

Northern Ireland Habitat Action Plan
Reedbeds
March 2005

1. Current Status

1.1 Biological status

- 1.1.1 The term reedbed is used to describe a range of common reed *Phragmites communis* dominated wetland vegetation communities where the water table is at or above ground level for most of the year. Reedbeds are therefore swamp communities, which may be defined as species-poor vegetation types, generally dominated by bulky emergent monocotyledons, with permanently or seasonally submerged substrates. Reedbeds provide a habitat for a range of specialist species most notably breeding birds.
- 1.1.2 Reedbeds are widely distributed on the margins of water bodies, along lowland and upland streams, estuaries, reservoirs, clay pits, sewage treatment works, industrial lagoons and as successional habitat on fens and bogs. Reedbeds originate naturally as a part of a seral succession of open water or as an indirect consequence of human activity. In some instances they have appeared when agricultural practices (or peat cutting) have ceased, usually where grazing and water control have been abandoned on low-lying land. Some have been created for specific purposes e.g. water treatment, while numerous ponds, gravel pits and ditches also contain reed that colonised naturally.
- 1.1.3 In habitat classifications, reedbeds are normally included in swamps which are defined as species-poor stands of herbaceous vegetation that are dominated by reeds and other large grasses or large, tussock-forming sedges, mostly dominated by one or a small number of species (NCC, 1990; Fossit, 2000). The dominance of *Phragmites communis* used to define reedbeds can vary. The habitat survey team of Environment and Heritage Service (EHS) use a 30-50% cover to distinguishing reedbed whereas in DARD agri-environmental schemes reedbeds are defined as a wetland with at least 75% cover of common reed.
- 1.1.4 Aquatic communities, mires, swamps and tall-herb fens plant communities have been the subject of comprehensive review as part of the National Vegetation Classification (NVC) (Rodwell, 1995). This builds on phytosociological techniques developed elsewhere in Europe including the Republic of Ireland. Although the NVC is not directly applicable in Northern Ireland, a large number of the plant communities which are described in the NVC occur in Northern Ireland (Shaw *et al.*, (1996), Wolfe-Murphy *et al.*, 1992, Corbett pers.comm.) and it is possible to compare many of the plant communities in Northern Ireland with those in mainland UK. The NVC distinguishes four main types of reed swamp and at least 16 types of reed-dominated tall-herb fen. Within Northern Ireland, reedbed corresponds to the NVC plant community S4 *Phragmites australis* swamp and reedbeds. The species-poor *Phragmites*-dominated community S25 *Phragmites australis-Eupatorium cannabinum* tall-herb fen is best treated within the Northern Ireland fen habitat action plan.

- 1.1.5 Taking into account the above definitions, to qualify as the priority habitat for the purposes of this plan, the reedbed should meet the following criteria: tall herbaceous wetland vegetation with >30% cover of *Phragmites*; reedbed area >0.5 ha and reedbed width over the whole area of at least 5m. However, the UK Habitat Action Plan (HAP) is largely concerned with larger reed beds (>2 ha) which contain or are likely to contain characteristic reedbeds species.
- 1.1.6 Reedbeds often occur as discrete stands but can also occur in a complex mosaic with other habitat types such as lakes, fen, wet woodland, coastal and floodplain grazing marsh and in modified examples of lowland raised bog. In these cases it may be difficult to distinguish reedbeds from other wetland vegetation. Generally, significant blocks of reedbeds such as occur on mineral soils in a coastal and floodplain grazing marsh context falls within this reedbed HAP. However, more fragmented mixed blocks such as occur within a dominant matrix of bog and fen are best treated as an integral component of the lowland raised bog and fen action plans respectively (Jones *et al.*, 2003).
- 1.1.7 No comprehensive inventory of reedbeds has been carried out in Northern Ireland. EHS unpublished estimates, based on the Northern Ireland Countryside Survey 2000 (NICS 2000) suggest that reedbed occupies in the region of 3228 ha in Northern Ireland. This would appear to be a significant proportion of the UK reedbed area estimated at 5000 ha (UK Biodiversity Steering Group, 1998). However, the England and Wales resource was estimated at 12400 ha in 2002 with an estimated additional 1138 ha in Scotland (UK Biodiversity Action Plan online report, 2002). However, reedbeds in Northern Ireland tend to occur in relatively small stands and this figure may include a significant proportion of stands less than 0.5 ha or less than 5m in width which should be treated as part of other habitats such as fens.
- 1.1.8 Reedbeds in Northern Ireland are especially associated with lowland wetlands around the large lakes and inter-drumlin wetlands. Several large stands (>10 ha) occur around Lough Neagh e.g. at Portmore Lough and Blackers Rock and in the Lough Erne catchments. There also a significant number of stands greater than 2 ha including an estimated 40 sites in Down and Armagh (Shaw *et al.*, 1996). This is similar to the situation elsewhere in the UK where out of 900 or so reedbed sites, only about 50 are greater than 20 ha, and these make a large contribution to the total area.
- 1.1.9 Historically there has been significant loss of reedbeds in the UK which may be as high as 40% between 1945 and 1990 (Hawke & José, 1996). It is likely that similar losses also occurred in Northern Ireland during this period. However, NICS 2000 indicates that there was little overall change in the area of swamp and reedbed in Northern Ireland between 1988 and 1998 (Cooper *et al.*, 2002).
- 1.1.10 Reedbeds in Northern Ireland are generally unmanaged. Their extent is governed by water-levels, nutrient enrichment and seral succession. In many places grazing is the limiting factor in their occurrence. Relatively few reedbeds were harvested historically for thatching material e.g. around the shores of Lough Neagh and there is virtually no reed harvesting occurring at the present time. This contrasts with Great Britain where many of the most important reedbeds have been traditionally managed as natural resources usually by cutting for thatch which maintained them as reed-dominated sites, effectively keeping the process of succession to scrub and more terrestrial

vegetation types in check. In the Republic of Ireland small scale reed harvesting occurs notably along the Shannon estuary. Conservation management including reed cutting, scrub clearance and water-level manipulation also occurs at a number of sites in Great Britain primarily for specialist breeding bird species.

