

Northern Ireland  
Environment Agency

## LAGAN

### Local Management Area Information Leaflet



## **Information Leaflet - Lagan Local Management Area**

The River Basin Management Plans will be implemented through Local Management Areas (LMAs) during the 2010 to 2015 planning cycle. This information leaflet is one of a series, for each of the 26 LMAs, across the Neagh Bann, North Western and North Eastern Districts. The leaflet includes details of the characteristics and quality of the water environment within the area and specific local measures identified to improve the water environment.

The leaflet will inform work with stakeholders, through **Catchment Stakeholder Groups**, to develop focused implementation plans for each LMA in the North Eastern District. These LMA Plans will be implemented on a three-year rolling programme within the North Eastern District as set out below:

- South Down, Strangford, Lagan and Bush in 2010;
- Quoile, Belfast Lough and Glens & Rathlin in 2011;
- Larne Lough in 2012.

### **Introduction**

Lagan LMA is in the North Eastern River Basin District and covers an area of approximately 606km<sup>2</sup>. Lagan River rises around Slieve Croob and flows approximately 70km to Stranmillis Weir at Belfast from which point it is transitional (estuarine). There are also sections of the river that feed the Lagan Canal which is currently being assessed for restoration. Lagan Weir further downstream from Stranmillis is the lower limit of the River Lagan. It was completed in 1993 to improve aesthetics and assist the environmental management of the estuarine section. From here the Lagan flows into the fully tidal Belfast Lough. This area also contains Belfast Harbour Estate (approximately 2000 acres), the busiest passenger port in Northern Ireland and handles 60% of Northern Ireland's sea borne trade. George Best Belfast City Airport is also situated on the Estate.

The main populated areas include the cities of Belfast and Lisburn. Other significant towns are Moira, Dromore, Lurgan, Hillsborough and Carryduff with a number of smaller villages scattered throughout.

The main land use in Lagan LMA is improved grassland (42%), arable farming (13%) and suburban/rural development (11%). River Lagan also supports a number of outdoor activities such as canoeing, angling, bird watching and walking.

**Key Facts**

**LMA area:** 606km<sup>2</sup>

**WFD water bodies**

22 river water bodies  
2 transitional water bodies  
1 coastal water body  
4 groundwater bodies

**Main land use:**

Agriculture (Improved grassland and Arable 55%)  
Neutral grass 11%  
Urban development 11%

