

APPENDIX 1

SWANPOOL SSSI

Citation sheet

CITATION SHEET

COUNTY: CORNWALL

SITE NAME: SWANPOOL

DISTRICT: CARRICK

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 (as amended)

Local Planning Authority: Cornwall County Council, Carrick District Council

National Grid Reference: SW 802315 Area: 8.87 (ha) 21.92 (ac)

Ordnance Survey Sheet 1:50,000: 204 1:10,000: SW83SW
SW73SE

Date Notified (Under 1949 Act): Date of Last Revision:

Date Notified (Under 1981 Act): 1995 Date of Last Revision:

Other Information: A new site.

Description and Reasons for Notification:

Swanpool is a brackish lagoon located immediately west of Falmouth behind Swanpool beach. The site lies on alluvium underlain by Devonian sandstones and shales of the Falmouth and Mylor Series. The pool is fed by a small stream and seepages of the Swanvale catchment to the north.

The pool was cut off from the sea by a sand and shingle bar deposited across its mouth at the end of the last Ice Age, forming a large freshwater lake. Fossil lake deposits from this era now underlie Swanvale to the north of the pool. The construction of an outlet culvert across the shingle bar to the beach in 1826 resulted in a considerable reduction in the extent of this freshwater lake and the tidal incursion of salt water. Swanpool is still connected to the sea via a tidal culvert which maintains brackish water conditions.

The semi-natural habitats fringing the pool, and in the lower catchment of the Swanvale represent successional stages from the former freshwater lake.

The open unvegetated water of the brackish lagoon is fringed by Common Reed - *Phragmites australis* swamp and reed-beds, the occurrence of Sea-club rush - *Scirpus maritimus* is indicative of the brackish conditions. The reed-beds merge into wet Willow woodland or Salix carr, dominated by Grey Willow - *Salix cinerea* and occasional Alder - *Alnus glutinosa*. The ground flora comprises abundant Yellow Iris - *Iris pseudacorus*, together with Greater Tussock-sedge - *Carex paniculata*, Water-mint - *Mentha aquatica*, Opposite-leaved Golden Saxifrage - *Chrysoplegium oppositifolium* and Hemlock Water-dropwort - *Oenanthe crocata*.

Much of Swanvale also supports wet Willow Carr vegetation, while in drier area the canopy is dominated by Ash - *Fraxinus excelsior*, Hawthorn - *Crataegus monogyna* and Pedunculate Oak - *Quercus robur*.

Swanpool * is of particular importance for two reasons, one as an example of a brackish lagoon, a rare habitat, covering only 770 ha. in Britain, and secondly as the only British location for the rare Bryozoan, the Trembling Sea-mat - *Victorella pavida*.

Swanpool is the largest saline lagoon in Cornwall and one of the eleven most important in Britain. The pool exhibits a well developed halocline which persists throughout the year and is maintained by the incursion of sea water on high water spring tides. The degree of salinity varies across the pool, creating a range of ecological conditions. Swanpool supports characteristic brackish lagoon species including *Gammarus chevreuxi*, *Palaeomonetes varians* and *Neomysis vulgaris*, however its primary importance is for the occurrence of the rare Trembling Sea-mat **, found here at its only British location, growing mainly on submerged stones within the lagoon and the outlet culvert.

* Coastal lagoons are listed on:-

Annex I of the EC Habitats and Species Directive (Council Directive 92/43/EEC).

** Trembling Sea-mat *Victorella pavida* listed on:-

Schedule 5 of the Wildlife and Countryside Act 1981

Red Data Book No. 3: for Invertebrates other than insects

APPENDIX 2

LOCAL PLAN POLICIES

Carrick District Council (1998)

Sites of Special Scientific Interest in Carrick

- 3.7.7** Few areas of the country contain such a wealth and variety of nationally and internationally important habitats, species and geological features as are found within the suite of SSSIs in Carrick. Overall the District contains some 15 SSSIs stretching from the wild north coast cliffs to the gentle sheltered estuaries and wooded margins of the Fal and Helford. The international importance of the suite of SSSIs in Carrick is highlighted by the fact that it includes four proposed Special Areas of Conservation (SACs) including the only proposed marine SAC wholly within Cornwall.
- 3.7.8** The north coast exhibits a range of spectacular and colourful cliff, maritime heathland, maritime grassland and calcareous dune habitats including the largest dune system in the County. As well as containing a large number of nationally rare plant and invertebrate species, breeding seabirds and grey seals there are also priority species from the EC Habitats & Species Directive including Shore Dock, early “Cornish” Gentian and Petalwort.
- 3.7.9** Inland a series of smaller isolated SSSIs comprise the largest extent of heathland supporting Dorset Heath to be found outside of Dorset. These wet heathlands also support a rich and diverse invertebrate fauna being especially important for butterflies, moths and dragonflies.
- 3.7.10** The south coast rias and valleys are fringed by some of the largest remaining tracts of ancient woodland in the District. The woodlands merge into areas of saltmarsh and extensive mudflats and sandflats. These intertidal habitats are of particular importance for waders and wildfowl on migration, including the Black-Tailed Godwit, present here in nationally important numbers.
- 3.7.11** In a County as geologically complex as Cornwall with a long history of mining it is not surprising that the District also contains a large number of sites of special interest for their geology. These include the spectacular mineral veins at Cligga and the folded Devonian strata elsewhere along the north coast. Inland the geological SSSIs include old mines and mineral tips which are the locations for a number of rare minerals. The geological interest along the south coast includes intrusive greenstone headlands as well as the raised beach deposits at Pendower.
- 3.7.12** And finally Swanpool - this the largest brackish lagoon in Cornwall with the only known population of the rare Trembling Sea Mat left in Britain.

POLICY 3G

<p>PLANNING PERMISSION WILL NOT BE GRANTED FOR DEVELOPMENT WHICH WOULD BE LIKELY TO DIRECTLY OR INDIRECTLY HAVE A SIGNIFICANT ADVERSE EFFECT ON A SITE OF SPECIAL SCIENTIFIC INTEREST EITHER INDIVIDUALLY OR IN COMBINATION WITH OTHER PROPOSALS.</p>
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- 3.7.21** Cornwall Nature Conservation Sites (CNC's) are those sites identified as the prime areas of nature conservation significance in Cornwall and which are considered to be of at least county importance.
- 3.7.22** Such sites, which obviously include all Sites of Special Scientific Interest (SSSI's) and National Nature Reserves (NNR's), cover approximately 15% of Cornwall's land area (approximately one third of this is SSSI).
- 3.7.23** Sites range from small ancient woodlands and meadows to extensive heathland and wetland complexes but all provide vital reservoirs for a large proportion of Cornwall's native flora and fauna.
- 3.7.24** It should, however, be noted that these sites are not the only areas of nature conservation value in the County and that there is a substantial area of widely scattered habitat including woodlands, ponds and hedgerows of more local significance outside of the CNC sites (approximately 8% of Cornwall's land area).
- 3.7.25** CNC sites have been selected from the total nature conservation asset base of the County in the light of knowledge gained from systematic and extensive countrywide habitat and species surveys and by the application of nationally recognised site assessment criteria.

Local Nature Reserves

- 3.7.45** A Local Nature Reserve (LNR) is defined by the National Parks and Access to the Countryside Act 1949 as -
"land managed for the purpose:-
a] of providing, under suitable conditions and control, special opportunities for the study of, and research into, matters relating to the flora and fauna of Great Britain and the physical conditions in which they live, and for the study of geological and physiographical features of special interest in the area; or
b] of preserving flora, fauna, or geological or physiographical features of special interest in the area; or for both of these purposes".
- 3.7.46** In addition to the reserves established by English Nature and the CWT, the District Planning Authority may provide Local Nature Reserves. For this purpose, it can exercise compulsory purchase powers, enter into agreements with parties having an interest in the site and make bye-laws for their greater protection. Policy C9 of the First Alteration encourages the establishment of such reserves.
- 3.7.47** It is recommended that sites proposed for declaration as LNRs should be:-
 - a]** Of high natural interest in the local context (SSSI or equivalent); or
 - b]** Of some reasonable natural interest and of high value in the District/County context for formal education or research; or
 - c]** Of some reasonable natural interest and of high value in the District/County context for the informal enjoyment of nature by the public; and
 - d]** Capable of being managed with the conservation of nature and/or the maintenance of special opportunities for study or research as the priority concern.
- 3.7.47** Many sites meeting the above criteria may be in private ownership including, for example, many areas of derelict land in the process of natural re-vegetation. The District Planning Authority may enter into agreements with the landowner and other persons with an interest in the land. English Nature has drawn up a model Nature Reserve Agreement for such cases. However, when the occasion demands, the Local Authority may purchase the site, if necessary using its compulsory purchase powers.