- 1.1.11 The condition of wetland vegetation on statutory sites is determined by setting targets or target ranges for carefully selected attributes. These attributes are components or characteristics of the vegetation that are relatively easy to measure, but which are reliable indicators of the 'health' of the habitat. For reedbeds, the dominance of *Phragmites communis* and the structure required to support bird and invertebrate species are important attributes. Reedbeds are often uniform in structure but a diverse structure is often desirable to maintain key species and diverse species assemblages. For instance the reed warbler *Acrocephalus scirpaceus* prefers tall reeds at the waters edge whereas the sedge warbler *Acrocephalus schoenobaenus* can use drier more mixed fen vegetation with shorter reeds. The bittern *Botaurus stellaris* and marsh harrier, *Circus aeruginosus* which are extinct as breeding birds in Ireland, but still occur occasionally and have the potential to re-colonise, need very large reed beds with the former also requiring abundant open shallow water to catch fish and amphibians. Many of Northern Ireland's larger reedbeds are largely unmanaged and their biodiversity could be significantly enhanced with suitable conservation management.
- 1.1.12 At the site level, maintaining the condition of reedbeds can conflict with the conservation objectives set for other priority wetland habitats. For example, although *Phragmites communis* is a natural component of many fen communities, its excessive dominance results in the loss plant diversity and loss of more open aquatic habitats. The development of reedbeds at the expense of fen would need careful consideration.
- 1.1.13 Reedbeds are of value for a range of specialist bird species. Characteristic breeding birds of reedbeds in Northern Ireland include reed bunting *Emberiza schoeniclus*, water rail *Rallus aquaticus*, sedge warbler and, locally, reed warbler. Reedbeds also provide nesting cover for a number of species of waterfowl such as great-crested grebe *Podiceps cristatus*. In Great Britain reedbeds support a distinctive breeding bird assemblage including bittern, marsh harrier, crane *Grus grus*, and bearded tit *Panurus biarmicus*. The latter, which formerly bred in Ireland and still occasionally occur, have increased in Great Britain and could breed in the future. In addition, reedbeds provide roosting and feeding sites for several birds including hen harrier *Circus cyaneus*, starling *Sturnus vulgaris*, swallow *Hirundo rustica* and sand martin *Riparia riparia*.
- 1.1.14 A wide range of other wetland animals use reedbeds especially where it is close to fen or open water including the priority species otter *Lutra lutra* and the reed-beetle *Donacia aquatic*. In the UK, at least 700 species of invertebrates have been found to be associated with reedbeds. Some 64 insect species are known to be dependent on reed to some extent and some 40 species of insect feed solely on reed.
- 1.1.15 Few rare plants are associated with reed beds. However, plant species diversity does increase towards the reedbed edges and this is where the less common vascular plants such as cowbane *Cicuta virosa*, greater water parsnip *Sium latifolium*, marsh fern *Thelypteris palustris* and marsh pea *Lathyrus palustris* occur. The rare moss *Fissidens monguillonii* has been recorded once in Northern Ireland in a reedbed in Co. Fermanagh.

1.2 Links with other action plans

- 1.2.1 This Reedbed Action Plan identifies specific targets and actions required to deliver Northern Ireland's contribution to the UK Reedbed Habitat Action Plan.
- 1.2.2 Reedbeds may form a complex mosaic with other habitats such as fens, lowland raised bog, wet woodland, floodplain and coastal grazing marsh and can fringe mesotrophic lakes, marl lakes, eutrophic standing waters, saline lagoons and saltmarsh, all of which have their own Northern Ireland habitat action plans. The requirements of these plans will need to be given due regard during the implementation of this plan, especially as the expansion of reedbed due to successional processes frequently reduces the area of some of these associated priority habitats.
- 1.2.3 Within Northern Ireland, reedbeds are an important habitat for a number of UK priority species identified as part of the UK Biodiversity Action Plan programme particularly reed bunting, bittern, the reed beetle *Donacia aquatica* and greater water-parsnip. The requirements of these species should also be taken into account during the implementation of this plan.

2. Current Factors Affecting The Habitat

- 2.1 Drainage - past arterial drainage schemes have reduced the extent of reedbeds throughout Northern Ireland. Lowered water levels results in reedbeds drying out with consequent invasion of scrub and change to drier vegetation types.
- 2.2 Harvesting - of the reed for thatching that may lead to loss of habitat though the cessation of such traditional practices can lead to reduction in structural diversity and species diversity within some reedbeds.
- 2.3 Eutrophication - from spray drift or runoff from adjacent agricultural land can lead to changes in herbaceous flora. In addition, pesticide drift may cause localised damage to some flora and/or fauna.
- 2.4 Industrial and urban development - can lead to fragmentation, greater ecological isolation and reduction in area of existing reedbeds. This loss of habitat is locally significant, particularly due to residential development within the Lough Neagh basin. Constraints from industrial or residential development on the spread of reedbed from conservation sites onto adjacent ground may lead to greater uniformity of structure within each individual reedbed site.
- 2.5 Fly tipping – of building rubble as well as agricultural and domestic waste into reedbeds in Northern Ireland is a frequent occurrence. This can lead to changes in the composition of the herbaceous flora and invertebrate communities.
- 2.6 Acidification and nitrogen enrichment - from atmospheric deposition could potentially lead to vegetation change. In Northern Ireland, atmospheric nitrogen deposition increases from west to east and higher levels therefore coincide with the areas of greatest concentration of reedbed.

- 2.7 Climate change – summary predictions for temperature and sea level rise as a result of global warming have been modelled by the MONARCH project (Harrison *et al*, 2001). These models indicate a much smaller impact in Ireland than in Britain. Climate change could potentially result in changes in the species composition and diversity of reedbed and associated invertebrate populations.

3. Current Action

3.1 Legal Status

- 3.1.1 In 1992, the EC adopted the *Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna*, known as the ‘Habitats Directive’. The Habitats Directive requires member states to designate and manage Special Areas of Conservation (SAC’s) for habitats (listed in Annex 1 of the Directive) and species (listed in Annex 2). A small proportion of these habitats and species, which are considered to be most in need of conservation at a European level, are given priority status. Although reedbeds are not an Annex 1 habitat they are often found in association with other Annex 1 habitats such as *residual alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* and *Calcareous fens with Cladium mariscus and Carex davalliana*.
- 3.1.2 At 31st July 2004, 51 sites in Northern Ireland are included in the UK’s list of candidate SACs (cSACs) which have been submitted to the European Commission. A few sites put forward as cSACs, e.g. Upper Lough Erne, have extensive reedbeds. Conservation objectives set by EHS for these sites may have a positive or negative impact on associated reedbeds within these sites. Although reedbeds may not be the primary reason that a cSAC was selected, developments that occur within cSACs have the potential to affect the habitat.
- 3.1.3 The *Conservation (Nature Habitats, etc.) Regulations (Northern Ireland) 1995* and *The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004* (The Habitat Regulations) require competent authorities, when considering a plan or project not directly connected with the management of a European site e.g. an SAC or SPA, to undertake an Article 6 assessment. This assessment will determine if the plan or project, either alone or in combination with other plans or projects, is likely to have a significant impact on the site. In the case of a negative or undetermined assessment, a competent authority may only agree to the plan or project where it is satisfied that there are no alternative solutions and that the plan or project must be carried out for imperative reasons of overriding public interest, which may be of a social or economic nature. However, if the site hosts a priority habitat or species then the plan or project may only be approved for: a) reasons of human health, public safety, beneficial consequences of primary importance to the environment, or b) other reasons which the Department (DOE), having considered the opinion of the European Commission (EC), determines are imperative reasons of overriding public interest.

