Northern Ireland
Environment Agency

River Basin Management Plans

Programme of measures

Key Sectors — Collection and Treatment of Sewage

Pressure Type — Diffuse and Point Pollution

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Northern Ireland Environment Agency

Introduction

Northern Ireland Water (NIW) is the sole provider of water sewerage services in Northern Ireland. Every year NIW collects 133 million tonnes of wastewater from 660,000 businesses and households.

There has been extensive investment in the provision of wastewater collection and treatment systems in Northern Ireland over recent years. Over the five year period up to 2008 £1.1 billion was spent on services protecting both public health and the environment.

There are localised and cumulative environmental problems in rural areas caused by sewage from scattered houses and industry which are typically treated by privately operated septic tanks or small treatment works. There are more than 110,000 properties (approximately 20% of the total) across Northern Ireland without public sewerage provision. The most serious problems are now considered to be associated with the high density of On-site Waste Water Treatment Systems (OWWTS) that are defective and/or not properly maintained.

An estimated 10% - 17% of Domestic Laundry Cleaning Products (DLCP's) sold in the UK still contain phosphate based ingredients. It is estimated they comprise 18% of the phosphorus load to sewer.

What causes the environmental impact?

The key pollutants from sewage discharges are:

- nutrients;
- organic matter, ammonia and faecal pathogens;
- toxic substances – from industrial effluent, household chemicals and road run-off;
- sewage-related debris.

Lough Scraban

What action are we already taking?

Key legislation

Urban Waste Water Treatment Regulations (Northern Ireland) 2007

In Northern Ireland the Urban Waste Water Treatment Directive is implemented through the Urban Waste Water Treatment Regulations (NI) 2007. The Regulations require that all significant discharges of sewage are treated, before the discharge to an inland surface water, groundwater, estuary or coastal water and that towns and cities with populations above 2,000 are provided with an adequate sewer system. The Regulations identifies sensitive areas where receiving waters are susceptible to the amount of nutrients discharged and further treatment is required e.g. Lough Erne and Lough Neagh catchments. Additionally, the Regulations have also banned the disposal of sewage sludge at sea since 1998.

Northern Ireland Water (NIW) is obliged to monitor the effluent quality at treatment plants and its compliance with the requirements of the Directive is assessed by the Northern Ireland Environment Agency (NIEA). NIEA sets standards for discharges from WWTW to ensure that the receiving water meets the required environmental objective.

Water and Sewerage Services (Northern Ireland) Order 2006

The Water and Sewerage Services (Northern Ireland) Order 2006 establishes a regulatory regime to ensure compliance with environmental, consumer protection and efficiency standards and sets out new rights for consumers. The Order supports the establishment of a government owned company (Northern Ireland Water) to deliver water and sewerage services from April 2007. As a result wastewater discharges from public sewerage infrastructure in Northern Ireland are now subject to enforcement action if the conditions of consent are not met or pollution incidents are caused by a failure to properly maintain and operate the infrastructure.

The Water (Northern Ireland) Order 1999

Under the Water (Northern Ireland) Order 1999 (the Water Order) it is an offence to discharge trade or sewage effluent to waterways or water in underground strata without the consent of the Department of the Environment (DOE). NIEA administers a system of discharge consents which lay down conditions relating to the quality and quantity of effluent that may be discharged. Numerical limits may be placed on a variety of parameters such as Biochemical Oxygen Demand, Dissolved Oxygen, trace metals, temperature, suspended solids, pH, flow and visible oil and grease. Other departments and Agencies are consulted on applications for all trade and private sewage discharges (excluding systems serving single domestic dwellings).

The key controls over On-site Waste Water Treatment Systems are the issue of discharge consents under the Water (NI) Order 1999 (Water Order) alongside the planning control system. NIEA is responsible for the Water Order consenting process including inspection and enforcement.

Pollution Prevention and Control Regulations (Northern Ireland) 2003

NIEA regulates major industrial activities under the Integrated Pollution Prevention and Control (IPPC) Directive. Small-scale commercial and industrial discharges to sewer systems and waters are licensed or consented by NIW. If the proposed discharge to sewer consists of special category effluent then NIW must refer the application to the NIEA to determine whether or not it should be prohibited or if any specific conditions should be applied to the discharge.