**Key industries:**

Agriculture  
Tourism  
Fishing  
Marine transport

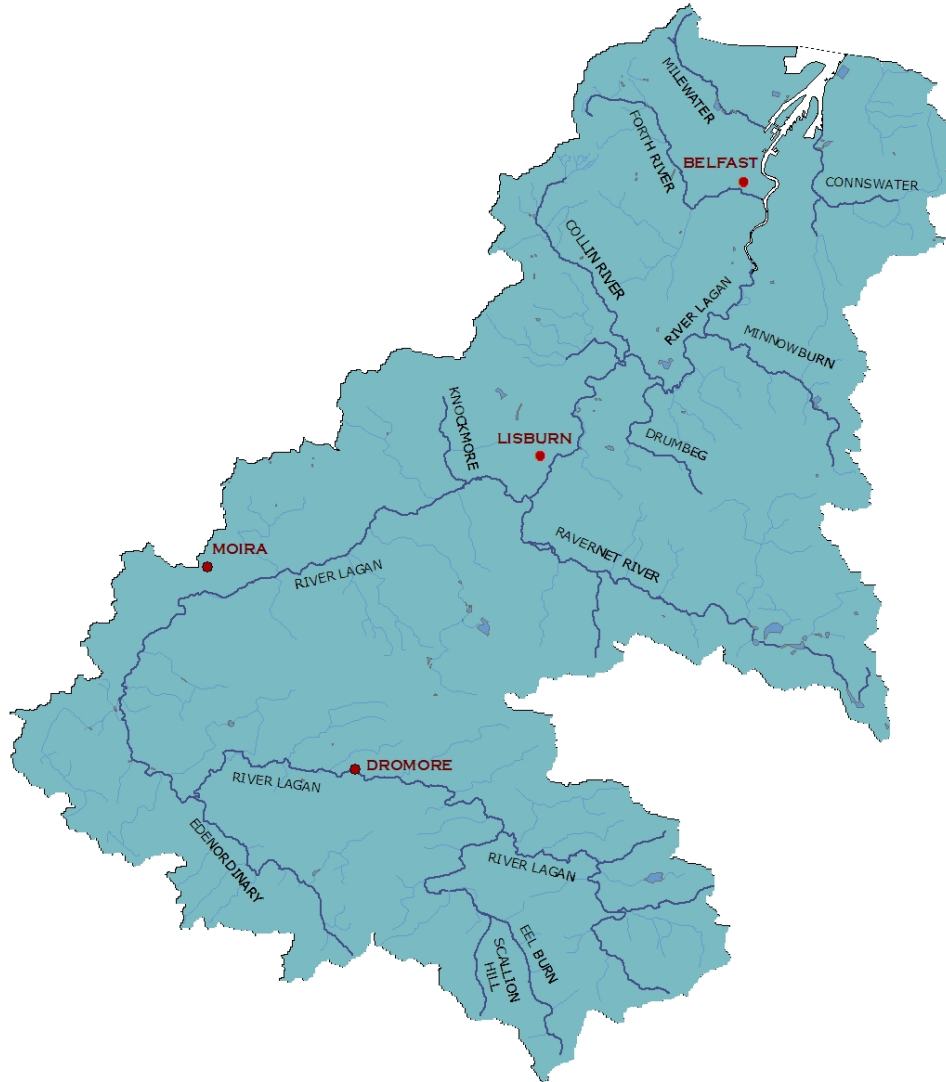
**Main cities/towns and populations:**

Belfast (276459\*)  
Lisburn (71465\*)  
Carrduff (6595\*)  
Dromore (4968\*)  
Moira (3682\*)  
Hillsborough (3400\*)  
\*Figures based on 2001 census



© Crown Copyright and Database Rights OSNI EMOU206.2

**Lagan LMA with main rivers identified**



## The quality of water bodies in Lagan LMA

Our understanding of the state of Northern Ireland's water environment and Lagan LMA has developed as we have adapted to the requirements of the Water Framework Directive. Now, when assessing water quality, we consider both ecological and chemical quality, as well as the pressures that can affect them.

Some water bodies have been changed to such a degree that they can no longer be restored to their original condition without compromising their current use. For example, some have been deepened to allow for navigation, others have flood defences or have been dammed to provide a source of drinking water. These are called Heavily Modified or Artificial water bodies and are required to meet Good Ecological Potential (GEP) rather than good status.

In Lagan LMA there are 6 river water bodies: Blackstaff River (2 sections), Connswater, River Lagan, River Lagan Tributary and Clowney Water; 2 transitional water bodies: Lagan Estuary and Connswater Estuary and 1 coastal water body: Belfast Harbour which have all been designated as heavily modified.

### What is the current status of surface water bodies in Lagan LMA?

100% of surface water bodies in Lagan LMA have been classified as less than good status and 36% of these have been identified as heavily modified. Most of the rivers failed to achieve good status due to impacts on invertebrate communities and elevated phosphorous levels. For coastal and transitional water bodies the main reasons for downgrading were impacts on the invertebrate communities and elevated levels of inorganic nitrogen.