- 3.1.4 Under the terms of the Habitat Regulations, the above Article 6 assessment by the competent authority is required for plans or projects e.g. land reclamation, which are outside European sites but may still have an impact on the site.
- 3.1.5 Guidance to help competent authorities and others to interpret the Habitat Regulations has been published (EHS, 2002).
- 3.1.6 Guidance on the completion of an Article 6 assessment has also been published (European Commission, 2000)
- 3.1.7 Under the *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985*, and more recently under *The Environment (Northern Ireland) Order 2002* Areas of Special Scientific Interest (ASSIs) are identified and declared by the Department of the Environment (DOE) through the Environment and Heritage Service (EHS). As well as ASSIs, the *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985* (NCALO) legislates for National Nature Reserves (NNRs), Marine Nature Reserves (MNRs) and Local Nature Reserves (LNRs). *The Environment (Northern Ireland) Order 2002*, strengthened the protection of ASSIs, recognising the importance of working in partnership with owners and occupiers and facilitating the positive management of these sites. All cSACs are designated as ASSIs prior to designation as cSACs.
- 3.1.8 NNRs are established by EHS not only because they represent good examples of habitats, species sites and earth science features but because they also provide valuable facilities for the public to enjoy, appreciate and learn about wildlife.
- 3.1.9 In 2000, the Northern Ireland Biodiversity Group (NIBG) made its Recommendations to Government (NIBG, 2000). These were largely accepted by the Northern Ireland Executive in 2002, with the publication of the *Northern Ireland Biodiversity Strategy* (DOE, 2002). *The Regional Development Strategy 2025* (DRD, 2001) is underpinned by the sustainable approach and includes Strategic Planning Guidelines (SPGs) on the protection of the environment which bring together a comprehensive collection of natural heritage and built heritage strategic guidance that includes sustaining and enhancing biodiversity.
- 3.1.10 Regional Planning and Transportation Division within DRD is responsible for co-ordinating the implementation of the *Regional Development Strategy (RDS) for Northern Ireland 2025* (DRD, 2001). The RDS contains a Spatial Development Strategy and related Strategic Planning Guidelines (SPGs). The emphasis in the SPGs is on competitiveness, sustainable development and tackling social exclusion and division. Operational policies to give effect to the SPGs are contained in Planning Policy Statements (PPSs).” Some of these policies have a direct or indirect bearing on the prevention of adverse impacts on priority habitats and species.
- 3.1.11 *PPS2 Planning and Nature Conservation* (DOE, 1997) (under review) contains planning policy for the hierarchy of sites of nature conservation importance. It also addresses trees and woodlands, protection of species and peatlands.
- 3.1.12 *PPS15 Planning and Floodrisk* is currently out to public consultation. It embodies the Government’s commitment to sustainable development and the conservation of

biodiversity and adopts a precautionary approach to decision making that takes account of climate change.

- 3.1.13 PPS14 - *Sustainable Development in the Countryside* is due to be published by the end of 2005
- 3.1.14 Site protection policies are included in Development Plans. These include the identification of Sites of Local Nature Conservation Importance (SLNCI's). Planning Service is currently considering which SLNCI's will be formally identified in Development Plans. Where such sites are confirmed in adopted plans, specific planning policies will be applied to development proposals on those sites.
- 3.1.15 The development of Local Biodiversity Action Plans (LBAP's) based on District Council areas and/or discrete landscape areas, and the appointment of Local Biodiversity Officers will help to build on the SLNCI network and encourage, co-ordinate and inform local biodiversity action.
- 3.1.16 EC Directive 2000/60/EC, *Establishing a Framework for Community Action in the Field of Water Policy* or the Water Framework Directive (WFD), was transposed into Northern Ireland law by the *Water Environment (WFD) Regulations (Northern Ireland) 2003*. The WFD sets a framework for comprehensive management of water resources in the European Community, within a common approach and with common objectives, principles and basic measures. It will be the driving force behind the setting of acceptable water quality standards on which all naturally occurring standing waters depend for the maintenance of their ecological integrity.
- 3.1.17 The WFD aims to determine baseline trophic states for all surface and groundwaters by setting reference conditions that indicate Good Ecological Status for all waterbody types. Under the WFD, member states must ensure that all waterbodies (excluding Artificial Waterbodies, e.g. Northern Ireland canals and Heavily Modified Waterbodies e.g. some Northern Ireland reservoirs), must be at least of Good Ecological Status by 2015. Artificial and heavily modified waterbodies must attain Good Ecological Potential by this date.
- 3.1.18 There is a requirement under Article 6 of the WFD to create a register of all areas which have been designated as requiring special protection under specific European Community legislation for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water. Northern Ireland must achieve compliance with the WFD standards and objectives relating to these protected areas by December 2015. There is an onus on the UK government under the WFD to ensure that any changes in water quantity and quality do not adversely affect sites of international importance.
- 3.1.19 The *Water (Northern Ireland) Order 1999* repealed and re-enacted, with amendments, the *Water Act (Northern Ireland) 1972*. The *Water (Northern Ireland) Order 1999* widens existing powers to license water abstraction to enable controls to be introduced, if necessary, to protect the aquatic environment in specific catchments or to control particular uses or industrial abstractions.

