



# LOUGH NEAGH MANAGEMENT STRATEGY

RECOMMENDATIONS FROM THE LOUGH NEAGH ADVISORY COMMITTEE 2002 - 2007

WISE USE OF WETLANDS



*Portmore Lough ASSI.*



*Sluice Gates at Toome.*

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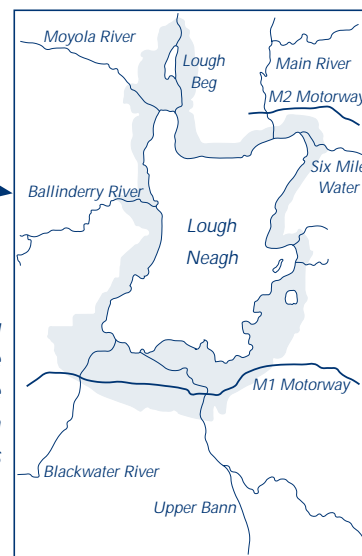
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# Lough Neagh Facts and Figures

Outline Map of Ireland



Map showing approximate boundary of the Lough Neagh Wetlands



<b>Surface Area of Lough</b>	383km <sup>2</sup>
<b>Average depth</b>	8.9m
<b>Maximum depth</b>	30m
<b>Volume</b>	3.45 x 10 <sup>9</sup> m <sup>3</sup>
<b>Length of shoreline</b>	Approximately 125km
<b>Maximum length</b>	30.5km (SW-NE)
<b>Maximum width</b>	12.1km (W-E)
<b>Total Lough Neagh Catchment</b>	5750km <sup>2</sup>
<b>LN Catchment (NI)</b>	4450km <sup>2</sup> (31% of Northern Ireland)
<b>LN Catchment (ROI)</b>	390km <sup>2</sup>
<b>LB Catchment</b>	910km <sup>2</sup>
<b>Total LN &amp; LB Catchment (NI)</b>	5360km <sup>2</sup> (38% of Northern Ireland)
<b>Status</b>	Hypertrophic - 145 micrograms phosphorus per litre
<b>Rivers Inflowing</b>	Blackwater, Ballinderry, Moyola, Six Mile Water, Main and Upper Bann are major tributaries, Glenavy and Crumlin are minor tributaries
<b>Outflowing</b>	Lower Bann (reaching the sea at Portstewart)
<b>Industries Past</b>	Linen, Coal, Diatomite, Willow basket making and Reed harvesting.
<b>Present</b>	Fishing, Agriculture, Peat extraction, Sand extraction, Water extraction, Tourism and Recreation.
<b>Commercial navigation</b>	Newry Canal (opened 1742, derelict 1949) Coalisland Canal (opened 1787, abandoned 1954) Lagan Canal (opened 1763, abandoned 1958) Ulster Canal (opened 1841, abandoned 1931) Lower Bann Navigation (opened 1847 and still operating) Upper Bann Navigation (opened 1742, abandoned 1954)
<b>Drainage schemes</b>	McMahon Scheme (began 1847-1858) lowered water level by 0.76m. Shepherd Scheme (1930-1942) plus 1952 and 1959 Schemes lowered average water levels by 1.26m. Average-to-average lowering over 160 years = 2.02m.
<b>Environmental listings and designations</b>	Area of Scientific Interest (1965) re-designated ASSI (1992) Ramsar Site from 1973 8 Nature Reserves Special Protection Area (from 1998)
<b>Prime Ownership features</b>	Bed and soil and sporting rights owned and leased by Shaftesbury Estates of Lough Neagh Ltd. Eel rights leased and Scale fishing rights owned by Lough Neagh Fishermen's Cooperative Society

## FOREWORD

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**Foreword by Chairman  
of the Lough Neagh Advisory Committee,  
Professor Brian Wood**

The Lough Neagh Advisory Committee is committed to providing management advice that will ensure the environmental, economic and social sustainability, or 'Wise Use' of the Lough Neagh area. As such, the Committee is pleased to present this Lough Neagh Management Strategy, June 2002.

This document has been two years in preparation. During this time, many organisations and individuals have given of their time and expertise to ensure that the management recommendations are relevant to the issues and appropriate. Indeed, almost one hundred formal replies were received during the consultation stages. This shows tremendous commitment from people who are interested in the Lough's future. Committee members were delighted with the level and quality of input and would like to express their sincere thanks to everyone involved.

This document is just the beginning. We must now encourage stakeholders, communities, local authorities and statutory agencies to incorporate these management recommendations into their forward work programmes, thus securing a sustainable and bright future for the Lough Neagh Wetlands.

A handwritten signature in blue ink that reads "Brian Wood". The signature is written in a cursive style with a small flourish at the end.

**Professor Brian Wood**  
Chairman, Lough Neagh Advisory Committee

# EXECUTIVE SUMMARY

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## Mission Statement

*The Lough Neagh Wetlands will be sustainably managed to conserve and enhance its natural, built and cultural heritage whilst developing economic and social opportunities for local communities and visitors according to the 'Wise Use of Wetlands' principle.*

## Background

In June 1998 the Water Appeals Commission was convened to consider the appeals of those aggrieved by the proposal to abstract more water from Lough Neagh. The Commissioner issued a report stating "...the Department could be failing in its overriding duty to protect the environment, if the issue of the overall management of the Lough Neagh Catchment were not addressed as a matter of urgency". Following discussions between the Lough Neagh Advisory and Co-ordinating Committees and DOE Environment & Heritage Service, a steering group was formed in June 2000. The preparation of this Lough Neagh Management Strategy commenced soon afterwards.

## Introduction

The Lough Neagh Wetlands are made up of Lough Neagh, Lough Beg, the satellite lakes, associated waterways and low-lying surrounding hinterland. This Lough Neagh Management Strategy document contains a series of **recommended objectives and indicative actions** for the future management and sustainable enhancement of the Lough Neagh Wetlands, as recommended by the Lough Neagh Advisory Committee. It is important to note that this is **not a statutory document** and it is **not a river basin management plan**. It is a summary of advice from Lough users, local residents, interest groups, statutory agencies and local authorities that has been compiled and approved by the LNAC.

## Cross Cutting Themes

The Lough Neagh Wetlands represent a diverse ecosystem where many complex interactions take place between man and the environment. The following have been highlighted as themes which impact on many of the issues relevant to the Wetlands: Wise Use of Wetlands, Ecosystem Approach, The EC Water Framework Directive (WFD), Regional Development Strategy for Northern Ireland 2025, Agriculture, Tourism, Partnerships, Think global - Act local and Implementation resources.

## Issues

The following issues and recommended objectives were highlighted during the three public consultation phases of the Strategy's production.

## Water Quality

Lough Neagh drains approximately 38% of Northern Ireland and the Lower Bann River is the sole outlet to the sea. Excess nutrients, particularly phosphorus and incidents of pollution all impact on the water quality in the local watercourses and in the open Lough. Pathogenic bacteria levels at water sport sites, large quantities of litter and instances of floating animal carcasses were also causes for concern for the water quality in the Lough.

- Objective 1. To implement the Water Framework Directive to achieve 'good status' within the timescales set out by the Directive including preparation and implementation of a Lough Neagh River Basin Management Plan.
- Objective 2. To reduce the number of high and medium severity pollution incidents by 20% on a NI wide basis (based on 1996 figures) and redress the effects.
- Objective 3. To ensure that appropriate areas of Lough Neagh have water of sufficient quality for contact water sports.
- Objective 4. To reduce the input and increase the removal of flotsam to Lough Neagh's watercourses.

### **Water Quantity**

The Lough level is controlled using the sluice gates at Toome. In winter months, during periods of high rainfall water levels can rise because the inflow far exceeds the outflow capacity of the Lower Bann River. This water level rise is particularly noticeable in the low-lying southern wetlands. High water levels can impact on many different activities, particularly agriculture. Lough levels also affect other activities, particularly navigation, and water quantity is important in relation to public water supply. Managing water levels is vital to maintaining the integrity of the ecosystem.

- Objective 5. To ensure that water quantity is managed within the provisions of the WFD to provide optimum conditions for the natural environment, economy, preservation of the archaeology and other stakeholders.
- Objective 6. To ensure an adequate supply of potable water.

### **Biodiversity**

Throughout the Lough Neagh Wetlands there are many important habitats, animals and plants. Actions to conserve and enhance these important biodiversity features include a combination of formally designating sites, implementing priority habitat and species action plans, developing planning and agricultural policies and promoting public awareness.

- Objective 7. To conserve, monitor, manage and where appropriate enhance and restore, important habitats and species in the Lough Neagh Wetlands.
- Objective 8. To prevent the introduction and, where possible, control the spread of invasive species in the LNW.

### **Life, Work and Influencing Change**

The people are a most important asset of the Lough Neagh Wetlands. They are diverse, but it is their actions that have sculpted the surrounding landscape over past centuries and it is they who bring life and vitality to the area through social interaction and social infrastructure. They live, work, relax, learn, educate and socialise in the Wetlands. The local people and stakeholders have a vital role in safeguarding and further developing the economic and social fabric whilst ensuring future environmental integrity.

