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 :

H91E0: Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

H91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-padion, Alnion incanae, Salicion albae*)

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 and 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 National Vegetation Classification (NVC) and other habitat types

Table 1.1.1 provides a summary description of H91E0 alluvial forests and its relations with UK classifications. In the UK this Annex I habitat falls mainly within the NVC types W2a, W5a-c, W6a-e and W7a-c (Rodwell 1991), though not all examples of these types are covered (W7 slope alderwoods in the uplands, small alder stands of W6 along ditches, and possibly some W5 and W2a stands do not qualify).

This habitat comprises woodland dominated by alder *Alnus glutinosa* and willow *Salix* spp. on flood plains, in a range of situations from islands in river channels to low-lying wetlands alongside the channels. It typically occurs on moderately base-rich, eutrophic soils subject to periodic inundation. On the drier margins of these areas other tree species, notably ash *Fraxinus excelsior* and elm *Ulmus* spp., may become abundant. Riparian trees are excluded from the Annex I type except where these form part of a wider network of alluvial woodland and wetland communities.

Many H91E0 forests are dynamic, being part of a successional series of habitats. Their structure and function are best maintained within a larger unit that includes the open communities, mainly fen and swamp, of earlier successional stages. In other situations the alder woods occur as a stable component within transitions to surrounding dry-ground forest, sometimes including other Annex I woodland types. These transitions from wet to drier woodland and from open to more closed communities provide an important facet of ecological variation. The ground flora is correspondingly varied. Some stands are dominated by tall herbs, reeds and sedges, for example common nettle *Urtica dioica*, common reed *Phragmites australis*, greater tussock-sedge *Carex paniculata*, and meadowsweet *Filipendula ulmaria*, while others have lower-growing communities with creeping buttercup *Ranunculus repens*, common marsh bedstraw *Galium palustre*, alternate-leaved golden-saxifrage *Chrysosplenium oppositifolium* and marsh-marigold *Caltha palustris*.

Clearance of riverine woodland has eliminated most true alluvial forests in the UK. Many surviving patches, as elsewhere in Europe, are fragmentary and often of recent origin. Residual alder woods frequently occur in association with other woodland types or with other wetland habitats such as fens.

Rodwell and Dring (2001) reported on the European context of British H91E0 Alluvial forests. This is a broad and complex category that includes riverine and flush woodlands from right across Europe outside the Mediterranean. They are to some degree azonal, occurring on alluvium and at seepage lines along river valleys that cut through the major biogeographic regions, though they still show some broad climatic and altitudinal differences in the dominant trees and the associated flora.

Table 1.1.1 Summary description of habitat H91E0 and its relations with UK vegetation/habitat classifications

Classification	Correspondence with Annex I type	Comments
EU Interpretation Manual	= H91E0	This habitat includes three main types: (i) riparian forests of *Fraxinus excelsior* and *Alnus glutinosa* of temperate and Boreal Europe lowland and hill watercourses (*Alno-Padion*); (ii) riparian woods of *Alnus incanae* of montane and sub-montane rivers of the Alps and the northern Apennines (*Alnion incanae*); and (iii) arborescent galleries of tall *Salix alba, S. fragilis* and *Populus nigra* along medio-European lowland, hill or sub-montane rivers (*Salicion albae*). In addition, several sub-types are identified: (a) ash-alder woods of springs and their rivers (*Carici remotae-Fraxinetum*); ash-alder woods of fast-flowing rivers (*Stellario-Alnetum glutinosae*); ash-alder woods of slow-flowing rivers (*Pruno-Fraxinetum, Ulmo-Fraxinetum*); montane grey alder galleries (*Calamagrosti variae-Alnetum incanae* Moor 58); sub-montane grey alder galleries (*Equiseto hyemalis-Alnetum incanae* Moor 58); white willow gallery forests (44.13 - *Salicion albae*). The Spanish types belong to the Cantabric atlantic and southeast Iberia peninsula alliance (*Osmundo-Alnion*).
National Vegetation Classification (NVC) (see Rodwell 1991, Hall 1997)	H91E0 ≈ the following NVC types: • W2a *Salix cinerea – Betula pubescens – Phragmites australis* woodland, *Alnus glutinosa – Filipendula ulmaria* sub-community • W5a-c *Alnus glutinosa – Carex paniculata* woodland • W6a-e *Alnus glutinosa – Urtica dioica* woodland • W7a-c *Alnus glutinosa – Fraxinus excelsior – Lysimachia nemorum* woodland	Although Rodwell and Dring (2001) did not specifically include W2a, there is a clear relationship to it from the description of the continental counterparts. Not all examples of the NVC types listed are included: W7 slope alderwoods in the uplands, small alder stands of W6 along ditches, and possibly some W5 and W2a stands do not qualify.
BAP priority habitat type	H91E0 covers a part of the Wet Woodland priority habitat type.	A substantial part of the Wet Woodland priority habitat type is excluded, as it comprises willow scrub (W1, W3), wet birch woodland (W4), and stands of the other types in other situations, for example alderwoods on slopes, along ditches, etc. Some comprises bog woodland, which falls within the H91D0 Annex I type.