- 3.1.20 *Council Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances* was aimed mainly at the control of discharges of specified substances to groundwater. The impact of the Directive has been limited because a) only a restricted range of substances is controlled, b) it does not address either diffuse pollution or the essential links to the management of abstraction and c) it does not establish a comprehensive system for the monitoring of groundwater.
- 3.1.21 *Policy and Practice for the Protection of Groundwater in Northern Ireland* (EHS, 2001) sets out DOE strategies to protect the groundwater resource from polluting activities from waste disposal, agriculture and industry including creation of land surface zoning, protection zoning around key abstractions, policy statements on the control of groundwater quality and abstractions.
- 3.1.22 *Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources* (the Nitrates Directive) seeks to reduce or prevent the pollution of water caused by the application and storage of inorganic fertiliser and manure on farmland. It is designed to safeguard drinking water supplies and to prevent wider ecological damage in the form of the eutrophication of freshwater and marine waters generally.
- 3.1.23 Article 4 of the Nitrates Directive refers to the establishment and implementation of a Code of Good Agricultural Practice (CoGAP), together with the provision of training and information for farmers promoting the application of the CoGAP on a voluntary basis.
- 3.1.24 Article 5 of the Nitrates Directive requires Member States to implement an Action Programme of mandatory measures in respect of designated Nitrate Vulnerable Zones (NVZs) or their total territory. Regulations establishing Northern Ireland as the territory to which an action programme under the Nitrates Directive applies, came into operation in October 2004.
- 3.1.25 Farms in the existing 7 groundwater NVZs are subject to the current *Action Programme Regulations (the Action Programme for Nitrate Vulnerable Zones Regulations (Northern Ireland) 1999, SR No.156)*.
- 3.1.26 The *Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (Northern Ireland) Regulations 2003(SR 2003/319) (SSAFO Regulations)* are designed to help prevent water pollution from agricultural sources and reinforce much of the advice in the Department of Agriculture and Rural Development (DARD) Code of Good Agricultural Practice for the Prevention of Water Pollution. These Regulations set legal requirements for new and substantially reconstructed or enlarged stores being brought into use after 1st December 2003.
- 3.1.27 *Council Directive (91/271/EEC) concerning urban waste water treatment* (the Urban Waste Water Treatment (UWWT) Directive) requires member states to identify as sensitive areas freshwaters and marine water which are found to be eutrophic or may become eutrophic. Larger Waste Water Treatment Works (WWTWs) i.e. those treating waste from 10000 population equivalent or more, within sensitive areas are required by the Directive to remove nitrate and/or phosphate from the wastewater streams.

- 3.1.28 The Code of practice for agricultural use of sewage sludge has been prepared by the Department of the Environment to complement the *Sludge (Use in Agriculture) Regulations 1989* covering Great Britain and the *Sludge (use in Agriculture) Regulations (Northern Ireland) 1990* which enforce the provisions of *EC Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture*.
- 3.1.29 Semi-natural areas, which are likely to be of particular environmental importance, are protected through the *Environmental Impact Assessment (Uncultivated Land and semi-Natural Areas) Regulations (Northern Ireland) 2001*. These regulations, which came into operation in Northern Ireland in February 2002, are administered by DARD and seek to ensure that agricultural development of uncultivated land or semi-natural areas must first be assessed for environmental significance.
- 3.1.30 *The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 1999* require the submission of an Environmental Impact Assessment (EIA) for certain large-scale development projects and development likely to have a significant effect on the environment. EIA is mandatory for those types of projects listed in Schedule 1 of the Regulations and is also required for those types of projects, listed and described in Schedule 2 of the Regulations, which are either located wholly or in part in a 'sensitive area' or meet or exceeds one of the relevant thresholds and are likely to have significant environmental effects. Sensitive areas include designated Areas of Special Scientific Interest (ASSIs) including Ramsar sites, a designated Area of Outstanding Natural Beauty (AONBs); a designated National Park; World Heritage Sites; Scheduled Historic Monument or European Site as defined in regulation 9 of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995. EIAs assist Planning Service and EHS in reaching decisions regarding environmental impacts of proposed developments.”
- 3.1.31 The UK Woodland Assurance Standard (UKWAS Steering Group, 2000), a voluntary certification standard, requires that valuable semi-natural habitats are being treated in a manner that does not lead to further loss of biodiversity. Forest Service is certified against this standard and is undertaking a survey of its lands to identify valuable semi-natural habitats which include grasslands.
- 3.1.32 Forest Service acquisition policy is outlined in *Afforestation – the DANI Statement on Environmental Policy* (DANI, 1993). It states that there should be a presumption against afforestation of botanically rich sites, which have undergone little disturbance for many years.
- 3.1.33 *Forests and Water Guidelines* (Forestry Commission, 2003), sets out water protection and riparian management standards with which forest managers are required to comply in relation to forest design planning and management of forestry operations which might effect water bodies
- 3.1.34 The relevant Republic of Ireland legislation governing water pollution control and water quality management in Republic of Ireland is provided by the *Local Government (Water Pollution) Acts 1977 and 1990* together with the *Local Government (Water Pollution) Regulations 1978 and 1992*. Anti-pollution provisions

are also contained in sections 171 and 172 of the *Fisheries (Consolidation) Act, 1959*. The *Environmental Protection Act, 1992* and associated regulations also makes provision for the protection of the environment, the control of pollution and the establishment of the Environmental Protection Agency (EPA) which is also responsible for monitoring and may initiate prosecutions for pollution offences.

3.2 Management, research and guidance

- 3.2.1 The Department of the Environment (DOE) has a duty to control discharges and emissions to surface and ground waters, including tidal waters out to the three-mile limit. Environment and Heritage Service (EHS), an agency within the Department of the Environment, takes the lead in advising on and in implementing the Government's environmental policy and strategy in Northern Ireland.
- 3.2.2 EHS, as part of the requirements of the Habitats Directive, has prepared conservation objectives for those sites submitted as cSAC's. Where reedbeds occurs on cSACs and ASSIs they are often found in association with EU priority habitats and they are, therefore, protected by control of potentially damaging operations and by the application of targeted conservation objectives.
- 3.2.3 Common standards monitoring protocols are also being established across the UK to assess the extent and condition of reedbeds within designated sites. However, standards for assessing favourable condition of the habitat in the wider countryside have not yet been agreed.
- 3.2.4 The Management of Sensitive Sites Scheme (MOSS), launched in 2002 by EHS, is a voluntary scheme designed to ensure the positive management of the site features to maintain their extent and favourable condition within ASSIs. Under the scheme, landowners can receive payment for carrying out conservation work within the framework of a written agreement. MOSS covers issues that have relevance to the conservation of site features including dumping, grazing and control of invasive species. EHS has negotiated several management agreements on ASSIs to help secure sympathetic ASSI management through the MOSS scheme.
- 3.2.5 The Environmental Protection Directorate (EPD) of EHS is responsible for the enforcement of legislation and a range of supporting activities to monitor and report on discharges and emissions to surface and ground waters, to establish the impacts of pollution, to set standards and to issue consent licenses and authorisations.
- 3.2.6 Within the EPD, Water Management Unit (WMU) is responsible for chemical and biological monitoring of lakes. The emphasis has been on monitoring the larger lakes. Lough Neagh and Lough Erne are sampled as part of the UK Environmental Change Network. Accounts of the regional chemistry of Northern Ireland's lakes have been produced as a series of county studies (Gibson, 1986, 1988, 1989, 1991; Gibson et al., 1992). A synoptic survey of Northern Ireland's lakes was conducted in 2002 (Gibson and Jordan, 2002) followed by a second survey in 2003 (Charlesworth et. al., 2003) predominantly chosen with the Water Framework, Freshwater Fish and Habitats Directives in mind.

