

REF.	ACTIONS	PARTNERS (lead partners in bold)
36.1	Update the NERP (now SEPA) report on phytoplankton in the loch in order to confirm the sources and the relative loads of nutrients within the catchment.	SEPA / SW / SAC / RSPB
36.2	Reduce nutrient inputs to the Loch of Skene catchment.	SEPA / SW / SNH / Landowners / NFUS / MI / SAC / FWAG / RSPB / NEAAG / AC / Householders / SRPBA / SGRPID / Land managers
36.2.1	Develop and implement a Programme of Measures to reduce nutrient input from agriculture and sewage.	NEAAG / SEPA
36.2.2	Develop a nutrient management plan for the Loch of Skene catchment.	SEPA / SW / SNH / Landowners / NFUS / MI / SAC / FWAG / RSPB
36.2.3	Ensure all future developments draining to Loch of Skene incorporate appropriate level of SuDS to protect the ecological status of the loch and its importance for wild birds.	AC / SEPA / SNH
36.2.4	Promote and implement best practices to reduce nutrient input from agriculture and sewage.	NFUS / SRPBA / AC / SEPA / Landowners / Householders /
36.2.5	Implement the Controlled Activities Regulations.	Landowners / SEPA / SNH / NFUS / Land managers / SGRPID
36.3	Review the impact of measures taken and plan further action accordingly.	SEPA
36.4	Encourage greater awareness and participation amongst local land managers, land managers and communities.	DCP / SEPA / SGRPID / NFUS
36.4.1	Assess the likely impacts of increased recreational activity on water quality of the loch. Draw up guidance on use and promote to recreational users.	Loch of Skene Working Group / Landowners / AC / SNH / SEPA

Acronyms are listed in the centre of this Action Card



OBJECTIVE 36. Improve the water and habitat quality of the Loch of Skene.

BACKGROUND

The Loch of Skene is located in low-lying countryside 13km West of Aberdeen. Its 48.3km² catchment is a rural, predominantly agricultural area. The area of the loch was artificially increased to 1.1km² by the installation of a dam at the outflow; the loch is no more than 2m deep.

The loch is an important site for birds, principally geese and ducks, and as a consequence is designated as a Site of Special Scientific Interest (SSSI), a Special Protected Area (SPA) and a Ramsar Site.

Currently, the Loch is used by Aberdeen and Stonehaven Yacht Club and Aberdeen Outdoor Education Centre for sailing between April and June. The purpose of this restriction is to avoid disturbance to roosting birds in autumn and winter.

The loch's natural ecology has been disturbed by inputs of nutrients, principally from the four streams that drain its catchment, and is consequently considered to be at high risk of failing to achieve good status within the 2015 timescale of the Water Framework Directive (WFD).

ISSUES

- Water quality in Loch of Skene is Class 2 which means it has been significantly altered by human activity (*the Scottish Environment Protection Agency classifies loch water quality by comparing current quality with that which would have existed before significant influence from man. Computer simulation is used to predict historic water quality based on records of land use before the development of intensive farming*).
- Loch of Skene is considered to be at high risk of failing to achieve good ecological status by 2015.
- The loch's water has been enriched to a eutrophic state by human activities that have given rise to excessive nutrient levels in the four streams that drain its catchment.

- The main sources of these nutrients are agriculture (from inorganic fertiliser or animal manure) and sewage (either from individual septic tanks or community sewage treatment plants).
- There are wastewater treatment plants at Dunecht and Lyne of Skene and these discharge nutrients to the Kinnernie and Kirktonbridge Burns which subsequently drain into the loch.
- Nutrients may also arise from the expanding suburb of Elrick to the east of the loch. Sewage from Elrick is not discharged to the loch catchment but a proportion of its surface water does drain to the loch and can contain nutrients from activities such as car washing as well as household appliances like dishwashers illegally connected to the surface water drain instead of the foul sewer.
- Other nutrient sources are forestry and droppings from birds, particularly during winter roosts of geese and gulls.
- Over the years dead organic matter has settled on the bed of the loch. This is a source of nutrients that can be recycled into the loch, particularly since as the loch is shallow the bed may be disturbed by wind action or outboard motors.
- The unnaturally high nutrient levels within the loch can favour microscopic photosynthetic organisms called algae. Prolific growths of algae (called 'blooms') have been observed to cause a nuisance in the loch since 1970. The presence and abundance of different species of algae depends on factors such as the availability of nutrients, water temperature and weather conditions. Typically diatoms are observed to bloom in spring and autumn whereas blue-green algae, called cyanobacteria, are mainly observed during the summer months.
- Blooms of blue-green algae are of concern because they can release toxic compounds, posing a danger to animals that live in the water or drink at the margins and to people doing water sports.

