

DRAFT FOR PUBLIC CONSULTATION

18 MARCH - 29 APRIL 2005

# The Peatlands of Caithness and Sutherland: A management strategy 2005 - 2015



LIFE Peatlands Project



## INTRODUCTION TO CONSULTATION DRAFT

### What is this document and why should you comment?

It is an **incomplete** draft strategy for the peatlands of Caithness and Sutherland. A number of organisations and individuals have already helped to shape this draft, but we should like the strategy to reflect the views of as wide a range of people as possible.

### Please give us your views!

1. Do you support the overall aim, vision and objectives?
2. Are there issues affecting the peatlands that are not covered in the draft strategy, and if so, what actions are needed to tackle them?
3. For the issues already included, are any additional actions needed?
4. The “can you help or lead?” column of the 5 action tables within the draft strategy is currently blank, as we need support to carry out the actions.
  - Do you or your organisation want to get involved in any of the actions? Can you help or lead? Can you provide time or money?
  - Do any of the actions link to work you are already involved in or are already planning to do?

Please fill in and copy the relevant action table, or refer to the action in your response. Expressing an interest at this stage does not commit you or your organisation. Once all the information from this consultation has been collated, further discussions can be held to confirm or agree on the level of any commitment.

5. Even if you do not want to get directly involved in the actions given in the action tables, please indicate what in your view the timescale and priority should be for each action as follows. Timescale: ongoing, short term (0-5 years), medium term (5-10 years) or long term. Priority: High, medium or low.
6. The peatlands are currently on the “tentative list” of sites that might be put forward for nomination as a World Heritage Site. Nominations are more likely to be taken forward where there is clear support from local communities, land managers and other interest groups. See section 7 of the draft strategy for further details. This consultation is an opportunity to give your view on whether the peatlands should be nominated as a World Heritage Site.
7. Do you have comments on any other part of the draft strategy?

### How should comments be submitted?

Please consider the questions above and send us your views. Comments can either be on paper, to Caroline Eccles, c/o Scottish Natural Heritage, 10 Henderson Road, Inverness, IV1 1AU, or electronic, to [caroline.eccles@snh.gov.uk](mailto:caroline.eccles@snh.gov.uk).

Please get in touch if you would like an additional copy of the strategy.

### What will happen next?

All comments will be considered and taken into account when a final version of the strategy is produced. The process of implementation will then start.

**The LIFE Nature Programme provides funding to European Union countries to promote sustainable development and assist in developing positive management for key habitats and birds. The LIFE Peatlands Project represents Phase II of European LIFE funded work in the peatlands of Caithness and Sutherland. It is a partnership of the RSPB, Forestry Commission Scotland, Scottish Natural Heritage and Plantlife International. Representatives from the Highland Council and the Scottish Executive also sit on the Steering Group.**

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## **1. INTRODUCTION**

### **Why the peatlands?**

1. The peatlands of Caithness and Sutherland are a special place, of national and international importance. Nowhere else in Britain, and possibly the world, is there such an extensive area of this type of peatland (c400,000ha). Together with associated areas of moorland and open water, large areas of the peatlands are designated as Sites of Special Scientific interest (SSSI). They are recognised to be of national importance for conservation both as a habitat in their own right and because of the diverse range of rare and unusual breeding birds they support. The designated peatlands are also part of the Natura 2000 series of sites (Special Protection Areas and Special Areas for Conservation), which seeks to maintain representative examples of the range of habitats and species across the European Union.

### **Why a strategy?**

2. Within the Caithness and Sutherland Peatlands Natura 2000 site, the UK government is committed under EU legislation to avoiding the deterioration of qualifying habitats and the habitats of qualifying species, and the disturbance of species within it. It must also ensure the site's integrity and maintenance in the future. Outside the designated site is a still bigger area of peatland, which is also of importance for nature conservation and to which the UK government has commitments under the UK Biodiversity Action Plan (see below). There is currently however no clear plan or vision for the area to ensure that these obligations are met. Rather there is a diverse range of regulations, incentives and policies. This strategy, and the process that has led to its production, is the beginning of a more co-ordinated approach.
3. The peatlands also carry the legacy of past landuse policies for forestry and agriculture, and in some places the impacts of drainage and forestry now need to be addressed urgently to ensure the future well-being of the peatlands. The balance between peatlands and woodlands in the area also needs to be reviewed, in line with current national forestry policy.
4. Although this is primarily a strategy to promote the natural heritage interest of the peatlands, there are many ways in which this can go hand in hand with supporting the needs of local communities and the economy. The strategy recognises that the peatlands are a place where people live and work, and that the support of local communities is key to the survival of the peatlands.

### **What area does it cover?**

5. The starting point for this strategy is all those areas of Caithness and Sutherland supporting semi-natural blanket bog vegetation, both those carrying designations and those without. The central part of the peatlands has become known by many as the Flow Country, but in fact peatland is much more extensive, stretching from the west coast of Sutherland across

to the far east of Caithness. The peatlands cannot be considered in isolation however, as they are intimately linked through hydrology, land management, bird and animal movements to a much wider area. The strategy therefore looks at the whole landscape in which the peatlands sit.

### **Who is it for and what will it be used for?**

6. This strategy is for everyone with a direct interest in the peatlands, for example whether running a croft, owning a sporting estate or a public agency with statutory duties.
7. Its uses will include the following:
  - As a statement of a shared vision and objectives for the peatlands.
  - As an action plan which can be used for prioritising work.
  - As a reference document for land managers considering future land management options.
  - As a source document when policies or plans that affect the area are being prepared.
  - As a means of advocating additional funding for the area.

### **How has it been prepared?**

8. The strategy has been prepared by a project officer and overseen by the Steering Group for the LIFE Peatlands Project. A wide range of people and organisations has also made invaluable contributions, through meetings, workshops and consultation. The strategy has been developed in the context of EU policy on biodiversity, and relevant national and local biodiversity and land use policies. The strategy should however be considered very much as a working document and not the “last word” on the subject. Whilst the timescale of the strategy is ten years, many of the actions identified here will take much longer to implement and still longer to come to fruition. It is therefore very much a beginning. There is still much that is not fully known about the peatlands and about the impacts of management, and future revisions of the strategy will be informed by experience.

### **How to find your way around the strategy.**

9. The strategy starts with an aim, objectives and a vision statement. Then comes an introduction to why the peatlands are special and to the various accolades they carry. There are then four topic sections, each related to one of the objectives. Each section describes relevant issues, and a list of actions that are needed to achieve the objective and address the issues raised.

**Overall aim for the strategy:**

**To enhance the special values of the peatlands of Caithness and Sutherland, through the promotion of sustainable land management, the encouragement of sustainable community and economic development, and co-ordinated action.**

**The vision of the strategy:**

**Our vision for the peatlands is one of a revitalised landscape, with extensive sweeps of hill and bog intersected by fertile straths. These straths and coastal strips support a mosaic of productive crofts and farms, rivers, forestry and woodland. Above and between the straths lie the world-renowned peatlands, which, together with their lochs and lochans, support a spectacular assemblage of birds and other wildlife, including internationally important numbers of raptors, waders and waterfowl. The straths, bogs, hills, lochs, rivers, woodlands and forestry are managed together for the wide range of services they provide and interests they support. No one land use dominates to the detriment of others. Rather there is mutual support, with everything underpinned by a healthy environment, at the centre of which is the great peatland of the north.**

**Strategy objectives**

**Objective 1: To promote land management that benefits nationally and internationally important areas of peatland, and associated habitats and species.**

**Objective 2: To promote sustainable woodland management and an appropriate balance between woodlands and peatlands.**

**Objective 3: To encourage sustainable community and economic development that is compatible with safeguarding those features that make the peatlands important.**

**Objective 4: To promote greater awareness, understanding and enjoyment of the special nature and values of the peatlands.**

## 2. WHAT'S SO SPECIAL ABOUT THE PEATLANDS?

### The habitat

10. The peatlands of Caithness and Sutherland form the largest and most intact area of blanket bog in Scotland and possibly the world, with 4% of the world's resource. Blanket bog develops where a cool wet climate allows the growth of vegetation dominated by *Sphagnum* bog mosses over extensive areas of sloping ground, hollows and flat areas. Other widespread plants are heather, cross-leaved heath, deer grass and cotton grass. On dying, the plants are laid down as layers of peat, with most of the peat soils having taken 7 to 8 thousand years to develop to their current state. Where the ground is not so wet, other habitats occur. These include wet heath, and on slopes where the natural drainage is better, dry heath and acid grassland.
11. To the non-specialist, the diversity of the bogs of Caithness and Sutherland may not be immediately apparent. There is however great variation in form and vegetation, thanks to the differences in climate, geology and underlying landform from west to east and north to south. Water is a critical ingredient of the bogs and a particularly special feature is the patterning of pools often found on level and gently sloping ground. Lochs of all sizes and with a diversity of chemical make-up are abundant throughout the area. The clean waters of the peatlands also feed into many rivers and streams, which sustain internationally important populations of otter, Atlantic salmon and freshwater pearl mussel. These watercourses also support important fisheries and provide water supplies.