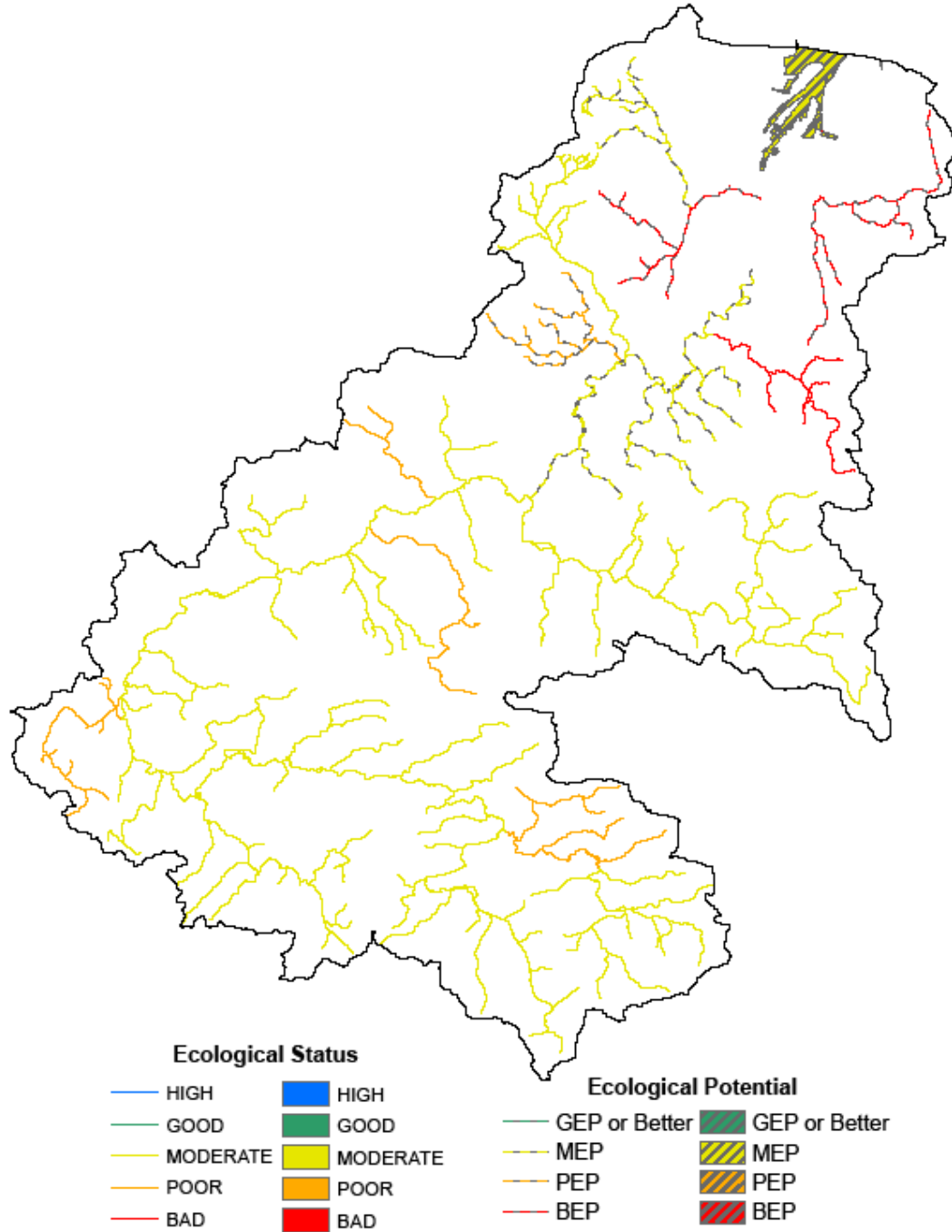
**Table 1: Status of surface waters in Lagan LMA**

Water body type	High	Good	Moderate	Poor	Bad	GEP	MEP	PEP	BEP
River	0	0	11	4	1	0	2	1	3
%	0	0	50	18.2	4.5	0	9.1	4.5	13.6
Transitional & Coastal	0	0	0	0	0	0	2	0	1
%	0	0	0	0	0	0	66.7	0	33.3
Total Surface Waters	0	0	11	4	1	0	4	1	4
%	0	0	44	16	4	0	16	4	16

**Groundwaters** (underground waters) interact with the surface waters around them, thus the quality and quantity of an area's groundwater can affect the surface waters.

One out of the four groundwater bodies contained within Lagan LMA is failing to achieve good status. This was due to water balance and nitrate levels.

**Overall status of water bodies in Lagan LMA**



## Protected areas in Lagan LMA

The LMA supports important habitats and wildlife. These areas have been designated under European Directives and require special protection. The protected areas are summarised in the following table.