Other key drivers for the setting of investment and priorities in this sector are compliance with the Freshwater Fish Directive, the Bathing Water Directive and the Shellfish Directive.


Kinbane Coastline

Planning Controls

In terms of septic tanks, the Water Order consenting process is the key control for ensuring the protection of our waters and this operates alongside the planning system by restricting the location of new developments. Domestic, commercial and industrial developments must obtain planning approval. Planning Service has issued a planning strategy for rural Northern Ireland; standards and joint UK guidance for on-site systems are also available. NIEA consents all discharges and undertakes inspections and enforcement where water pollution related to septic tanks and / or proprietary on-site systems is identified.

These controls and guidance play a major role in protecting water quality in non mains sewer areas, but problems arise where tanks or systems are not properly planned, designed, managed and operated.

NIEA has undertaken work to examine the impacts of a dispersed population pattern on water quality and to inform proposals for future legislation, policies and procedures to address pollution related to wastewater treatment provision in rural areas. This work on the dispersed settlement pattern will inform NIEA as to the way forward. Consultations on policy decisions will be advertised widely and comments received/acted upon in the normal manner. Timeframes for completion of the work have not been confirmed.

Investment programmes and plans

Northern Ireland Water - Capital Works Programme (2007 – 2010)

The Capital Works Programme associated with the Strategic Business Plan has been agreed to cover the period March 2007 to March 2010. The three year expenditure programme has a budget of £676 million. The Capital Works Programme outputs from the period covering 2007 and 2008 included 52.4km of sewers and completion of projects to upgrade eight WWTW. Price Control 2010 (PC10) is the process through which Northern Ireland Water will agree with the Regulator (NIAUR), the organisation's priorities and plans for the next 3 years. It will also determine the financial framework for the period 2010 – 13, including the levels of public funding and non-domestic customer charges. The next 5 year business plan (PC13) will cover the period 2013 up until 2018 will take into account the objectives set out for 2015 and 2021. Further information on PC10 process can be found at http://www.niwater.com/pc10.asp

CSOs are required to protect the sewer network in the event of heavy rainfall as the collection system would be unable to cope and out of sewer flooding would occur. Standards for continuous and intermittent discharges to Shellfish Waters are set to ensure protection of the areas. Drainage area studies are being carried out by Northern Ireland Water to assess the hydraulic capabilities of the sewer network. The information from the assessments is used by NIEA to establish a Statement of Need for improvements to the system. NIEA issues a letter of formal agreement to Northern Ireland Water which outlines the preferred solution. The formal agreement allows Northern Ireland Water to draw up detailed construction plans and prepare an implementation programme.

Urban Pollution Management

NIEA works closely with Northern Ireland Water to identify and rectify unsatisfactory combined sewer overflows, to rationalise sewer systems and to reduce the volume spilt from overflows. NIEA issues performance standards that control the flow forwarded for treatment, spill frequency, volume of discharge and associated pollutant loads so that water quality objectives and desired amenity value of receiving waters are not compromised. There is an ongoing program of drainage area studies that determine the hydraulic performance of sewers and the extent of any future upgrades.


Mussels

Sustainable Drainage Systems (SuDS)

Sustainable Drainage Systems (SuDS) control the quantity and quality of run-off waters by providing storage in tanks, swales or ponds. This delays or prevents discharge to streams or rivers until there is capacity to accommodate it. SuDS is not widely used in this sector at present however NIEA has chaired a group that has produced a draft SuDS strategy with the aim of encouraging wider adoption of SuDS (see Urban Development Sector for more detail). The delivery of the agreed strategy will be the responsibility of a number of Departments and government agencies and local authorities.

DRD, through Roads Service, will help with the adoption of Sustainable Drainage Systems (SuDS). Roads Service has already embedded SuDS into its design criteria for new major roads projects. This has led to SuDs being designed into several new major roads projects over the last few years. All new motorways, dual carriageways and improvements to roads of such standard have SuDS incorporated in their construction, where technically and economically feasible. Roads Service retain maintenance responsibility for SuDS that receive water from road drainage, systems that receive water from other sources, such as roof drainage from dwellings or other buildings, in addition to road drainage, would be maintained by Northern Ireland Water.