- 3.2.7 Under the *Water (Northern Ireland) Order 1999*, all effluent discharges from both domestic and non-domestic premises which are not connected to the public sewerage system require consent from DOE, where discharge to a water way or the underground stratum is proposed.
- 3.2.8 The WMU of EHS has the role of implementing the WFD. By 2005, a screening exercise to identify significant pressures and impacts on water bodies and the identification of water bodies at risk of failing to achieve Good Ecological Status must be completed by EU member states. WMU has carried this out for all lakes greater than 50 ha in size. Lakes identified to be ‘at risk’ will be prioritised for water quality improvement actions within the overall framework of a River Basin Management Plan (RBMP).
- 3.2.9 The United Kingdom Technical Advisory Group (UKTAG) was established in 2001 to provide coordinated advice on technical aspects of the implementation of the WFD. It is partnership of the UK environment and conservation agencies and includes partners from the Republic of Ireland. The establishment of International River Basin Districts (IRBDs), where they straddle the border between two EU states, is permitted by the WFD. Seventy percent of Northern Ireland falls within the three IRBDs agreed by Northern Ireland and Republic of Ireland.
- 3.2.10 A groundwater monitoring strategy for Northern Ireland (EHS, 2000) and a policy document on groundwater protection (EHS, 2001) have been produced. WMU monitors groundwater for a number of chemical and microbiological parameters to assess compliance with EC Directives and to assess general groundwater quality. In Republic of Ireland, the EPA has the central role in sampling groundwater resources as part of a national groundwater monitoring programme.
- 3.2.11 DARD, through its Countryside Management Branch (CMB), has developed a series of agri-environment schemes including the Environmentally Sensitive Areas (ESA) Scheme (revised in 2000) and the Countryside Management Scheme (CMS). A further revision to both the ESA and CMS has recently been approved under the current Northern Ireland Rural Development Programme (2000-2006). Their objective is to protect and enhance semi-natural habitats by encouraging more sensitive management practices. Both these schemes have similar management provisions, are voluntary and apply to the whole farm.
- 3.2.12 The designation of ESAs commenced in 1988 and today there are 5 ESAs in Northern Ireland. Fen, Swamp and Reedbed are all listed as habitats in ESA and CMS and if present on the farm must be managed according to specific management plan prescriptions. The minimum eligible area for the habitats to be managed as a “Fen/Swamp or Reedbed” is 0.1 ha, and the land must be able to be farmed/managed. Landowners/farmers must have at least 3 hectares of land to be eligible to join ESA or CMS.
- 3.2.13 The Habitat Improvement Scheme (HIS) aims to help farmers protect, enhance and establish habitats which are considered to have major conservation value. This is achieved by taking land out of agricultural production or by entering into a 10 year agreement which involves extensive grazing based on non-application of fertilizers and pesticides to the land. No new applications for the HIS are being accepted as the

scheme closed in mid-1999. The scheme has been replaced by the Countryside Management Scheme (CMS).

- 3.2.14 The CMS, launched in 1999, was developed with the primary aim of maintaining and enhancing biodiversity and is open to application from all farmers and landowners outside ESAs. As funding is limited, entry into the scheme is competitive, being based on who can offer the greatest environmental benefits. DARD can provide area-based payments on blocks of > 0.1 ha in area within the farm unit, where it meets clearly defined criteria. The priority habitat must be brought under agreement and managed according to the specific objectives and prescriptions of the agri-environment scheme. A sample of these habitats are under long-term monitoring by QUB's Agri-environment Monitoring Unit (QUB, 2004). CMS and ESA both have a voluntary option to create a habitat along watercourses/standing waters, by leaving 'grass margins' either grazed or not grazed. The minimum width of these 'grass margins' is 1m. Mowing ungrazed margins is required at least once every 3 years. This will help minimise the nutrient enrichment. Within agri-environment schemes (CMS and ESA) responsible farm waste management is an integral component of the scheme requirements.
- 3.2.15 DARD has developed the Entry Level Countryside Management Scheme (ELCMS) which is due to open mid 2005. ELCMS has been designed to be easily accessible and to deliver a range of basic agri-environment improvements. Participants in the scheme will be required to undertake a field boundary management module, one of 3 possible water quality modules and one of 5 further biodiversity modules. The scheme will complement the existing agri-environment programme.
- 3.2.16 Standard agricultural practice requires the disposal of a variety of liquids and slurries to land. These activities must, however, be carried out with due regard to the prevailing soil moisture conditions and the vulnerability of local surface and groundwater to pollution. Best practice is described in the Department of Agriculture and Rural Development Codes of Good Practice. Disposal of waste to land, other than agricultural waste and sewage sludge applied for the benefit of the ground, is controlled by *Pollution Control and Local Government (Northern Ireland) Order 1978*.
- 3.2.17 The Department of Agriculture and Rural Development (DARD) promotes the Farm Waste Management Scheme (Northern Ireland) 2004 that will aid in the control of agricultural runoff to reedbeds. The scheme provides financial assistance to farmers who are installing or improving farm waste facilities in order to assist compliance with Action Programme measures in Nitrate Vulnerable Zones which have been designated under the Nitrates Directive and with the recently introduced *Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (Northern Ireland) Regulations 2003 (SSAFO Regulations)*. The whole of Northern Ireland has been declared a nitrate vulnerable zone under the Nitrates Directive. DARD and DOE have been working together to develop a strategy for the implementation of the Nitrates Directive, and to deal with Phosphate within the context of Northern Ireland's eutrophication problem. Phosphorus controls will be introduced under the WFD. A second DARD consultation paper will be published in April 2005 on draft Regulations under the WFD to control agricultural phosphorus with the aim of introducing these in the summer of 2005.