- 3.7.48** 1996 saw the District Planning Authority designate Swanpool in Falmouth as a Local Nature Reserve. The District Planning Authority will investigate other potential sites as and when opportunities arise.

POLICY 3H

PLANNING PERMISSION WILL NOT BE GRANTED FOR DEVELOPMENT WHICH HAS A SIGNIFICANT ADVERSE IMPACT, EITHER DIRECTLY OR INDIRECTLY ON REGIONALLY IMPORTANT GEOLOGICAL /GEOMORPHOLOGICAL SITES AND ON THE ECOLOGICAL VALUE OF AREAS OF GREAT SCIENTIFIC VALUE, CORNWALL NATURE CONSERVATION SITES, AND LOCAL NATURE RESERVES.

3.8 General Nature Conservation & Species Protection

- 3.8.1** The protection of key sites in isolation will not, on its own, achieve the objectives outlined in the chapter. There needs to be both a greater awareness of and protection for features and habitats which do not fall within designated areas. These may include woodlands, wetlands and flower-rich grasslands. Through their protection, enhancement and management their nature conservation value can be greatly enhanced. Where possible such features should be protected, but development can in appropriate circumstances also provide opportunities to gain improved management and protection for such sites and create new areas of nature conservation value.
- 3.8.2** It is important to note that CNC sites are not the only areas of nature conservation value. The many copses, ponds, small wetlands and hedgerows in the wider countryside are often very important at a more local level and contribute a great deal to the character of the District. Without such areas, many of the prime sites would become isolated islands of semi-natural habitat.
- 3.8.3** Policy C8 of the First Alteration directs development away from natural and semi-natural habitats including CNC sites. The District Planning Authority will seek to liaise with the CWT to ensure that the nature conservation importance of such sites is maintained.
- 3.8.4** The Council will endeavour to ensure through the control of development and through its own action that the public has access to sites of importance for nature conservation unless such access would be detrimental to the wildlife interests of the site.

POLICY 3J

PROPOSALS FOR DEVELOPMENT SHOULD SEEK TO AVOID DAMAGE TO LOCALLY IMPORTANT HABITATS AND SHOULD, WHERE PRACTICABLE, RETAIN AREAS WITHIN ANY DEVELOPMENT PROPOSALS.

- 3.8.5** A further important element in considering nature conservation is the protection of species, particularly those that are dispersed or associated with features of farmland and are therefore located away from sites designated for wildlife protection. Considerable protection of species is afforded by the 1981 Wildlife & Countryside Act. However, under this Act no offence is deemed to be committed if a person carrying out an action which causes harm can show that their action was the incidental result of a lawful operation and could not reasonably have been avoided. In order that such a situation is avoided, the presence of a protected species will be a material planning consideration if a proposal would be likely to result in harm to a protected species or its habitat. The recent Protection of Badgers Act 1992 together with guidance contained within the EC Habitats Directive 1994 and Planning Policy Guidance Note 9 "Nature Conservation" also provide considerable protection of species.

POLICY 3K

PLANNING PERMISSION WILL NOT BE GRANTED FOR ANY DEVELOPMENT WHICH WOULD LEAD TO THE LOSS, DISTURBANCE OR SIGNIFICANT DAMAGE TO A PROTECTED SPECIES OR ITS HABITAT UNLESS APPROPRIATE MITIGATION MEASURES CAN BE ACHIEVED.

3.9 Coastal Planning

- 3.9.1** The coastal zone extends seaward and landward of the coastline. The District Planning Authority's jurisdiction in the seaward direction is the mean low water mark. Coastal zone limits are determined by the geographical extent of coastal natural processes and human activities related to the coast.
- 3.9.2** In accordance with PPG20 on Coastal Planning, the District Planning Authority is encouraged to define a coastal zone and to provide planning policies for within this zone. Policies should be provided not only on the control of development, but also on the improvement of the physical environment and for the conservation of the natural beauty and amenity of the land.
- 3.9.3** PPG20 highlights the recognition that on-shore development can often have an impact off-shore. In some cases development on the coast can lead to significant changes elsewhere within a coastal system, changes that may affect coastal features that provide natural coastal protection, although this is less pertinent to a predominantly hard coast as that found within Carrick.
- 3.9.4** PPG20 also emphasises the care with which the planning of all undeveloped coastline must proceed, so that the natural character and landscape are retained and the precautionary approach to development that must be adopted in areas of potential risk from flooding, erosion or instability.
- 3.9.5** The District Council is committed to improved management of the Coastal Zone through both its support for countryside services and involvement in both the Falmouth Bay and Estuaries Initiative and Falmouth SAC Management Plan and Group.
- 3.9.6** The last ten years have seen continuing pressure upon the coast from a variety of forms of development. These range from new houses and holiday chalets to marinas, moorings and related developments. Whilst the importance of the coast to tourism and recreation is accepted, the fragile nature of the coastal ecology and scenery mean there is a limit to the amount of pressure, use and development it can absorb without being damaged.
- 3.9.7** This is reflected in the identification of tourism pressure areas in the First Alteration which seeks to restrain further holiday accommodation in the area and Policies C16 and TR9 which seek to protect the coastal environment generally. Although these areas have not been carried forward into the Replacement Structure Plan, the local plan will continue to identify them under Policy 11AE.
- 3.9.8** The majority of the Carrick coast is covered by AONB, Heritage Coast, SSSI and/or AGLV designations. The majority of these specifically designated areas are included within the defined coastal zone. However, none of these designations are principally aimed at the treatment of the coastal zone as an integrated unit, taking into consideration both the geographical influence of coastal natural processes and human activities related to the coast, within a planning control context. The designation of a coastal zone will enable the undeveloped Carrick coast to remain protected from development which does not require a coastal location and preserve a feature which plays a vital part in the attraction of the District for both its resident population and visitors alike.
- 3.9.14** Policy 3L provides guidance on the types of development that would or would not be acceptable within the coastal zone, particularly the undeveloped coast which will seldom be the most appropriate location

for developments that do not require a coastal location. However, certain types of development may be acceptable such as development which would have a minimal impact on the character of the coast and development essential for agriculture or forestry.

POLICY 3L

PLANNING PERMISSION WILL NOT BE GRANTED FOR DEVELOPMENT OUTSIDE OF EXISTING SETTLEMENT BOUNDARIES WITHIN THE COASTAL ZONE UNLESS:-

- (i) IT IS ESSENTIAL IN CONNECTION WITH PROVIDING PUBLIC ACCESS TO THE COAST FOR INFORMAL RECREATION, OR;**
- (ii) IT INVOLVES ALTERATIONS, ADDITIONS OR CHANGES OF USE WITHIN THE CURTILAGE OF EXISTING BUILDINGS WHICH WOULD HAVE LITTLE IMPACT UPON THE CHARACTER OF THE AREAS, OR;**
- (iii) THE DEVELOPMENT IS ESSENTIAL FOR THE PURPOSE OF AGRICULTURE OR FORESTRY, AND IS DESIGNED TO HAVE A MINIMUM IMPACT ON THE CHARACTER OF THE AREA OR;**
- (iv) THE DEVELOPMENT INVOLVES AN EXTENSION TO AN EXISTING CAMPING OR CARAVANNING SITE WHICH IS NECESSARY TO PROVIDE AN IMPROVED LAYOUT AND THE PROVISION OF BETTER LANDSCAPING AND WOULD NOT RESULT IN A SIGNIFICANT INCREASE IN THE NUMBER OF PITCHES.**

10.6 Access to the Countryside

- 10.6.1 The recreational use of the countryside is important for residents and holidaymakers alike. Footpaths and bridleways provide direct access to the countryside for walkers and horse riders. Facilities such as car parks and picnic areas contribute to better access for the active enjoyment of the countryside.
- 10.6.2 A need for better laying out, signing and provision of inland footpaths, parking areas and picnic sites is evident, particularly to create circular routes for the enjoyment of the countryside as an alternative to using coastal facilities.
- 10.6.3 The Countryside Commission and Sports Council place a high priority on improving public access to and enjoyment of the countryside. While the achievement of this objective is important it is also important, to keep in view the interests of landowners and the need to conserve the very beauty of the countryside that is the attraction.
- 10.6.4 Where unused land is taken into public ownership particularly in connection with land reclamation schemes, it is possible for the District Council to provide additional facilities. Such schemes usually involve tree planting, picnic and parking areas and footpaths.
- 10.6.5 Swan Valley in Falmouth has potential as a recreational and amenity area. There is scope to identify and improve remaining sections of a walkway from the sea to Bickland Water Road to create a continuous route which logically continues along the coast from Swanpool on open cliff top land to Gyllyngvase Beach. The District Planning Authority will resist development proposals along the Swan Valley walkway, though minor structures such as bridges, fencing and informal play equipment may be allowed provided that these are essential to the enjoyment of the walkway.

