Favourable reference area is greater than the current extent, but not by more than 10%. The area appears to have improved somewhat since 1994, with earlier clearance and conversion having largely been stemmed and some recent small-scale expansion/restoration having taken place.	2
Specific structures and functions (including typical species)	Unfavourable – Bad but improving	More than 25% of the habitat area is considered to be Unfavourable as regards its specific structures and functions. Much more of that which is in Unfavourable condition is recovering than is declining.	2
Future prospects (as regards range, area covered and specific structures and functions)	Unfavourable – Bad but improving	Habitat prospects over the next 12-15 years is considered to be bad, with severe impact from threats expected and long term viability not assured. Given progress already made and some additional recovery once further conservation measures are put into place, the expectation is that habitat condition will improve but that more than 25% will still be in Unfavourable condition in the next 12-15 years.	2
Overall assessment of conservation status	Unfavourable – Bad but improving	On the basis that both Structure and Function and Future Prospects are both Unfavourable – Bad but improving, the overall conclusion is Unfavourable – Bad but improving.	2

Key to confidence in judgement: 1 = High; 2 = Medium; 3 = Low

7. Annexed Material **(including information sources used 2.2)**

7.1 References

BARKER, S. 1998. The history of the Coniston woodlands, Cumbria, UK. In: Kirby, K.J. and Watkins, C. (eds.) The Ecological History of European Forests. CABI, Wallingford. 167-183.

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UK BAP Habitat Action Plan for upland oak woodland. Available via UKBAP website http://www.ukbap.org.uk/

Map Data Sources

JNCC International Designations Database. Joint Nature Conservation Committee.

NVC Woodland Community Access Database. Joint Nature Conservation Committee.

Richard Weyl (personal communication) 1995. Environmental Heritage Service.

7.2 Further information on Common Standards Monitoring data as presented in Sections 4.2 and 5.2

Table 7.2.1 Summary of the coverage of the data shown in Tables 4.2.1 and 5.2.1

Data	Value
Number of SACs supporting feature (a)	70
Number of SACs with CSM assessments (b)	65
% of SACs assessed (b/a)	93
Extent of feature in the UK – hectares (c)	91,900
Extent of feature on SACs – hectares (d)	17,802
Extent of features assessed – hectares (e)	16,890
% of total UK hectarage on SACs (d/c)	18
% of SAC total hectarage that has been assessed (e/d)	95
% of total UK hectarage that has been assessed (e/c)	17

Notes

1. Extent of features on SACs (d) includes only those features that have been submitted on the official Natura 2000 data form as qualifying features. This figure is based on the habitat extent figures presented on standard Natura 2000 data forms.
2. The data included are from CSM assessments carried out between April 1998 and December 2006. NB: these include additional and some up-date data from those used in the six year report produced by JNCC (Williams, J.M., ed. 2006. *Common Standards Monitoring for Designated Sites: First Six Year Report*. Peterborough, JNCC).

Table 7.2.2 Summary of grid square map data shown in Maps 4.2.1-3 and 5.2.1-3

Status	Number of squares	Proportion of all squares
Current – Unfavourable (red)	142	23%
Current – Favourable (green)	17	3%
On SAC but not assessed (blue)	5	1%
Not on SAC (transparent)	460	74%
Total Number of 10km squares (any colour)	624	100%
Future – Unfavourable (red)	59	9%
Future – Favourable (green)	100	16%