- 3.2.18 The Action Programme measures developed under the Nitrates Directive will be a major force in tackling diffuse pollution from agriculture. A booklet called “Guidelines and Manure Planning for farmers in Nitrate Vulnerable Zones” has been co-produced by EHS and DARD. Other actions carried out by the Countryside Management Branch to address nutrient enrichment have included: initiatives targeting catchments, pollution referrals and responsible phosphate management; nutrient management planning in the Lough Erne and Lough Neagh catchments; introduction of Codes of Good Agricultural Practice (CoGAP) for the protection of water and introduction of Competence Development.
- 3.2.19 Cross-compliance between EC environmental directives and payment of subsidies under Common Agricultural Policy CAP reform will increase the environmental sustainability of agriculture and the environmental performance of individual farmers. This will potentially reduce diffuse pollution levels. In return for a single payment, farmers must keep their land in good agricultural and environmental condition.
- 3.2.20 DARD has developed a Grassland Fertiliser computer programme which provides farmers with fertiliser recommendations that best match the nutrient requirements for their soil and crop, and in so doing avoid over-supply of nutrients to the environment. Adherence to minimum fertiliser prescriptions (and preferably no fertiliser application at all) is essential in the vicinity of reedbeds, where nutrient drift can result in changes in species composition and habitat status.
- 3.2.21 The *Environmental Impact Assessment (Forestry) Regulations (Northern Ireland) 2000* require anyone who wishes to carry out a relevant project, i.e. afforestation, deforestation, forest road works or forest quarry works, that is likely to have significant effects on the environment, to obtain consent for the work from DARD. The Regulations define thresholds above which the opinion of Forest Service is required. These thresholds take into consideration sensitive areas, which include Areas of Outstanding Natural Beauty (AONBs), ASSIs, National Parks, Nature Reserves, World Heritage Sites, Scheduled Historic Monuments and European sites. If consent for work is required, the applicant must provide an Environmental Statement in support of the application and where consent is granted, Forest Service may stipulate conditions to which the work is subject.
- 3.2.22 Forestry research projects currently underway to assist forest management particularly in acid sensitive catchments are co-funded by DARD and the Council for Research and Development (COFORD). In addition to these large-scale projects, are a number of smaller projects which include ecological assessments of lakes and impacts on groundwater
- 3.2.23 Forest Service, an agency within DARD is currently undertaking a biodiversity audit (2002-2005) which will assist in identifying areas of reedbed within their estate. EHS also holds information from surveys of reedbeds in AONBs, statutory protected sites and SLNCIs.
- 3.2.24 The Rivers Agency, as the statutory drainage and flood protection authority for Northern Ireland are responsible for maintaining the effective drainage function of designated watercourses under the *Drainage (Northern Ireland) Order 1973*. All

drainage and flood defence proposals are subject to the *Drainage (Environmental Assessment) Regulations (Northern Ireland) 1991*, as amended, which require an assessment at planning stage of the environmental impact of the proposed works. Rivers Agency also consult with EHS on their annual programme of drainage maintenance, where this may have an impact on designated sites of nature conservation importance. This includes both localised operations such as maintenance of outfalls for field drains and more significant river maintenance works or flood defence schemes.

- 3.2.25 EHS has produced a *River Conservation strategy for Northern Ireland* (DOE, 2001) outlining its role and responsibility in protecting, conserving and enhancing the natural and built heritage values of rivers in Northern Ireland and facilitating their sustainable use.
- 3.2.26 Roads Service has produced an Environmental Handbook (under review) as a guidance to road contractors to minimise the impact of roads from the design stage through to construction including the protection of wetland species and habitats inside or outside designated areas.
- 3.2.27 Other relevant information is gathered through specialist biological recording groups, Non-Governmental Organisations (NGOs), universities and other government bodies. Biological records are stored in the Museum and Galleries of Northern Ireland (MAGNI) at the Centre for Environmental Data and Recording (CEDaR). At 31st March 2004, over 1.4 million records were held by CEDaR and there are developments underway to make these records more accessible through the Internet. This will be achieved through the National Biodiversity Network, a union of organisations throughout the UK working together to create an information network of biological data providing an accessible data source for biodiversity information.
- 3.2.28 A number of nature conservation non-governmental organisations e.g. RSPB, UWT, and the National Trust (NT) have nature reserves that are managed for biodiversity some of which contain reedbeds. Extensive stands of reedbeds occur on the RSPB reserve at Portmore Lough. The NT Biodiversity Strategy 2004-2009 (Davidson, 2004) lists two properties containing reedbeds, Castle Coole and Crom, both in Co. Fermanagh. The UWT reserves at ECOS, Blessingbourne, Tonregee Island and at Bog Meadows have small stands (<1 ha) of reedbeds.
- 3.2.29 The RSPB, English Nature, Broads Authority and the British Reedgrowers' Association management have produced a publication *Reedbed Management for Commercial and Wildlife Interests* (Hawke & José, 1996) that comprehensively deals with best practice for the conservation, rehabilitation, restoration and creation of reedbeds.
- 3.2.30 The RSPB have produced a habitat creation handbook for the minerals industry, a practical guide to the creation of priority Biodiversity Action Plan habitats on redundant mineral workings including reedbeds. The handbook covers sand and gravel, clay, soft and hard rock quarries and opencast coal, and is of value to mineral operators, local authorities, conservation organisations and all those involved in restoring or managing such sites (RSPB, 2003).

- 3.2.31 Northern Ireland coastline is 650 km long. Extensive reedbeds occur along its estuaries and lagoons. The conservation of the coastline of Northern Ireland took a step forward with the publication in 1995 of a consultation paper on coastal zone management (DOE Environment Service). Currently an Integrated Coastal Zone Management strategy is being developed for Northern Ireland and is due for completion by 2006. This will help provide a strategic context for the implementation of this action plan.
- 3.2.32 A number of reedbeds within designated sites are owned, partially owned or leased by EHS and are managed for nature conservation. Several of these, including Ross Lough owned by Forest Service, are designated as National Nature Reserves (NNRs). NNRs are subject to a site management plan and positive management of these sites has been undertaken by EHS in association with Forest Service using best-practice management techniques.
- 3.2.33 The total river resource in Northern Ireland is estimated to be 15,445 km. The vegetation communities present along a particular stretch of river depend on flow velocity, water quality (nutrient status) and bed structure. Naturally functioning rivers have habitats associated with high watertables and flooding including fens, reedbeds, wet woodland and wet grassland. Some of Northern Ireland's rivers contain extensive reedbeds, while along many more they are reduced to scattered stands as a result of agricultural intensification, urbanisation and mismanagement. Landuse and river management for flood protection, land drainage, navigation, fisheries management, protection of water quality, urban developments, and recreational activities throughout the catchment have an impact on water quality and quantity that in turn can have positive or negative effects on reedbeds.

4 Action Plan Targets

- 4.1 Maintain the total extent of reedbed in Northern Ireland at 3,200 ha.
- 4.2 Where favourable, maintain the condition of reedbed in Northern Ireland.
- 4.3 Achieve favourable condition of 95% of reedbed which lies within designated sites, by 2015.
- 4.4. For stands outside ASSIs, secure favourable condition over, as near as practicable, 100% of the reedbed resource in Northern Ireland, by 2015.