POLICY 10F

THE DISTRICT PLANNING AUTHORITY WILL CREATE A CONTINUOUS WALKWAY TOGETHER WITH INFORMAL/FORMAL OPEN SPACE IDENTIFIED ON THE PROPOSALS MAP ALONG THE SWAN VALLEY, FALMOUTH. BUILT DEVELOPMENT WILL NOT BE PERMITTED WITH THE EXCEPTION OF MINOR STRUCTURES ASSOCIATED WITH THESE USES.

APPENDIX 3

REPLACEMENT STRUCTURE PLAN POLICIES

Cornwall County Council (1997)

12 Coastal waters

ENVIRONMENT

12.28 Much of the coast is recognised as nationally important for its landscape and wildlife as well as its rich historic heritage - both above and below water. The variations in geology and structure around the coast are subjected to the complex interactions between weathering, erosion, wave attack, tidal range and currents; the result is a range of landforms and habitats which have an immense variety of marine and maritime plants and animals. Indeed two estuaries in Cornwall, the Tamar and the Fal/Helford, have been identified as candidate Special Areas of Conservation (SACs) under the Habitats Directive.

12.29 The Government has provided guidance on coastal planning issues in Planning Policy Guidance Note No. 20 Coastal Planning (1992). The PPG emphasises the strategic importance of the special value of the coast with the particular need to protect and conserve the undeveloped coast and to consider the potential offshore impacts of onshore development. The impact of both large-scale, as well as the cumulative effect of small developments, require careful consideration. There is a need for consistent planning policies along the coast and the Government encourages co-operative working between local authorities and other agencies and bodies to this end. The many issues relating to development on or near the coast are considered more fully in section 11.

(2) Biodiversity and Nature Conservation

Biodiversity

This term is used to describe the variety of flora and fauna in the environment. The Biodiversity Convention signed at the 1992 UNCED Conference in Rio. This committed signatories to the conservation of biological diversity (including ecosystems, sustainable use, and the fair and equitable sharing of benefits arising) and the development of national strategies to progress the Convention. The UK Action Plan for Biodiversity (1994) is the national response which recognises the important role of local authorities. Nature conservation is one of the main activities contributing to the maintenance of biodiversity.

12.30 Cornwall contains a wealth of areas and sites of nature conservation value. The prime nature conservation assets of Cornwall are the remaining areas of natural, semi-natural and other wildlife habitats (about 22% of

Cornwall's land area). This nature conservation asset base is finite and many of the most valuable areas are largely non-recreatable in terms of the human lifespan. If the full range of wildlife diversity is to be maintained there must be a limit to irreversible change - this involves site protection and active conservation management of both sites and landscape features to help prevent habitat fragmentation and isolation.

12.31 Areas of nature conservation value are not confined to statutorily designated sites but found throughout the coast and countryside. Statutory and non-statutory sites together with the network of landscape features which provide wildlife corridors, links or stepping stones from one habitat type to another, all help form the matrix necessary to ensure the maintenance of the current range and diversity of wildlife.

Government advice about nature conservation and planning

Government Policy (PPG9 (1994) "Nature Conservation") emphasises the importance of the planning process in helping provide protection for areas of nature conservation value, both through the development plan and the development control process. The PPG gives development control criteria for SSSIs and sites with additional national and international designations.

The European Union's Habitats and Wild Species Directive

This adds a further context in which to consider nature conservation, with the aim of maintaining the biodiversity within the European Union. Measures include planning for conservation, encouraging the management of features of major importance for wildlife and establishing a coherent network of Special Areas of Conservation (SAC). To date it appears from the Government's list of possible SACs at least some 8 sites in Cornwall will be put forward to the European Commission in recognition of the representative European value of rare species and habitat types in Cornwall, including Lizard and Dorset heaths, subtidal landbanks, estuaries, shallow inlets, dunes and dune grasslands and vegetated sea cliffs. All terrestrial SACs and Special Protection Areas (SPAs) as well as all National Nature Reserves (NNRs) are also SSSIs.

In addition the Directive encourages the management of features in the landscape which are of major importance for wildlife by reason of their linear or continuous nature and their function as stepping stones, examples can include: rivers and their banks, hedges, ponds, copses etc.

12.32 Cornwall Nature Conservation (CNC) Sites, defined by the Cornwall Wildlife Trust (CWT), include all areas of wildlife habitat that are of value at least a Cornish level for nature conservation. They also encompass all

biological sites of national value i.e. notified and potential SSSIs as well as the proposed Tamar Estuary SPA and candidate SACs.

12.33 Sites of Special Scientific Interest (SSSI) are statutorily notified by English Nature (via the Wildlife and Countryside Act 1981 as amended) and are selected according to rigorous and published guidelines. They form a suite of habitat types which as a whole is of national importance. SSSIs are key parts of the natural areas that make up our countryside and in turn depend on the health of the surrounding countryside. Any development that might adversely affect an SSSI (including proposals around an SSSI) inevitably involves questions of national policy. Once lost the special wildlife and natural features are difficult or impossible to restore or recreate. There are, at present, 3 NNRs in Cornwall - Golitha Falls in the upper Fowey Valley, Goss Moor in mid Cornwall and parts of the Lizard Peninsula.

Habitat monitoring

All areas of wildlife habitat are potentially vulnerable to development and other changes in land-use. In view of the significance and interest of the nature conservation asset base in Cornwall, it is appropriate that the County Council is involved in and assists with the work of nature conservation within the limits of available resources. The County Council will continue its pivotal role in conjunction with CWT in wildlife habitat monitoring. This led to the Cornwall "LIFE" Project, benefiting from European funding in recognition of its development of European Union Policy. The County Council looks to this audit, in conjunction with existing initiatives (including English Nature's Natural Area characterisation programme), to form the basis of a strategic approach to nature conservation in Cornwall.

12.34 Throughout the countryside, lack of care in the siting of development and associated works can cause needless losses to the value and diversity of wildlife habitats and their constituent animals and plants. English Nature should be consulted about all proposals that might affect SSSIs and NNRs whilst CWT should be consulted about development affecting CNC sites and wider nature conservation issues. Where appropriate the specific expertise of the Royal Society for the Protection of Birds (RSPB) should also be sought.

Voluntary action

A number of voluntary organisations within Cornwall manage areas for their nature conservation value including the National Trust, RSPB, Cornwall Wildlife Trust and Woodland Trust. Local Authority involvement can be through the establishment of Local Nature Reserves (via Section 21 of the National Parks and Access to the Countryside Act 1949) identified through the district-wide Local Plan processes.

12.35 Nature conservation and planning is not confined to statutory and non-statutory sites and landscape features - certain wild plants and animals, including all wild birds, are protected under the Wildlife and Countryside Act, whilst some other animals either have their own legislation (eg. Protection of Badgers Act) or are otherwise protected by international agreements such as the Birds and Habitats Directives.

12.36 With careful planning and control nature conservation and development can be compatible - suitable planning conditions and obligations can serve to promote nature conservation objectives, including site protection and the active management of landscape features of importance to wildlife.

Policy ENV 5

Natural and semi-natural habitats or associated wildlife should not be significantly disturbed or damaged by development. In particular, development should not adversely affect to a significant degree:

1. any site of European importance (either Special Protection Area or Special Area of Conservation) including proposed sites;
2. Sites of Special Scientific Interest or National Nature Reserves;
3. the substantive value of sites shown to be of at least county-wide importance for wildlife;
4. any protected species or its habitat; and
5. the landscape features within the Areas of Great Scientific Value (listed in Proposal ENV D) of importance to wildlife by reason of their linear or continuous nature or function as stepping stones between habitats.

In considering development proposals account should be taken of the European, national or local importance of the interest to be protected.

The greatest protection must be given to sites of European importance. Development, having either direct or indirect impact on these sites, will be unacceptable unless no alternative site is available and there is an overriding public need. Where the site concerned hosts a priority natural habitat or species, development will not be permitted, unless it is necessary for reasons of human health or public safety or for beneficial consequences of primary importance for nature conservation.

APPENDIX 4

Gainey, P. (1997).

TREMBLING SEA-MAT. BASELINE DISTRIBUTION AND SPECIES ACTION PLAN.