Through much of the lowlands and colline areas of north-west Europe and extending into the sub-montane, *Salix alba* is the most important early colonist of river shoals and terraces following the initial invasion by osiers like *Salix triandra, S. viminalis* and *S. purpurea* and, with the accumulation of sediments above the zone of frequent flooding, it comes to dominate in willow woodlands. *S. fragilis* is also characteristic of these wet woodlands. *Alnus glutinosa* is usually a somewhat later invader of such alluvial flats, but becomes a frequent canopy companion in established riverine woodlands. Associated

understorey species include *Sambucus nigra* and *Prunus padus* and the dominant field layer plants are bulky nitrophilous herbs like *Urtica dioica, Symphytum officinale* and *Alliaria petiolata,* with such sprawlers as *Galium aparine, Calystegia sepium* and *Solanum dulcamara.*

Where alluvial flats dry out somewhat, the dominance of the earlier invading willows is eclipsed and *Alnus glutinosa* is joined by *Fraxinus excelsior* and, on deeper finer sediments, by *Ulmus minor* and *U. laevis.* Our nearest equivalent to this kind of vegetation is included as part of the W7 *Alnus-Fraxinus-Lysimachia* woodland (the alluvial flat sub-community. Such associations have sometimes been separated from the *Salicion albae* and grouped with the swamp and fen alderwoods of the *Alnion glutinosae*. Strictly speaking, these latter woodlands (among which the UK W5 *Alnus-Carex* community belongs) do not appear to be included within this habitat type, though they can occur as part of mosaics with the other woodlands here.

The third kind of wet woodland included within this habitat occurs in flushes on the slopes of middle-aged river valleys or along so-called 'brook channels'. These are not inundated by flooding but, where ground water emerges this maintains the soils in a saturated and usually quite base-rich and eutrophic condition. Here, it is again *Alnus glutinosa* and *Fraxinus excelsior* that are the characteristic canopy dominants, the latter often with the greater cover.

2. Range [2.3]

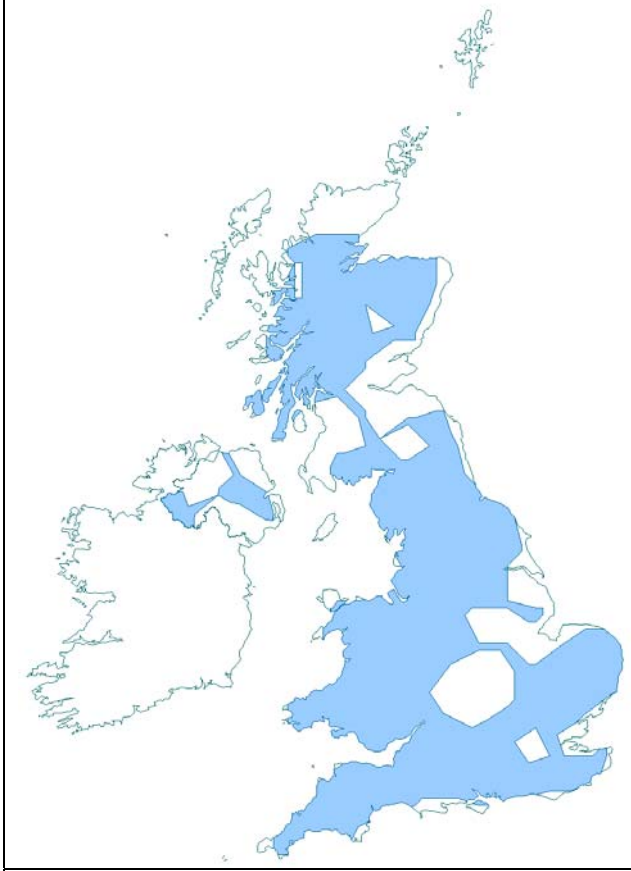
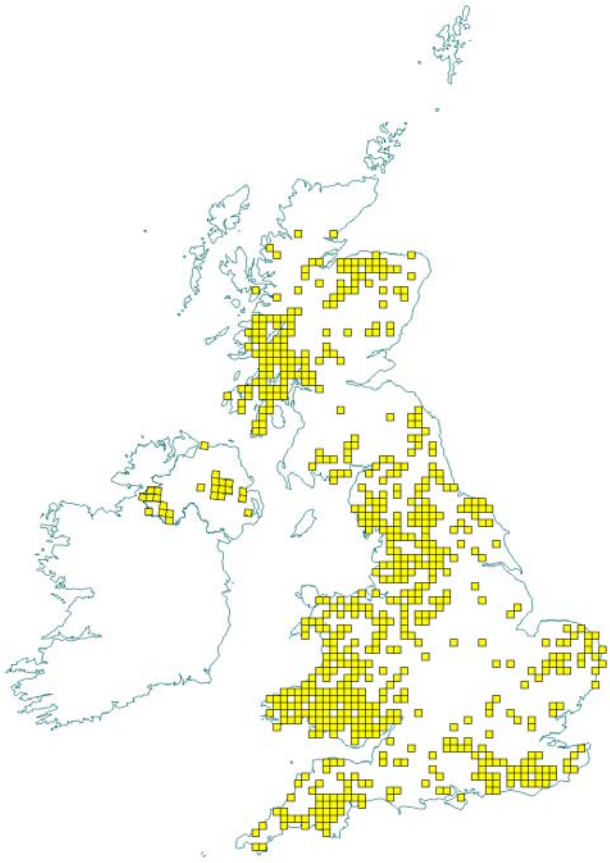
2.1 Current range