### The wildlife

12. Within any given area of bog, the lochs and dubh lochans, hummocks, hollows and smaller pools provide niches for a wide range of plants and invertebrates. The rich insect life in turn helps to support many bird species. The most notable breeding birds are red-throated diver, black-throated diver, wigeon, teal, common scoter, golden plover, greenshank, dunlin, wood sandpiper, greylag goose, short-eared owl, golden eagle, hen harrier, merlin and peregrine. Many of the birds are typically northern species that are at the southern limit of their range here (see Annex 1). Peatland mammals include the native red deer, otters and watervoles.

The peatlands are home to a high proportion (48%) of the UK's breeding population of common scoters, with the UK population having declined by 50% over the last 25 years. This duck nests on moorland around peatland lochs and lochans. Reasons for the duck's decline have not been established, but may relate to water quality changes in lochs in afforested catchments and changes in predators present around the lochs.

13. As is the case with bird populations elsewhere, the bird numbers on the peatlands are not static. Unfortunately some species such as dunlin, golden plover, snipe and curlew are declining in number. The reasons for this are not fully known, although in the case of golden plover there are indications that forest plantations may be having an impact on the peatland breeding sites. In contrast some species such as greenshank

and stonechat are stable or increasing. Marked differences in population change have occurred between the western and the eastern parts of the peatlands, with most species faring better in the west than the east. This may be due to differential changes in land use and/ or climate change.

14. Whilst some of the peatland birds spend all of the breeding season on the peatlands, others make use of areas either close by or further afield for feeding. Close by, the enclosed pasture or in-bye ground in some parts of the straths provides important feeding for peatland wading birds, particularly the golden plover and dunlin. On the north coast, the calmer sandy bays provide feeding for red throated divers, and greenshank make use of the bays, rivers and areas of saltmarsh. Once the all-important breeding season is over, many of the birds disperse to other parts of Caithness and Sutherland, the UK or beyond.

### **Climate change-the carbon store**

15. More recently, with growing concerns regarding climate change, the value of peatland as a massive carbon store has begun to be recognised. As peat is largely made up of the remains of plants, which are themselves made of carbon, it locks up large stores of carbon which would otherwise be released to the atmosphere and contribute to global warming. Disturbance of the peat surface, for example through drainage, burning or erosion, allows the peat to break down and carbon dioxide, a “greenhouse gas”, is given off to the atmosphere.
16. Restoration of damaged peatland may reduce carbon dioxide emissions, as every hectare of intact bog is reckoned to store around 250 kg of carbon every year, whereas every cubic metre of peat removed releases 55kg of carbon. It is possible that global warming could have a negative impact on the extent of peatland. Good land management, and activities such as drain blocking, may be valuable in buffering them against the potential reduction in extent.

### **The landscape**

17. Aside from its nature conservation interest, the landscape value of the area is much appreciated both nationally and in a Highland context. Much of the landscape of the interior of Sutherland and west Caithness is made up of sweeping moorland, moorland slopes and hills, and flatter areas of peatland. The scale of the landscape is vast in UK terms. Much of the area is remote, is used for extensive rather than intensive land uses and has little or no built development.
18. Such “wild land” is a diminishing resource in Scotland, but is very much part of the regional character of Caithness and Sutherland and the national identity of Scotland. It provides opportunities for people to experience solitude and closeness to nature and attracts people to the area.
19. The straths of Kildonan, Halladale and Naver, that cut through to the interior of Sutherland and west Caithness, are more populated, often supporting forestry, fragments of native woodland, and farming and crofting activity. By contrast the peatlands in the east of Caithness are

surrounded by a more intimate landscape of mixed agriculture and forestry.

### **Social and economic uses**

20. Despite this strong wild land character, the peatlands support and are shaped by agriculture, sporting management and conservation. These activities provide valuable local employment. The peatlands also contribute to the local tourism industry, with many visitors coming to enjoy the wildlife, landscape and archaeology. Use of the area for recreation is at a relatively low intensity, although increasing as it is elsewhere in Scotland.

### **The archaeology**

21. The activities of the past inhabitants of the peatlands are often visible, and the good state of preservation of many sites makes them an important archive. Examples are important prehistoric sites such as Camster Caims and the widespread remains of the pre clearances communities, for example along Strath Naver. The peat itself can also be an important source of information on the past activities of man and about past environments. Research on the peat deposit tells us for example, that these peatlands are an ancient landscape, with extensive areas having been treeless for at least the last 4000 years.

## **3. SO MANY TITLES...**

22. In 1989 the then Secretary of State for Scotland approved an Indicative Forestry Strategy for Caithness and Sutherland, endorsing a reduced expansion of forests and directing SNH (then NCC) to embark on an extensive process of designation. During the 1990s, almost 150,000 hectares of blanket bog and associated habitats were designated as Sites of Special Scientific Interest (SSSI) under the Wildlife and Countryside Act (1981).
23. In 1999 all or part of 39 peatland SSSI (145,370 ha), were classified as a Special Protection Area (SPA) under the EU's Birds Directive (79/409/EEC), on account of the populations of breeding waders, wildfowl and raptors (see Annex 1). The same area was also designated in the same year as a Wetland of International Importance, a worldwide accolade under the Ramsar Convention.
24. Active blanket bog has since been identified as a priority habitat under the EU's Habitats Directive (92/43/EEC). An area encompassed by, but slightly smaller than the SPA (143,571 ha), was designated on 17 March 2005 as a Special Area of Conservation (SAC) under the EU's Habitats Directive. The SAC qualifies for designation on the basis of various habitats including blanket bog, wet heath, and certain types of lochs and also its otter populations (see Annex 1 for full list). Conservation objectives for the SAC and SPA are given at Annex 2.
25. Outside the area covered by the European designations is a considerable area of undesignated blanket bog, much of which is still of high nature conservation interest. These areas make an important contribution to the

UK Government's wider responsibilities under the Habitats Directive, Birds Directive, Ramsar Convention and UK Biodiversity Action Plan (UKBAP) and should be managed sympathetically.

26. The UK Biodiversity Action Plan identifies a series of habitats and species for which priority action is required, as part of the government's contribution to the International Convention on Biological Diversity. Those present in and around the peatlands include blanket bog, upland heathland, upland birch woodland, water vole and common scoter. Local Biodiversity Action Plans (LBAPs) have recently been prepared for both Caithness and Sutherland and outline how the UK BAP will be implemented at a local level.
27. Several of the rivers in the peatlands are SACs, namely the Rivers Borgie, Naver and Thurso, on account of the populations of freshwater pearl mussels, Atlantic salmon or otters. Although the main focus of this strategy is the peatlands, there is an intimate link between the management of the peatlands and the health of the rivers.
28. The Kyle of Tongue is a National Scenic Area (a national landscape designation). A number of other coastal and upland areas have either been identified or are under consideration for local landscape designations through the Local Plan process. Parts of the peatlands are included in areas of search for "wild land", identified by SNH in its policy statement on 'Wildness in the Scottish Countryside'.
29. In 1999 the Flow Country was placed on the UK government's tentative list of sites for nomination as World Heritage Sites (see section 7 below).

## **4. MANAGEMENT OF THE OPEN PEATLANDS AND ASSOCIATED LAND**

30. Past and present management has influenced the current nature conservation value of the peatlands. This section reviews current land management of the open peatlands, summarises the impacts it is having on the nature conservation interest, and then identifies actions that might be taken to address these impacts and support Objective 1. The proposed actions reflect recent and ongoing shifts in policies and support mechanisms for agricultural, sporting management and the natural heritage, including *A Forward Strategy for Scottish Agriculture* and the *Scottish Biodiversity Strategy*. These seek a greater synergy between the environment and our activities.

**Objective 1: To promote land management that benefits nationally and internationally important areas of peatland and associated habitats and species.**

### **Agriculture**

31. Away from the more fertile land in the east of Caithness, the majority of the agricultural land in the peatlands is given over to rough grazing, with improved in-bye ground being restricted to parts of the coast and the straths. Very little land is under crops, with sheep dominating and only limited cattle numbers. Crofting tenure predominates in the north and west, coexisting with large sporting estates. Recent years have seen a reduction in the number of active crofters, with a few crofters running a large number of holdings in some areas.
32. Major Common Agricultural Policy reforms came into force on 1 January 2005. These mean that farmers and crofters currently in receipt of subsidies will in future claim a Single Farm Payment (SFP), which will be subject to compliance with a number of standards and with the framework of Good Agricultural and Environmental Condition. This cross-compliance may well be beneficial to the peatlands in that it will encourage good stewardship. The SFP will not be a headage payment and so many anticipate that there will be a reduction in stock numbers in more marginal areas.
33. Although the improved in-bye land does not form part of the Natura site and is not peatland, there is an important link as some fields provide key feeding grounds for wading birds (including golden plover and dunlin) that breed on the Natura site. To be suitable for the waders these fields need to be actively managed. Knowledge of field usage by golden plover and dunlin is incomplete. Other peatland birds including snipe, curlew, hen harriers, short-eared owls, merlins, greylag geese and lapwings also make use of farmland close to the peatlands.