**English Nature Research Report. No 225.
English Nature, Peterborough.**

APPENDIX 5

SWANPOOL MANAGEMENT GROUP - PROGRESS REPORT 2000

**Swanpool Management Plan Review 2000
1994 Work Schedule Update**

Project	Progress since 1994
Habitat Management	
1.1 Maintain shingle bar and outlet culvert	Shingle bar is generally self-maintaining. See 1.11 below for maintenance of outlet culvert.
1.2 Monitor quality of water in lagoon and in main stream	Regular samples taken by the Environment Agency in the stream, which is also representative of the pool.
1.3 Respond to developments in catchment which may alter above	Ongoing consideration and consultation by the relevant authorities; Carrick District Council, Environment Agency and English Nature.
1.4 Monitor siltation depths at fixed points on lagoon	Regular monitoring required during next 5 year period.
1.5 Monitor extent of reedbed and woodland habitat using aerial photos	Regular monitoring required during next 5 year period.
1.6 Manage woodland and reedbed to maintain current extent	Ongoing maintenance, annual trimming of reeds carried out along roadside periphery of reedbeds following consultation with English Nature on nesting birds.
1.7 Monitor regeneration of coppiced alder stools, and if none plant grey willow	Alder were felled in 1996, however, new planting has not been successful. It is therefore anticipated that grey willow will be replanted during 2000.
1.8 Control Japanese knotweed by spraying with 'roundup'	Spraying is carried out in some areas, however this has not been entirely successful. Regular cutting carried out around Tregonniggle Inlet. Remaining problem of disposal and areas bordering car park. Control methods adjusted according to latest Environment Agency advice.
1.9 Ensure appropriate zoning of current watersports using markers	Model boat use area is zoned by moveable marker buoys at the southern end of pool. Use of pedal boats during the summer season is also restricted through the use of marker buoys.
1.10 Erect wire mesh barrier around culvert	Wire mesh barrier is erected during the duckling season over the culvert, with its effectiveness monitored by volunteer wardens.
1.11 Maintain culvert	Safety improvements and maintenance works to be commenced before April 2000 by Carrick District Council.

Rare Species Management	
2.1 Assess current status of notable species and modify management plan	Report produced in 1997 on Trembling Sea-Mat, baseline distribution in England and Species Action Plan.
2.2 Monitor changes in status of notable species and respond	Report produced in 1997 on Trembling Sea-Mat, baseline distribution in England and Species Action Plan. Report provides a baseline on which to compare future monitoring.
2.3 Carry out research into ecology of Trembling Sea Mat (TSM)	Report produced in 1997 on Trembling Sea-Mat, baseline distribution in England and Species Action Plan. Report included investigation of current literature on ecology of this species.
2.4 Carry out research into current salinity regime	No work to date.
Amenity and Education Management	
3.1 Maintain pavements and roads around reserve	Ongoing maintenance. 30mph speed limit signs installed in 1998 by Cornwall County Council. Bus shelter installed adjacent to crazy golf course in 1999 by Cornwall County Council.
3.2 Maintain existing paths within reserve	Ongoing maintenance. All benches replaced during the period 1994-99. Litter bins replaced 1996.
3.3 Maintain buoyancy aids and warning signs referring to blue-green algae	Signs placed at both ends of pool to warn of blue/green algae. Ongoing attention as required.
3.4 Collect litter from around site	All year round commitment by Carrick District Council and leaseholder. One-off litter picks carried out by local schools and organisations.
3.5 Change signs on local roads from Boating Lake to LNR	Boating Lake sign was removed in 1997.
3.6 Provide two interpretation boards	Two interpretation boards installed June 1996 – northern and southern ends of the pool.
3.7 Interpretive leaflet	Leaflet published in 1998 and distributed to local residents, tourist information centres, schools, local organisations and members. Copies also available at the Swanpool café and car park attendants hut.
3.8 Publicise LNR through media	Ongoing commitment by all organisations involved. Successful media attention from formal designation ceremony; terrapins, leaflets, interpretation boards, local residents.

3.9 Contact local residents to explain change in status of Swanpool	Through Residents Association and a leaflet distributed in 1996 which also highlighted problems of dumping garden waste around the pool.
3.10 Establish a local group and local volunteer wardens	Volunteer wardens have been provided through the Residents Association on an ongoing basis with training and advice received from the Cornwall Wildlife Trust during 1999.
3.11 Patrol reserve regularly	Ongoing commitment by forum members, volunteer wardens, local residents and local schools.
3.12 Monitor impact of public use on habitats, flora and fauna	Ongoing commitment, particularly by local residents, users and forum members.
3.13 Control rats if necessary	Continuous baiting programme, however, problem of rats still remains.
Other	
4.1 Seek outside funding for management works	<p>1996/1998 Funding obtained from Carrick District Council and English Nature for the production of the interpretive boards and information leaflet.</p> <p>1996 Funding obtained from Carrick District Council and the Rural Action fund for a study of terrapins within the pool.</p> <p>1998 Environment Agency funding obtained for the construction of boathouse.</p> <p>1999/2000 Carrick District Council funding obtained for the revision of the management plan.</p> <p>Ongoing management works funded by Carrick District Council and the lessee.</p> <p>Ongoing habitat management funded by English Nature and the Cornwall Wildlife Trust.</p> <p>Management plan objectives have periodically been reviewed and updated by the forum.</p> <p>Full revision of management plan carried out by Environmental Consultants (CTNC) Ltd 1999/2000.</p>
4.2 Review management plan	
4.3 Provide inflatable boat access to lagoon	Use of boat provided by both the Falmouth Model Boat club and the lessee.

APPENDIX 6

HABITAT ACTION PLANS

(UK Biodiversity Steering Group, 1995)

Saline lagoons

A costed habitat action plan

1. Current status

Lagoons in the UK are essentially bodies, natural or artificial, of saline water partially separated from the adjacent sea. They retain a proportion of their sea water at low tide and may develop as brackish, full saline or hyper-saline water bodies. The largest lagoon in the UK is in excess of 450 ha although the rest are much smaller and some may be less than 1 ha. Lagoons contain soft sediments which often support tasselweeds and carophytes as well as filamentous green and brown algae. In addition lagoons contain invertebrates rarely found elsewhere. They also provide important habitat for waterfowl, marshland birds and seabirds. The invertebrate fauna present can be divided into three main components: those that are essentially freshwater in origin; those that are marine / brackish species and those that are more specialist lagoonal species. The presence of certain indigenous and specialist plants and animals make this habitat important to the UK's overall biodiversity.

There are several different types of lagoons, ranging from those separated from the adjacent sea by a barrier of sand, or shingle ('typical lagoons') to those arising as ponded waters in depressions on soft sedimentary shores to those separated by a rocky sill or artificial construction such as a sea wall. Sea-water exchange in lagoons occurs through a natural or man-modified channel or by percolation through or overtopping of the barrier. The salinity of the systems is determined by various levels of fresh water input from ground or surface waters. The degree of separation and the nature of the material separating the lagoon from the sea are the basis for the distinguishing several different physiographic types of lagoon.

2. Current factors affecting the habitat

The processes which lead to the natural development of some types of lagoons are generally inhibited by human coastal activities. It is probable that the formation of new lagoons will not keep pace with the process of lagoon loss. Current factors affecting this habitat type include:

- Lagoons are naturally transient; salinity regimes change as succession leads to freshwater conditions and eventually to vegetation such as fen carr. Some formerly saline sites are now freshwater.
- The bar-built sedimentary barriers of 'typical' coastal lagoons tend to naturally move landwards with time. Lagoons behind them will eventually be in-filled as bar sediments approach the shore.
- Pollution, in particular nutrient enrichment leading to eutrophication, can have major detrimental effects. This may result from direct inputs to the lagoon or from water supply to the lagoon.
- Artificial control of water (sea and fresh) to lagoons can have profound influences on the habitat.
- Many lagoons are often seen as candidates for in-filling or land claim as part of coastal development.
- Some coastal defence works can prevent the movement of sediments along the shore and lead to a gradual loss of the natural coastal structures within which many coastal lagoons are located.
- The impact of coastal defences will be compounded by the effects of sea level rise. It has been estimated that about 120 ha of coastal lagoons in England alone (10% of the existing resource) will be lost in the next 20 years, mainly as a consequence of sea level rise.
- Sea level rise also presents an opportunity for the reinstatement of saline waters to freshwater lakes which once were coastal lagoons, thereby allowing the creation of new lagoonal habitat.

3. Current action

3.1 Legal status

In Great Britain, 10 species of invertebrate and plant associated with lagoons are protected under the Wildlife and Countryside Act 19.1. No lagoon species are listed for protection under the Wildlife (Northern Ireland) Order, 1985.