Codes of practice and guidelines

Pollution Prevention Guidelines

There are a range of Pollution Prevention Guidelines (PPGs) that have been produced jointly by agencies across the UK providing advice on the control of pollution. PPG 1 provides a basic introduction to pollution prevention and signposts others PPGs. Standards and guidance for OWWTS are contained in Pollution Prevention Guideline PPG 4. Pollution Prevention Guideline 4 will be changed to improve existing controls, support updated guidance for new systems and to prioritise actions in areas with high concentrations of existing OWWTS. The aim is to ensure that new unsewered development is located in areas where adequate onsite wastewater treatment and soil percolation can be achieved. Guidance will address improved procedures for site selection, design, installation and construction supervision.

Education and Awareness Campaigns

Northern Ireland Water's Bag it and Bin It'

Northern Ireland Water's Education team has a number of Education and Awareness Campaigns, such as Northern Ireland Water's 'Bag It and Bin It' campaign which promotes the disposal of sanitary material such as cotton buds in the bin rather than flushing them down the toilet. This keeps them out of the sewage stream altogether, preventing them from being discharged from Combined Sewer Overflows (CSOs) during heavy rain or choking the fine screens at wastewater treatment works, both of which can cause pollution. The "Bag it and Bin it" campaign will be an on-going exercise with Education Officers actively engaging with schools, hospitals, nursing homes, libraries and community groups. NI Water has also participated in a beach clean up awareness exercise. Further information on the campaign can be obtained from the NI Water website: www.niwater.com In addition the NI Water's Waterbus "The Wonderful World of Water" visits Primary Schools teaching pupils about the water cycle, water for health, water conservation, water and wastewater treatment. Water audits of schools are also available to track water usage.

Education

It is important that we all appreciate our role in controlling the pollution which is caused by what passes to the drains from our homes. If we reduce pollution at source it lowers the costs associated with its treatment and produces environmental benefits. This is especially true for hazardous substances, nutrients and sanitary litter. For example, not using certain substances in domestic products (e.g. strong disinfectants) reduces the need for treatment to remove them from sewage and reduces their concentration in sewage sludge.


Education


Education

What action are we taking to promote sustainable water use?

Northern Ireland Water has an important role in supporting development across Northern Ireland. If a developer wishes to build houses or industrial/ commercial sites in a city or town served by a Northern Ireland Water sewerage system then they must be able to discharge their effluent to sewer. NIEA and Planning Service will not normally allow a development to avoid the costs of connection to the sewer by constructing a private sewage works which discharges directly to the environment. This prevents the potential environmental, health and public nuisance impacts which would result from large numbers of small privately operated sewage works in urban areas. The requirement to maintain a strategic drainage system which provides a high level of environmental protection may constrain development if there is no longer any capacity in the trunk sewer, treatment system or the receiving water.

At present NIEA, Northern Ireland Water and Planning Service aim to provide information on potential constraints to allow developers to direct development towards areas where there is available capacity in the sewerage infrastructure and the environment. Where this is not possible, Northern Ireland Water will plan investment to provide additional capacity, in line with its current strategic business plan, funding and environmental prioritisation.

Northern Ireland Water has a procedure in place for the adoption of any sewer, lateral drain or private waste water treatment works under Article 159 of the Water and Sewerage Services (Northern Ireland) Order 2006. New works must be constructed to an adoption specification. Existing works that an owner wishes Northern Ireland Water to adopt are inspected, a defect list is produced and the owner is given the opportunity to rectify these and demonstrate that the works is capable of meeting its discharge consent standard over a one year period following which it can be adopted.

What improvements will current measures achieve?

Over the period up to 2015, Northern Ireland Water will make significant investments in the sewerage network and WWTW which in turn will improve the water environment. NIEA and Northern Ireland Water are currently working to deliver the capital works programme associated with the Strategic Business Plan 2007 – 2010. The proposed programme for 2009 to 2010 includes £492 million of improvements to WWTWs and sewers and £10 million for poorly performing small WWTWs. Additionally Northern Ireland Water employs the use of Public Private Partnership (PPP) investment to complement conventionally funded programmes. PPP programmes for WWTW and collections systems with a capital value of £122 million are also being taken forward throughout this period.

Improvements to the WWTW and networks will improve water quality in these areas. These areas were chosen on the basis of overloaded works and networks and areas of most concern. New WWTW and sewer upgrades will be designed to enable discharges to meet the standards set by NIEA.