Range surface area [2.3.1]: **169,703 km²**
Date calculated [2.3.2]: **May 2007**
Quality of data [2.3.3]: **Poor**

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). The value of alpha was set at 25 km; the alpha was clipped to include inland areas only.

Maps 2.1.1 and 2.1.2 show the range and distribution of H91E0 alluvial forests in the UK. They include all Special Areas of Conservation (SACs) for the types and known stands that conform to NVC types W2a, W5, W6 and W7 (including all sub-communities W5a-c W6a-e, and W7a-c) as collated in the Joint Nature Conservation Committee (JNCC) Database of Woodland Community Types.

Examples of H91E0 forests appear to be widespread across the UK. They are particularly numerous through much of the oceanic west and north of Britain, extending across much of south-west England, Wales, northern England, and much of northern Scotland. There are also notable concentrations in low-lying parts of East Anglia, and also along the mildly humid ranges of south-east England. Although this is a reasonably complete reflection of the distribution of the type, the underlying information is on the one hand incomplete and on the other includes some records that do not conform to H91E0, but which cannot be separated based on the basis of NVC community type information alone. It is unclear if this has a major influence on the range/distribution pattern shown. Many H91E0 stands are fragmentary and so unlikely to be sampled, particularly if they are recent in origin. In particular, small patches along the major rivers of lowland England and central and northern Scotland are not accommodated in the maps. Nevertheless, the apparent scarcity of the habitat in central England and central Scotland is realistic, albeit not as drastically as depicted in the maps.

Map 2.1.1 Habitat range map [1.1] for H91E0	**Map 2.1.2** Habitat distribution map [1.2] for H91E0
	
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: 664

See Section 7.1 for data sources

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 H91E0 Alluvial forests appears to have remained more-or-less stable since 1994.

2.3 Favourable reference range

Favourable reference range[2.5.1]: Approx. 170,000 km^2

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, which is approximately 170,000 km^2, has been set as the favourable reference area. Reasons for this are discussed below.

Available evidence suggests that the current range of H91E0 Alluvial forests is both sufficiently large and compact not to raise any major concerns about the viability of the habitat on these accounts. It includes much of the native range of alluvial forest, which virtually spans the whole country (see Section 3.3). The range has been reasonably stable over the last 100 years, albeit with some local losses and small-scale expansion. Major breaks, which in part reflect a lack of recording and collation of records, are long-

standing: virtually all former woodland was cleared from the floodplains and riverside land in pre-historic and early historic times.

The current range of H91E0 Alluvial forests 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 current range has remained stable since 1994 and over the last century. Much of the native range of alluvial forests is accommodated within the broad limits of the current range and major breaks are long-standing. The current range area of H91E0 is therefore taken to be viable and approximately equal to that of the favourable reference range.

3. Area [2.4]

3.1 Current area

Total UK extent [2.4.1]: 65km^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 H91E0 Alluvial forest in the UK. This is estimated to cover around 6,500 ha. There is no comprehensive data available on the extent of the habitat, so this figure is based mainly on expert opinion. The areas given are as reported by Jackson and McLeod (2002), expect that the area in Northern Ireland has now been decided on. The total is considerably less than for the Biodiversity Action Plan (BAP) Wet Woodland priority habitat as this is considerably broader in scope than H91E0 (see Table 1.1.1).