- Objective 9. To retain a mixed, active, physically healthy and economically healthy local population in the Wetlands.

- Objective 10. To maintain and enhance local services, cultural and social activities, recreational opportunities and people's desire to act as custodians within the Wetlands.
- Objective 11. To ensure that members of the local community and stakeholders have a meaningful say in the management and development of their local area.
- Objective 12. To raise awareness, appreciation and a desire to act as custodians of the Wetlands in local people and in people throughout the catchment.

### **Landscape**

The landscape of the Lough Neagh Wetlands is a culmination of millions of years of rock formation, alteration and erosion. People have had a great impact on the visual appearance of the Wetlands through their drainage activities, farming practices, peat extraction and settlement patterns. Parts of the low-lying Lough margins are densely settled at present, with lines of houses edging the straight or looping roads, but there are other areas of uninhabited marsh and woodland, peatland, wet meadows, reedbeds, woodlands and scrub, with pastures and settlements on adjacent higher ground.

- Objective 13. Ensure that all locally distinctive buildings, archaeological sites and features are retained in the Wetlands and continue to contribute to the overall landscape quality.
- Objective 14. To ensure that existing 'out of character' buildings blend with the Wetlands landscape.
- Objective 15. To ensure that all new buildings/developments are sympathetically designed and appropriately sited and managed to maintain the traditional and special Wetlands landscape character.
- Objective 16. To maintain and appropriately enhance traditional field and boundary patterns and individual features which contribute to overall landscape character of the Wetlands.

### **Agriculture, Minerals and Fish**

Farming, sand extraction and eel fishing have been and are major employers in the Lough Neagh Wetlands. Whilst traditional agriculture has been responsible for sculpting much of the familiar landscape of the Wetlands, modern farming or land management techniques can have major impacts on the general appearance of the landscape, environmental quality and the local economy. The sand is recognised as a finite resource and removal may have implications for the ecosystem. Careful management of scale and eel fish is vital to ensure future viability and local employment.

- Objective 17. To maintain and enhance the economic potential of farm units within the Wetlands, whilst maintaining and enhancing the environmental quality, social infrastructure and recreational potential.
- Objective 18. To maintain a viable local economy whilst protecting and enhancing the archaeological interest, landscape and biodiversity of the Lough Neagh Wetlands.
- Objective 19. To monitor, maintain and enhance indigenous fish populations and maintain a viable commercial fishing industry.



### Recreation

The Lough Neagh Wetlands provide significant opportunities for both land and water based recreation, including walking, cycling, wildfowling, angling and cruising. All such opportunities must be well managed, appropriately marketed and sustainably developed to avoid disturbance to the surrounding natural and built environment and the local population whilst providing economic opportunities.

- Objective 20. To manage and enhance recreational activity in the Wetlands giving due consideration to vital environmental, economic and social needs.
- Objective 21. To provide well-managed and serviced water access points and activities within the Lough Neagh system which do not impact negatively on local people or the environment.
- Objective 22. To extend the Neagh/Bann navigable waters and seasonal usage period.
- Objective 23. To ensure sustainable management of wildfowl and wildfowling for local people within the Wetlands.
- Objective 24. To protect, sustainably manage and enhance indigenous fish stocks and fish movement in the Neagh/Bann system.
- Objective 25. Expand the opportunity for inclusive quality game and coarse angling in the Neagh/Bann system.
- Objective 26. To strategically promote and market the Lough Neagh Wetlands to locals and visitors as a quality environment, which can offer well managed, high quality land and water recreation and angling opportunities.

### Navigation

Lough Neagh is an extensive, shallow inland sea with a large surface area. The navigable waters of the Lough, the Lower Bann and the lower reaches of the inflow rivers are used by both commercial and recreational craft. There is a huge potential to increase boat numbers, particularly recreational craft when the canal network is re-watered and when the Lower Bann navigation system is promoted. The lack of a navigation authority for Lough Neagh is a major concern.

- Objective 27. To provide a safe, navigable and marketed waterway for commercial and recreational users.

### Strategic Management

At present there is a management structure in operation for the Lough Neagh area. This consists of Lough Neagh Advisory and Co-ordinating Committees. These Committees are respectively charged with providing advice and steering implementation of projects to ensure the Wise Use of Wetlands. It is recognised that an additional organisation, the Lough Neagh Partnership is needed to secure resources and to develop and implement strategic projects.

- Objective 28. To ensure the environmental, economic and social sustainability of the Lough Neagh Wetlands in compliance with the 'Wise Use of Wetlands' principle by providing strategic management information.

Objective 29. To ensure the environmental, economic and social sustainability of the Lough Neagh Wetlands in compliance with the 'Wise Use of Wetlands' principle by implementing projects.

**Way Forward**

The Lough Neagh Advisory Committee can only give advice. It hopes that the lead reporting and implementing agencies, highlighted within this document, will adopt the recommended objectives and indicative actions into their forward work plans. This document is only the start of the process. Statutory agencies, local authorities, stakeholders, local communities and individuals must work in partnership to ensure the co-ordinated management and sustainable development of the Lough Neagh Wetlands. The Lough Neagh Advisory Committee will review progress towards implementation on an annual basis.

**LOUGH  
NEAGH  
MANAGEMENT  
STRATEGY**

**Mission Statement**

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**Introduction**

The **Lough Neagh Wetlands** are made up of Lough Neagh, Lough Beg, the satellite lakes, associated waterways and low-lying surrounding hinterland. This Lough Neagh Management Strategy (LNMS) document contains a series of **recommended objectives and indicative actions** for the future management and sustainable enhancement of the Lough Neagh Wetlands, **as recommended by the Lough Neagh Advisory Committee (LNAC)**. It is important to note that this is **not a statutory document** and it is **not a river basin management plan**. **It is a summary of advice from Lough users, local residents, interest groups, statutory agencies and local authorities that has been compiled and approved by the LNAC.**

**Area Covered by the Strategy**

Each individual issue discussed in this Strategy relates to a different geographic area. For this reason, it has been difficult to accurately define the physical area on the ground in terms of the whole Strategy. In an attempt to clarify this situation, three symbols have been devised. As far as possible each management issue has been allocated one of the symbols below to allow the reader to associate the subject with a physical area on the ground. The Lough Neagh and Lower Bann catchment with major watercourses are highlighted in Figure 1. This is the physical area normally used when referring to water quality issues.



*Figure 1*

**Lough Neagh  
and Lower Bann  
Catchment and  
major Watercourses**

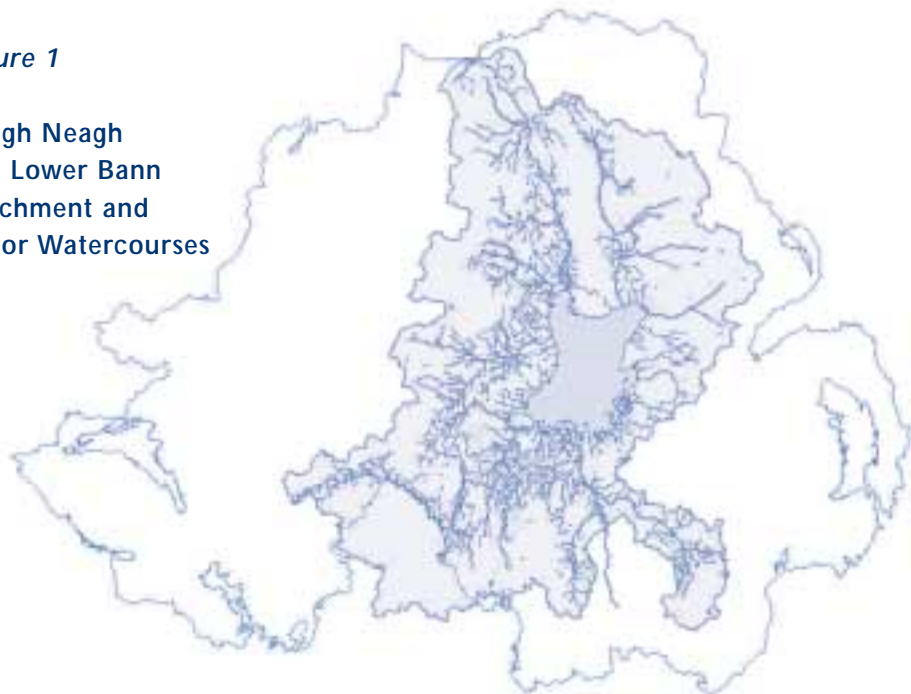




Figure 2

Lough Neagh Wetlands

- 48. West Lough Neagh Shores
- 52. Lower Bann Valley
- 61. North Lough Neagh Shores
- 62. East Lough Neagh Points
- 63. Portmore Lough Fringe
- 64. Lough Neagh Peatlands.