**Management of in-bye fields for peatland waders**

- large, open, old, damp pasture fields are preferred
- short sward height of under 80mm from February to July preferred
- avoid rolling and grass-harrowing between mid-March and mid- July.
- avoid using herbicides and pesticides
- encourage earthworm and leatherjacket (crane fly larvae) population
- create or retain wet patches, and spread farmyard manure
- control rushes by regular cutting and grazing, as birds like to be able to see around them
- areas of arable crops are also beneficial

34. A limited number of farmers and crofters in the area are in the Rural Stewardship Scheme (RSS), which promotes management to improve the biodiversity and landscape value of a holding. Entry is more difficult however for those holdings with a restricted number of habitats, as is often the case here.

**Game management**

35. Much of the open ground in the peatlands is managed for sport, with a significant proportion being in the ownership of a small number of large estates. Sporting management includes deer management, other game and fisheries and makes an important contribution to the economy and employment of the local area.

36. Deer management is undertaken by individual landowners, and co-ordination is provided by Deer Management Groups (DMGs). There were dramatic rises in deer numbers from the 1960s to the 1980s, but some estates have made significant efforts to reverse these trends. Densities vary considerably across the area. The traditional deer range was much reduced with the widespread afforestation of the 1970s and 1980s and deer movements have been greatly affected.

37. A recent development is the erection of fences to prevent deer movement onto agricultural and crofting ground. This has happened to the east of Broubster and Shurrery, along Strath Naver and around Strath Halladale. It is not yet known whether these fences are likely to increase deer grazing and trampling pressure on the adjacent peatlands, or whether more fencing of this type is likely to be erected elsewhere.

38. Grouse management occurs in the drier moorland areas in the east, but is restricted in extent. In recent years it has been hampered by reductions in grouse numbers. These may be due to a range of factors including loss of heather ground, land use changes, changes in burning practice, poor weather in June in recent years (which has affected breeding), heather beetle attacks, changes in keeper activity and the presence of a significant tick problem in some areas. There is no evidence from the limited study to date that ticks have a significant effect on other moorland birds, although they frequently carry obvious tick loadings.

39. Many land managers are concerned about loss of heather cover across the area, as heather provides feeding for both deer and grouse. The causes of this are not known, but contributory factors can be inappropriate grazing and trampling levels by deer and sheep, and poor burning practice. Recent attacks of heather beetle have exacerbated the problem. Current management guidance to combat heather beetle is to continue to carry out muirburn in accordance with the Muirburn Code, as heather that is well managed and not degenerate is more likely to recover fully.
40. Salmon, sea trout and brown trout fisheries make an important contribution to the economy of the area. The productivity of the rivers is good and on the whole stocks are considered to be well managed. Brown trout fisheries are found in lochs and rivers across the area.

### **Management for nature conservation**

41. Until the 1980s the national and international importance of the peatlands was not widely recognised. Since then however, there has been a growth in the management of land specifically for nature conservation. In 1992 SNH introduced its Peatland Management Scheme (PMS) that encourages environmentally friendly land management on both agricultural ground and sporting estates. It is a voluntary scheme open to people managing peatland SSSI in Caithness and Sutherland. Those who participate receive annual payments for the five-year agreement term.
42. Uptake and support of the scheme has been good, with about 55% of the SAC being covered by PMS agreements. Some land managers would like to see the scheme put greater emphasis on more positive work such as drain blocking, but resource constraints are an issue. To date the PMS has also not covered the whole gamut of deer related management issues, but relevant ongoing demonstration projects elsewhere in Scotland and the development of best practice guidance will inform any future amendments to cover this.
43. The RSPB has become very active in the area since the mid 1990s, and is now a major landowner (15,500 ha), with management agreements in place to promote their objectives over a still larger area. They are also a significant employer, with seven full-time staff equivalents involved directly in the peatlands.
44. Since 1994 two tranches of funding from the EU LIFE Programme have supported a partnership project carrying out a range of management and restoration work, largely on RSPB and Forestry Commission Scotland land, but also to a more limited extent on private ground. Large scale drain blocking is ongoing within the European designated peatland. Targeted tree removal and peatland restoration is also taking place on adjacent areas, with a view to protecting the Natura site features.
45. Plantlife International, a charity focusing on plant conservation, also has a reserve in the peatlands at Munsary in Caithness, and this too has benefited from drain blocking and other work under the Life Project. The

Management Group for the reserve is drawn largely from the local community.

## **Drains**

46. Through the 1950s and 1960s, financial incentives were provided for the draining of agricultural land, as part of a post-war policy to promote food production. In reality these drains did little to improve agricultural output in most areas of the peatlands, and are now often detrimental to the nature conservation interest. Drains affect over half of the SAC, with 22% of the area seriously affected.
47. Typically the water table is lowered for a distance of up to four metres either side of a drain, with other less obvious effects potentially extending further. Gradual slumping of the peat occurs towards the drain and in older drains deep lateral cracking and collapse are observable. The drier conditions allow better heather growth and halt peat formation. This drying out may also reduce the number of invertebrates, which will have a knock on effect on birds.
48. Where drains were dug on the most gentle of gradients and where maintenance has not taken place, infilling is gradually taking place. By contrast on steeper slopes, the impact of the drains has increased over time, as scouring by rock and debris from further up the hill has increased the size and erosive power of the drains. The silt carried into streams and rivers by these drains may have negative effects on game fisheries. Periods of high rainfall exaggerate the problems of erosion and lead to high flows in adjacent watercourses.
49. Over the last 15 years some localised drain blocking has been undertaken, largely by the RSPB. Not all are keen on the idea however; some livestock managers have concerns that stock may become attracted to the sweeter growth in blocked drains and then become stuck. However in recent years there has been an increasing tendency towards flash floods in rivers locally, and drain blocking could help moderate flows. Ongoing research suggests that drain blocking might also reduce carbon emissions from peatland and so contribute to efforts to abate global warming.

## **Muirburn**

50. Muirburn is a traditional land management practice, carried out to promote new vegetation growth and so increase the amount of feeding available for stock, deer or grouse. It is regulated by legislation and guided by a code of practice known as the Muirburn Code. When practised in accordance with the Muirburn Code, muirburn is compatible with maintaining the nature conservation interest of the peatlands. The Code recommends that blanket bogs should not be burnt, and so the focus of activity should be on the steeper drier heather areas. Extensive less well-controlled burns often encroach on areas of blanket bog, particularly when fires are set in drier or windier conditions using limited manpower. On SSSIs muirburn practice is

subject to consultation, and under the PMS a muirburn plan is required. RSS schemes can also cover muirburn activities.

51. Some habitats are extremely sensitive to burning, and many of the rare and sensitive plants found in peatlands cannot survive fires. Although the vegetation of an area burnt in the past may superficially appear unchanged, regular or severe burning reduces the variety of plants found and removes some sensitive peat forming species. Erosion can also result from severe burns, and once established on these sensitive peat soils it can be very difficult or impossible to reverse.

### **Grazing and trampling**

52. Due to slow vegetation growth and poor nutritional quality, blanket bogs can only support low densities of grazing animals. Sheep and/or red deer graze most of the designated peatlands, with the impacts of the two being difficult to distinguish. Over much of the area, grazing levels are considered to be appropriate for maintaining the nature conservation interest, but there are areas with overgrazing and, less frequently, undergrazing. There is also localised evidence of trampling damage.
53. Trampling can have a more significant impact than grazing, particularly in the wetter "flows", as grazing is only attractive in these areas for a short period in the early winter and spring. Trampling can kill off bog mosses and other plants, leaving bare peat, and can be exacerbated by fencing, which can channel deer through narrow areas. Overgrazing and excessive trampling can both lead to erosion, with the slow growth of vegetation and cool wet climate slowing or preventing vegetation recovery.
54. Deer numbers are counted regularly across the area, but further survey work is required to assess the impact of both deer and sheep on the vegetation. SNH and DCS are currently developing survey methods. Repeat surveys will then be able to detect any changes that may need to be addressed by modifications to management.