Of the 177 lagoon sites surveyed in England, just over 50% occur within existing SSSIs and about 10% occur within NNRs and as many in LNRs. Fewer examples are found in Wales where only about four lagoons are recognised (there remain some un-surveyed potential sites in Clwyd). A survey currently under way in Scotland is expected to identify about 130 lagoons. A preliminary study suggests that there may be 30 lagoonal habitat sites in Northern Ireland (of these only a few small perched salt marsh pools are thought to be natural in origin). In Northern Ireland they will all eventually fall within the ASSI/SPAs network.

Internationally important lagoons have been designated, for their bird interest, as SPAs under EC Birds Directive. Coastal lagoons are also listed as a priority habitat on Annex I of the EC Habitats Directive and the UK Government has recently set out its proposals for sites which it could merit designation as SACs under this Directive.

3.2 Management research and guidance

Coastal groups are currently preparing shoreline management plans for defined lengths of coast. The production of these plans will require identification of key habitats, including coastal lagoons, and confirmation of their management requirements.

Certain lagoons have an established research base and study group.

4. Action plan objectives and proposed targets

- The current number, area and distribution of coastal lagoons should be maintained and enhanced. There are at present only about 1,300 ha of known saline lagoonal habitats in the UK.
- Create, by the year 2.10, sufficient lagoon habitat to offset losses over the last 50 years.

Recent evaluations estimated that 38 English lagoons were lost in the later half of the eighties. Within the next 20 years the creation of at least 120 ha of lagoon habitat is considered attainable and necessary within England just to keep pace with projected losses.

5. PROPOSED ACTIONS WITH LEAD AGENCIES

5.1 Policy and legislation

- Continue to take account of the coastal lagoon habitats in assessing the grant-aiding of sea defence works. (ACTION: MAFF, WO)
- Identify abstractions known, or likely to be adversely affecting (through reduced freshwater flows) lagoonal habitats of nature conservation importance. Abstractions should be revoked or reduced where the review identifies this as necessary. (ACTION: NRA, RPBs, SEPA)
- Review current marine aggregate extraction licences by 1997 as a means of assessing the combined impact of aggregate extraction on coastal processes relating to lagoons. (ACTION: DoE)

5.2 Site safeguard and management

- Continue notification of sites which meet the SSSI/ASSI guidelines ensuring that representation of the full range of lagoonal types is covered. (ACTION: CCW, DoE(NI), EN, SNH)
- Progress with the programme to designate lagoonal habitats as SPAs, Ramsars and SACs by 2004. (ACTION: DoE, SO, WO)
- Maintain and monitor the stable exchange of waters to and from lagoonal habitats as part of site management plans. (ACTION: CCW, EN, SNH)
- Encourage the production of management plans for lagoonal sites especially SSSIs/ASSIs, NNRs, LNRs and NGO-owned nature reserves by 1998. These may also include objectives for all relevant Red Data Book species. (ACTION: CCW, EN, SNH)
- Contribute to shoreline management plans to ensure that processes relevant to coastal lagoons are taken into account. (ACTION: EN)
- In light of research results consider establishing a management scheme to create, by the year 2.10, sufficient lagoonal habitat to offset losses of the last 50 years. This scheme should maintain the coastal lagoon and saline pond resource despite losses due to sea-level rise and might be tied-in to coastal habitat creation through managed retreat. (This is unlikely to be possible behind shingle bars/spits which should be preserved where possible as they are exceedingly rare structures in the UK.) (ACTION: DoE, MAFF)
- In so far as the legislation permits the Government should take account of the potential benefits to lagoons when designating Nitrate Vulnerable Zones. (ACTION: MAFF, SOAEFD, WOAD)

5.3 Advisory

- Create a lagoons working group to define best management practices, lagoon creation and colonisation / re-introduction of characteristic species by 1996. (ACTION: CCW, EN, JNCC,

MAFF, SNH)

5.4 International

- Develop liaison within Europe to ensure best practices in lagoonal conservation is exchanged and developed. (ACTION: CCW, EN, JNCC, SNH)

5.5 Future research and monitoring

- Establish an inventory of all coastal lagoonal habitats currently of national and international importance by 1998. Where information is still inadequate encourage surveys which assess the importance of lagoonal habitats. (ACTION: CCW, DoE, DoE(NI), EN, JNCC, SNH, SO)
- Consider the development of coastal geomorphological modelling techniques which could assist in an understanding of the retention and development of lagoonal and other habitats, and consider supporting an associated programme for the monitoring of sediment supply and movement where appropriate. (ACTION: MAFF, SOAEFD, WOAD)
- Assess the feasibility of using some derelict docks as sites for the creation of lagoonal habitat including for possible *ex-situ* conservation of threatened lagoonal species. (ACTION: CCW, EN, SNH)
- Saline lagoonal habitat creation schemes should be tested. Such opportunities may arise through coastal defence set back and perhaps also land use by industry. (ACTION: CCW, EN, SNH)
- Support research into the environmental requirements and other elements of the ecology and genetic viability of populations of certain key characterising lagoonal species. This would provide a sound basis for management. (ACTION: CCW, EN, SNH)

5.6 Communications and publicity

- Raise public awareness by increasing links between schools, colleges and universities and local estuarine sites by providing educational resources and training on the interpretation of saline lagoonal habitats. (ACTION: DoE, SO, WO).

Costings

The successful implementation of the action plan will have resource implications for both the private and public sectors. The data in Table.1 below provide a preliminary estimate of the likely resource costs to the public sector in the years 1997, 2000 and 2.10.

The data are based on targets whereby 700 hectares of lagoon habitat will be appropriately maintained and improved through to 2.10.

Habitat Type: Saline lagoons (,000 per annum)

Area to be 1997 2000 2.10 700 800 1,500 600
maintained
and
enhanced
(Ha)



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Reedbeds

A costed habitat action plan

1. Current status

Reedbeds are wetlands dominated by stands of the common reed *Phragmites australis*, wherein the water table is at or above ground level for most of the year. They tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland may be associated with them. There are about 5000 ha of reedbeds in the UK, but of the 900 or so sites contributing to this total, only about 50 are greater than 20 ha, and these make a large contribution to the total area. Reedbeds are amongst the most important habitats for birds in the UK. They support a distinctive breeding bird assemblage including 6 nationally rare Red Data Birds the bittern *Botaurus stellaris*, marsh harrier, *Circus aeruginosus*, crane *Grus grus*, Cetti's warbler *Cettia cetti*, Savi's warbler *Locustella luscinioides* and bearded tit *Parus biarmicus*, provide roosting and feeding sites for migratory species (including the globally threatened aquatic warbler *Acrocephalus paludicola*) and are used as roost sites for several raptor species in winter. Five GB Red Data Book invertebrates are also closely associated with reedbeds including red leopard moth *Phragmataecia castanaea* and a rove beetle *Lathrobium rufipenne*.

2. Current factors affecting the habitat

- Small total area of habitat and critically small population sizes of several key species dependent on the habitat.
- Loss of area by excessive water extraction and, in the past, land drainage and conversion to intensive agriculture.
- Lack of or inappropriate management of existing reedbeds leading to drying, scrub encroachment and succession to woodland.
- Most of the important reedbeds are found on the coast of eastern England, where relative sea-level rise is predicted to lead to the loss of significant areas of habitat.
- Pollution of freshwater supplies to the reedbed: siltation may lead to drying; toxic chemicals may lead to loss of fish and amphibian prey for key species; accumulation of poisons in the food chain and eutrophication may cause reed death.

3. Current action

3.1 Legal status

Most of the more significant reedbeds are notified as SSSI/ASSI and many are notified as Wetlands of International Importance under the Ramsar Convention and as SPAs under EC Birds Directive. Several of the larger reedbeds are managed as NNRs by EN and CCW, and as reserves of the RSPB and County Wildlife Trusts.

3.2 Management, research and guidance

EN's 3 year, 200,000 *Action for Bittern* project, part of its Species Recovery Programme, provides funding for reedbed rehabilitation and extension in England.

The RSPB has a priority programme for reedbed rehabilitation on their reserves and are creating new reedbeds on land of low nature conservation interest purchased by the society.

The Broads Authority conducts a reedbed management programme within their executive area in association with EN, who provide management agreements to owners/occupiers for reedbed management.

The Suffolk river valleys and Broads ESAs require farmers to maintain and manage reedbeds, and capital grants are available for restoration work. Payments are also available under Countryside Stewardship for the management, creation and restoration of reedbeds.

The statutory conservation agencies have negotiated several management agreements on SSSIs to help secure sympathetic reedbed management and have worked with key partners using EU Life funding to create an extensive reedbed on former peat workings in the Somerset Levels.