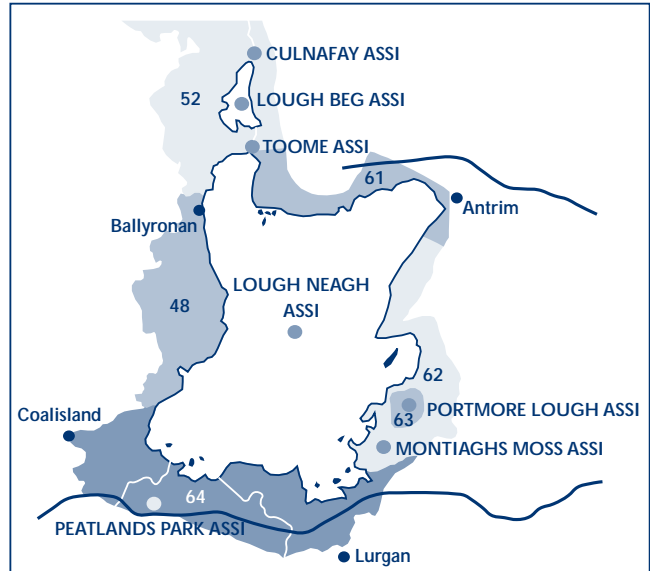
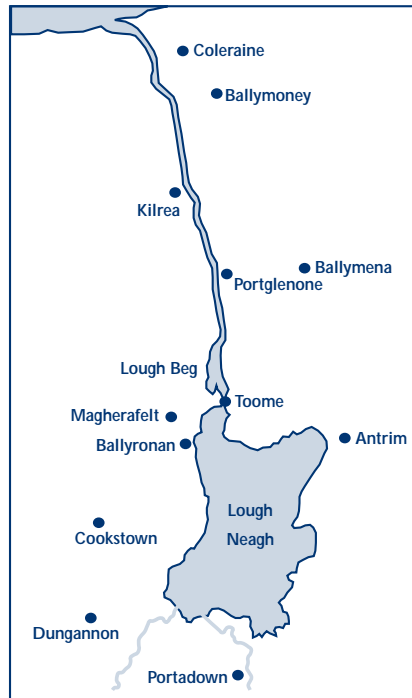


Figure 3

Navigable Water



Issues such as biodiversity and landscape will usually relate to the Lough Neagh Wetlands that has been defined using the appropriate Landscape Northern Ireland Character Areas. Figure 2 relates to the physical area covered by the Lough Neagh Wetlands. Navigational issues in general relate to the navigable waters of the Lough, Lower Bann and lower reaches of the Blackwater, Upper Bann and Six Mile Water rivers and are referred to mainly in the Navigation and Recreation chapters are shown in Figure 3. It is recognised that the implementation of recommendations made in this document will have an impact on areas and individuals outside the target area of action. Boundaries are not definite or definitive.

**Why produce a strategy?**

The Lough Neagh Wetlands are an extremely complex system where people live, work and interact with the natural environment. This Lough Neagh Management Strategy or plan is being produced to highlight the overall goals and actions necessary to achieve an acceptable

balance between the needs of local people and the needs of the environment. The use of the wetland resources for the benefits of the local population whilst maintaining the natural environment is the basis of the Ramsar '**Wise Use of Wetlands**' principle that will be the foundation for this document. This final Management Strategy provides the information, but the implementation of the recommended objectives and actions is key to ensuring a sustainable future for the economic, environmental and human resources of the area.

### **Development through Partnership**

This Strategy was developed by a partnership approach. Local people, stakeholders, local authorities and statutory organisations were all involved in developing the recommended management actions. As it was impossible to have everyone simultaneously round the table during the development stages, three public consultation phases were identified. The **first consultation stage** was in October 2000. The initial comments and ideas from these first public meetings were developed by a series of working groups and published in the July 2001 Consultation Document. Comments received on the Consultation Document formed the basis for the **second public consultation stage** and were taken into account in producing the Draft Document. Again the detailed comments received on the Draft LNMS were given serious consideration in the preparation of this document. Obviously partnerships and consultation will continue between the LNAC and all relevant stakeholders as the recommendations are refined and implemented over the coming years and in particular, a further consultation process will be fast tracked with wildfowling interests.

### **'Ownership' and Implementation**

It is important that people living, working and with interests in the area feel that the Lough Neagh Management Strategy is their Strategy and that they will benefit directly from its implementation. Whilst a non-statutory document, the Strategy provides a set of recommended objectives which everyone, including the statutory sector and stakeholder bodies are strongly urged to work together to put in place. Whilst statutory bodies and local authorities are aware of the important contribution that the Strategy will make to the implementation of their obligations under relevant EU Directives and International Conventions, many of the highlighted actions can only be implemented by stakeholders. As the body charged with providing management advice on Lough Neagh, the LNAC will promote 'ownership' of the Strategy and the implementation of the recommended management actions through encouraging the incorporation of relevant recommendations into statutory, stakeholder and community group action plans. Lead agencies and partners have been attributed to each of the recommended objectives and actions, but it has been difficult for the LNAC to complete timescales and targets as implementation of most of the recommendations is outside their own remit. It has been difficult to make the objectives and associated actions fully SMART (specific, measurable, achievable, realistic and time-bound), but the LNAC will be encouraging lead agencies to incorporate actions into their own forward work programmes.

### **Background to Strategy Production**

In June 1998 the Water Appeals Commission was convened to consider the appeals of those aggrieved by the proposal to abstract more water from Lough Neagh. The Commissioner issued a report stating "...the Department could be failing in its overriding duty to protect the environment, if the issue of the overall management of the Lough Neagh Catchment was not addressed as a matter of urgency". In September 1998, the LNAC agreed that through

the Lough Neagh Co-ordinating Committee (LNCC) they would maintain pressure on the Environment & Heritage Service (EHS) to produce an overall management plan for the Lough Neagh Catchment. Over the next 12 months, EHS refined a paper entitled 'Developing a Management Strategy for Lough Neagh' thus highlighting a way forward. The Northern Ireland Biodiversity Strategy Proposals also include a recommendation to 'Engage all relevant users and riparian interests in the preparation and implementation of management plans for all catchments'. In addition, the community sector has requested a more inclusive approach to the future management of Lough Neagh and surrounding land resources. They also feel that there is a lack of background and accessible information on how they can be proactive in relation to managing their own surroundings. The LNMS is a good start in adding to the information database and providing advice. Resources for the production of the LNMS were secured from EHS (DOE), Rivers Agency (DARD), Inland Fisheries and Navigation (DCAL), Water Service (DRD) and the Environmental Policy Division (DARD). A Steering Group with members from the funding bodies, the LNAC and local Authorities was formed in June 2000.

### **Sustainability Appraisal**

In order to ensure that the recommended objectives highlighted in this document do not adversely impact on the overall sustainability of the Lough Neagh Wetlands, a sustainability appraisal has been carried out. In this appraisal the potential impacts of implementing each objective have been considered in terms of the resultant effects on environmental, economic and social factors. When implementation of a particular objective would have had a detrimental effect on the local environment, economy or society, mitigation had to be considered or an explanation for progressing given. All objectives have been considered in this way and appropriate mitigation measures and explanations have been considered in the text. The full sustainability appraisal is shown in Appendix 1.

An attempt has been made to use plain language in this document, but it has been difficult to avoid some technical terms and the use of abbreviations for reporting agencies and partners. A glossary has been provided for your convenience in Appendix 2 and a reference section showing the main documents used during the preparation of this document is available as Appendix 3.

The LNAC would like to thank all the organisations and individuals that have been involved in the production of this Strategy. Many people gave freely of their time and expertise in order to make the LNMS a more informative and meaningful document. In particular the LNAC would like to thank the LNMS Steering Group for their extremely valuable assistance during the preparation of this document. A list of the members of the LNMS Steering Group and a list of individuals and organisations involved in the process are shown in Appendices 6 & 7 respectively.

### **Further Information**

Information on the LNMS and Lough Neagh Advisory Committees can be obtained from:

Caroline Marshall  
Lough Neagh & Lower Bann Advisory Committees  
Sperrin House  
43 Queen's Avenue  
MAGHERAFELT BT45 6BX  
E.mail: [info@lnlb.org.uk](mailto:info@lnlb.org.uk)  
Website: [www.loughneagh.org](http://www.loughneagh.org)

The Lough Neagh Wetlands represent a diverse ecosystem where many complex interactions take place between man and the environment. In producing the LNMS it has become evident that there are many cross cutting themes that impact on all, or many of the main issues. These cross cutting themes have been identified and detailed below.

#### **A Wise Use of Wetlands**

The production of this Lough Neagh Management Strategy will help to ensure that further development of the area's environmental, economic and social resources will take place in a considered way to meet the demands of people today without compromising the needs of future generations. This is embodied in the sustainable development and the '**Wise Use of Wetlands**' principles. Whilst the term sustainability can be applied to many different subjects, in the context of this document the term will refer to the three overarching subjects mentioned in the Ramsar Wise Use of Wetlands principle - **environmental sustainability, economic sustainability and social sustainability**.

People now have more free time and money to spend on recreation and holidays, and it is recognised that more people will want to avail of the natural, man-made and social resources of the Wetlands. Whilst the three prongs of sustainability are important, **environmental sustainability** is absolutely key to an area's future. It is vital that future management and further development of the known and still hidden resources are given careful consideration so as not to destroy a vital aspect that people can now, and may in the future, value and enjoy.