Table 3.1.1 Area of H91E0 in the UK

	Area (ha)	Method [2.4.3]	Quality of data [2.4.4]
England	2,500 (2,000-3,000)	1	Poor
Scotland	1,750 (1,500-2,000)	1	Poor
Wales	2,000 (1,000-3,000)	1	Poor
Northern Ireland	250 (200-300)	1	Poor
Total UK extent [2.4.1]	6,500 (4,700-8,300)	1	Poor

Method used to estimate the habitat surface area: 1 = only or mostly based on expert opinion; 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 H91E0 since 1994 are not precisely documented. Although there has been a good deal of recent interest in expanding the resource, this has resulted in only limited planting, regeneration and restoration of sites. As alder and willow have not been recorded consistently in the various forestry censuses, it is not possible to use these to estimate whether there is likely to have been an overall increase.

Any changes that have occurred are likely to have been small, so the area has on balance probably remained more-or-less stable since 1994.

3.3 Favourable reference area [2.5.2]

Favourable reference area: Approx. 71.5 km^2

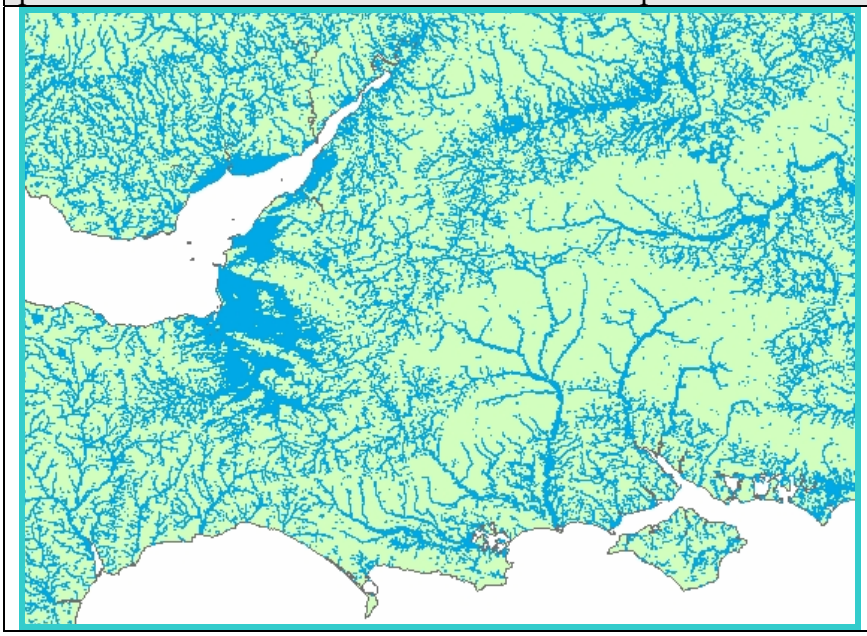
Section 3.2.1.3 of 'Assessing Conservation Status: UK Approach' sets out how favourable reference range estimates for habitats have been determined in the UK. Based on this approach, the favourable reference area has been identified as greater than the current extent, but not by a factor of more than 10%. Reasons for this are discussed below.

H91E0 Alluvial forest is a scarce resource in the UK. The current area of c.6,500 ha is spread very thinly across the UK. Even where it does occur, it often comprises small stands and opportunities for interaction between sites seem to be limited. Accordingly, there seems to be a general consensus amongst woodland conservationists that this habitat is too fragmented and isolated to be sure that all of the component species can perpetuate themselves.

Concern about fragmentation is heightened by the scale of loss of this habitat, compared to its natural status and given that its area is at an historical low. Alluvial forests undoubtedly did once cover a much greater area than at present. Map 3.3.1 shows the extent of the riverine drainage system in part of southern Britain. At least small stands of the type would have occurred along most of the courses of rivers and major streams. Larger expanses would have occurred on major floodplains. The resource would have been largely connected, albeit that it often formed narrow, linear stands.

Peterken and Hughes (1995) described surviving British floodplain forests. Virtually all former floodplain and riverside woodland has been cleared, because its high fertility which made it prime farmland or for settlement. Relatively little ancient woodland survives on any major floodplain: those substantial and possibly ancient floodplain forest that do survive are very scarce; small patches of alder and willow are scattered over lowland floodplains, but these are invariably secondary and most occupy wet depressions. Even where patches survive the associated hydrology is often much altered. There are some small alluvial flats of alder and/or willow beside small streams within or aside some ancient woods, but overall its distribution has been significantly reduced with major areas where it is now very scarce.

Map 3.3.1 The riverine drainage system of part of southern Britain. The blue coloured areas represent streams, rivers, and major floodplains and fens (e.g. the Somerset Levels). Note the different dendritic patterns on chalk bedrock to the east versus less permeable rocks to the west.