Investment by Northern Ireland Water represents the single most important improvement programme for Northern Ireland's water environment which will deliver improvements in the quality of:

- bathing waters protected and providing greater opportunities for tourism and recreation;
- shellfish growing waters supporting the further development of the shellfish industry;
- waters designated for freshwater fisheries resulting in greater fishery potential with associated local economic and recreational benefits; and
- all rivers, lakes and estuaries supporting a greater diversity of aquatic plants and animals which will support wider recreational and amenity use.

The importance of improving the amenity value of rivers is especially important in urban areas where this can make an important contribution to urban regeneration. The economic benefit of this together with the direct support available to facilitate development provides substantial support to the Northern Ireland economy.

What further actions will deliver environmental improvements?

The following tables summarise the existing/ planned measures and supplementary measures for Collection and Treatment of Sewage.

Key Sector: **Collection and treatment of sewage**

Pressure Type: Diffuse and point source pollution

Summary of existing and planned measures

Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of mechanism (year end)
Reduction in pollution	Comply with discharge standards in quality and quantity	PC10 and subsequent Investment Programmes (PC13) Urban Pollution Management studies The Water (Northern Ireland) Order 1999 Water and Sewerage Services (Northern Ireland) Order 2006 Pollution Prevention and Control Regulations (Northern Ireland) 2003 Urban Waste Water Treatment Regulations (Northern Ireland) 2007 Compliance with other Directives e.g. Shellfish, Bathing Waters, Freshwater Fish Education campaigns	NIW	DRD, NIEA, NIAUR	2012
	Reduce contaminants at source		NIW	DRD, NIEA	In place
	Reduce un-consented losses of waste water to marine, river and lake environments Address unsatisfactory CSOs through assessment of environmental impact and planned investment		NIW	DRD, NIEA	In place
Reduction in nutrient and dangerous substances	Comply with existing water directives Reduce nutrient and dangerous substance loadings to sewer Improve water quality to meet objectives		NIW	DRD, NIEA	In place

Key Sector: **Collection and treatment of sewage**
Pressure Type: Diffuse and point source pollution

Summary of supplementary measures

Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of action (year end)
Reduction in pollution from unsewered properties	Review waste water consent conditions to ensure that adequate controls and emission limits are set	The Water (Northern Ireland) Order 1999	NIEA	NIW, DRD	2012
	Develop mathematical models for all of Northern Ireland to look at cumulative impacts of discharges at a catchment scale	Research and Development	NIEA		2011
	Address the environmental impacts of inadequate private sewerage discharges and support sustainable development as part of PC10	The Water (Northern Ireland) Order 1999	NIEA	NIW, DRD	2012
	Improve existing controls on septic tanks Develop mapping and methods to calculate the vulnerability of receiving waters	The Water (Northern Ireland) Order 1999 Development control and enforcement practices Guidance to address improved procedures for site selection, design, installation and construction supervision	NIEA		2010
	Research to examine legislative requirements and responsibilities to identify best practice in relation to (OWWTS)* Improve existing controls, support updated guidance for new systems and to prioritise actions in areas with high concentrations of existing OWWTS	Policy and guidance on OWWTS Pollution Prevention Guidelines (PPG4)	NIEA		2011

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Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of action (year end)
Reduction in pollution from unsewered properties	Investigate provision of main sewers or OWWTS maintenance programmes in priority areas (existing systems, large unsewered populations where water quality is threatened)	Maintenance programmes	NIEA, NIW		2011
	Ban sale of Domestic Laundry Cleaning Products (DLCPs) containing more than 0.4% Phosphorus	Development of UK-wide legislation	DOE	DEFRA	2015
	Identify potential constraints on development	The Water (Northern Ireland) Order 1999	DOE	DRD/ PS/ NIW	2012
	Introduce seasonal discharge consents where possible to promote installation of reed beds and constructed wetlands for sewage treatment	The Water (Northern Ireland) Order 1999 SIMCAT model	NIEA	NIW	2012
	Review and investigate the effectiveness of wetlands in the reduction of nutrient loadings	Research and development	NIEA		2012
	Improve septic tank maintenance, installation and design	Awareness programme Guidance to improve procedures for site selection, design, installation and construction supervision	NIEA	NIW	2012

Our aim is to protect, conserve and promote the natural environment and built heritage for the benefit of present and future generations.

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