Employment levels within the Lough Neagh Wetlands have improved in the last few years. Whilst many people leave the area to work, a considerable number find employment in traditional industries such as fishing and sand extraction. It is recognised that recreation and tourism are growth industries in Northern Ireland and that the Lough Neagh Wetlands possess many of the attributes necessary to be a significant recreation and tourism destination. In particular, the potential in water based recreation and green and knowledge based tourism is huge. Thus a healthy environment and viable economy are inextricably linked. It is anticipated that local people will have many future employment opportunities and thus **economic sustainability** will arise from careful and considered use of the environment.

A diverse environment and vibrant economy also impacts positively on the health and general wellbeing of the local population and leads to **social sustainability**. Whilst there is good evidence of local community activity and social interaction it is vital to maintain a good mix of people by retaining young people and welcoming new people with fresh enthusiasm for the area. In order to ensure that local people have a sense of pride in and a desire to act as custodians for their area, they must be represented and included in the decision making processes.

#### **B Ecosystem Approach**

The Lough Neagh ecosystem has been severely impacted by man's activities. Water levels have been drawn down as a result of a series of drainage schemes. The water level draw down has resulted in bogs, fens, swamps and other wetland areas surrounding the Lough being converted to agricultural use. Nutrient input, mainly phosphorus, from throughout the catchment has caused the lake to become highly enriched or eutrophic. Introduced fish

species, especially roach, have significant impacts on the functioning of the lake ecosystem. Other non-native species, such as zebra mussel, could have unpredictably damaging consequences if they were to be accidentally introduced to the Lough. Whilst for management purposes it is useful to address individual issues including key activities, habitats and species, it is also important to think in terms of the ecosystem as a whole and to take appropriate action to maintain and improve its integrity.

### **C Water Framework Directive**

The EC Water Framework Directive (2000/60/EC) (WFD) came into effect in December 2000. The purpose of the WFD is to establish an overall framework for the integrated protection of surface waters and groundwaters, based on the river basin, the natural unit for the management of water. It will not be formally implemented in Northern Ireland until transposed into local legislation and therefore could be quite a time lag until the WFD brings about measurable improvements.

One of the objectives of the WFD is that all waters should achieve ‘good status’ which, for rivers, will be defined in terms of invertebrates, aquatic plants, fish communities, hydromorphological and physico-chemical characteristics.

The WFD is likely to require that the Lough Neagh Special Protection Area is part of a register of sites designated for conservation of habitats or species directly dependent on water. Northern Ireland must achieve compliance with the WFD standards and objectives relating to the Special Protected Areas by December 2015.

Under the WFD, it will be a requirement to prepare River Basin Management Plans. This Lough Neagh Management Strategy is **not a river basin management plan**. These plans will set out targets for ‘good status’ which have yet to be defined, and the measures necessary to achieve them. They will be strategic in nature and will provide a framework to report to the EU. As the WFD defines Ireland as one ‘eco-region’, a River Basin Management Plan will be prepared for the Lough Neagh catchment on a cross-border basis including part of County Monaghan. There will still be a need to address river catchment planning at a local level.

The implementation of the WFD will impact on many of the issues relevant to the Lough Neagh Wetlands. Whilst outlined here, it will be referred to in several of the issue chapters.

### **D Regional Development Strategy for Northern Ireland 2025.**

The Regional Development Strategy for Northern Ireland (RDS) was formulated in September 2001. It sets out a spatial framework to guide development over the next 25 years. It is not limited to land use planning but recognises that policies for physical development have an important bearing on other matters such as developing a strong mixed use rural economy, whilst protecting the natural character of lakes, waterways and landscapes. Lough Neagh is specifically mentioned in terms of the quality of the landscape, environment and potential for water based activity.

### **E Agriculture**

Agriculture is a cross cutting theme that can impact within the farm unit and on the surrounding environment, economy and community. Due to its importance in the three strands of environment, economy and society within the Wetlands area, agriculture is discussed more widely in Chapter 5.

### **F Tourism**

This Lough Neagh Management Strategy is written from the perspective of local people and



stakeholders. It should be appreciated that when the recommended objectives are implemented, the environmental, economic and social benefits will be experienced by local people, but will also make the area more attractive in tourism terms. If more people visit the area and spend money, economic and social benefits will be experienced by local people. It is appreciated that increased tourism can have negative environmental and social impacts, but a balanced approach, stringent monitoring and management techniques can help alleviate any negativity. Tourism is therefore a cross cutting theme that can impact on many issues within the Wetlands.

### **G Partnerships**

This Management Strategy is being produced through a partnership approach. All too often, statutory agencies give management advice that means little on the ground to local people. Local people and stakeholders have been involved in the production of these management objectives and actions and it is hoped that they will value and help implement them. Implementation of the Management Strategy and thus the future of the Wetlands will involve the setting up of public, private, stakeholder and community partnerships, where local people will have a valued say in the future management and sustainable development of their own area.

### **H Think Global - Act Local**

Developing a management strategy at a local level encourages action and implementation over a wide geographical area. Positive management by landowners in the upper reaches of the Lough Neagh catchment could have positive effects on the environment of the lower reaches of the Lower Bann River. This is the principle of Local Agenda 21: to 'think global - act local'. Lots of actions on a small scale can have widespread impact. If small management plans are produced for discrete small areas, through a partnership approach, the process of ensuring future sustainability of the global environment will not appear to be such an unachievable task.

### **I Implementation Resources**

In order for the LNMS to be successful, the recommended management actions must be implemented through a partnership approach, with input of time and effort from many people as well as financial resources. Whilst some funding may already be allocated by central and local government, it is recognised that considerable additional funding will be needed over the coming years to ensure a sustainable future for the Wetlands. The next round of European Union Structural Funds will be distributed over the coming years. Discussions are underway on the setting up of a Lough Neagh Partnership to secure and strategically distribute such funds in the Wetlands area. These additional funds will be of significant benefit in helping to implement the LNMS.

### **Issues**

In an attempt to provide a clear structure to the Lough Neagh Management Strategy document, it has been necessary to concentrate on important interests or issues. The highlighted issues are water; biodiversity; life, work and influencing change; landscape; agriculture, minerals and fish; recreation; navigation and strategic management. Outline information has been provided for each issue. Objectives and indicative actions have been attributed to individual subjects within each issue. Where objectives and indicative actions are applicable under more than one issue they are repeated for your convenience. Whilst it is hoped that the objectives are relatively comprehensive, it should be noted that the actions are 'indicative' and will change during the implementation stages.

**Aim: To prevent deterioration, improve quality and ensure fair and equitable use of the water resource, consistent with environmental designations, economic factors and human uses.**

## Introduction



### Water Framework Directive

As previously mentioned in the Cross Cutting Themes section, the implementation of the EC Water Framework Directive (WFD), will impact on many issues within this Strategy. The goals of the WFD can be summarised as follow:

- \* to prevent the further deterioration of water quality and protect and enhance the aquatic ecosystem thus promoting good ecological status;
- \* to promote sustainable water use based on a long-term protection of available water resources;
- \* to further protect and improve the aquatic environment, including groundwater through the progressive reduction, phasing out and eventual cessation of human impact through discharges, emissions and losses of priority substances;
- \* to ensure the progressive reduction of pollution of groundwater and prevent its further pollution; and
- \* to contribute to mitigating the effects of floods and droughts.

Under the WFD, all aspects of water quality and quantity should be considered using an international river basin management (IRBM) or catchment approach. The river basin management plan will address all waters in the catchment including rivers, lakes, groundwaters, estuaries, coastal waters and artificial and heavily modified water bodies.

### Lough Neagh & Lower Bann Surface Catchment

Figure 1 on page 11 shows the extent of the Lough Neagh and Lower Bann River Basin or surface catchment, which covers approximately 38% of Northern Ireland and, discharges through the Lower Bann River to the sea. This catchment also drains water from County Monaghan in the Republic of Ireland.

Issues relating to water are divided into water quality and water quantity.

## 1.1 Water Quality

### Background Information

The surface waters and groundwaters within the Lough Neagh catchment are monitored by Environment and Heritage Service (EHS) for compliance with a number of existing water quality related EC Directives.

EHS policy in the field of water quality is “to maintain or improve quality in surface waters and waters in underground strata as required by national policy, EC Directives and international agreements, and to generally manage river, estuarine and coastal waters to be at least “Good” under the adopted classification schemes with no downward movement between classes”.

**River Water Quality**

In addition to monitoring carried out to assess compliance with EC Directives, EHS monitors the rivers under the national Chemical and Biological General Quality Assessment (GQA) schemes. GQA examines a range of chemical and biological factors which taken together describe the overall quality of the river environment. The values of these factors at the various sampling points reflect the quality of NI rivers by detecting the impact of diffuse and point source pollution from a range of sources including agriculture, industry and sewage treatment. In 2000 the river water quality monitoring network almost doubled in length. Figure 4 and Figure 5 compare the 1995 and 2000 river quality results for Biological and Chemical GQA.

