

## Did the groups see nutrients as the major issue?

Yes, and no. Excess nutrients is the main cause of algal blooms in water, and the anglers in particular were well aware of the effect that algae can cause. Rescobie Loch suffers from regular blooms, which are thought to be caused by phosphorous which comes from a combination of soil being washed off fields and the sediment at the bottom of the lake itself - it can also come from septic tanks and sewage works. But for other people things which we were either unaware of, or hadn't thought of as a problem, were a more pressing issue.

## What other issues did people tell us about?

- concerns over low water levels, particularly in summer. These were blamed on abstraction for irrigation with so much of the catchment being used for farming, including horticulture.
- periodic localised flooding, with a combination of heavy rains, poor urban drainage and silted up river channels being seen as the cause.
- poor water quality and smells in areas close to sewage works, or due to new housing developments putting too much strain on existing sewage networks. Poor understanding and maintenance of septic tanks was another factor.
- an increase in alien plants such as giant hogweed and Japanese knotweed tangling banks and making parts of the river inaccessible. Where they kill off native plants, there was also a concern about soil erosion from bare banks in winter.
- pressure on drinking water supplies due to elevated levels of metals - high arsenic had been found in a well supply.
- contamination of water from landfill sites, local quarries and road run-off.
- declining fish stocks, because of modifications to the river such as weirs which make it difficult for fish to return upstream to spawn, or because of net fishing at the river mouth.
- excessive growth of algae affects the water quality and ecology of the lochs.

## But not all bad news?

Not at all! In general the people who live and work in the catchment are very happy with the quality of the water and the surrounding environment. Many commented on the increase in wildlife seen over the past few years, with sightings of otters, kingfishers and other birds, dragonflies and a variety of other insects. Several groups are working hard to promote biodiversity in the catchment and their work was seen as very valuable.

## What do we need to work on?

Given the responses of the people who took part, a number of scientific questions have been thrown up, including:

- how do the levels of nutrients being measured in the Lunan and its tributaries affect habitats, and wildlife (if at all)?
- can we get a better nutrient budget to identify ways to cut down on the amounts entering the water? Can we work with farmers to help them reduce the amount coming from agriculture?
- if flooding and water shortages are an issue now, what impacts might changing climate have on water resources in the catchment?
- if water quality is a concern, how can we trace the source of any contamination?
- can we increase the whole community's understanding of how they can help to improve water quality?

## What do we do next?

The scientists, regulators and land managers need to put their heads together and use the information we have gathered, along with what the farmers have provided, to decide what we need to do next.

- we will report the findings of this work to the Tay Area Advisory Group (AAG), who are responsible for river basin management planning in the River Tay basin, which includes the Lunan.
- we will hold a meeting with our colleagues in SEPA and SAC to share our results and find out what their own research has found.
- once we have had a chance to discuss the story so far with other groups, we want to work on addressing some of the specific questions mentioned above.
- in future we would like to invite all the groups back for another set of meetings where we can show them how we (and others) have responded to the issues they have told us about.
- we hope to be able to provide people with septic tanks with practical information on how to maintain and manage them to keep them functioning correctly, and reduce the chance that they are polluting the water.
- we aim to provide information and help promote good practice among people who live and work in the catchment, so everyone can help manage it, and it can be enjoyed by us all.



## Contact information

If you would like to know more about the work of this project, or any other work going on in the Lunan Water catchment at the Macaulay Institute, please contact:

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## Other useful contacts

Angus Council  
[www.angus.gov.uk](http://www.angus.gov.uk)  
Farming and Wildlife Advisory Group (FWAG)  
[www.fwag.org.uk](http://www.fwag.org.uk)  
Murton Wildlife Trust  
[www.murtonwildlifetrust.org.uk](http://www.murtonwildlifetrust.org.uk)  
Rescobie Loch Development Association  
[www.rescobieloch.co.uk](http://www.rescobieloch.co.uk)  
The Scottish Agricultural College (SAC)  
[www.sac.ac.uk](http://www.sac.ac.uk)  
Scottish Environment Protection Agency (SEPA)  
[www.sepa.org.uk](http://www.sepa.org.uk)  
Scottish Natural Heritage  
[www.snh.org.uk](http://www.snh.org.uk)  
Scottish Water  
[www.scottishwater.co.uk](http://www.scottishwater.co.uk)

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[www.scotland.gov.uk/Topics/Rural](http://www.scotland.gov.uk/Topics/Rural)

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# Linking local and scientific knowledge in the Lunan Water



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## What's it all about?

The Lunan Water is the site for a new project looking at the health of land and waters, and how science can help in finding solutions to environmental problems. The Macaulay Institute, the Scottish Agricultural College (SAC) and the Scottish Environment Protection Agency (SEPA) are working together to try and understand the issues, however we need your help.

## Why are we doing it?

SEPA are responsible for implementing the European Water Framework Directive (WFD) legislation in Scotland. One of the important ways in which the WFD works is that it allows everyone to have a say in the way the catchment is managed. Listening to what local people have to say helps scientists and policy makers make better decisions.

## Who is taking part?

We have asked a group of scientists, people who work with land based industries, anglers, and a cross section of local people who live in the catchment and see and use it every day to give us their views.

## What have we been doing?

We have hosted five discussion groups where we gave a presentation on what we see as the issues in the Lunan Water. Our understanding from past work conducted by SEPA was that the quality of water is not all it might be due to the levels of nutrients which have leaked into the river and lochs. We tried to show what effects these nutrients have on the water, where they come from and the quantities involved. We believe farming is not the only source of these nutrients; in fact everyone in the catchment contributes to the problem. Nutrients come from a number of places, including sewage works, septic tanks and from the sediments found at the bottom of lochs such as Rescobie and Balgavies.

