Pollution is an introduction of contaminants into the natural environment that results in adverse change. It can take the form of chemical substances or energy, such as light, heat or noise. Pollutants, the components of pollution, can be either foreign substances, energies or naturally occurring contaminants.\(^1\)

Protection of water, land and air from pollution is central to sustainable use of the environment and our long term quality of life.
Why should we do this?

Our responsibilities
Scottish Canals has legal duties to prevent and manage pollution of the environment. We also have responsibilities, where this management overlaps with our other functions, to protect the health and safety of our staff, customers and partners.

Our staff, partners and customers care
Our staff, partners and customers value the waterway environment and expect it to be of high quality. We can use our combined efforts to monitor, protect and enhance the canal environment.

Business threats and opportunities
Pollution, which is generally minor and infrequent, is the most commonly reported environmental incident on our network. Pollution reduces the amenity value of our waterways, poses potential health and safety risks, impacts on biodiversity and can be costly to resolve.

By managing our pollution risks appropriately, we can not only enhance the canal environment, but also derive additional economic and social benefits. With 22 million visits per annum to our network, we can also demonstrate pollution prevention and management best practice to a wide audience.
Key Drivers

- **Scottish Government National Performance Framework: Objectives: Healthier and Greener**
  Outcomes: We live longer, healthier lives; We reduce the local and global environmental impact of our consumption and production; We value and enjoy our built and natural environment and protect it and enhance it for future generations.\(^{(2)}\)

- **Scotland River Basin Management Plan 2009** and subsequent plans which set a route to protecting and improving Scotland’s water environment in a sustainable manner.\(^{(3)}\)

- **The Water Environment (Controlled Activities) (Scotland) Regulations 2011** which authorise the management of waste water on the Scottish Canals network.\(^{(4)}\)

- **The Private Water Supplies (Scotland) Regulations 2006** whose purpose is to ensure the provision of clean (wholesome) drinking water. Scottish Canals has a small number of private drinking water supplies on its estate.\(^{(5)}\)

- **The Scottish Environment Protection Agency’s Pollution Prevention Guidelines** which provide practical guidance to reduce the risk of pollution of the water environment.\(^{(6)}\)

- **The Water Environment (Oil Storage) (Scotland) Regulations 2006**. The regulations set design standards for above ground oil storage devices including fixed tanks, intermediate bulk containers, drums and mobile bowsers.\(^{(7)}\)
Key Drivers

- **Environmental Protection Act 1990, Part IIA** and associated regulations and guidance which control the management and remediation of contaminated land that, in its current state, is causing or has the potential to cause significant harm or significant pollution of the water environment.\(^8\)

- **Low Emission Strategy for Scotland – consultation draft 2015** which includes a framework to bring together central and local government air improvement policies and a new refocused agenda for action. It sets out the contribution that better air quality can make to sustainable economic growth and quality of life for the citizens of Scotland.\(^9\)

- **Scotland’s Land Use Strategy 2011** which refers to land contamination and the regulatory and management regimes which help to minimise human health risks and ensure that regeneration opportunities are realised.\(^10\)

- **Scottish Canals’ Corporate Plan 2014** which refers to our contribution to the environmental well-being of Scotland.\(^11\)

Status traffic light

Amber means:
We are already active in this area but there is room for improvement.

What are we doing now?

Our baseline

Canal network water quality

The chemical quality of water is an important indicator of past and present pollution issues. The water quality in the Caledonian and Crinan Canals, which are in predominantly rural catchments, is good. The Lowland Canals’ water quality was poor historically due to pollutants from unregulated industrial activities in or near them entering the network. The legal control of water pollution since the 1970s, and regulations to deliver the European Water Framework Directive in Scotland in the 2000s, coupled with a decline in canal-side industry, major contaminated sediment clean-ups and removal of barriers to water flow in the Lowland Canals (2000-02) as part of the Millennium Link project, have dramatically improved canal water quality.