Although much of the clearance of alluvial forest took place long ago, it also suffered some local losses during the last century as part of the widespread decline in ancient semi-natural woodland (Spencer and Kirby 1981; Roberts *et al.* 1992). Admittedly, it is unlikely to have suffered as substantially as some other types. Where small patches of the type occurred along smaller streams, they appear to have been less likely to suffer from coniferisation, because of the wetness of the soils. For example at Witherslack Woods in Cumbria and Chalkney Wood in Essex, the strips of wet woodland were left when the surrounding stands were converted to conifers. However, some sites have suffered from the planting of non-native poplars. Wet woodland has been affected by water abstraction and improved drainage of land, where this has lowered ground water-tables. Poor water quality has become an additional factor, as caused by agricultural run-off, industrial effluents or rubbish dumping. On the other hand, the richness of the associated soils might have made them prime candidates for conversion to agriculture, particularly in the uplands. Over the same period the abundance of semi-natural habitats and interconnecting features within the wider countryside also declined, increasing ecological isolation.

There has been some compensatory expansion of alder woodland on to abandoned wet grassland and fen (for example in the Broads, East Anglia, and the Mound Alderwoods SAC, north Scotland, following impoundment of the estuary). While these are now valued as alluvial woodland, other examples are being cleared to restore important open wetland habitats. Despite recent interest in expanding the wet woodland resource, this has resulted in only limited creation or restoration of sites.

Peterken and Hughes (1995) state the case for and the benefits, problems and experience of restoring floodplain forests. Potential locations are limited by urban and industrial development, major drainage schemes/river containment, and agricultural, navigational and recreational interests. Some potential area is currently occupied by wetland habitats of nature conservation importance (some is within SACs for such types). In some cases recent stands of alluvial woodland merit clearance to restore wetland habitats. Thus, the case for expansion is constrained.

As fragmentation and isolation are most likely to lead to impoverishment rather than complete habitat loss, it is considered that an increase of no more than 10% above the current area of H91E0 is necessary to remedy this problem. The favourable reference area is therefore taken as not more than 10% above the current area of c.6,500 ha.

3.4 Conclusions on area covered by habitat

Conclusion[2.6.ii]: Unfavourable – Inadequate

This habitat is scarce and spread very thinly across the UK, often in small stands with limited opportunities for interaction between sites. Concerns are heightened by the scale of habitat loss compared to its natural status and given that it seems more fragmented and isolated than previously. Although much of the original alluvial forest was lost long ago, the habitat declined further during the last century. At the same time the quality of the wider countryside also declined. Despite some compensatory expansion of secondary stands, recent interest in wet woodland has resulted in only limited creation or restoration. Potential locations for expansion are somewhat constrained, partly because some of its potential area is currently occupied by wetland habitats of conservation importance. As it is considered unlikely that the remedy to this situation requires an increase of more than 10% above the current habitat area, the favourable reference area is taken to be no more than 10% above the current habitat area.

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

4.1 Main pressures[2.4.10]

The main pressures likely to be affecting H91E0 are listed below. These are derived from the UK BAP Habitat Action Plan for wet woodland and via the adverse features listed in Common Standards

Monitoring (CSM) condition assessments (see Section 4.2.1). The related EC codes are shown in brackets.

- Water management and pollution (**810 Drainage, 830 Canalisation, 850 Modification of hydrographic functioning, general, 700 Pollution, 701 water pollution**)

This is an important pressure that takes several forms: (i) lowering of water-tables through drainage or water abstraction, which results in a transition to drier woodland types; (ii) flood prevention measures, river control and canalisation, which leads to a loss of dynamic disturbance-succession systems and invertebrate communities, and possible reductions in the extent of individual sites; and (iii) poor water quality arising from eutrophication, industrial effluents or rubbish dumping, which changes the composition of the ground flora and invertebrate communities.

- Cessation of traditional management (**190 Agriculture and forestry activities not referred to above**)

Some alluvial forests, particularly those with alder-dominated stands, have a history of coppice management. Cessation of such management reduces their wildlife value and may encourage succession to drier types of woodland.

- Inappropriate grazing regimes (**140 Grazing**)

Inappropriate grazing levels and poaching of the soil by sheep, cattle and deer is a major pressure on some alluvial forest sites. This has lead to changes in the woodland structure, impoverished the ground flora, damaged the soil structure, and created difficulties for regeneration.

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

Several invasive non-native species have invaded or been introduced into H91E0 Alluvial forests. These include Himalayan balsam *Impatiens glandulifera;* giant hogweed *Heracleum mantegazzianum*, and Japanese knotweed *Fallopia japonica*. Non-native hybrid poplars have also been introduced in places for forestry purposes: these can be difficult to irradiate and spread via suckers.

- Clearance and conversion (**164 Forestry clearance, 162 Artificial planting**))

Clearance and conversion of alluvial forests for other land-uses remains an issue particularly for secondary woods recently established on wetland sites.

- Constraints on expansion (**190 Agriculture and forestry activities not referred to above, 400 Urbanised areas, human habitation, 410 Industrial or commercial areas, 430 Agricultural structures**)

At some alluvial forest sites, constraints are imposed from agriculture, industrial or residential development on the spread of woodland onto adjacent ground. This reduces opportunities to diversify the forest age structure.