Figure 4

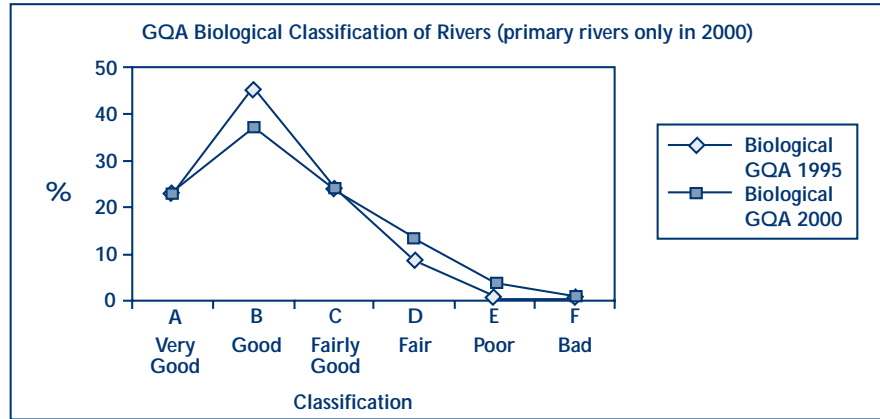


Figure 5

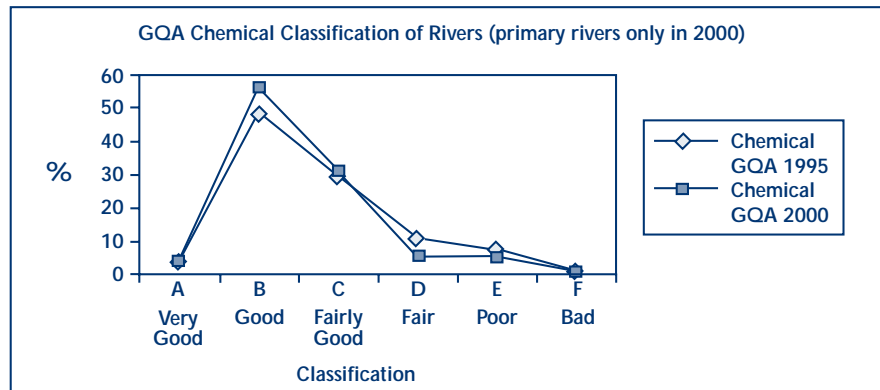


Figure 4 shows that there has been a decline in the biological quality of water in the Lough Neagh and Lower Bann catchment over the 1995 to 2000 period. The length of river classed as “Good” has decreased whilst the length of river classed as “Fair” and “Poor” has increased. The observed decline in biological river water quality can largely be attributed to excessive nutrients in the system. There has been an improvement in chemical quality over the five year period, with an approximately 8% drop in the length of rivers classified as Fair to Bad and a corresponding increase in the length classified as Very Good to Fairly Good. Improvements have in most cases been due to improved dissolved oxygen levels in the rivers.

**Lake Water Quality**

Lough Neagh is monitored by EHS for compliance with a number of EC Directives. A regular programme of Lough and tributary sampling to assess nutrient levels, particularly phosphorus, has been carried out since the late 1960s by the now Aquatic and Environmental Science Division (AESD) of DARD.

### Groundwater Quality

Whilst the visible surface water is a vital resource, groundwater is also a natural resource with both ecological and economic value. It plays a vital role as a store of water that can be abstracted for a variety of uses and can be an important component of flow to surface ecosystems. Groundwater can also act as a pathway transmitting pollutants from the surrounding catchment to local surface waters and for this reason the quality and quantity of this limited resource must be managed and protected in parallel with surface water. EHS monitors groundwater for compliance with a number of EC Directives and to assess general groundwater quality. Groundwater is sampled regularly for a number of chemical and microbiological parameters. Based on the results of the 2000 survey, groundwater chemical quality within the Lough Neagh catchment is generally of a potable (drinkable) quality.

### Points of Concern

While eutrophication is the main concern for the Lough Neagh catchment, other local concerns were raised during the production of this Strategy. These included the level and number of pollution incidents, the bacterial content in water-sport areas and the amount of litter and dead animals. The LNAC have focused their recommendations accordingly in the following sections.



## 1.1.1 Eutrophication

### Background

**Eutrophication is the term used to describe the process of nutrient enrichment, where a water body changes from a nutrient poor state (oligotrophic) to a nutrient rich state (eutrophic). It has been defined in the European Commission's (EC) Urban Waste Water Treatment (UWWT) Directive (91/271/EEC) as:**

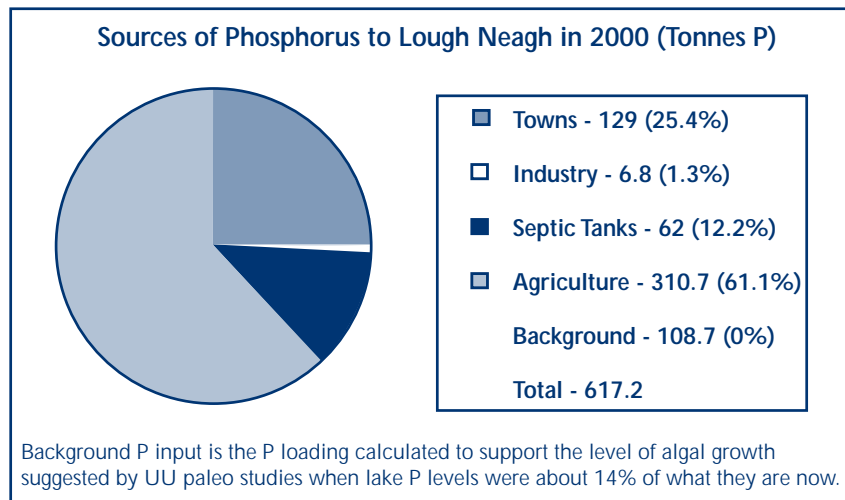
*"The enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of water concerned".*

Nutrients occur widely in nature in plants, micro-organisms and in animal and human faeces. They are used extensively in fertilisers and phosphorus is a constituent of detergents. High levels of these compounds can therefore end up in watercourses. In freshwaters the plant community, including algae, will in most instances deplete phosphorus from the water in preference to nitrogen, making phosphorus the growth-limiting nutrient. Nitrogen is generally the limiting nutrient in coastal waters. River estuaries can show a gradation from phosphorus limitation at the upstream tidal limit, which is largely freshwater, to nitrogen limitation at the seaward end. A **eutrophic**, or phosphorus rich lake produces large quantities of algae, which in turn reduce water transparency, disrupting further the ecological condition of the lake. Likewise, a eutrophic watercourse may overproduce plants that can cause large swings in dissolved oxygen concentrations. This may adversely affect fish and animals living in or adjacent to the watercourse. Clarity and aesthetic appeal of water diminish and there may be consequences for human health and a need for more intensive drinking water treatment, as decaying algae can be toxic. Any lake with a phosphorus concentration over 35 micrograms per litre is classed as **eutrophic** (over enriched). In 2000, Lough Neagh had an average phosphorus concentration of 145 micrograms per litre (source AESD) and is therefore classified as **hypertrophic**. To bring the Lough back to below the eutrophic threshold will require a 75% reduction in phosphorus concentration.

**Eutrophication in Lough Neagh**

Eutrophic conditions in Lough Neagh were originally thought to be due to high inputs of phosphorus from point sources, mainly waste-water treatment works (WWTWs) which at the end of the 1970s accounted for approximately half the phosphorus entering the lake. Eutrophication was considered to reflect the growth of towns such as Ballymena, Antrim, Lurgan and Portadown and the introduction of phosphorus detergents. However reducing the phosphorus discharged from the ten major WWTWs in the Lough Neagh catchment, which commenced in the early 1980s, only lowered the lake concentration until 1987. Since then there has been a steady rise in the total phosphorus concentration of the Lough. This increase is primarily due to increasing river loadings of soluble phosphate. As the phosphorus contribution from the WWTWs has been static or in slight decline since 1987, the origin of the phosphorus responsible for these rising levels in the Lough must be diffuse sources. The historic record of river phosphorus measurements has shown that the diffuse inputs have been increasing to the lake since monitoring began in 1974. It is likely therefore that the dramatic enrichment of Lough Neagh, which occurred in the 20th Century, has been the result of increased nutrients coming from both urban and agricultural sources. While the urban sources have been reduced since 1981 and the phosphorus content of detergents has decreased appreciably since 1986, the agricultural inputs to Lough Neagh have continued to increase. On-farm Nutrient Management Plans are vital to help farmers manage the application of fertiliser and to minimise runoff of phosphate to watercourses. Implementation of alternative slurry disposal methods, such as a bio-gas production, are also necessary to avoid the spreading of excess slurry on land. Figure 6 shows the sources of phosphorus to Lough Neagh in 2000 (source AESD). As well as the levels of nutrients within the water column of the Lough and rivers there has also been a considerable build up of nutrients in sediments that may slow down any recovery of the system due to nutrient release and recycling. It is thought that the large populations of Lough Neagh flies may be a result of the hypertrophic condition of the Lough.

Figure 6



**Septic Tanks**

Given the rural nature and dwelling dispersal within the catchment, there is a high dependence on waste water treatment by installation of septic tanks. From the results of a study carried out by the Wildfowl and Wetlands Trust in the southern wetlands in 2001, it is understood that many of these may not be functioning satisfactorily due to the nature of the substrate around the soak-away and inappropriate management. Passing the septic tank effluent through a

small constructed wetland could do much to improve the water quality of local watercourses and thus Lough Neagh.