### **Vehicle use**

55. All-terrain vehicles (ATVs) and quad bikes are now commonly used for both sporting and agricultural work, and the cumulative effects of the last forty years of use are now evident in some places. When used in softer and wetter areas of peatland they can cause significant damage to the fragile plant communities, with recovery either being very slow or bare ground becoming eroded. Use of vehicles can be controlled on SSSI, and some practical work to minimise damage can be funded through PMS agreements.
56. It is likely that in the future more constructed tracks will be proposed as informal ATV routes become more damaged by greater use. It is possible that fishing activity may increase in some areas and may result in the desire for increased vehicle use. Whilst constructed tracks can limit the incremental spread of damage, they have their own direct and indirect

effects on the vegetation and on water movement. In terms of vehicle technology, ATVs with front wheel steering are likely to cause less damage than those that rely on skid steering.

### **Peat cutting**

57. No commercial peat cutting takes place within the Natura site, and elsewhere in the peatlands there is just one site where there is ongoing extraction. Domestic peat cutting still takes place, but is less widespread than it used to be. Where it still occurs, it has become increasingly mechanised. On designated peatland it is subject to discussion under both SSSI procedures and the PMS to minimise any impacts.

#### **Summary of key open peatland management issues that may affect the nature conservation interest of the peatlands**

(see text above for further information)

- To be suitable for peatland waders, inbye fields in key areas need to be actively managed.
- RSS is a positive tool, but uptake here is low, perhaps because entry is more difficult for those holdings with a restricted number of habitats, as is often the case here.
- New fences to restrict deer movements may affect grazing and trampling levels of adjacent areas.
- There is concern that heather cover has reduced in the area.
- Peatland Management Scheme is valuable and should be continued, but could be more proactive in addressing positive management works.
- Drains are often detrimental to the nature conservation interest and may impact on fisheries interests and river flow rates.
- Poor muirburn practice can damage sensitive peatland habitats.
- More guidance and training are needed on vegetation assessment and what constitutes good condition.
- Regular monitoring is needed to identify any changes in vegetation and their causes.
- ATVs and quad bikes can cause damage to sensitive peatland habitats.

**Objective 1: To promote land management that benefits nationally and internationally important areas of peatland and associated habitats and species.**

Table 1

<b>Actions required to achieve Objective 1 and address issues relating to management of open peatland.</b>	<b>Could you help with or lead on this action? If so, how?</b>	<b>What priority should be given to it? (high, medium or low?)</b>	<b>When should it be carried out? [ongoing, short 0-5 years, med 5-10 years or long term]</b>
Promote changes to Rural Stewardship Scheme to ensure applicability and availability in the peatlands and associated habitats including inbye.			
Promote easily accessible land use support systems through ongoing CAP reform that maximise the opportunities for the sustainable management of the peatlands.			
Seek to reduce and reverse trends of loss of heather from areas of heath and bog.			
Promote continued funding for the Peatland Management Scheme.			
Facilitate the blocking of agricultural drains and consider the introduction of additional funding for this through PMS or RSS.			
Promote best practice and training in the sustainable management of the peatlands, including habitat assessment e.g. through RSS, PMS, DMGs, North Highland College.			
Maintain deer and sheep numbers at levels that sustain the natural heritage interest of the peatlands, and are compatible with other land uses.			
Undertake regular assessment of deer and sheep numbers and the habitat to identify any impacts that might be occurring.			
Support Deer Management Groups as a forum for collaborative deer management, with a view to balancing			

private and public objectives in relation to deer.			
Embed habitat impact assessments into Deer Management Plans and use to inform cull targets.			
Promote DCS Best Practice Guidance and consider implementation of accreditation scheme.			
Investigate management and engineering solutions to impacts of ATVs on peatland			
Facilitate implementation of Local Biodiversity Action Plans for Caithness and Sutherland.			

## 5. MANAGEMENT OF WOODLANDS IN AND AROUND THE PEATLANDS

58. The overall aim of this strategy is to maintain and enhance the special values of the peatlands. This cannot be done effectively without consideration of the management of forests and woodlands in and around the peatlands. The majority of woodland today is coniferous forest planted in the 1970s and 1980s and in some cases these forests are having detrimental impacts on the interests of the Natura site. In line with the Scottish Forestry Strategy consideration now needs to be given to achieving a more sustainable balance between woodlands and peatlands. In seeking this balance, there is also an opportunity to review the scope for new woodlands in the area. This section of the strategy looks at issues in relation to woodlands and identifies actions to address objective 2.

**Objective 2: To promote sustainable woodland management and an appropriate balance between woodlands and peatlands.**

### Native woodlands

59. Broadleaved woodlands are scarce around the peatlands, being mostly restricted to a few of the more sheltered straths and gorges. The Scottish Semi-natural Woodland Inventory identifies 12378 ha of semi-natural woodland in Caithness and Sutherland, with the majority of this being around Assynt and the Kyle of Sutherland. It is likely that broadleaved woods were once more extensive on less exposed, better-drained areas and on stream sides, but clearance by man, burning and grazing have reduced their extent significantly. Those fragments that remain tend to be heavily grazed both by domestic stock and deer. This not only restricts regeneration, but may also reduce the diversity of species that are present.
60. Birch is the dominant tree species, with other key species including rowan, alder, aspen, grey willow, eared willow, and bird cherry. Hazel is locally common where conditions are slightly richer, and goat willow and wych elm occur locally in gorges, again favoured by slightly richer conditions. Oak reaches its northern limit in the southern part of the peatlands, occurring only locally on better mineral soils. The nearest extensive pinewoods are far to the south at Amat. Juniper occurs locally, mainly in gorges. Dwarf birch (*Betula nana*) also deserves a mention, as this nationally scarce plant occurs in the peatlands, albeit with a restricted range.
61. The plant and animal species supported by the native woodlands in this area are considered to be typical of birch dominated woodlands, with plant species being more diverse in gorges or ledges out of the reach of grazing animals. The species present are those that survive well in woodland edge conditions, rather than those that require large blocks of unbroken woodland. The more western woodlands have richer, more oceanic moss, liverwort and fern communities.

62. In the north of Scandinavia, there is commonly a transitional zone of tree growth of decreasing size on the edge of bogs. It is used by a number of peatland birds that also occur or have occurred in Caithness and Sutherland, namely wood sandpiper, ruff, Temminck's stint and red-necked phalarope. Although there are a few places in Caithness and Sutherland where native woodlands border the edge of bogs, there is no transitional woodland of this type. Research is needed to determine whether this habitat ever existed here and if so, its extent.

### **The forestry resource**

63. A significant proportion of the plantations in Caithness and Sutherland is managed by Forest Enterprise with mixed objectives. In most privately owned plantations however the focus is usually on the production of commercial timber, although Christmas tree production and game management are increasingly important. The nature conservation value of these woodlands is limited. The quality of the timber being produced varies with species, species provenance and site conditions, with those plantations on shallower peats and mineral soil producing the best timber. Windthrow is also an issue, with the majority of plantations being managed on a clearfell system, to avoid the risk of windthrow. With appropriate design and in some cases early thinnings, the impact of windthrow can be reduced.

### **The impacts of forests on the peatlands**

64. In the 1970s and 1980s some plantations were established on peatland of similar quality to that subsequently designated as SSSI, leading to a direct loss of blanket bog and associated habitats. In some cases forestry is now having a detrimental impact not only on underlying but also adjacent peatland habitat. An audit of damage and threat to the Natura site has identified forestry as the activity having the greatest detrimental impact on the Natura site.
65. Since 1988 forestry activity has been governed by the "Forest and Water Guidelines". Adherence to these has avoided problems associated with earlier forestry practices, such as soil disturbance and, in some soil types, erosion, higher flow rates in adjacent streams and pulses of higher nutrient levels. Afforestation proposals are also now appraised under the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 and widely consulted on before the Forestry Commission Scotland (FCS) determine whether to give approval.

### **Impact of forests on peatlands**

- Creation of forest drains and furrows, and taking up and interception of water by growing trees, all contribute to lowering the water table and drying the peat.
- Peat cracks as it dries, with the cracks eventually forming an underground network. This can hinder attempts to rewet the surface, as the network of cracks can carry water around dams that are put in to block forestry drains.
- Research has identified hydrological impacts on peatland up to 50m beyond the edge of a forest, including changes in surface water flow and surface shape. This research was however carried out on a first rotation forest. As a precautionary measure the distance of 100m is used when considering possible hydrological impacts, to allow for further extension of the affected area during subsequent forestry cycles.
- Bog plants can survive under an open forest, but disappear once tree canopy closes.
- Road building, fence construction and the application of fertilisers and herbicides can also affect both underlying and adjacent peatland.
- Areas of peatland available for breeding peatland birds may be reduced by forestry. Studies have shown reduced use of peatland near to forest edges by species including golden plover, curlew and red grouse. This may be due to increased predation, avoidance by birds of tall structures (visual avoidance), and changes to habitat management near forests (e.g. reduced burning leading to taller vegetation). Research is ongoing, but suggests that impacts may extend up to 1000m in some circumstances.
- Forests can harbour predators of peatland birds (for example foxes, crows) but there is incomplete knowledge on their numbers and impacts.
- Presence of forests may benefit small numbers of rarer bird species such as merlin, as well as a number of more common woodland species.
- Seeding of non-native tree species onto bogs from adjacent forests may be an issue in the longer term. Seeds can be carried up to about 100m. Climate change may exacerbate this impact, if bogs become drier in the summer as some models predict.
- Deer can be channelled along forest fences and cause trampling damage up to about 10m. Where pools and wetter areas lie adjacent to fences, damage can extend up to 500m.