- Disease (**973 introduction of disease**)

A *Phytophthora* root disease has badly affected some alluvial forest stands. This affects alder trees and can, in some cases, kill trees outright.

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

An assessment of relevant literature and exceedence of critical loads (see Technical Note III) indicated that this habitat is not considered sensitive to nutrient nitrogen deposition or acidification. Given the generally rich natural character of soils in alluvial forests, additional nitrogen input or increased acidity are unlikely to be major problems. However, the assessment did not explicitly consider concentrations of atmospheric pollution from ammonia and oxides of nitrogen, which are considered to have potentially damaging impacts on the bryophyte and lichen communities of wet woodland habitats. Parts of the range of H91E0 are certainly within areas where high levels of these substances occur.

4.2 Current condition

4.2.1 CSM condition assessments

Condition assessments based on CSM (see http://www.jncc.gov.uk/page-2199) provide a means to assess the structure and functioning of H91E0 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 CSM condition assessments for UK SACs supporting habitat H91E0. 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 81% of the area and 66% of the number of assessments was Unfavourable. This means that at least 33% of the total UK habitat area was in Unfavourable condition. Most of the Unfavourable assessments indicated no change in condition or were unclassified. Of the remainder, somewhat more were recovering than declining.

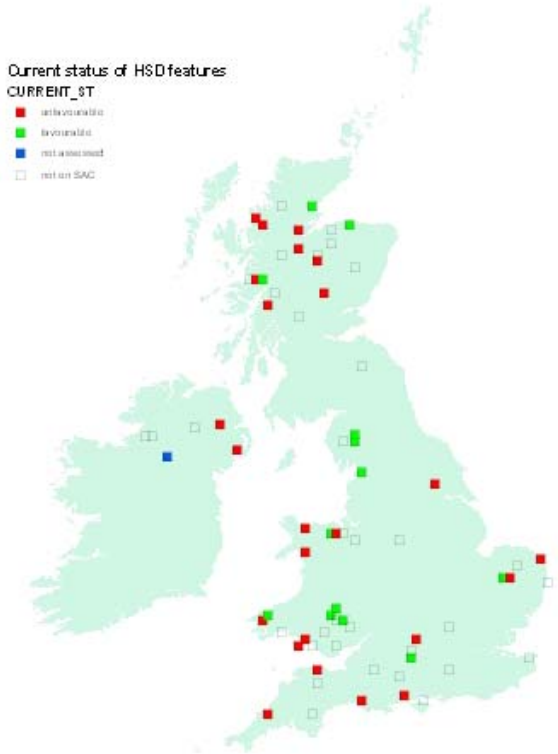
Table 4.2.1 CSM condition assessment results for UK SACs supporting H91E0. See notes below table for details. Information on the coverage of these results is given in Section 7.2

Condition	Condition sub-categories	Area (ha)	Number of site features
Unfavourable	Declining	69	2
	No change	933	8
	Unclassified	536	6
	Recovering	579	7
	Total	2,117	23
	% of all assessments	***81%***	***66%***
	% of total UK resource	***33%***	***unknown***
Favourable	Maintained	304	6
	Recovered	0	0
	Unclassified	188	6
	Total	491	12
	% of all assessments	***19%***	***34%***
	% of total UK resource	***8%***	***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.

Current Condition of H91E0 based on CSM 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	

Site of Special Scientific Interest (SSSI)/Area of Special Scientific Interest (ASSI) condition assessments

Table 4.2.2 and Maps 4.2.2 and 4.2.3 summarise the CSM 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 57% of strongly indicative assessments were unfavourable. Most of the unfavourable assessments indicated a recovery or at least no change in condition.

Table 4.2.2 CSM condition assessment results for UK SSSI/ASSIs that were judged to be either strongly or weakly indicative of the condition of H91E0 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	89	
	Unclassified	3	
	Recovering	156	
	Total	292	
	% of all assessments	***57%***	
Favourable	Maintained	21	
	Recovered	0	
	Unclassified	202	
	Total	223	
	% of all assessments	***43%***	

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 outwith the SAC-SSSI/ASSI series. However there is some qualitative information available as part of the BAP process for wet woodland generally. This suggests that there is no reason to assume that the condition outside of designated sites is likely to be any better than within.

4.3 Typical species

Typical species[2.5.3]: ***Carex pendula, Ribes rubrum, Carex elongata, Petasites hybridus, Cardamine amara, Carex remota, Lysimachia nemorum, Scirpus sylvaticus, Veronica montana***

Typical species assessment[2.5.4]: Change in 10 km square occupancy across UK over last 25 years

Several species show a medium-very high degree of faithfulness to this habitat or at least the three main related woodland community types (W5, W6, W7) within the NVC. Trends in the occurrence of these species across the UK during the last 25 years are set out in the table below. All showed significant increases, mostly of <25%. These data suggest that at least some species associated with H91E0 have increased in occurrence, though not necessarily within this forest type.