#### **Waste Water Treatment Works and Sewerage Systems**

The EU Urban Waste Water Treatment Directive (91/271/EEC) (UWWTD) provides a framework for the control of sewage discharges to waterways. The Lough Neagh catchment (excluding the Lower Bann sub-catchment) was identified in 1994 as sensitive to eutrophication under the Directive placing a statutory requirement to continue with, and extend the existing phosphorus removal from WWTWs serving population equivalents of over 10,000. Additional planned upgrades should have a small, but sensitive effect on the levels of phosphorus in the Lough.

As well as standards of treatment, the UWWTD also covers collection systems, more commonly known as sewerage systems. The Directive requires that collection systems for WWTWs are provided by the same compliance dates as the WWTWs and that they are designed, constructed and maintained in accordance with the best technical knowledge not entailing excessive costs, as set out in the Guidance Note to the UWWT Regulations published by EHS.

Most collection systems are combined in that they deal with rainwater run-off as well as domestic and industrial wastewater. Such systems are fitted with combined sewer overflows (CSOs) that allow storm sewage to discharge directly to waterways during storm events that would normally overwhelm the system and risk damage to the sewer itself and any ancillary equipment. Such discharges are intermittent and, when subject to good engineering design and providing they discharge into waters with adequate dilution, do not normally have adverse environmental effects. In Northern Ireland due to lack of investment, a number of systems contain unsatisfactory CSOs. EHS and Water Service are currently working together to identify and rectify unsatisfactory CSOs and to rationalise the overall number of CSOs within collection systems.

#### **The NI Eutrophication Strategy**

Eutrophication is considered to be the biggest threat to water quality in Northern Ireland. The EHS Eutrophication Strategy, which is due for publication before the end of 2002, highlights a number of recommendations and actions, targeted at the public, agricultural, industrial and private sectors, to address the current eutrophication problem. Voluntary nutrient management, education, and legislative measures are highlighted as methods of implementing the recommendations. Some European countries, including the Republic of Ireland, have adopted the legislative approach. The need to introduce regulations to enforce compulsory nutrient reduction will be kept under review. The LNAC recognises the positive work that is taking place in relation to voluntary nutrient management but supports the introduction of a compulsory approach. Given the current pressures on the farming community, the LNAC believes that high levels of promotion and large incentives are vital to reduce the phosphorus input to the system. The Eutrophication Strategy also outlines recommendations on the installation and management of septic tanks and the necessary upgrades to WWTW. Whilst significant phosphorus reduction is vital, the long term nature and large scale of any practical work is recognised.

#### **Nitrates in the Lough Neagh Catchment**

At present nitrate levels are not considered to be a problem within the Lough Neagh catchment, but DOE and DARD are currently undertaking a review of nitrates in Northern Ireland. The results of this review should be available to influence the Action Plan of this LNMS as appropriate.

Objective 1	Reporting Agency		
<b>Implement the Water Framework Directive to achieve 'good status' within the timescales set out by the Directive including preparation and implementation of a Lough Neagh River Basin Management Plan.</b>	<b>EHS</b>		
Indicative Actions	Reporting Agency	Partners	Timescale
1a To reduce the input of phosphorus from major sources to the Lough Neagh catchment through publication and implementation of the NI Eutrophication Strategy.	EHS	GD/A LA NGOs SH ROI	To be set by WMU
1b Continue water quality monitoring programme within the catchment.	EHS	DARD	Ongoing
1c Encourage good farming/agricultural practice in relation to minimising phosphorus leaching and run off from the rural environment and encourage uptake of the CMS through possible creation of a new post.	DARD	UFU NIAPA LNP	Ongoing
1d Review procedures for assessing applications for discharge consent to ensure that unsuitable sites are not consented, and ensure effective septic tank installation and management within the catchment and hold an up to date septic tank database.	EHS	PS	Ongoing
1e Monitor and ensure compliance in relation to WWTW, sewage systems and industry.	EHS	WS	Ongoing
1f Carry out research into the most effective recovery and phosphorus reduction methods in Lough Neagh.	UNI	FHE	2004
1g Implement at least one nutrient management plan initiative, including soil sampling, in a priority sub-catchment of Lough Neagh with a long term goal of having compulsory nutrient management planning in the whole catchment.	DARD	EHS UFU NIAPA LNP RAN	2005
1h Raise awareness of the causes of a eutrophic system, the environmental implications, the consequences for users and methods of prevention using appropriate and targeted media.	LNAC	LNP DARD EHS	Ongoing
1i Implement the water quality recommendations contained within the NI & UK Biodiversity Strategies and the NI River Conservation Strategy.	EHS	DARD	Ongoing
1j Implement the 'Policy and Practice for the Protection of Groundwater in Northern Ireland' including investigation of the role of groundwater with respect to quality and quantity inputs into the surface water system.	EHS	GSNI DARD GSI	Ongoing

Indicative Actions	Reporting Agency	Partners	Timescale
1k Carry out a review into the entry requirements/ standards to the CMS for landowners within the Wetlands and amend/tailor as necessary.	DARD	UFU NIAPA RAN	ASAP
1l Implement the relevant recommendations of the Culture Arts & Leisure Committee report on Inland Fisheries.	DCAL	FCB UAF UCFF	Ongoing
1m Operate a Lough Neagh catchment water quality monitoring group as a sub group of the Lough Neagh Advisory Committee.	LNAC	RAN SH EHS LWC	Ongoing
1n Set up 3 inclusive river/catchment monitoring groups and encourage information flow.	RAN	EHS LNAC LCG	2004



**1.1.2 Pollution**

**Background Information**

Pollution incidents are specific events that result in the release of an undesirable substance to a watercourse or underground stratum. These substances may come from farm, domestic and industrial environments. They include slurry, silage effluent, pesticides, herbicides, fungicides, detergents, sewage, hydrocarbon oils, and heavy metals. Their influences vary and involve short and long term consequences and localised and widespread effects. They can pose severe threats to the environment and to human health. Early detection is essential in reducing their influence. Some pollution incidents can be deliberate as, for example, the release of excess slurry or milk into a watercourse. Other incidents caused as a result of an accident can be difficult to avoid, such as the overflow from WWTWs of untreated sewage into a river during periods of prolonged high rainfall. Such incidents, whilst unfortunate and in the short are unavoidable, do not send out the right messages to the public.

**Pollution Incidents and Targets**

From January to December 2000, there were 403 confirmed pollution incidents and 39 pollution related prosecutions in the Lough Neagh catchment (Source EHS). The trend over recent years has been a gradual decrease in the number of reported and substantiated pollution incidents on a Northern Ireland wide basis. In a bid to reduce the number of higher severity incidents overall, EHS has a target to reduce the number of high and medium severity incidents by 20% by March 2003. This reduction is based on 1996 figures and is a Northern Ireland wide target.

**Regulation of Discharges**

Statutory discharge consent is needed for discharges (including septic tanks) to water, and the conditions set are regularly monitored. Water Service, which manages WWTWs and collection systems, is exempt from Discharge Consents but must comply with Registered Standards and the requirements of the Urban Waste Water Treatment Regulations (NI) 1995. Registered Standards set for Water Service discharges are placed on a public register along with compliance data. Standards for the regulation of discharges from Water Service CSOs and pumping stations are also being drawn up.



**Pollution Emergencies**

Action may be taken to prevent water pollution or, where pollution has occurred to remedy or mitigate the effects on watercourses. The cost of such action may be recovered from the polluter. Plans for emergency action are set out in EHS's "Water Pollution Incident Response Procedures". All pollution incidents are recorded on EHS's Pollution Incident Logging and Tracking System (PILOTS), a computerised management information system networked to all field agents including the Fisheries Conservancy Board.

To encourage the reporting of pollution, EHS has a freephone 'Water Pollution Hotline' number 0800 80 70 60.

**Prosecutions**

The Water (NI) Order 1999 provides for a fine of up to £20,000 on summary conviction of a water pollution offence or an unlimited fine on conviction or indictment. More severe financial penalties or a term of imprisonment may be imposed if the offence is continued. Even though the maximum fine has been increased ten fold since February 1994 the average fine is in the region of £500. The 'polluter pays' principle embodies the ethos that those responsible for causing incidents of pollution or destruction should pay for basic physical clean up operations. 'Polluters' should also be asked to pay realistic compensation for damage to the ecological system. Larger fines may be a more effective pollution deterrent but compensation payments are vital for habitat restoration. Government Departments are actively involved in educating the industrial and agricultural sectors in pollution prevention measures. Government Departments are immune from prosecution.