### **The future management of forests in Caithness and Sutherland**

66. In line with FCS's policy on peatland, there will be cases where replanting of forestry will not be required by FCS and where restoration to bog or wet

heath will be appropriate. Incentives will be considered to promote restoration, which may involve early felling. The highest priority cases will be those areas of forestry which are affecting the interests of the Natura site (see Annex 1). Where trees are causing or likely to cause deterioration of the interests of the Natura site (SPA/ SAC), replanting will not be required after felling. In most cases these interests are contained within the boundary of the Natura site, but in a few cases species may also be dependent on ground outside the boundary. This would need to be taken into account in any assessment.

67. There is also a small number of SSSI within Caithness and Sutherland that are not within the Natura site but have peatland interest. Under the Nature Conservation (Scotland) Act 2004, all public bodies now share responsibility for the protection of SSSI and have a duty to further the conservation of biodiversity. Under this legislation, the impact on the protected natural features of SSSI in the vicinity needs to be taken into account when considering any forestry proposals. This includes proposals both on FCS land and on private land.
68. Outside the designated peatlands is a considerable area of undesignated peatland, much of which is still of high nature conservation interest. Under the UK Biodiversity Action Plan, the Blanket Bog Habitat Action Plan seeks to introduce management regimes to restore 75% of blanket bog which is currently degraded, such that it is in or approaching favourable condition by 2015. This target will not be reached unless both designated and undesignated blanket bog is restored, and decisions on forestry affecting undesignated peatland will need to take this into account. Where the land is not affecting Natura interests but where there would still be a clear benefit from restoration to blanket bog or wet heath, replanting will not be required and restoration will be encouraged

### **Restoration of afforested areas to blanket bog and wet heath habitats**

69. Restoration of afforested areas to bog and wet heath habitat has already been happening in Caithness and Sutherland as part of the LIFE Peatland Project. The first phase of this work ran from 1994-98 when a number of techniques were tested on a range of high priority sites. The trials clearly demonstrated the restorability of such areas, showing the recovery of key peatland species within 2-3 years of felling. The second phase of the Project (from 2001 to 2006) is carrying out much more extensive restoration, with a target of 2100 ha by 2006. To date, approximately 1600 ha has been restored.
70. Any area of forestry with an average peat depth of a minimum of one metre is a valid candidate for restoration. The time taken for recovery to blanket bog or wet heath vegetation will vary greatly however, depending on site history, site conditions and techniques used. The longer that a tree crop has been on the land for example, the more likely that more of the original bog vegetation will have been lost and that the peat will have been more damaged, such that recovery will take longer. Costs of restoration also vary depending on the age of the trees, with costs rising steeply as the trees mature and so become more difficult to handle. In priority areas

there is therefore an urgent need to undertake restoration in the near future, so as to reduce both recovery times and costs.

71. Site characteristics that are likely to indicate and promote a more speedy recovery include the presence of a shallow water table (within 10cm in winter), the presence of pools and damp hollows, and a drainage layout favourable to rewetting. Flatter areas or with a slope of less than 1° are also more likely to recover more quickly as restoration of water levels is likely to be easier. Where the peat has already dried out to the extent that it is cracking, it will be much more difficult to rewet and promote recovery.
72. Where the tree canopy closure is incomplete, there is more likely to be remnant bog vegetation surviving. This will ensure a faster recovery as the surviving bog vegetation can spread out once the conditions become favourable for it, as drains are blocked and the water level rises. It is not anticipated that any seeding of plants will be required, as the wetter conditions following restoration will favour peatland plants and suppress other species.
73. The LIFE Peatlands Project has looked at various techniques of tree felling and drain blocking, and established that bog recovery is quicker where tree trunks are cut up and then laid into the forestry ditches. This not only blocks the ditches and so slows any water flow, but also provides a structure to knit the vegetation together. Whilst ideally trees would be removed from site, this is currently prohibitively expensive. The creation of local markets for timber may change this position in the future. Removal of trees would have to be done in a way that minimised damage to the bog surface.
74. There are potential water quality implications from the clearance of significant areas of forestry. The key issue is phosphate, but this is only likely to become a problem if more than 20% of a catchment is deforested in any given 12 month period.

## **Forests and deer**

75. Forests have a significant impact on deer in the peatlands, as they reduce the deer range and restrict and channel deer movements. This in turn can lead to higher densities of deer on the peatlands, cause localised tracking and erosion along fence lines. Where fences are not maintained, the forests also provide shelter and enable deer condition to improve and numbers of both red and roe deer to increase. Where deer are not controlled sufficiently this can cause a threat to more vulnerable broadleaved tree species. It is not yet known whether the rise in forest deer populations is likely to have implications for the condition of the peatlands. With the downturn in the economic outlook for forestry, some forest blocks have now been purchased by owners whose primary objective is to manage the deer for sport.

## **The future of the forests**

76. Forestry now competes in a global market and decisions about harvesting are affected by timber prices and the costs of harvesting and transportation. Haulage costs are often the key factor in determining viability, along with timber quality. Extraction by road is restricted in many areas to agreed routes, set by bridge weight restrictions and the poor condition of some single-track roads. The railway is seen as providing a potential alternative in the future and loading facilities have already been developed at Kinbrace. Similar facilities are currently being considered for the Georgemas Junction in Caithness.
77. Haulage costs can be significantly reduced where local markets are available. Wood as a fuel is now recognised as an important source of renewable energy and government agencies and the EU are encouraging the development of woodfuel “clusters” (users and suppliers) in various parts of Scotland. In addition to local community interest in Caithness and Sutherland, a woodfuel district heating scheme is currently under consideration for Wick, as is the development of a “cluster” of businesses using locally sourced wood as fuel. Although woodfuel is a low value product, it does provide the additional potential benefits of local employment, the opportunity to thin woodlands at an early stage and an end use for smaller timber felled for peatbog restoration that is currently being left on site.
78. Although there are currently relatively low numbers of people employed directly in forestry, the jobs provided in extraction and haulage, particularly from Forest Enterprise woodlands, can have a big impact in an area with such low population numbers and limited employment opportunities. Over 30 people have also been involved in contract forestry work for the current EU LIFE Peatlands Project. A considerable investment has been made in forest recreation and interpretation in the area, by Forest Enterprise in particular, and this will have knock-on benefits for employment in tourism. Private forest owners have now opened up a continuous horse, cycle and walking route through the peatland forests from Loch More to Forsinain, with a circular route from Loch More via Altnabreac.

## **Planning for new woodlands**

79. There would be nature conservation and potentially socio-economic benefits from improving the condition of the existing native woodlands and where possible expanding them. Benefits could include recreational use, landscape enhancement, timber for local use and stock shelter once any woodland is fully established. Given the current low level of native woodland cover however, it is also a priority to encourage new native woodlands, preferably by natural regeneration, or by planting where that is unlikely to be successful. Changes in incentives in recent years have already encouraged a number of native woodland schemes in the area on mineral soil or shallow peat. Some of these have been carried out by crofters taking advantage of changes in legislation. The North Highland Forest Trust are a useful support organisation for this work.

80. There may also be areas on mineral ground or shallow peat where it is appropriate to plant new areas of non-native woodlands, particularly where these bring multiple benefits such as timber for local use and habitat network links. The establishment of both native and non-native woodland on appropriate mineral and shallow peat can also bring the benefit of locking up carbon, and so support efforts to slow climate change.
81. The nature conservation value of new woodland can vary depending both on the species used and on its location. Where new woodlands (either natives or non-natives) are positioned near existing woodlands, as part of a network, it is easier for species to colonise the new woods from the existing woodland habitat. The new woods can also become a stepping-stone, a link in a woodland habitat network that allows animals and plants to move according to their needs. To be part of a network, woods do not need to be continuous but some species will find it easier to move between woods than others, depending on both the distances and also on the type of land to be crossed. Riparian or riverside woodlands are of particular value in a network, as rivers form natural corridors. There are also additional benefits to fisheries, water quality and flow regulation from riverside planting.
82. Consideration should also be given to promoting some areas of native scrub or more open woodland of appropriate species on the edge of peatlands on mineral or shallow peat. The potential impact on peatland interests would need to be assessed.
83. Deer impacts are generally too high over most of the area to allow any new planting or regeneration schemes without fencing. Deer fencing adds considerably to the costs and brings other disadvantages such as landscape impacts, tracking by deer and a less natural woodland structure. Deer fences need to be considered in the light of the Joint Statement on Deer fencing. Any woodland proposals should take into account the existing use of an area by deer (for example as wintering areas) and plan for future deer management.
84. Map based computer-modelling can help plan where new woodland might best contribute to a woodland habitat network. Modelling has to take into account the nature of woodlands in an area and the species they support.