As part of the Scotland River Basin Management Plan (RBMP) 2009,(12) the Scottish Environment Protection Agency (SEPA) assessed the chemical status of the water in natural and man-made water bodies. The canal network is split up into 43 water bodies (26 canal sections, 11 rivers and six lochs).
What are we doing now? Our baseline

SEPA has a targeted sampling regime which focuses on higher risk sites. The overall chemical status of water in six of the 43 water bodies was reported on in 2012 and 2013 respectively. Three sites on the Lowland Canals and one on the Caledonian had a Pass classification and two Union Canal water bodies were assessed as failing the Water Chemistry parameter due to historic contamination from a former munitions factory. Scottish Canals significant investment is in addressing this issue has been acknowledged by the Scottish Environment Protection Agency. Scottish Canals does not have any actions for these sites in the Scotland River Basin Management Plan.\(^{(12)}\)

Further details of the full water quality assessment of the canal network which also takes account of biological quality, hydrology (changes to water levels and water flows), morphology (changes to the beds, banks and shores of water bodies) and an assessment of invasive non-native species can be found in Theme 9, page 09 – 12.
What are we doing now? Our baseline

Management of water pollution

Pollution of the water environment in Scotland is regarded as a significant environmental problem.\(^{(13)}\) On the Scottish Canals network, water pollution can come from point sources, e.g. septic tank discharges, diffuse sources e.g. run-off from roads, engineering projects and farm land or as a result of accidents or vandalism leading to spillages of polluting materials e.g. oils.

• Between 2012 and 2014, no significant water pollution events occurred. Twelve minor water pollution incidents were reported: seven oil/fuel/paint from boats, two point source pollution, one sediment in stream, two sewage entering canal from third parties.

• In 2013/14, Scottish Canals had 38 septic tanks which discharged waste water, either to a designated area of land (soak-away) or to a watercourse. The majority of discharges are small and authorised via a simple registration from SEPA. At Auchinstarry, Forth & Clyde Canal Marina, there is a higher volume, licenced discharge which serves a number of buildings and a boat marina. In 2013, our performance with regard to meeting the licence conditions was assessed by SEPA as Excellent.

• The canal network receives surface water run-off from adjacent land in both urban and rural areas. This run-off may contain various pollutants which have the potential to adversely affect water quality. A key problem on the Lowland Canal Network is the supply of nutrients (e.g. phosphates/nitrates) which can lead to more extensive aquatic plant growth.\(^{(14)}\) This results in navigation hazards which are costly to manage.
What are we doing now? Our baseline

Recreational water quality

Scottish Canals assesses recreational water quality at Pinkston Watersports Centre in Glasgow where the likelihood of contact with canal water is very high. The water at this site is treated and has been fully compliant with Bathing Water Directive (76/160/EEC) and Bathing Waters Directive 2006 (7/EC) since it opened in May 2014.

The water play and boating pond areas at the Falkirk Wheel are supplied with drinking water and have a regular cleaning regime.

Very localised blue-green algal blooms occur at some of our reservoirs and locks, usually in the summer months. To manage the potential adverse medical effects of these algae, Scottish Canals follows Scottish Government guidance Cyanobacteria (Blue-Green Algae) in Inland and Inshore Waters: Assessment and Minimisation of Risks to Public Health (Revised Guidance 2012). Only two minor occurrences of blue green algae were reported between 2012 and 2014 on the Lowland Canals.
What are we doing now? Our baseline

Potable water quality
Scottish Canals had four private drinking water supplies on the Caledonian Canal in 2014. The supplies are regularly tested by Highland Council for their compliance with the quality requirements of the Private Water Supplies (Scotland) Regulations 2006.

Water quality to support fish
The Caledonian, Forth & Clyde and Union Canals are the only waters in Scotland designated for coarse fish, such as perch, roach, pike, tench and eel, under the European Directive on freshwater fisheries. The canals fully complied with the Directive’s water quality standards from 2001-2012. The Directive was repealed in 2013 and the water quality requirements are now met through the broader ecological objectives set in the Scotland River Basin Management Plan 2009 and subsequent plans.
What are we doing now? Our baseline

Land quality

The industrial past of the canal network, particularly in the Central Belt, has led to land contamination in some areas on, and adjacent to, Scottish Canals’ estate. No Scottish Canals land is on any local authority contaminated land register as required under the Environment Protection Act 1990, Part IIA.\(^{(8)}\)

Land contamination is a consideration in Scottish Canals’ environmental appraisal process.

A British Waterways nationwide survey of canal sediments in 1992 and more recent samples provide baseline information on sediment quality. We have extensive experience of the analysis and sustainable management of canal sediments.\(^{(17)}\)

Contaminated sediments removed during dredging projects are treated and disposed of appropriately. Suitable canal sediments from dredging projects have been used to improve agricultural land and deliver ecological benefits at a number of locations across the network.