RSPB/EN/Broads Authority/British Reedgrower's Association published a leaflet '*Reedbed Management for Bitterns*' and the management guide '*Reedbed Management for Commercial and Wildlife Interests Handbook*' to encourage the management and creation of reedbeds.

Statutory conservation agency and RSPB staff provide advice to a range of reedbed owners on appropriate management, rehabilitation, extension and creation.

Voluntary and statutory agency staff monitor (and license the monitoring of) the population size and productivity of key reedbed species.

The NRA has been encouraged to incorporate reedbed protection, management or creation in its catchment and shoreline management plans.

Many reedbeds are subject to, or will soon be subject to, water-level management plans as prepared under a MAFF and Welsh Office initiative.

4. Action plan objectives and proposed targets

- Identify and rehabilitate by the year 2000 the priority areas of existing reedbed (targeting those of 2ha or more) and maintain this thereafter by active management.

This target should provide habitat for 40 pairs of bitterns and provide optimum conditions for other reedbed species and should be targeted primarily in the south-east.

- Create 1,200 ha of new reedbed on land of low nature conservation interest by 2.10.

The creation of new reedbed should be in blocks of at least 20 ha with priority for creation in areas near to existing habitat, and linking to this wherever possible. The target should provide habitat for an estimated 60 breeding pairs of bitterns boosting numbers to previous levels. It should be targeted in the south-east of Britain.

5. Proposed action with lead agencies

5.1 Policy and legislation

- Continue to notify nationally important sites as SSSI/ASSI by 1998. (ACTION: CCW, DoE(NI), EN, SNH)
- Continue the existing programme of designations of internationally important sites as SPA and/or Ramsar and SAC by 2004. (ACTION: DoE, DoE(NI), SO, WO)
- Develop a clear national strategy for reedbed creation and management by 1997, cross-relating to coastal management plans, ESAs, set-aside and mineral extraction plans, and ensuring that an effective level of monitoring and inventory is maintained. (ACTION: CCW, DoE, DoE(NI), EN, JNCC, SNH, SO, WO)
- Consider modifying or expanding existing habitat schemes such as Wildlife Enhancement Schemes (WES), Tir Cymen, ESAs, Countryside Stewardship, Nitrate Sensitive Areas and Habitat Scheme to encourage and allow for the creation of 1,200 ha of reedbed. Priority should be given also to reedbed creation as a preferred condition of after-use for mineral extraction sites. (ACTION: CCW, DoE, DoE(NI), EN, LAs, MAFF, SOAEFD, SNH, WOAD)
- Encourage the development of both sympathetic water abstraction, water level management policies and of appropriate coastal zone management plans in order to protect existing reedbeds. (ACTION: NRA, IDBs, LAs)

5.2 Site safeguard and management

- Ensure that development schemes do not affect the integrity or the conservation interest of reedbeds. (ACTION: LAs)
- Acquire, in appropriate circumstances, or grant-aid acquisition of, land of low nature conservation interest for the creation of new reedbeds. (ACTION: CCW, EN, SNH)
- Ensure favourable management of key reedbeds by 2.10, offering, where appropriate, long-term, targeted management agreements for reedbed management on important sites. (ACTION: CCW, EN, SNH)

5.3 Advisory

- Ensure the favourable management of key reedbeds by providing advice based on the most recently available prescriptions. (ACTION: CCW, DoE(NI), EN, SNH)
- Ensure that authorities creating new reedbeds for effluent treatment and other primary purposes receive up-to-date advice on reedbed creation for wildlife. (ACTION: CCW, DoE(NI), EN, SNH)
- Initiate training courses for land managers and countryside land management advisors on techniques of reedbed creation and management. (ACTION: CCW, DoE(NI), EN, SNH)

5.4 International

- Promote pan-European co-operation on research, conservation and management of reedbeds and reedbed species. (ACTION: CCW, EN, JNCC, SNH)

5.5 Future research and monitoring

- Promote research into the ecology of key GB reedbed species, particularly in relation to management such as cutting regimes, burning and mere and dyke management. (ACTION: CCW, EN, SNH)
- Ensure the continued surveillance of population distribution, size and productivity for key GB reedbed species and of water levels, water quality and current reedbed management for all significant reedbeds. (ACTION: CCW, NRA, EN, SEPA, SNH)
- Encourage necessary research to inform and monitor attempts to restore and re-establish *Phragmites* swamp. (ACTION: CCW, EN, SNH)
- Begin large-scale trials of the use of reedbeds for reducing point and diffuse source agricultural pollution by 1998. Trials should include the study of the most effective means of reedbed establishment, management and their benefits to wildlife. (ACTION: MAFF, NRA)

5.6 Communications and publicity

- Provide material which promotes the importance of reedbeds and their conservation by end of 1997. (ACTION: CCW, EN, SNH)
- Launch a campaign to enhance the market for UK reed by 1997. (ACTION: DoE, LAs)

Costings

The successful implementation of the action plan will have resource implications for both the private and public sectors. The data in Table.1 below provide a preliminary estimate of the likely resource costs to the public sector in the years 1997, 2000 and 2.10, in addition to existing public expenditure commitments in 1995. Figures are provided for central estimates of costs and also for a range of alternative costs (low and high). These alternative figures reflect different payment (and cost) levels and different scheme coverage assumptions. The costings also take account of revenue from reed production.

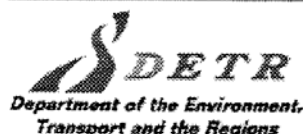
The data are based on targets whereby 5,000 hectares of existing reedbed habitat will be appropriately maintained and improved and 1200 hectares of reedbed will be re-established through to 2.10. This results in a central estimate of about .100 per hectare per year (including existing commitments in 1995) required for management and enhancement costs (by 2.10). This figures is also based on the assumption that the proportion of private land under management schemes will increase from 22% in 1995 to 78% in the year 2.10.

In order to re-establish 1200 hectares of reedbed habitat additional costs will be shown in Table.1. It is assumed that about half the area can be re-established by 2000 at an average (central) expenditure of approximately .620 per hectare per year (including existing commitments) in 2000. On-going costs to 2.10 will comprise a higher proportion of management expenditure relative to new establishment costs.

It should be noted that the above figures will not necessarily be the net cost to the public sector. While significant increases in environmentally based payment schemes would be required to make payments to land managers there could be some savings in terms of reduced agricultural support payments.

Habitat Type: Reedbed (,000 per annum)

Area to be maintained and enhanced (Ha)	1997			2000			2010		
	Low	Central	High	Low	Central	High	Low	Central	High
5000	40	90	110	90	180	230	190	210	420
Area re-established (Ha)	1997			2000			2010		
	Low	Central	High	Low	Central	High	Low	Central	High
1200	50	100	170	110	200	340	130	230	410



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Wet woodland

A Habitat Action Plan

1. Current status

1.1 Biological status

1.1.1 Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species, but sometimes including ash, oak, pine and beech on the drier riparian areas. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, and in peaty hollows. These woodlands occur on a range of soil types including nutrient-rich mineral and acid, nutrient-poor organic ones. The boundaries with dryland woodland may be sharp or gradual and may (but not always) change with time through succession, depending on the hydrological conditions and the treatment of the wood and its surrounding land. Therefore wet woods frequently occur in mosaic with other woodland key habitat types (e. g. with upland mixed ash or oakwoods) and with open key habitats such as fens. Management of individual sites needs to consider both sets of requirements.

1.1.2 In terms of National Vegetation Classification (NVC) plant communities this habitat is characterised by .1 *Salix cinerea* - *Galium palustre* woodland, W2 *Salix cinerea* - *Betula pubescens* - *Phragmites australis* woodland, W3 *Salix pentandra* - *Carex rostrata* woodland, W4c *Betula pubescens* - *Molinia caerulea* woodland: *Sphagnum* sub-community, W5 *Alnus glutinosa* - *Carex paniculata* woodland, W6 *Alnus glutinosa* - *Urtica dioica* woodland, and W7 *Alnus glutinosa* - *Fraxinus excelsior* - *Lysimachia nemorum* woodland. Some birch stands classified as W4 are relatively dry and in management terms better treated alongside other extensive birch stands. As a provisional division, sub-communities W4a and W4b are better associated with Upland/Northern Birchwoods. Just as small wet woodland patches may be treated as part of a dry land mosaic, so dry land fringes of predominantly wet woodland areas are linked with the accompanying wet woodland. Wet flood plain forests of ash, elm and oak, lacking alder, are most likely to fall into W8 *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland.