5. Proposed Action with Lead Agencies

5.1 Policy and legislation

- 5.1.1 By 2006, initiate discussions with other government departments to ensure appropriate consultation mechanisms exist for proposed changes in land use.
(ACTION: DOE, DARD, Planning Service, EHS)

- 5.1.2 By 2006, review *Planning Policy Statement 2 (PPS2) – Planning and Nature Conservation*, to include policies relating to the conservation of priority habitat and species.
(ACTION: Planning Service, EHS)
- 5.1.3 By 2006, produce *Planning Policy Statement (PPS15) on Planning and Flood Risk*. This includes an objective to promote an integrated sustainable approach to the management of development and flood risk that, among other matters, will contribute to the conservation and enhancement of the biodiversity of Northern Ireland.
(ACTION: Planning Service, EHS)
- 5.1.4 By 2005, produce *Planning Policy Statement (PPS14) on Sustainable Development in the Countryside* which includes objectives to minimise the impact of housing development on the environmental resources of habitat, water quality and biodiversity of the rural area, thereby contributing to the conservation of biodiversity in Northern Ireland.
(ACTION: DRD, EHS, Planning Service)
- 5.1.5 Identify further examples of reedbeds as SLNCIs for consideration for adoption into appropriate Development Plans.
(ACTION: EHS, Planning Service)
- 5.1.6 Ensure that important reedbed sites not already identified e.g. as SLNCIs, are recognised and, where appropriate, site protection policies are included in Development Plans and other strategic plans including Local Biodiversity Action Plans (LBAPs).
(ACTION: Planning Service, EHS, DARD, District Councils, Forest Service)
- 5.1.7 In the preparation of Planning Policy Statements, the promotion of biodiversity will be taken into account where appropriate.
(ACTION: Planning service, DRD, EHS)
- 5.1.8 Consider a review of Countryside Management Scheme and Environmentally Sensitive Areas Scheme to include streamlining of habitats/options to ‘fit’ with Biodiversity Action Plan habitat definitions if there is to be a review of agri-environment schemes under the new Rural Development Programme (2007 – 2013)
(ACTION: DARD)
- 5.1.9 By 2007, ensure that agri-environment scheme prescriptions relating to diffuse pollution and improved farm waste management are contributing, where appropriate, to maintaining or enhancing reedbeds across Northern Ireland.
(ACTION: EHS, DARD)
- 5.1.10 By 2009, ensure that designated reedbeds are properly recognised within River Basin Management Plans as required by the Water Framework Directive.
(ACTION: EHS)

- 5.1.11 By 2006, seek to encourage positive environmental change through the reformed Common Agricultural Policy (CAP), for example, by promoting sustainable agricultural management of reedbeds.
(ACTION: DARD, EHS)
- 5.1.12 By 2007, ensure reedbeds are adequately protected through the CAP.
(ACTION: DARD, EHS)
- 5.1.13 By 2006, ensure that all farmers receiving agri-environment scheme payments and LFA Compensatory Allowance Payments are complying with GFP.
(ACTION: DARD, EHS)
- 5.1.14 Ensure that the delivery of this action plan is fully compatible with relevant aspects of forest policy.
(ACTION: EHS, Forest Service)
- 5.1.15 By 2005, implement an effective policy for assessing septic tank installations and discharges.
(ACTION: EHS)

5.2 Site safeguard and management

- 5.2.1 By 2006, determine the extent and quality of the reedbed resource which falls within protected areas and notify further sites, if required, to fill significant gaps. In particular, ensure that there is adequate representation of the full range of variation in reedbed communities found around Northern Ireland.
(ACTION: EHS)
- 5.2.2 By 2006, develop agreed methods for describing and assessing favourable condition for reedbeds.
(ACTION: EHS)
- 5.2.3 By 2006, produce conservation objectives for all statutory sites that incorporate reedbed habitats including cSACs, ASSIs and NNRs ensuring that the objectives do not conflict with the requirements of reedbeds.
(ACTION: EHS)
- 5.2.4 By 2007, identify priority reedbed sites in critical need of rehabilitation.
(ACTION: EHS)
- 5.2.5 By 2007, initiate restoration of sites identified at 5.2.4. The full range of reedbed communities and species should be considered as well as the transitions to other habitat types of conservation interest.
(ACTION: EHS)
- 5.2.6 By 2008, initiate measures intended to achieve favourable condition of all significant stands of reedbeds within ASSIs and NNRs.
(ACTION: EHS)

- 5.2.7 By 2007, target positive management through agri-environment schemes, MOSS, river maintenance schemes, the LBAP process and grant aid for biodiversity to secure favourable management on reedbed sites (including SLNCIs) prioritised in 5.2.4, according to agreed timescales.
(ACTION: EHS, DARD, Rivers Agency)
- 5.2.8 By 2006, promote and implement the management and restoration of reedbeds owned or part-funded by government.
(ACTION: EHS, DARD, Forest Service, Water Service, District Councils)
- 5.2.9 Continue to promote the Farm Waste Management Scheme (Northern Ireland) 2004, agri-environmental schemes, and associated CoGAP including nutrient planning, establishment of buffer zones and controlled grazing to reduce the impact of eutrophication on reedbed communities and species.
(ACTION: EHS, DARD)
- 5.2.10 Under the terms of the WFD, establish the Water Quality Objectives consistent with the Good Ecological Status of designated reedbed habitats, by 2009
(ACTION: EHS)
- 5.2.11 As required by WFD, deliver the above water quality objectives by 2015.
(ACTION: EHS)
- 5.2.12 By 2006 determine a methodology to review discharge consents for designated sites to ensure that they are contributing to an adequate level of water quality.
(ACTION: EHS)
- 5.2.13 By 2009, produce local nutrient control plans, involving all stakeholders, within the framework of river basin management plans.
(ACTION: DARD, EHS)
- 5.2.14 Encourage the use of Sustainable Urban Drainage Systems (SuDS) where appropriate, to reduce diffuse pollution and improve the quality of water discharging to reedbed sites.
(ACTION: Water Service, EHS, Rivers Agency, Planning Service)

5.3 Advisory

- 5.3.1 By 2006, provide information to landowners on the conservation and importance of reedbed habitat through production, promotion and dissemination of literature.
(ACTION: EHS, DARD)
- 5.3.2 By 2006, develop guidelines that identify those circumstances under which degraded reedbed restoration should be encouraged.
(ACTION: DARD, EHS)