## What did we do in the discussion groups?

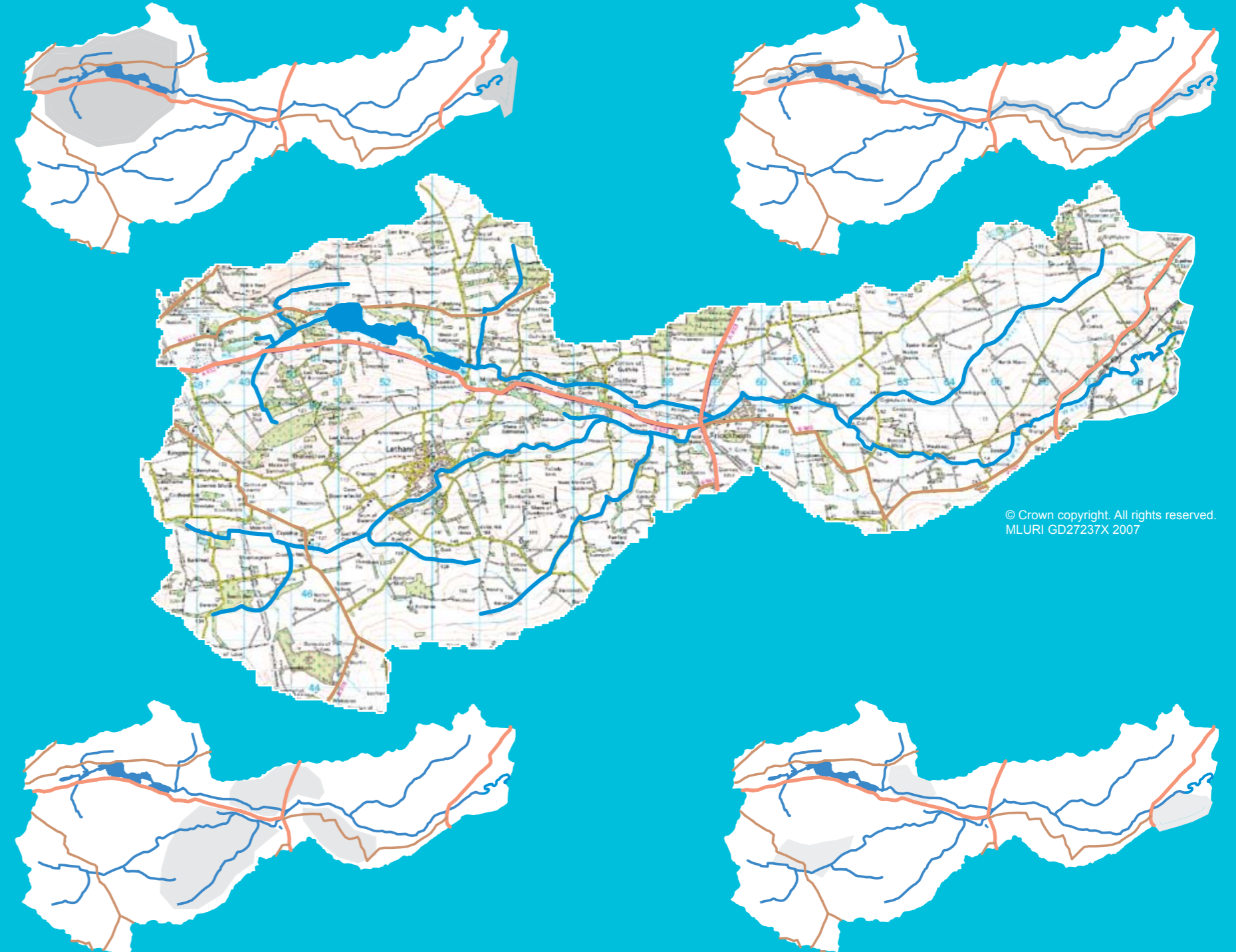
We provided everyone with a map of the whole catchment, and asked them to mark the areas they knew, and any places where they thought the catchment was 'healthy' or 'unhealthy'. We asked what matters to them when they think about the places where they live, work and play, to tell us if they knew about the nutrients issues, and whether they agree with the 'scientific' summary.

## And what did they tell you?

They told us that what matters to scientists and regulators isn't necessarily what others think or worry about, so if we want to manage the catchment for the benefit of people and the environment we need to take into account a wide range of views.

## Most visited by our participants

The areas of the catchment most frequently visited are those around local beauty spots like Restenneth Moss and the Murton National Nature Reserve just north and east of Forfar, and around the mouth of the Lunan, where it empties into the North Sea. Favourite activities in these areas are walking, sight-seeing and relaxing!



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## Occasionally visited by our participants

The centre of the catchment is used by a variety of people, but less heavily than other areas. Some people keep livestock, and the residents of Friockheim and the surroundings enjoy walking here, but the Lunan Water in this area is fished less frequently, and other forms of recreation are uncommon. Perhaps because the presence of humans is lower, several people reported increased sightings of local wildlife, including otters, kingfishers and a variety of insects.

## Frequently visited by our participants

The land around Rescobie and Balgavies Lochs is popular with walkers, and Rescobie itself is one of the main areas for anglers in the catchment. They also fish on many of the lower stretches of the Lunan, in the eastern part of the catchment right to the coast. The stretch immediately east of Friockheim is less heavily used by others due to the bankside vegetation making it difficult to walk in some places.

## Seldom visited by our participants

Areas away from the Lunan Water are less likely to be visited by anyone other than locals. With such a large part of the catchment being farmed or used for horticulture, opportunities to visit much of it are more limited, but the people of towns like Letham and Inverkeilor know the best spots to take their dogs, and enjoy the peace and quiet of this part of Angus.