Table 4.3.1 Trends and faithfulness of selected typical species for H91E0

Typical species	Faithfulness to habitat H91E0 (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)
Carex pendula	Very high	Significant increase, >25% in 25 years
Ribes rubrum	Medium	Significant increase, >25% in 25 years
Carex elongata	Very high	Significant increase, but <25% in 25 years
Petasites hybridus	Very high	Significant increase, but <25% in 25 years
Cardamine amara	Medium	Significant increase, but <25% in 25 years
Carex remota	Medium	Significant increase, but <25% in 25 years
Lysimachia nemorum	Medium	Significant increase, but <25% in 25 years
Scirpus sylvaticus	Medium	Significant increase, but <25% in 25 years
Veronica montana	Medium	Significant increase, 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 from water management, cessation of traditional management, inappropriate grazing regimes, invasive species, clearance and conversion, constraints on expansion, disease and air pollution. Condition assessments for SACs and SSSIs indicate that a large part of the habitat is in Unfavourable condition: 68-81% of assessed SACs are judged Unfavourable, whilst the level for relevant SSSI/ASSIs is 57%. Most Unfavourable assessments indicate some form of recovery or at least no change in condition. There is no reason to expect the condition of the non-designated resource to be better.

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 H91E0 alluvial forest. The habitat is part of the UK BAP wet woodland 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 alluvial forest areas that has been converted to non-native plantations. Although new and restored areas of habitat will take to mature, it is expected that this will make an increasing contribution to the H91E0 resource over the coming decades.

Alluvial forest 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 5-10% of alluvial forest 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 H91E0 in response to the EC Habitats Directive (see

http://www.jncc.gov.uk/ProtectedSites/SACselection/habitat.asp?FeatureIntCode=H91E0). Various other measures and initiatives have been put in place to help conserve such woodland, including published guides on their management and creation. Amongst various initiatives that have undertaken is The New Forest Life Project, part of output being the restoration of 261 ha of alluvial forest (see http://www.newforestlife.org.uk/).

5.1.2 Main future threats[2.4.11]

The most obvious major threats to H91E0 over the next 12-15 years are given below. The related EC codes are shown in brackets.

- Water management and pollution (**810 Drainage, 830 Canalisation, 850 Modification of hydrographic functioning, general, 700 Pollution, 701 water pollution**)
- Cessation of traditional management (**190 Agriculture and forestry activities not referred to above**)
- Inappropriate grazing (**140 Grazing**)
- Invasion by non-native species (**954 invasion by a species, 966 antagonism arising from introduction of species**)
- Constraints on expansion (**190 Agriculture and forestry activities not referred to above, 400 Urbanised areas, human habitation, 410 Industrial or commercial areas, 430 Agricultural structures**)
- Disease (**973 introduction of disease**)
- Air pollution (**702 air pollution**)

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

5.2.1 CSM condition assessments

The CSM condition assessments reported in Sections 4.2.1-2 provide a basis to crudely predict the potential future condition of H91E0 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. There are a number of caveats to this approach set out beneath this table.

SAC condition assessments

Table 5.2.1 and Map 5.2.1 summarise the possible future condition of H91E0 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 may occur (summary statistics for the map are given in Section 7.2). The combined assessments show that of the SACs assessed 41% of the area and 54% of the number of assessments fall within the future-Favourable category. This means that at least 16% of the total UK habitat area is within this category.

Table 5.2.1 Predicted future condition of UK SACs supporting H91E0 based on current CSM 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	69	2
	Unfavourable no change	933	8
	Unfavourable unclassified	536	6
	Total	1,538	16
	% of assessments	***59%***	***46%***
	% of total UK extent	***24%***	***Unknown***
Future-Favourable	Favourable maintained	304	6
	Favourable recovered	0	0
	Unfavourable recovering	579	7
	Favourable unclassified	188	6
	Total	1,070	19
	% of assessments	***41%***	***54%***
	% of total extent	***16%***	***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.

SSSI/ASSI condition assessments

Table 5.2.2 and Maps 5.2.2 and 5.2.3 summarise the possible future condition of H91E0 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 exist (summary statistics for the maps are given in Section 7.2). The combined condition assessments show that of the SSSI/ASSI assessments considered 74% of strongly indicative assessments within the future-Favourable category.