- 5.3.3 By 2007, develop and promote awareness and training programmes on the conservation, management and restoration of reedbed through key organisations/individuals involved in the delivery of advice to farmers and land managers.
(ACTION: DARD, EHS)
- 5.3.4 By 2007, promote and develop demonstration sites for the management and restoration of reedbed.
(ACTION: EHS, DARD)
- 5.3.5 By 2006, encourage applications from potential partners to obtain funding to bring reedbed habitat into favourable management.
(ACTION: EHS, DARD, District Councils)
- 5.3.6 By 2006, review all relevant guidelines and advisory material on the management, restoration practices, and creation of reedbed communities.
(ACTION: EHS, DARD, Forest Service)
- 5.3.7 By 2006, provide information to landowners and occupiers on the status, and conservation importance of reedbed through the production, promotion and dissemination of literature.
(ACTION: EHS, DARD, Forest Service)
- 5.3.8 By 2006, produce a code of best practice for land owners incorporating suitable management, including grazing regimes and drainage appropriate to the geographical distribution and ecological variation found in wetlands.
(ACTION: DARD, Forest Service, EHS)
- 5.3.9 Develop guidelines which identify those circumstances under which reedbed restoration should be actively encouraged.
(ACTION: EHS, DARD, Forest Service)

5.4 International

- 5.4.1 Further develop links with the Republic of Ireland and other European and international organisations to promote the exchange of information and experience in research, management techniques, education and conservation strategies.
(ACTION: EHS)
- 5.4.2 By 2009, prepare River Basin Management Plans for the Northern Ireland component of cross-border catchments, working closely with the Republic of Ireland.
(ACTION: EHS)

5.5 Monitoring and research

- 5.5.1 By 2006, compile an inventory of all reedbeds in Northern Ireland.
(ACTION: EHS)

- 5.5.2 By 2006, review the requirement for and if necessary, commission applied research to help develop beneficial and practical management techniques (including appropriate stocking levels) for the enhancement and restoration of reedbeds and populations of associated characteristic species.
(ACTION: DARD, EHS)
- 5.5.3 Continue to monitor and maintain the flow and water quality of rivers that drain into designated reedbed sites.
(ACTION: Rivers Agency)
- 5.5.4 By 2009, ensure that the results of the WFD monitoring programme carried out for the status of protected areas are fully integrated into river basin management plans.
(ACTION: EHS)
- 5.5.5. By 2005, complete a review of water abstractions from and within the vicinity of all designated reedbed sites and meet targets to maintain water levels in such sites by 2010.
(ACTION: EHS)
- 5.5.6 Continue to commission applied research to help develop beneficial and practical management techniques for the enhancement, restoration and re-creation of reedbeds and populations of associated characteristic species.
(ACTION: DARD, EHS)
- 5.5.7 By 2006, ensure that all relevant information gathered in surveys is passed to the Centre for Environmental Data and Recording (CEDaR) based at the Ulster Museum and to other relevant centres. Encourage access to, and exchange of these records, by contributing to the National Biodiversity Network www-based catalogue of environmental information.
(ACTION: EHS)
- 5.5.8 By 2007, ensure the importance of reedbed is recognised through the identification of Sites of Local Nature Conservation Importance (SLNCIs) in Development Plans.
(ACTION: EHS, Planning Service, District Councils)
- 5.5.9 By 2008, seek to use locally important reedbed sites (including SLNCIs) to target positive management through agri-environment schemes, grant aid for biodiversity and restoration management by 2008.
(ACTION: EHS, Planning Service, District Councils)
- 5.5.10 By 2005, review research requirements on the effects of pollution and climate changes on reedbeds and promote research needs accordingly.
(ACTION: DARD, EHS, Academic Partners)
- 5.5.11 Promote research into the role and transport of phosphorus and nitrogen in fresh waters and into the quantification of risks posed by diffuse pollution.
(ACTION: DARD, EHS)
- 5.5.12 Continue to explore methods that will further reduce the risk of water contamination, resulting from forestry operations such as ground preparation, aerial fertilisation and

timber harvesting.

(ACTION: Forest Service, DARD, EHS)

- 5.5.13 By 2006, set in place a reporting and monitoring structure to encourage progress towards the delivery of the targets and the completion of actions identified in this plan.
(ACTION: EHS)

5.6 Communications and publicity

- 5.6.1 Provide advice and information on land management through the production, promotion and dissemination of literature, including technical handbooks and leaflets, and use of information technology.
(ACTION: DARD, EHS)
- 5.6.2 Continue to promote Peatlands Park as the flagship for achieving education, increased public awareness and appreciation of peatlands (including reedbeds) in Northern Ireland.
(ACTION: EHS)
- 5.6.3 By 2008, develop demonstration sites to reflect the range of ecological variation and applied management techniques throughout Northern Ireland's reedbed resource.
(ACTION: EHS, Forest Service, DARD)
- 5.6.4 By 2006, facilitate production of a simple web-page, an attractive booklet and/or CD-ROM for the public and schools which explains the conservation importance of reedbeds in Northern Ireland.
(ACTION: EHS, DENI, Forest Service)
- 5.6.5 By 2006, encourage appropriate access as well as interpretative and educational provisions on key reedbed sites to increase enjoyment and public awareness of the biodiversity of reedbeds.
(ACTION: EHS, DARD, Forest Service, District Councils)

6. Costing

- 6.1 A table showing the global costs for this and other HAPs is available on the EHS/Biodiversity web page.

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List of Useful Acronyms

ASSI	Area of Special Scientific Interest
BAP	Biodiversity Action Plan
CEDaR	Centre for Environmental Data and Recording
CMD	Countryside Management Division
CMS	Countryside Management Scheme
DARD	Department of Agricultural and Rural Development
DCAL	Department of Culture, Arts and Leisure
DETI	Department of Enterprise, Trade and Industry
DOE	Department of the Environment
DRD	Department for Regional Development
EHS	Environment and Heritage Service
ESA	Environmentally Sensitive Area
ESCRs	Earth Science Conservation Review Site
HAP	Habitat Action Plan
JNCC	Joint Nature Conservation Committee
MAGNI	The National Museums and Galleries of Northern Ireland
NIBG	Northern Ireland Biodiversity Group
NICS	Northern Ireland Countryside Survey
NNR	National Nature Reserve
PPG	Planning Policy Guideline
PPS	Planning Policy Statement
RA	Rivers Agency
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAP	Species Action Plan
SLNCI	Sites of Local Nature Conservation Importance
SoCC	Species of Conservation Concern
SPA	Special Protection Area
WFD	Water Framework Directive
WWT	Wildfowl and Wetlands Trust