Guidelines for new woodlands (native and non-native species)

- Woodland establishment should be on mineral ground or shallow peat.
- Where planting is proposed near peatland, would need to consider any possible impacts on peatland interest, for example through harbouring of predators and through peatland birds avoiding nesting near woodland edge. More open woodland with a higher proportion of scrub species is likely to be more appropriate.
- Inbye ground which is used by feeding peatland waders should be avoided.
- Prioritise watercourse planting.
- Prioritise establishment of new native woodlands close to existing native woodland
- Consider deer movements and use of the area.
- For native woodlands birch will be the dominant species. Other appropriate species are rowan, alder, aspen, grey willow, eared willow, bird cherry and in some areas Scots pine. Hazel, goat willow and wych elm will be suitable in slightly richer conditions. Juniper may also be appropriate in small amounts.
- Locate woodland so as to maximise the habitat network benefits.
- Prioritise woodlands that can bring multiple benefits to the area.
- Consider impacts on the NSA, any local landscape designations, the settings of designated cultural and historic sites, wild land search area, landscape character.
- Consider opportunities to improve public access.

**Summary of key forestry and woodland management issues in and around the peatlands**

(see text above for further information)

- Native woodlands are scarce and often heavily grazed.
- No transitional zone of native scrub/ open woodland is present on edge of bogs.
- The balance between woodlands and peatlands needs to be reviewed.
- Local markets for timber would benefit local economy.

**Objective 2: To promote sustainable woodland management and an appropriate balance between woodlands and peatlands.**

Table 2

<b>Actions required to achieve Objective 2 and address issues relating to forests and woodlands in and around the peatlands.</b>	<b>Could you help with or lead on this action? If so, how?</b>	<b>What priority should be given to it?</b> (high, medium or low?)	<b>When should it be carried out?</b> <i>[ongoing, short 0-5 years, med 5-10 years or long term]</i>
Promote incentives that support the sustainable management of woodlands and the expansion of woodland habitat networks, including riparian woodlands.			
Provide clear guidance on the location and type of woodland that might be appropriate in and around the peatlands.			
Develop guidelines on appropriate forestry restructuring and clearance, and incentives and mechanisms to enable these to be implemented.			
Develop modelling to identify areas where creation of new woodland would have maximum natural heritage benefits.			
Support the preparation of Forest Plans for individual land ownerships			
Determine the appropriateness of promoting scrub/ open woodland at the edge of blanket bog.			
Maximise the local economic and community benefits from any forest restructuring or clearance work.			
Promote the development of wood fuel and other local timber markets.			
Develop economic methods of extracting small trees off peat bogs whilst minimising damage to bogs.			
Ensure forest and woodland planning and design take account of deer and future deer management.			
Undertake bird modelling to enable prioritisation of clearance of forestry areas not currently affecting the Natura site but where restoration to bog should be a priority.			
Promote and implement national guidance on			

fencing for deer management.			
Encourage co-operation between deer and forestry managers to address forest deer issues.			

## 6. COMMUNITY AND ECONOMIC DEVELOPMENT

85. The future long-term health of the peatlands depends very much on decisions that are made regarding social and economic development in the area. This section looks at development issues that already impact on the peatlands or may do so in the future and identifies actions to address objective 3. Some aspects of socio-economic development are dealt with in other parts of the strategy, in particular woodlands (section 5), and tourism and interpretation (section 7).

**Objective 3: To encourage sustainable community and economic development that is compatible with safeguarding those features that make the peatlands important.**

### Community management and ownership

86. Over recent years there has been an increasing interest in community involvement in land management and ownership, spurred on by the creation of the Scottish Land Fund and the provisions of the Land Reform Act. There are various ongoing local initiatives to support community development. Scottish Executive policy is also encouraging greater community involvement in planning, as a result of which the Sutherland Partnership is currently preparing a Community Plan. A similar exercise is anticipated for Caithness.

87. Community engagement in the peatlands has the potential to ensure that community priorities are addressed, that more economic benefits are retained locally and that a sense of ownership is maintained or developed. On a local scale, Forest Enterprise and RSPB already seek community involvement in the management planning for their holdings in the area. There is also wide consultation on both public and private forestry proposals.

88. The various crofting Grazing Committees are an existing mechanism for collective management, which has been used widely in recent years, with some now planning and carrying out drain blocking for example. A number of Grazing Committees have taken advantage of changes in legislation and have carried out woodland regeneration or planting schemes. Several have used income from the Peatland Management Scheme to support wider community initiatives such as village halls (for example West Halladale), rather than retaining the benefit solely for the crofting land.

89. The only peatland in community ownership at present is on the Melness Crofters Estate. The North Sutherland Community Forest Trust (NSCFT) owns several large sheds at Forsinain, to be used for wood processing. The NSCFT is currently looking at ways of developing local economic benefits from forestry, which may involve land ownership. They are already involved as contractors in some of the forest clearance work being undertaken at Forsinard as part of the LIFE Peatlands Project.

## Renewable Energy Development

90. In 1997 at the Kyoto summit meeting, the UK government signed up to targets for reductions in the emissions of the greenhouse gases that contribute to global warming. The promotion of renewable energy technologies is one element of the government's programme to meet these targets, and is supported by financial incentives.
91. Along with other areas with consistently high average wind speeds, open landscapes and relatively low population densities, Caithness and Sutherland have seen a rapid rise in interest from would-be developers encouraged by these incentives; particularly those looking at onshore wind technologies. There are currently over 40 wind turbine proposals in Caithness and Sutherland. At present there is no national strategic framework to guide potential developers, although the Highland Council is now embarking on a regional strategy.
92. The development of renewable energy generation capacity is an important part of efforts to tackle global warming, but environmental standards should also be maintained to ensure that environmental losses do not outweigh gains. With adequate planning it should be possible to enable some schemes to progress in appropriate locations and at the correct scale. Smaller scale schemes that bring community benefit are likely to be more appropriate in this area.
93. Particular issues in relation to the peatlands include the possible loss of habitats and wildlife. The impact on birds will depend on the numbers and species of birds present, their flight patterns in relation to the wind turbines, the number, size and characteristics of the wind turbines, and ancillary developments including transmission lines. Potential consequences include bird collision and disturbance.
94. Other issues are the potential damage to peat soils, bog structure, hydrological integrity, creation of access tracks into the peatlands, associated changes in land use, grazing, and disturbance to deer in the construction phase. Consideration is also needed of the impact on open landscapes, where wind turbines can be very visible, the potential attrition of the wild land resource and the cumulative impact of successive developments. Building on peat in the uplands, on a slope or where previously disturbed by forestry are all very technically demanding situations, which can potentially cause difficulties.
95. Whilst proposals may not themselves be located on peatland, they may impact on the flight lines of peatland birds and the feeding range of eagles. Many of the breeding birds fly daily to the north coast to feed, passing over large areas of undesignated land. Migration routes also take birds across undesignated land. Information on bird flight lines is currently incomplete. There is a risk that developers will seek to fit proposals between the designated peatland sites, and consideration will need to be given to the impact this might have not only on the peatlands, but also on any potential World Heritage Site nomination.

96. The technology for harnessing tidal and wave energy is perhaps twenty years behind that for wind energy. Nevertheless consideration is already being given to the north coast, given its potential suitability. A particular issue here will be the use of the coast by peatland breeding birds. Red throated divers feed in the calmer sandy bays during the breeding season for example, and common scoters winter on the sea lochs.

97. Wood fuel is considered in paragraph 77.

### Other developments

98. Other developments likely to occur in the area are infrastructure projects such as road and track repair or creation, water supply provision and house building. Other proposals have also been mooted, such as the development of peatland for berry growing. Trial areas for this already exist.

### Objective 3: To encourage sustainable community and economic development that is compatible with safeguarding those features that make the peatlands important.

Table 3

Actions required to achieve Objective 3 and address issues relating to community and economic development	Could you help with or lead on this action? If so, how?	What priority should be given to it? (high, medium or low?)	When should it be carried out? <i>[ongoing, short 0-5 years, med 5-10 years or long term]</i>
Support community involvement in planning and management of the peatlands area.			
Ensure any community planning or community development initiatives take into account the need for sustainable management of the peatlands			
Promote a more strategic approach to the development of renewable energy developments in the area.			
Support renewable energy developments where these are compatible with the natural heritage.			
Ensure infrastructure developments are compatible with natural heritage interests.			