1.1.3 Many alder woods are ancient and have a long history of coppice management which has determined their structure, and in some situations it appears that this practice has maintained alder as the dominant species and impeded succession to drier woodland communities. Other wet woodland may have developed through natural succession on open wetlands (sometimes following cessation of active management) and structurally are little influenced by direct forestry treatments.

1.1.4 Notable concentrations of wet woodland on fens occur in East Anglia, Shropshire and Cheshire, while hill-side and plateau alder woods are more restricted to Wales, Cumbria and western Scotland. Fragments of ancient floodplain forest are rare, and the best examples are probably in the New Forest and northern Scotland. Bog woodlands of pine on bog are confined to Scotland, but fragments of birch bog woodland occur more widely in scattered stands across the UK.

1.1.5 Some wet woods include habitats identified under Annex.1 of the EC Habitats Directive, for example Residual alluvial forests and Bog Woodland.

1.1.6 There are no precise data on the total extent of wet woodland in the UK, but in the late 1980s the Nature Conservancy Council estimated the total extent of this type in ancient semi-natural woodland to be about 25,000 - 30,000 ha. The area of recent wet woodland may be at least as large again. Thus a crude estimate of the total wet woodland area in the UK is 50,000 - 70,000 ha.

1.1.7 Wet woodland combines elements of many other ecosystems and as such is important for many taxa. The high humidity favours bryophyte growth. The number of invertebrates associated with alder, birch and willows, is very large, although some are now confined to just a few sites, for example the biodiversity priority species beetles *Melanopion minimum* and *Rhynchaenus testaceus*. Even quite small seepages may support crane flies such as *Lipsothrix errans* and the endemic *Lipsothrix nervosa*. Dead wood within the sites can be frequent, and its association with water provides specialised habitats not found in dry woodland types - the fly *Lipsothrix nigristigma* for example is associated with log jams in streams. Wet woodland provides cover and breeding sites for otters *Lutra lutra*. While few rare plant species depend on wet woodland per se, there may be relict species from the former open wetlands on the site such as the marsh fern *Thelypteris palustris*.

1.2 Links with species action plans

1.2.1 Wet woodland is an important habitat for a number of priority species including otter *Lutra lutra*, the weevils *Melanopion minimum* and *Rhynchaenus testaceus*, the crane flies *Lipsothrix ecucullata*, *L. nervosa*, *L. errans* and *L. nigristigma* and the netted carpet moth *Eustromia reticulata*. Their requirements should also be taken into account in the implementation of the plan.

2. Current factors affecting the habitat

2.1 Wet woodland is affected by the following factors that impact directly or indirectly upon its current condition and dynamics:

- 2.1.1 Clearance and conversion to other land-uses, particularly in woods recently established on wetland sites.
- 2.1.2 Cessation of management in formerly coppiced sites may encourage succession to drier woodland types.
- 2.1.3 Lowering of water-tables through drainage or water abstraction, resulting in change to drier woodland types.
- 2.1.4 Inappropriate grazing levels and poaching of the soil by sheep, cattle and deer leading to a change in the woodland structure, ground flora impoverishment and difficulties for regeneration.
- 2.1.5 Flood prevention measures, river control and canalization, leading to loss of dynamic disturbance-succession systems and invertebrate communities, as well as possible reductions in the extent of individual sites.
- 2.1.6 Constraints on the spread of woodland from conservation sites onto adjacent ground from agriculture, industrial or residential development, leading to greater uniformity of structure across the site.
- 2.1.7 Poor water quality arising from eutrophication, industrial effluents or rubbish dumping leading to changes in the composition of the ground flora and invertebrate communities.
- 2.1.8 Invasion by non-native species which alter vegetation composition and lower conservation value (e. g. Indian balsam *Impatiens glandulifera*); air pollution which may influence particularly bryophyte and lichen communities; and diseases such as *Phytophthora* root disease of alder.
- 2.1.9 Climate change, potentially resulting in changes in the vegetation communities.

3. Current action

3.1 Legal status

- 3.1.1 Statutory site protection plays an important part in the conservation of this habitat type. Designation as Sites of Special Scientific Interest (SSSI) or as Areas of Special Scientific Interest (ASSI) (Northern Ireland) of about 5.10% of the more important areas of wet woodland ensures compulsory consultation with the statutory nature conservation agencies over management operations and development proposals. Some wet woods that include habitats identified under Annex.1 of the EC Habitats Directive, for example Residual alluvial forests and Bog Woodland have also been proposed as Special Areas of Conservation (SACs).
- 3.1.2 Other important sites receive protection through the inheritance Tax Exemption scheme and National Trust properties can be declared to be inalienable land.
- 3.1.3 National forestry policy includes a presumption against clearance of broad-leaved woodland for conversion to other land uses, and in particular seeks to maintain the special interest of ancient semi-natural woodland. Felling licences from the Forestry Authority (FA) are normally required if the woods are not managed under plans approved by them. Relevant hydrological policy issues include water level management plans, and impoundment licences and consents for abstraction and land drainage issued by the Environment Agencies.
- 3.1.4 Some woods may receive additional protection through policies and strategies within development plans, through National Park Management plans or by being subject to Tree Preservation Orders.

3.2 Management, research and guidance

- 3.2.1 There are a number of significant inventories on woodlands available, including the Forestry Authority's National Inventory of Woodland and Trees (NIWT), initiated in 1995, which provides information on the extent, distribution and composition of woodland in the whole of GB. Information on woodland type and management is also collected as part of the FA's Woodland Grant Scheme (WGS), documentation through local woodland management initiatives or information held on the Forest Enterprise compartment database. The country conservation agencies also hold relevant information in Ancient Woodland Inventories as well as information from individual surveys of statutory protected sites.
- 3.2.2 Other relevant information is gathered by the Environment Agency through surveys and monitoring of rivers and water quality; Local Authority and non-governmental organisation site and species survey and monitoring programmes; and local and national recording schemes and centres covering relevant species and sites.
- 3.2.3 All woodland is expected to be managed according to the UK Forestry Standard.
- 3.2.4 Grants for, and advice on, management, including regeneration, planting and some other operations, are available from FA and in some circumstances from other government agencies and local authorities (including the national park authorities). Some Environmentally Sensitive Areas and the Habitat Scheme in Wales include woodland prescriptions or require the agreement holder to seek management advice and provide incentives for woodland and wetland management. Woodland, landscape and local biodiversity strategies may provide also support for woodland creation and management. Local woodland initiatives and fora such as the Wild Rivers Project, Highland Birchwoods, Coed Cymru, Cumbria Broadleaves, Tayside Native Woods also promote the expansion and/or management of these woods.
- 3.2.5 The FA guide to the management of wet woods was published in 1994. Management should follow this guide, as

well as other FA guidelines (in particular the Forestry and Water Guidelines) in order to qualify for grant aid or felling licences from FA. The Forest Enterprise is also expected to follow these guides on their land. Guidance on ways of creating new native woodland is also available in the FA Bulletin 112 and on desirable locations for new woods from reports by SNH, CCW and EN.

3.2.6 Wildlife and tree management advice is available locally through the statutory conservation agencies, the Farming and Wildlife Advisory Group, ADAS, the Countryside Advice and Information Service (Wales), plus the voluntary and commercial sectors (e. g. the Wildlife Trusts, and local woodland initiatives). The experience of woodland managers is also developed and promoted by organisations such as the Small Woods Association, the Timber Growers Association, Royal and Royal Scottish Forestry Societies, Institute of Chartered Foresters and Association of Professional Foresters.

3.2.7 Research is undertaken by various bodies and individuals, for example by the Forestry Authority (e. g. into Phytophthora disease and into the conservation of black poplar), the conservation agencies (e. g. re-introduction of beavers in Scotland), by NGOs (e. g. RSPB work on the impacts of alder on water quality) and the Environment Agency (e. g. potential for restoration of floodplain woodland).

4. Action plan objectives and proposed targets

4.1 The targets established in this plan are based on the objective of maintaining the current extent of semi-natural wet woodlands and encouraging a balance of appropriate management regimes (for example re-establishment of natural hydrological systems by blocking drains or removing unnecessary embankments) within regions and across the distribution of the type. This will encourage the range of characteristic associated species, communities and ecological/hydrological processes to persist. The restoration targets are based on the desirability of restoring some of the former areas of ancient semi-natural wet woodlands (around 10%) which have become dominated by non-native species since World War II. Creation targets aim to encourage the expansion of wet woodland by encouraging natural colonisation and by planting using species mixtures of site-native and local genetic provenance.

4.2 The targets will require review and adjustment during the course of the plan. As an early step in plan implementation more precise estimates of extent, and distribution of wet woodland will need to be determined. Criteria for determining the appropriate balance of different management regimes; suitable areas for woodland expansion and restoration (including creation of wet woodland within other woodland types) will also need to be developed.