WHO IS INVOLVED?

- Aberdeenshire Council
- Dee Catchment Partnership
- Farming & Wildlife Advisory Group
- Householders
- Landowners
- Land managers
- Macaulay Institute
- Loch of Skene Working Group
- North East Area Advisory Group
- National Farmers' Union Scotland
- Royal Society for the Protection of Birds
- Scottish Agricultural College
- Scottish Environment Protection Agency
- Scottish Government Rural Payments & Inspections Directorate
- Scottish Rural Property & Business Association
- Scottish Water

- All algal blooms inhibit aquatic rooted plants through shading and alter the balance of dissolved oxygen in the water column to the detriment of fauna within the loch.
- There are issues associated with recreational use (sediment disturbance by outboard motors, toilet/waste water facilities).

EXISTING / RECENT INITIATIVES

- As part of the River Basin Planning process a programme of measures is being designed with the aim of reducing inputs of nutrients from agriculture and sewage sources, in order to halt and reverse the process of eutrophication.
- Scottish Water will reduce the amount of nutrients from their treatment plants at Dunecht and Kirkton of Skene.
- The loch catchment lies within the Aberdeenshire Nitrate Vulnerable Zone. Farmers within the catchment are required to prepare farm action plans to reduce the input of nitrogen into the catchment.
- New developments such as the housing at Elrick are required to have SuDS in order that the nutrient run-off load remains no greater than it would have been from the natural catchment on which the development is built.
- The Loch of Skene has been monitored as part of the Grampian blue-green algae Action Plan.
- A working group made of representatives from Dunecht Estate, Aberdeenshire Council, Scottish Natural Heritage, sailing and bird interests has been formed to investigate the potential to extend the

period of use throughout the year and to expand the use to include windsurfing and canoeing. Increased use may however impact on water quality and the frequency of algal blooms.

ACTIONS REQUIRED

- Review and update the existing report on phytoplankton in the Loch of Skene.
- Develop and implement a Programme of Measures to reduce nutrient input from agriculture and sewage.
- Develop a nutrient management plan for the loch catchment.
- Promote good practice for agriculture and draw on financial incentives to help farmers remediate problem areas and implement good management of soil, nutrients, agro-chemicals, manures and slurry.
- Promote involvement and awareness amongst land managers and communities..
- Coordinated reduction of pollution over the whole catchment.
- Monitor recreational use and potential effects on water quality.

LEGISLATION

See Action Pack Annex for information sources

- Building (Scotland) Regulations 2004
- Conservation of Wild Birds Directive 79/409/EEC
- EC Nitrates Directive (91/67/EEC)
- Nature Conservation (Scotland) Act 2004
- Nitrate Vulnerable Zones (Scotland) Regulations 2003,

NVZ (Grants) (Scotland) Regulations 2003, Nitrogen Vulnerable Zone Action Programme

- Sewerage (Scotland) Act 1968
- Silage, Slurry and Agricultural Fuel Oil (Scotland) Regulations 2003
- The Conservation (Natural Habitats and Species) Regulations 1994
- The Conservation (Natural Habitats and Species) Regulations 1994.
- Town and Country Planning (Scotland) Act 1997
- Water Environment (Controlled Activities) (Scotland) Regulations 2005
- Water Environment and Water Services (Scotland) Act 2003
- Water Framework Directive
- Wildlife and Countryside Act 1981

GUIDELINES AND INFORMATION

See Action Pack Annex for information sources

- 4 Point Plan
- Causes and effects of nuisance populations of phytoplankton in the Loch of Skene, Aberdeenshire. Roger Owen (North East River Purification Board, now SEPA. 1980.)
- Diffuse pollution initiative (SEPA)
- Drainage Assessment, A Guide For Scotland
- Farm Soils Plan
- Farming and Wildlife Advisory Group (FWAG)
- Forests and Water Guidelines (Forestry Commission)
- Linking Environment and Farming (LEAF)
- Nature Conservation: Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds June 2000
- Planning Advice Note PAN 61
- Prevention of Environmental Pollution from Agricultural Activities (PEPFAA Code) 2005
- SEPA Best Management Practices
- SEPA Pollution Prevention Guidelines
- Sustainable Urban Drainage Systems design manual for Scotland and Northern Ireland
- Targeted Inputs for a Better Rural Environment
- Watercourses in the Community



Loch of Skene

RELATED ACTION CARDS

- 1. Diffuse agricultural pollution
- 7. Private sewage treatment systems
- 15. Effects of land management on river flow
- 16. Flood alleviation
- 20. Lowland wetlands
- 37. Elrick burn catchment