## 7. SPREADING THE MESSAGE ABOUT THE PEATLANDS

99. Despite the acknowledged importance of the peatlands, opportunities to find out more are very limited, as are places where you can access and enjoy the peatlands. Our understanding of the peatlands is also far from complete. This section looks at issues surrounding the promotion of better understanding and enjoyment of the peatlands and identifies actions to address objective 4.

### **Objective 4: To promote greater awareness, understanding and enjoyment of the special nature and values of the peatlands.**

#### **Tourism, recreation, awareness and interpretation**

100. Levels of awareness of the value of the peatlands amongst local people have grown considerably in local years, but still remain variable. Local support for and pride in the peatlands is key to ensuring the objectives of this strategy are met, and is likely to come not only from increased awareness, but also from demonstrable economic benefit. Tourism is the most likely source for this, but in itself is more likely to be successful where there is a pride in the local area. At present the infrastructure of interpretation facilities (both for locals and visitors), and backup support for locals involved in tourism is limited, with the notable exception of the RSPB visitor centre at Forsinard. A recent positive development is the creation of a new countryside ranger post for North Sutherland, which is likely to enable a greater emphasis to be put on the peatlands by the Council's Ranger Service.
101. Given that visitor numbers are unlikely to be large, there is currently no justification for major capital spend (for example on an additional visitor centre), and a number of small items of infrastructure (such as interpretation boards) spread geographically is likely to be more successful, with some perhaps being linked through a trail. Marketing of the area should be carried out in tandem with this proposed small-scale development.
102. Planning for interpretation will need to take into account the fragile nature of the peatlands, as peatland cannot withstand the pressure of many trampling feet or the possible disturbance to nesting birds. Nevertheless the Dubh Lochan trail at Forsinard demonstrates that access can be compatible with maintaining the nature conservation interest. Limitations are also presented by the remoteness of much of the area, with access often being only by single-track roads and in some cases a long walk.
103. Interpretation of the peatlands is most likely to engage people if it is linked to man's activities in the peatlands, both today, through land management such as crofting, and historically. As visitors may not initially be aware of the peatlands, interpretation should be made available at places where people are going anyway such as at accommodation providers, tourist attractions, on the train and at visitor centres (for example John o'Groats). Opportunities should be taken to

interpret the peatlands at existing sites such as Camster Cairns and Yarrows.

104. Any interpretation should be provided as part of an overall agreed approach to the area and should carry the same clear messages, which are likely to include highlighting why it is special, the international importance of the area, its fragility and that people live and work here. An overall identity also needs to be developed for the area. Interpretation of peatland restoration work should also be provided.
105. There are currently very few walking, cycling or horse riding routes, other than in the forests. The identification of more peatland routes would be beneficial, particularly short walks in interesting places. Such route marking would also reduce any potential conflicts with sporting and agricultural management. Despite the recent changes in legislation clarifying rights in relation to public access, no significant increase in the public's use of open land in this area is anticipated, given the difficulty of much of the terrain. There is therefore no current proposal to have a comprehensive access strategy.

### **World Heritage Site nomination**

106. In 1999 the Flow Country was added to the "Tentative List" held by the UK government of sites that might be put forward for nomination as World Heritage Sites. UNESCO bestows this international accolade on either natural or cultural properties of outstanding universal value. The Flow Country would be submitted in the natural heritage category, but to date no action has been taken to progress the nomination. Nominations are made through the Scottish Executive and then through the UK government, and are more likely to be taken forward where there is a clear demonstration of support from local communities, land managers and other interest groups. Any submission would need to be accompanied by a management strategy for the area, for which this document could form the basis.
107. If a nomination were to be successful it would not bring with it any additional planning procedures or burdens for land managers in the area. As an accolade however, this international designation could make a significant contribution to raising the profile of the peatlands, both nationally and internationally. It might also stimulate additional funding to develop aspects of this strategy

### **Research**

108. Despite the international importance of the peatlands, research efforts have been sporadic, hampered by lack of funding and the remoteness of the area from most universities and colleges. Research and survey on a number of topics would therefore be beneficial, both to guide land management decisions and to add to our overall understanding of the peatlands. RSPB are currently carrying out research to look at the impact of forest blocks and their removal on bird populations on adjacent peatlands, and the impacts of drain blocking on the carbon balance.

FCS has also carried out extensive research on the impacts of forestry on peatlands and the potential for peatland restoration. A survey of historic landuse has recently been completed for Caithness and will shortly be complemented by a survey for Sutherland.

109. A key issue on which little research has been carried out is the potential impact of climate change on the peatlands. Increasingly drier summers and heavier rainfall events in autumn/ winter are anticipated, with overall rainfall amounts increasing. This is likely to cause increasing erosion in peatland areas. By the 2050s the temperature is likely to be 1-2° C above the temperature at the end of the last century. These increasing temperatures and drier summers are likely to have negative impacts on peat formation.
110. Obligations under the Water Framework Directive may result in additional monitoring and research requirements in the area.

**Objective 4:**

**To promote greater awareness, understanding and enjoyment of the special nature and values of the peatlands**

Table 4

<b>Actions required to achieve Objective 4 relating to spreading the message about the peatlands</b>	<b>Could you help with or lead on this action? If so, how?</b>	<b>What priority should be given to it? (high, medium or low?)</b>	<b>When should it be carried out? <i>[ongoing, short 0-5 years, med 5-10 years or long term]</i></b>
Establish a forum of those involved in the management of the peatlands to oversee co-ordination and monitoring of this strategy.			
Prepare an interpretative plan for the peatlands and seek funding for its implementation.			
Review existing interpretation facilities/ materials and revise as required.			
Support interpretation projects that encourage community involvement and bring community benefit.			
Encourage all interpretation providers within the peatlands to promote peatland messages e.g. Scottish Executive, Historic Scotland, FCS, RSPB.			
Provide training on interpretation of the peatlands for those who work with visitors and interest groups			
Encourage sustainable provision for recreation and access			

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Hold workshop to promote research in the peatlands.			
Support research and monitoring that enhance understanding of the peatlands and the impact of management on them.			
Support research into the impact of climate change on peatlands and associated habitats and species, and the impacts of management.			
Support research into the impact of the heather beetle.			
Continue to support work on the potential impact of predators on peatland birds.			
Monitor the impact of drain blocking work on hydrology, agricultural and nature conservation interests.			
Support research and survey on the distribution and feeding requirements of peatland waders.			
Support research and survey into the distribution of water voles.			
Support research into whether woodland was previously present on the edge of bogs			

## **8. WHAT HAPPENS NEXT ?**

111. This strategy offers a new beginning for those managing and looking after the peatlands of Caithness and Sutherland. The final strategy will be endorsed by SNH, RSPB, FCS and Plantlife International. A wide range of other organisations and individuals have also already expressed their support through their enthusiastic participation in the development of the strategy. Continuing support is essential if the strategy is to be translated into action on the ground and policy change.
112. For each of the actions identified in the strategy, a lead partner or group of partners will be identified to lead on implementation. Numerous other organisations and individuals will also need to be involved in the implementation process. Implementation will be monitored by SNH, RSPB, FCS and Plantlife International. A key proposal is to establish a forum of those involved in the management of the peatlands. This Forum could also assist in monitoring implementation of and spreading the word about progress with the strategy.
113. Additional funding will be required for many of the proposed actions. In some cases this can be addressed through reprioritisation of existing funds, but in other cases additional sources of funding will need to be sought.

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## Annex 1 SAC and SPA descriptions

### Caithness and Sutherland Peatlands SAC

#### Site details

<b>Country</b>	Scotland
<b>Unitary Authority</b>	Highland
<b>Grid Ref*</b>	NC866402
<b>Latitude</b>	58 20 10 N
<b>Longitude</b>	03 56 15 W
<b>SAC EU code</b>	UK0013602
<b>Area (ha)</b>	143538.7

\* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

#### General site character

Inland water bodies (standing water, running water) (3%)  
 Bogs. Marshes. Water fringed vegetation. Fens (78.5%)  
 Heath. Scrub. Maquis and garrigue. Phygrana (18%)  
 Dry grassland. Steppes (0.5%)

#### Annex I habitats that are a primary reason for selection of this site

##### **3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea***

Caithness and Sutherland Peatlands supports a range of high-quality freshwater loch habitats that include **Oligotrophic to mesotrophic standing waters**. The lochs are part of large, generally nutrient-poor, drainage systems which characterise this part of the northern Highlands. The site covers an area greater than 140,000 ha and includes several hundred freshwater lochs of which the larger are oligotrophic. The lochs are generally located within **7130 blanket bog** and peatlands that sit on nutrient-poor rocks. The aquatic vegetation is dominated by a very narrow range of species typical of northern, upland, lochs but there is much local variation in their abundance. The most characteristic species are shoreweed *Littorella uniflora*, water lobelia *Lobelia dortmanna*, bulbous rush *Juncus bulbosus*, bog pondweed *Potamogeton polygonifolius* and alternate water-milfoil *Myriophyllum alterniflorum*. More mesotrophic lochs support a wider range of pondweed *Potamogeton* species; other species present include stoneworts *Chara* spp. and *Nitella* spp. and least bur-reed *Sparganium natans*. The margins of a few lochs support two nationally scarce plants; bog hair-grass *Deschampsia setacea* and marsh clubmoss *Lycopodiella inundata*. Other notable species include awlwort *Subularia aquatica* and water sedge *Carex aquatilis*. The range of aquatic invertebrates includes the nationally rare water beetle *Oreodytes alpinus*.