Table 5.2.2 Predicted future condition of H91E0 on SSSI/ASSIs based on CSM 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	89	
	Unfavourable unclassified	3	
	Total	136	
	% of assessments	***26%***	
Future-Favourable	Favourable maintained	21	
	Favourable recovered	0	
	Unfavourable recovering	156	
	Favourable unclassified	202	
	Total	379	
	% of assessments	***74%***	

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:

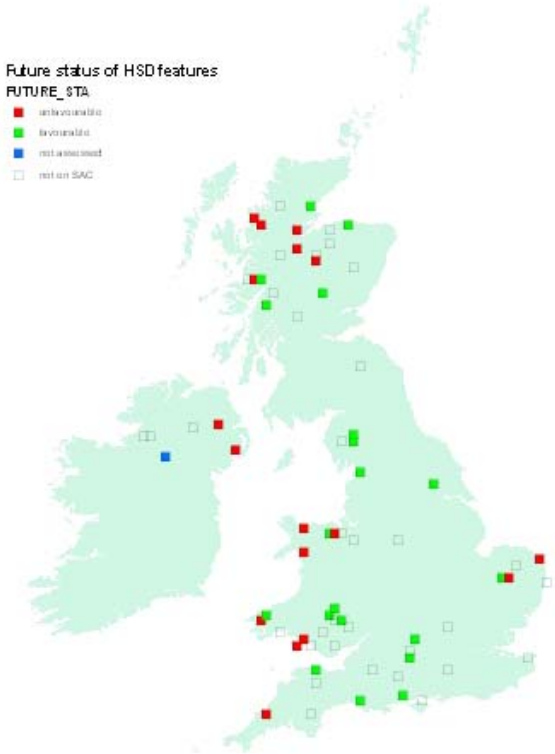
(i) the Unfavourable-recovering condition assessments will at some point in the future become Favourable;

(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.

Predicted Future Condition of H91E0 based on CSM 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	

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

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

Based on the UK approach (see 'Assessing Conservation Status: UK Approach' section 3.2.4.3), where between 75% and 95% of the total UK habitat area is likely to be Favourable in 12-25 years, the judgement for Future Prospects should be Unfavourable – Inadequate.

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 water management, cessation of traditional management, inappropriate grazing, invasive species, constraints on expansion, disease, and air pollution. Condition assessments for SACs indicate that only 41-54% of the habitat may become Favourable in the foreseeable future: the figure for SSSI/ASSIs is higher at 74%. Although some progress has been made and even allowing for some additional recovery once further conservation measures are put into place, the expectation is that a significant part of the habitat remain in Unfavourable condition in the next 12-15 years, but less than 25%.

6. Overall Conclusions and Judgements on Conservation Status

Conclusion[2.6]: Unfavourable – Bad but improving

On the basis of Structure and Function, 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	Current area is below the favourable reference area, but not by more than 10%. It has, nevertheless, remained relatively stable in extent since 1994.	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. Most Unfavourable assessments indicate some form of recovery or at least no change in condition.	2
Future prospects (as regards range, area covered and specific structures and functions)	Unfavourable – Inadequate but improving	Habitat prospects over next 12-15 years considered to be bad, with severe impact from threats expected and long term viability not assured. Given the good progress already made and some additional recovery once further conservation measures are put into place, the expectation is that a significant part of the habitat will be in Unfavourable condition in the next 12-15 years, but less than 25%.	2
Overall assessment of conservation status	Unfavourable – Bad but improving	On the basis of Structure and Function, 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

HALL, J. 1997. An analysis of National Vegetation Classification survey data. *JNCC Report* No. 272, Peterborough.

JACKSON, D.L. & MCLEOD, C.R. (eds.) 2002. Handbook on the UK status of EC Habitats Directive interest features: provisional data on the UK distribution and extent of Annex I habitats and the UK distribution and population size of Annex II species. *JNCC Report* No. 312. Version 2. www.jncc.gov.uk/page-2447

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ROBERTS, A.J., RUSSELL, C., WALKER, G.J. & KIRBY, K.J. 1992. Regional variation in the origin, extent and composition of Scottish woodland. Botanical Journal of Scotland **46**, 167-189.

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UKBAP. Habitat Action Plan for wet 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 (*pers. comm.*) 1995. Environmental Heritage Service.

7.2 Further information on CSM 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)	36
Number of SACs with CSM assessments (b)	35
% of SACs assessed (b/a)	97
Extent of feature in the UK – hectares (c)	6,500
Extent of feature on SACs – hectares (d)	2,738
Extent of features assessed – hectares (e)	2,608
% of total UK hectarage on SACs (d/c)	42
% of SAC total hectarage that has been assessed (e/d)	95
% of total UK hectarage that has been assessed (e/c)	40

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 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).

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)	24	33%
Current – Favourable (green)	13	18%
On SAC but not assessed (blue)	1	1%
Not on SAC (transparent)	35	48%
Total Number of 10km squares (any colour)	73	100%
Future – Unfavourable (red)	17	23%
Future – Favourable (green)	20	27%