Objective 2		Reporting Agency		
To reduce the number of high and medium severity pollution incidents by 20% on a NI wide basis (based on 1996 figures) and redress the effects.		EHS		
Indicative Actions	Reporting Agency	Partners	Timescale	
2a Implement the Water Framework Directive to achieve 'good status' within the timescales set out by the Directive including preparation and implementation of a Lough Neagh River Basin Management Plan.	EHS	DARD WS GD/A NGOs SH LA ROI	As per WFD	
2b Operate a Lough Neagh catchment water quality monitoring group as a sub group of the Lough Neagh Advisory Committee.	LNAC	RAN SH EHS	Ongoing	
2c Set up 3 inclusive river/catchment monitoring groups and encourage information flow.	RAN	EHS LNAC LCG LWG	2004	
2d Review enforcement procedures, pollution penalties and compensations.	EHS		2005	

Indicative Actions	Reporting Agency	Partners	Timescale
2e Respond to all reported pollution incidents within the Lough Neagh catchment, reduce response times to reports of pollution and encourage feedback.	EHS		Ongoing
2f Maintain a comprehensive database of incidents that is publicly accessible where possible	EHS		Ongoing
2g Continue to promote pollution prevention and provide assistance and guidance when requested.		LNAC LNP	Ongoing
2h Research and further develop measures for containment of pollution at source.	UNI	FHE	Ongoing



### 1.1.3 Bacteria Levels

#### Background Information

The quality of water can also be based on its bacterial content related to particular uses. All water contains various types and numerous amounts of bacteria, most of which are harmless to humans. However, some bacteria when ingested or absorbed can cause illness. At present it is a statutory requirement that water extracted for human consumption by Water Service is tested and treated to ensure it meets acceptable standards. The statutory agencies do not test for bacterial content in relation to water sports, but in some in-shore areas of the Lough, local authorities carry out their own testing and they have prohibited contact water sports because levels of illness-causing bacteria are high.

#### Bathing Water Directive

At present the EC Bathing Water Directive (76/160/EEC) requires Member States to identify areas where bathing is traditionally practised by a large number of bathers. EHS has identified 16 bathing waters, all of which are coastal, where the water is tested for its bacterial content. DOE currently has no plans to identify any freshwater sites, as bathing has not been shown to take place in large numbers in these areas.

However, the European Commission is proposing to revise this Directive in the future. The definition of bathing may be changed to include water contact sports, and waters identified would include areas in which water sports are actively promoted such as Lough Neagh. Bacteria monitoring under this proposed new Directive will be appropriate for freshwater bodies and will differ from the parameters currently monitored for coastal regions. Once a revision of this Directive has taken place, DOE will consult on all identified areas. The LNAC would recommend that the DOE monitor Lough Neagh's bathing sites for bacterial content as soon as possible.

Objective 3	Reporting Agency		
To ensure that appropriate areas of Lough Neagh have water of sufficient quality for contact water sports.	EHS		
Indicative Actions	Reporting Agency	Partners	Timescale
3a Test water in all contact water sport areas for pathogenic bacteria.	LA		Ongoing

Indicative Actions	Reporting Agency	Partners	Timescale
3b Test water in all contact water sport areas for pathogenic bacteria, identify sources and action clean up programmes as appropriate under any future revision of the EC Bathing Waters Directive.	LA	WSE WS	As per Directive
3c Promote designation and branding of specific, appropriately located and well managed contact water sport areas with good water quality in Lough Neagh.	LNP	LNAC WSE EHS WWC LA	ASAP
3d Raise public awareness of the effects of poor water quality on human health using appropriate and targeted media.	LA	LNP LNAC HPA	Ongoing



**1.1.4 Flotsam**

**Flotsam**

Large quantities of flotsam, including plastics, cans, bottles and fallen animals are deposited each year all around the shores of the Lough and along the watercourses. The prevailing wind deposits large amounts of this debris on the Northeast shore. This is the result of a combination of deliberate and negligent actions. Flotsam can be aesthetically unpleasant, pose a hazard to watercraft, be a source of infection and disease and a direct hazard to wildlife and livestock. In certain circumstances, oil residues left on land after flooding can deter new grass growth. In the past, local wildfowling clubs, in co-operation with local authorities organised a very successful Lough Neagh Litter Lift and removed large quantities of the debris from around the Lough. Such an event would be welcomed on an annual basis and could be expanded to other areas, but people should be encouraged to dispose of unwanted material in an appropriate manner.

**Fallen Animals**

Whilst there was a significant problem with animals carcasses floating in open water and being washed up on the shores of the rivers and Lough, it is anticipated that recently introduced legislation obliging farmers to send the ear tag and death and disposal details to the authorities will lead to a reduction of this problem.

Objective 4		Reporting Agency		
To reduce the input and increase the removal of flotsam to Lough Neagh's Watercourses.		LA		
Indicative Actions	Reporting Agency	Partners	Timescale	
4a Set up 3 inclusive river/catchment monitoring groups and encourage information flow.	RAN	EHS LNAC LCG	2004	
4b Investigate the sources of flotsam and review present appropriate litter byelaws and enforcement procedures.	LA	?	ASAP	

Indicative Actions	Reporting Agency	Partners	Timescale
4c Carry out shore and river clean up campaigns.	LNP	SH LNAC WWC LWC LA	As necessary
4d Remove all navigational dangers from access channels and open waters.	NA	CU LNR	As necessary
4e Ensure the disposal of dead farm animals in a manner appropriate with the Farm Waste Management Strategy and explore alternative ways of disposal.	DARD	UFU NIAPA IF	Ongoing
4f Review provision for and maintenance of screens and filters.	DARD		Ongoing
4g Raise awareness of the effects of litter in the watercourses and encourage responsible litter management through a 'take your litter home' campaign and using appropriate targeted media.	LA	LNAC LNP	Ongoing



## 1.2 Water Quantity

### Introduction

In June 1998 the Water Appeals Commission was convened to consider the appeals of those aggrieved by the proposal to abstract more water from Lough Neagh. Abstraction of an additional 130 megalitres/day from the Lough was upheld. However the Commissioner stated in her report that "...the Department could be failing in its overriding duty to protect the environment, if the issue of the overall management of the Lough Neagh Catchment was not addressed as a matter of urgency". This statement was the impetus for the production of an integrated Lough Neagh Management Strategy, but it should not be considered as a replacement or a catchment management plan.

Implementation of the EC Water Framework Directive, as outlined in previous sections, will have an impact in relation to issues affecting water quantity.

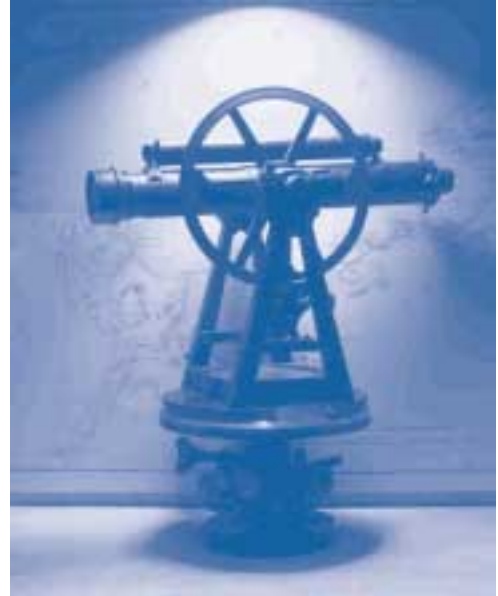
#### 1.2.1 Water Levels

##### Background Information

Lough Neagh drains approximately 38% of Northern Ireland, with the Lower Bann River being the sole outlet channel for the Lough. Past drainage schemes have lowered the Lough by an average of approximately 2 metres over the past 160 years (14.58m Ordnance Datum Belfast to 12.56mOD). The Lough level is controlled using the sluice gates at Toome, and since 1959 the statutory target range has

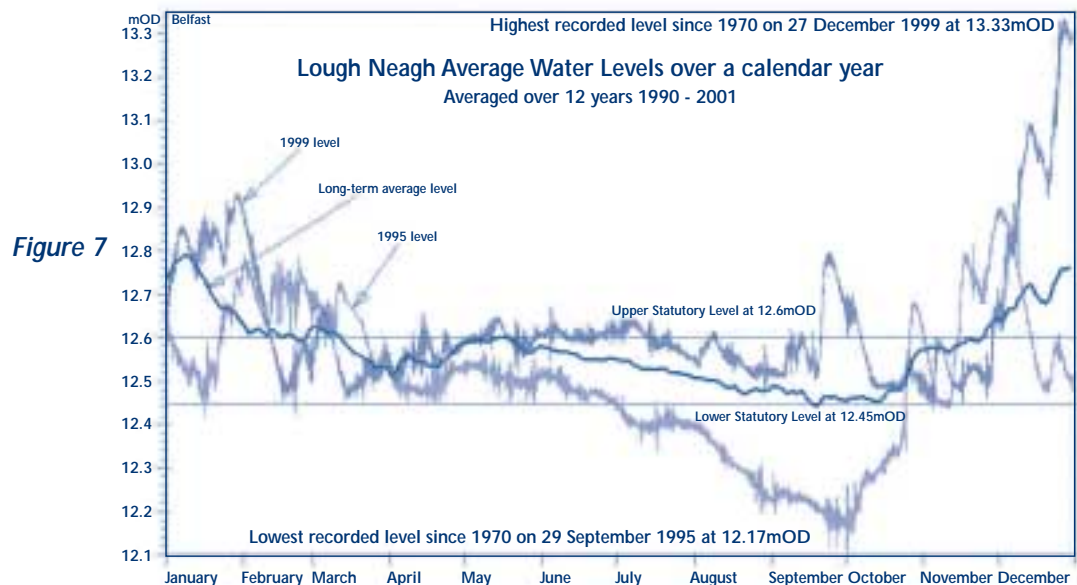
<b>Lough Levels Affect:</b>	
Sand extraction	Eel fisheries
Farming & horticulture	Salmon fishing
Water supply	Angling
Nature Conservation	Agriculture
Water sports	Sailing
Cruising	Bird watching
Wildfowling	Recreation
Residents-flooding	

been between 12.45OD and 12.60OD. In winter months, during periods of high rainfall, especially when combined with snowmelt, water levels can rise above the statutory upper level because the inflow far exceeds the outflow capacity of the Lower Bann River. This water level is particularly noticeable in the low-lying southern wetlands, but can also have an impact on the flood plains further up the Upper Bann and Blackwater Rivers. High water levels can impact on many different activities, particular agriculture and in some case recreational activity such as witnessed at the low lying land of Portadown Golf Club. Land liable to flood should be designated appropriately in Local Plans and only suitable 'development'/activities should be allowed to take place.