4.2.1 Maintain current area (currently estimated at 24,000-30,000ha) of ancient semi-natural wet woodlands and total area of the type.

4.2.2 Initiate measures intended to achieve favourable condition in 100% of wet woodlands within SSSI/ASSIs and Special Areas of Conservation, and in 80% of the total resource by 2004, and achieve favourable condition over 70% of the designated sites and 50% of the total resource by 2.10.

4.2.3 Initiate restoration of 3,200 ha to native wet woodland. Complete restoration to site-native species over half of this area by 2.10 and all of it by 2.15.

4.2.4 Initiate colonisation and/or planting of 6,750 ha of wet woodland on unwooded or ex-plantation sites. Complete establishment of half of this by 2.10 and all of it by 2.15.

5. Proposed actions with lead agencies

5.1 Policy and legislation

5.1.1 Develop a national framework for management indicating an appropriate balance of minimum intervention, coppice and high forest across the range of variation within wet woodland. (Action: CCW, DANI, EHS, EN, FC, SNH)

5.1.2 Encourage the development of forestry/landscape strategies to provide a context for and to promote expansion and positive management of wet woodland. (Action: CC, CCW, DANI, DETR, DOE(NI), EA, EHS, EN, FA, LAs, (including NPAs), MAFF, SEPA, SNH, SOAEFD, WOAD)

5.1.3 Evaluate the appropriateness of the Woodland Grant Scheme and other funding mechanisms to encourage the desired management and expansion targets in these woods by 2000 and amend as necessary by 2002. (Action: CC, CCW, DANI, EHS, EN, FC, SNH, SOAEFD, WO)

5.1.4 Investigate ways of assisting wet woodland development as an alternative to current regimes through changes to CAP. (Action: CCW, DANI, EN, EHS, FA, MAFF, SNH, SOAEFD, WOAD)

5.1.5 Evaluate implications of water level management plans for the expansion, restoration and management of these woods and seek changes as appropriate. (Action: CCW, DANI, EA, EHS, EN, FA, MAFF, SEPA, SNH, SOAEFD, WOAD)

5.2 Site safeguard and management

5.2.1 By 2004 designate those wet woodlands approved by the EC as SACs under the Habitats Directive and ensure that SSSI/ASSI coverage of important wet woodland sites is adequate through periodic review of the series. (Action: CCW, DANI, DETR, EHS, EN, SNH, SOAEFD, WO)

5.2.2 Develop and promote the use of long-term management plans (20 years +) by woodland owners aimed at integrating the appropriate diversity of species and structure to benefit nature conservation (including restoration of replanted areas) with other management objectives. (Action: CCW, DANI, EHS, EN, FC, SNH)

5.2.3 Continue to support existing woodland initiatives such as Coed Cymru and encourage new ones in areas not covered by existing schemes. (Action: CCW, DANI, EHS, EN, FA, SNH)

5.2.4 Promote and implement the management and restoration of wet woodland in state-owned forests through for example Forest Design Plans. (Action: DANI, FC)

5.2.5 Develop and agree criteria for identifying priority areas for woodland expansion, for example around small sites, to connect sites, to restore hydrological zonation of woodland; to create new large floodplain forests, whilst avoiding other priority habitats. Establish by 2005 a small number of demonstration sites to show good practice. (Action: CC, CCW, DANI, EA, EHS, EN, FA, MAFF, SEPA, SNH, SOAEFD, WOAD)

5.2.6 Develop methods for assessing the condition of wet woods suitable for use on both designated and non-designated sites and initiate sample surveys by 2000. (Action: CCW, EHS, EN, FA, JNCC, SNH)

5.2.7 Contribute to the implementation of relevant priority species action plans, through the integration of management requirements and advice, in conjunction with relevant steering groups. (Action: CCW, DANI, EN, EHS, FA, SNH)

5.3 Advisory

5.3.1 Develop and promote training on the conservation and management of semi-natural woodland including the special features and conditions that apply to wet woods. (Action: CCW, DANI, EHS, EN, FA, NPA, SNH)

5.3.2 Encourage and provide advice on the marketing and sustainable use of products from wet woodland as a means of supporting appropriate management. (Action: FA)

5.3.3 Review (and if necessary re-issue) the Management of Semi-Natural Woodlands Forestry Practice Guides, other relevant Guidelines and advisory material by 20.1. (Action: CCW, DANI, EA, EHS, EN, FC, SEPA, SNH)

5.3.4 Provide advice to woodland managers on appropriate management regimes for wet woodland, including grazing regimes within wet woods and promote the management of deer in areas where they are, or might become, major limitations on the regeneration and spread of wet woods. (Action: CCW, DANI, DCS, EHS, EN, FC, MAFF, SNH, SOAEFD, WOAD)

5.4 International

5.4.1 Develop links with European organisations and programmes, such as European Forestry Institute, the European Environment Agency and the European Centre for Nature Conservation to obtain estimates of the extent and distribution of comparable/related woodland, and exchange experience on research and management. (Action: CCW, EHS, EN, FA, JNCC, SNH)

5.4.2 Explore the possibilities for funding to support conservation work in these woods from the European Union. (Action: CCW, EHS, EN, FA, JNCC, SNH)

5.5 Monitoring and research

5.5.1 Develop and implement systems for recording the occurrence, distribution, management and composition of wet woods, based on the National Inventory of Woodland and Trees by 2000, and explore opportunities to make this information widely available through the National Biodiversity Network initiative. (Action: CCW, EHS, EN, FC, JNCC, SNH)

5.5.2 Develop a small suite of demonstration wet woodland sites (. 10-20) where detailed structure, process and species monitoring is carried out to complement the simpler, condition assessments that will be adopted by the statutory agencies more widely by 2005. (Action: CCW, EN, FA, SNH)

5.5.3 Identify about four large-scale (>50 ha) sites for the re-creation of floodplain forests in the UK, including both hydrological, wildlife conservation, economic and amenity considerations by 2005. (Action: CCW, DANI, EA, EHS, EN, FA, SEPA, SNH)

5.5.4 Investigate the relationships and dynamics of this habitat in relation to other priority habitats with which it commonly occurs, both other woodland types (e. g. upland mixed ash, upland oakwoods, native pinewoods) and open habitats (e. g. fens and mires), and for a range of taxa for which little information currently exists. (Action: CCW, EHS, EN, FFL, FA, SNH)

5.5.5 Review the impact of major invasive herbaceous species (e. g. *Impatiens glandulifera*) and devise appropriate guidance on their control (where appropriate) by 20.1. (Action: CCW, EHS, EN, FA, SNH)

5.5.6 Monitor restoration of damaged wet woodland so that restoration efforts can be focused on sites most likely to show a positive response. (Action: CCW, EHS, EN, FA, SNH)

5.5.7 Develop and implement appropriate surveillance and monitoring programmes to assess progress towards action plan targets. (Action: CCW, EN, EHS, FC, JNCC, SNH)

5.6 Communications and publicity

5.6.1 Devise a strategy for distribution of existing advisory material to woodland managers and, if appropriate, produce material to fill any significant gaps identified. (Action: CCW, EA, EN, FA, LA, SEPA, SNH)

6. Costings

6.1 The successful implementation of the habitat action plans will have resource implications for both the private and public sectors. The data in the table below provides an estimate of the current expenditure on the habitat, primarily through agri-environment schemes and grant schemes, and the likely additional resource costs to the public and private sectors. These additional resource costs are based on the annual average over 5 and 10 years. The total expenditure for these periods of time is also given. Three-quarters of the additional resources are likely to fall to the public sector.

6.2 Estimate of current expenditure has not been shown separately as it has not been possible to allocate expenditure within the Woodland Grant Scheme to different woodland habitat types. It is estimated that 65-75% of the costs shown are additional to current expenditure.

7. Key references

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Costings for wet woodland

	Current expenditure	1st 5 yrs to 2003/2004	Next 10 yrs to 2013/20
Current expenditure /£000/Yr	-		
Total average annual cost /£000/Yr		2214.5	1997
Total expenditure to 2004/£000		11072.6	
Total expenditure 2004 to 2.14/£000			19972



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APPENDIX 7.

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APPENDIX 8.

NATURE RESERVE VOLUNTARY WARDEN GUIDELINES

Contact Cornwall Wildlife Trust Tel: (01872) 273939

APPENDIX 9.

MAKING THE RIGHT CONNECTIONS

Environment Agency leaflet Tel: 08708 506 506 for further information

APPENDIX 10.

INFORMATION LEAFLET

Swanpool Nature Reserve