Developments linked to canal regeneration projects in recent years have resulted in the clean-up a number of contaminated sites e.g. Forth & Clyde and Union Canals in the Falkirk area. A major element of the Millennium Link project on the Lowland Canals (1999-2002) was the removal of mercury contaminated sediment from the Union Canal.\(^{(18)}\)
What are we doing now? Our baseline

Air quality

Our well vegetated canal corridors, particularly in urban areas, function as ‘green lungs’ improving local air quality.

There is strong evidence for the mitigating effects of vegetation on air pollution. By intercepting airborne particulate matter (PM10 – particles less than 10 micrometres in diameter), vegetation reduces their concentrations in air and as a result improves air quality. This reduces human exposure to PM10 which leads to a reduction in the incidence of respiratory illness.\(^{(19)}\) Vegetation can also help to alleviate higher temperatures in cities, known as the urban heat island (UHI) effect, which can lead to elevated air pollution levels.\(^{(20)}\)

Local Authorities have a duty under the Environment Act 1995, to identify any locations within its boundaries where the National Air Quality Strategy\(^{(21)}\) air quality objectives are not likely to be achieved and declare these areas as Air Quality Management Areas (AQMA). Only one AQMA, designated for sulphur dioxide pollution from the Grangemouth petrochemical complex, coincides with the canal network.
What are we doing now? Our baseline

The main direct source of emissions to air on Scottish Canals’ estate is from our land and water vehicles and motorised plant equipment. In recent years, our older fleet vehicles have been replaced with newer models with lower emission standards. The emissions performance of our vessels and plant is under review.

We do not allow burning of waste on our land with the exception of Dutch Elm diseased trees. This is to reduce both potential smoke nuisance and any risks to the historic canal network structures. Scottish Canals does not have any activities which require authorisation from the Scottish Environment Protection Agency for emissions to air.

Noise impacts from Scottish Canals’ activities are minimal, localised and transient.

For further information see Themes 1 and 4.
What are we doing to improve water, land and air quality?

Water

We have made significant investments in waste water management in the last five years (Costs c. £1m) at Auchinstarry Marina, Forth & Clyde Canal and on the Crinan Canal at Crinan Basin and Ardrishaig has improved the quality of discharges to the water environment.

Scottish Canals is currently working on a number of projects to promote Sustainable Urban Drainage schemes, which use living systems to manage pollutants in surface water run-off. (See Theme 2)

Where possible, we select low environmental risk materials for our activities. To reduce pollution risk from our own estate, we have upgraded our fuel dispensing and oil storage infrastructure and hazardous substance storage facilities. To further reduce pollution risk, we have Environmental Protection Plans for all sites which store more than 200 litres of hazardous substances and regularly audit the storage of hazardous materials.

We invested £88k in 2014 to upgrade the private water supplies at two sites on the Caledonian Canal and further investment is planned for 2015/16.
What are we doing to improve water, land and air quality?

Water

For minor pollution incidents, we have canal-side supplies of clean-up and containment equipment and trained operational staff members. For larger pollution incidents, we use specialist contractors and ensure preparedness via regular oil spill scenario tests with relevant public bodies.

To reduce pollution risks from boats, Scottish Canals is part of the Boat Safety Scheme\(^{(22)}\) which provides pollution prevention guidance for boaters and we promote the Green Blue green guide to practical inland boating.\(^{(23)}\)

We have Operational and Environmental Risk Assessments (OERA) for four locations on the network where blue green algal blooms have occurred in the past: Hillend Reservoir, Townhead, Port Dundas and Laggan Locks.
What are we doing to improve water, land and air quality?

**Land**

- Through regeneration projects, in and on the canal network, we are facilitating the clean-up of historically contaminated land.

**Air**

- Maintaining vegetation along canals, particularly in urban areas is contributing to improving air quality.
What will we do?

We will continue to work closely with staff and stakeholders to reduce pollution in the canal environment.

Strategic aims

8S.1 Scottish Canals to contribute to improving Scotland’s water environment by reducing water pollution.
8S.2 Scottish Canals to contribute to Scotland’s Land Use Strategy 2011 by reducing historically contaminated sediment and land on its estate.
8S.3 Scottish Canals to contribute to the Low Emissions Strategy for Scotland.

Targets

8T.1 No significant water, land or air pollution incidents as a result of our activities on the Scottish Canal network 2015-2025.
8T.3 Deliver one project to reduce the area of Scottish Canal land holdings affected by historic contamination by 2025.
8T.4 Reduce the air quality impacts of Scottish Canals activities 2016-25 (target to be set by Dec 18).
References


References