*Theodolite used by McMahon to survey for first Lough lowering.*

Figure 7 shows the long term annual average water level of Lough Neagh (source - Rivers Agency). The water levels from 1990 to 2001 have been used to produce the average level. The individual levels for 1999 and 1995 have been added to show the effects of a very wet winter and a very dry summer on Lough level. This figure shows that the Lough level is easier to control over the summer period than the winter period.



**Agriculture and Navigation**

Whilst drainage schemes and level control measures have prevented severe water level fluctuations, farmers show frustration at not being able to access land early in the growing season. Also, as a result of dry summers and evaporation the Lough level can fall below the minimum statutory level to maintain a flow in the Lower Bann. In times of drought, a reduced water level can have a noticeable impact on many issues including navigational activities, water quality and on local economies including commercial fishing, fish migration, agriculture,

sand extraction and water based recreation. Whilst the control range for the Lough is set in statute, operational management within these levels could be reviewed. Any formal review or modelling of new water level management regimes would be complex and could have wide-ranging logistic, cost and legal implications. The water resource in the catchment must be protected for all users and a successful outcome would depend on reaching a new consensus amongst the potential conflicting interests. Water levels are also of prime importance in maintaining the integrity of the entire wetland ecosystem and landscape. The reopening of the Ulster's Canal network would have no perceived impact on water levels in Lough Neagh as it is anticipated that all water will be back-pumped to the summit level.

#### **Public and Private Water Supply**

Lough Neagh has been used as a source of water for human needs for many years. It now provides water for approximately one third of the population of Northern Ireland in as practical a way as possible. This involves up to 252MI/day (3.0 m<sup>3</sup>/s), one fifth of the amount that goes through the Lower Bann fish pass (15.0+ m<sup>3</sup>/s), being abstracted from three locations on the Lough shore to supply the water treatment works at Castor Bay, Dunore Point and Moyola. Water Service's Water Resource Strategy 2002-2030 confirmed the need for abstraction from Lough Neagh up to the total abstraction right already granted, 382 megalitres/day. When operating at peak abstraction levels, the fish pass flows will be at least three times abstraction levels. As the demand for water increase, amounts taken from the Lough may increase further. The needs of all users should be balanced against any requirement for further abstraction. Any potential changes to the water level regime must be considered within the context of the requirements of the Water Framework Directive. Private water supplies are also used throughout the catchment from lakes, rivers and groundwaters for private drinking water supply, agriculture, industrial and commercial purposes.

#### **Abstraction Control**

There is currently no system of licensing abstraction for any purpose from waterbodies in Northern Ireland although in some cases EHS can oppose new development of abstraction under the planning process. EHS has exercised a degree of control on water abstractions by including volume limits in Water Order consents to discharge. EHS has also stated that groundwater baseflow contributions to surface waterways (e.g. rivers/lakes and wetlands) should be maintained at an acceptable level. Under the Water (Northern Ireland) Order 1999 EHS has powers to make regulations to control water abstraction and will keep this under review. The EC Water Framework Directive requires that for water quantity, overall principles should be laid down for control on abstraction and impoundment in order to ensure the environmental sustainability of the affected water systems.

#### **Ecosystem Integrity**

The Lough Neagh and Lough Beg area is a world-renowned wetland ecosystem and as such has been designated as a Ramsar site. The maintenance of this entire wetland ecosystem as well as the ecosystem of the Lower Bann River depends on water. One of the most obvious impacts of higher or lower water levels within the Neagh system is on breeding waders (e.g. snipe, redshank, lapwing, curlew) that nest in the damp grasslands adjoining Loughs Neagh and Beg. The Loughs remain one of the most important areas for these birds whose numbers are declining in Northern Ireland. Lower water levels may make the grasslands too dry to be suitable for these birds, while higher levels in spring or summer could flood their nests and cause breeding failure. If water is low during the spring salmon run, fish cannot get into rivers to spawn. Low water levels can also cause important wetland habitats such as

marshes and wet woodlands to dry out. As Lough Neagh is an SPA and an ASSI, government has a statutory obligation under European law to protect and conserve the important species of the area.

**Archaeological Conservation**

Water levels are essential for preserving organic archaeological layers that provide the widest potential spectrum of materials ranging from robust timbers to human skin and hair. The control of water levels, while primarily for maintaining water quantity, accords well with archaeological conservation principles.

Objective 5		Reporting Agency		
To ensure that water quantity is managed within the provision of the WFD to provide optimum conditions for the natural environment, economy, preservation of the archaeology and other stakeholders.		EHS		
Indicative Actions	Reporting Agency	Partners	Timescale	
5a Carry out water balance and assessment of ecological needs of water bodies within the Lough Neagh Catchment to meet WFD.	EHS	DARD WS PWA	As per WFD	
5b Review operation of water level management within the provision of the WFD to provide optimum conditions for the environment, economy and stakeholders.	DARD	LNAC SH	2006	
5c Raise awareness of the importance and complex nature of water levels in targeted audiences using appropriate media.	DARD	LNP LNAC	Ongoing	

Objective 6		Reporting Agency		
To ensure an adequate supply of potable.		WS		
Indicative Actions	Reporting Agency	Partners	Timescale	
6a Upgrade the water delivery system to reduce system water loss and therefore abstraction needs.	WS		Ongoing	

**Aim: To protect, manage and, where possible, enhance and restore important biodiversity features in the Lough Neagh Wetlands.**

### INTRODUCTION

Throughout the Lough Neagh Wetlands (LNW) there are many habitats, animals and plants that are important either because they are rare in Northern Ireland or because they constitute a significant proportion of the Irish, UK or international resource. Actions to protect and enhance these important biodiversity features include a combination of formally designating sites, implementing priority habitat and species action plans, developing planning and agricultural policies, promoting public awareness etc. as described in this Strategy.



#### **Biodiversity of the Lough Neagh Wetlands**

Within the LNW there are a number of significant habitats. The largest and most obvious is the open water of Loughs Neagh and Beg and the satellite lakes, including Portmore Lough and Lough Gullion. On the lake fringes and scattered throughout the hinterland there are a range of habitats including wet woodland and scrub, fens, swamps, reed beds, peatlands, wet grassland, ditches and drains. Many of these are fragmented and sometimes highly modified in an agricultural landscape and some are entirely manmade, such as ditches and drains, but can be important for biodiversity. The LNW are also important for a range of wetland species including birds, plants, invertebrates and fish. The number of diving ducks, great crested grebes and swans are internationally important whilst the numbers of many other bird species are important in a UK or Irish context. The largest numbers of wetland birds are present as wintering populations but some are present as breeding birds with special nesting requirements. There are 46 notable rare plants, invertebrates and other species associated with wet grassland, wet woodlands and cut-over bogs. Lough Neagh still supports the largest population of pollan in Ireland and Europe, a relic of the last ice age. The LNW have been subject to considerable change. The historical lowerings of the Lough's water level and the high levels of nutrient enrichment (eutrophication) particularly phosphorus have led to the contraction of wetland habitats and the local extinction of some animals and plants formerly known to occur in the area.



#### **Natural Conservation Designations**

The LNW have a range of nature conservation designations including Ramsar Site, Special Protection Area (SPA), Areas of Special Scientific Interest (ASSI), National Nature Reserves (NNR) and (in due course) Sites of Local Nature Conservation Importance (SLNCI). These are outlined in more detail below.

**Ramsar Sites** are wetland sites of international importance designated under the Wetlands Convention (also known as the Ramsar Convention). An area overlapping but somewhat larger than the Lough Neagh, Lough Beg and Portmore Lough ASSI/SPA has been designated as a Ramsar Site. The Ramsar Site is shown on Figure 8.

**Special Protection Areas** are sites designated under the Birds Directive that have internationally important populations of over-wintering, migrating or breeding birds. SPA designation brings stronger protection measures to ASSIs. Lough Neagh, Lough Beg and Portmore Lough are all part of an SPA. The SPA is shown in Figure 9.