##### **3160 Natural dystrophic lakes and ponds**

This site represents **Natural dystrophic lakes and ponds on 7130 Blanket bogs** in northern Scotland. The scale and diversity of the peatlands of Caithness and Sutherland make them unique in Europe. They are three times larger than any other peat mass in the UK. Dystrophic waters are especially common in the Peatlands. Compared to most other blanket bog systems, at this site waterbodies account for a high proportion of the bog surface. Dystrophic water bodies here range in size from pools to medium-sized lochans. Surface patterns and pool complexes occur in a variety of forms, reflecting different climatic and hydrological conditions within the site.

#### **7130 [Blanket bogs](#)**

The scale and diversity of the Caithness and Sutherland peatlands in northern Scotland make them unique in Europe. They form the largest peat mass in the UK and are three times larger than any other peatland area in either Britain or Ireland. The site is important because of the considerable abundance of large (several square kilometres) continuous areas of *Sphagnum* carpets and hummocks, including *Sphagnum fuscum*, *S. imbricatum* and *S. pulchrum*, and for its numerous intact pool systems. Not only are these features usually rare and localised on other bog systems in the UK, but a very high proportion of this ground remains undisturbed. The vegetation is mainly cross-leaved heath *Erica tetralix* with *Sphagnum papillosum* as well as deergrass *Trichophorum cespitosum* and hare's-tail cottongrass *Eriophorum vaginatum* blanket mire. Freshwater pools and lochans are an integral component of the mire expanse.

#### **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site**

##### **4010 [Northern Atlantic wet heaths with \*Erica tetralix\*](#)**

##### **7140 [Transition mires and quaking bogs](#)**

##### **7150 [Depressions on peat substrates of the \*Rhynchosporion\*](#)**

#### **Annex II species that are a primary reason for selection of this site**

##### **1355 [Otter \*Lutra lutra\*](#)**

This extensive site contains numerous lochs, lochans and extensive areas of headwaters of burns and rivers. There is extensive habitat suitable for **otters *Lutra lutra*** and this is reflected in the presence of a good population, representative of the northern mainland of Scotland.

#### **Annex II species present as a qualifying feature, but not a primary reason for site selection**

Not applicable.

## SPA description

(information as published 2001)

### Caithness and Sutherland Peatlands

<b>Country</b>	Scotland
<b>Unitary Authority</b>	Highland
<b>SPA status</b>	Classified 02/02/1999
<b>Latitude</b>	58 20 10 N
<b>Longitude</b>	03 56 15 W
<b>SPA EU code</b>	UK9001151
<b>Area (ha)</b>	145516.75
<b>Component SSSI/ASSIs</b>	A'Mhoine Bad na Gallaig Badanloch Bogs Ben Griams Ben Hutig Ben Loyal Blar nam Faoileag Cnoc an Alaskie Coir an Eoin Coire na Beinne Mires Druim na Coibe Druim nam Bad Dunbeath Peatlands East Halladale Forsinard Bogs Grudie Peatlands Knockfin Heights Loch Caluim Flows Loch Meadie Peatlands Lochan Buidhe Mires Lon a'Chuil Mallart Moss of Killiminster Oliclett Rumsdale Peatlands Shielton Peatlands Skelpick Peatlands Skinsdale Peatlands Sletill Peatlands Strath an Loin Strath Duchally Strathmore Peatlands Strathy Bogs Stroupster Peatlands Syre Peatlands Truderscaig West Borgie West Halladale West Strathnaver

The Caithness & Sutherland Peatlands are located across the northernmost parts of mainland Scotland. The SPA contains a large proportion of these peatlands, which form one of the largest and most intact areas of blanket bog in the world. The peatlands include an exceptionally wide range of vegetation and surface pattern types (pool systems), some of which are unknown elsewhere. This range of structurally diverse peatland and freshwater habitats supports a wide variety of breeding birds including internationally important populations of raptors, wildfowl and waders.

## Qualifying species

For individual species accounts visit the [Species Accounts section](#)

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This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

### During the breeding season;

Black-throated Diver *Gavia arctica*, 26 pairs representing at least 16.3% of the breeding population in Great Britain (11 year mean, 1986-1996)

Golden Eagle *Aquila chrysaetos*, 5 pairs representing at least 1.3% of the breeding population in Great Britain (Count, as at 1992)

Golden Plover *Pluvialis apricaria*, 1,064 pairs representing at least 4.7% of the breeding population in Great Britain (Count, as at mid-1990s)

Hen Harrier *Circus cyaneus*, 14 pairs representing at least 2.8% of the breeding population in Great Britain (5 year mean, 1993-1997)

Merlin *Falco columbarius*, 54 pairs representing at least 4.2% of the breeding population in Great Britain (Count, as at early 1990s)

Red-throated Diver *Gavia stellata*, 89 pairs representing at least 9.5% of the breeding population in Great Britain (Two year mean, 1993-1994)

Short-eared Owl *Asio flammeus*, 30 pairs representing at least 3.0% of the breeding population in Great Britain (Count, as at mid-1990s)

Wood Sandpiper *Tringa glareola*, 5 pairs representing up to 50.0% of the breeding population in Great Britain (Two year mean, 1994-1995)

This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

### During the breeding season;

Common Scoter *Melanitta nigra*, 27 pairs representing <0.1% of the breeding Western Siberia/Western & Northern Europe/Northwestern Africa population (1996)

Dunlin *Calidris alpina schinzii*, 1,860 pairs representing at least 16.9% of the breeding Baltic/UK/Ireland population (Count, as at 1994)

Greenshank *Tringa nebularia*, 256 pairs representing at least 0.4% of the breeding Europe/Western Africa population (1994/95)

Wigeon *Anas penelope*, 43 pairs representing <0.1% of the breeding Western Siberia/Northwestern/Northeastern Europe population (1994)

## Annex 2

### CONSERVATION OBJECTIVES FOR CAITHNESS AND SUTHERLAND PEATLANDS SITE OF COMMUNITY IMPORTANCE

#### ANNEX I HABITAT(S) (\* indicates European priority habitat)

##### To avoid deterioration of the qualifying habitats:

- Blanket bogs\*
- Depressions on peat substrates of the *Rhynchosporion*
- Natural dystrophic lakes and ponds
- Northern Atlantic wet heaths with *Erica tetralix*
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
- Transition mires and quaking bogs

thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features.

##### To ensure for the qualifying habitats that the following are maintained in the long term:

- Extent of the habitats on site
- Distribution of the habitats within site
- Structure and function of the habitats
- Processes supporting the habitats
- Distribution of typical species of the habitats
- Viability of typical species as components of the habitats
- No significant disturbance of typical species of the habitats

#### ANNEX II SPECIES

##### To avoid deterioration of the habitats of the qualifying species:

- Otter *Lutra lutra*

or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features.

##### To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

## **CONSERVATION OBJECTIVES FOR CAITHNESS AND SUTHERLAND PEATLANDS SPECIAL PROTECTION AREA & RAMSAR SITE**

### **1. CONSERVATION OBJECTIVES FOR CAITHNESS AND SUTHERLAND PEATLANDS SPA**

**To avoid deterioration of the habitats of the qualifying species:**

- Black-throated Diver *Gavia arctica*
- Common Scoter *Melanitta nigra*
- Dunlin *Calidris alpina schinzii*
- Golden Eagle *Aquila chrysaetos*
- Golden Plover *Pluvialis apricaria*
- Greenshank *Tringa nebularia*
- Hen Harrier *Circus cyaneus*
- Merlin *Falco columbarius*
- Red-throated Diver *Gavia stellata*
- Short-eared Owl *Asio flammeus*
- Wigeon *Anas penelope*
- Wood Sandpiper *Tringa glareola*

**or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.**

**To ensure for the qualifying species that the following are maintained in the long term:**

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

### **2. CONSERVATION OBJECTIVES FOR CAITHNESS AND SUTHERLAND PEATLANDS RAMSAR SITE**

**To promote the conservation of the wetland so as to avoid deterioration of the wetland habitats of Ramsar interest and significant disturbance of associated species.**