**Table 2: Protected areas in Lagan LMA**

Protected Area Type	Location
<a href="#">Waters used for the abstraction of drinking water (drinking water protected areas)</a>	There is 1 drinking water protected river. There are 4 drinking water protected groundwaters.
<p><a href="#">Areas designed to protect economically significant aquatic species</a></p> <p>Freshwater Fish Directive (78/659/EEC)</p> <p>Shellfish Waters Directive (79/923/EC)</p>	<p>There are 134 km of rivers (37.5km designated Cyprinid, 96.5km designated Salmonid) and 5.7 km of canal (all designated Cyprinid) identified under the Freshwater Fish Directive.</p> <p>There are no designated shellfish waters.</p>
<p><a href="#">Bathing Waters</a></p> <p>These are bathing waters identified under the Bathing Waters Directives (76/160/EEC)</p>	There are no identified bathing waters.
<p><a href="#">Nutrient Sensitive Areas</a></p> <p>Areas designated as sensitive under the Urban Waste Water Treatment Directive (91/271/EEC) and the Nitrates Directive (91/676/EEC)</p>	<p>There are 3 Urban Waste Water Treatment Directive sensitive areas; River Lagan, Tidal Lagan and Inner Belfast Lough.</p> <p>A total territory approach has been adopted in Northern Ireland for the Nitrates Directive.</p>
<p><a href="#">Areas designated for the protection of habitats or species (Natura 2000 sites)</a></p> <p>These are areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection.</p> <p>Habitats Directive (92/43/EEC)</p> <p>Birds Directive (79/409/EEC)</p>	<p>There are no water dependent Special Areas of Conservation.</p> <p>There is 1 water dependent Special Protection Area; Belfast Lough.</p>

## Why are some waters not reaching good status?

There are a number of pressures that may prevent some waters reaching good quality. The main ones are considered to be:

- **Abstraction and flow regulation**
- **Diffuse and point source pollution**
- **Changes to morphology (physical habitat)**
- **Invasive alien species**

Five river water bodies were identified as being impacted by **abstraction and flow regulation**. Three of these were classified as heavily modified due to flood risk management. The main rivers affected were: Blackstaff River and River Lagan. Although the other two river water bodies were not classified as heavily modified, they did show impacts from abstraction and flow regulation. The main rivers affected were: River Lagan and Colin Glen River

A number of biological and chemical elements can be affected by both **diffuse and point source pollution**.

**Table 3: Water bodies not reaching good status due to diffuse and point source pollution**

Classification element affected*	Number of water bodies showing impacts		
	River	Coastal	Transitional
Macrophytes	6	N/A	N/A
Diatoms	0	N/A	N/A
Phytoplankton	N/A	0	N/A
Macroalgae	N/A	0	N/A
Angiosperms	N/A	0	N/A
Invertebrates	18	1	1
Fish	1	N/A	2
DIN	N/A	1	2
Phosphorous	15	N/A	N/A
Dissolved Oxygen	8	0	1
Specific Pollutants/Priority Substances	3	0	0

\*More than one element may be affected in each individual water body.

In Lagan LMA the main impact was observed in invertebrate communities and dissolved oxygen levels. These elements are associated with organic enrichment. The main rivers affected were: Blackstaff River, River Lagan, Ravernet River, Purdy's Burn River, Connswater River and Colin Glen River. Belfast Harbour and Lagan Estuary also showed impacts from organic enrichment.

Impacts were also observed in macrophyte communities and phosphorous levels. These elements are associated with nutrient enrichment. The main rivers affected were: Blackstaff River, River Lagan, Ravernet River,

Connswater River, Purdysburn River and Clowney River. Evidence of nutrient enrichment was also observed in coastal and transitional water bodies in Lagan LMA. The element associated with nutrient enrichment in these types of water body is Dissolved Inorganic Nitrogen (DIN). The water bodies affected were: Belfast Harbour, Connswater Estuary and Lagan Estuary.

Three river water bodies failed to achieve good status for specific pollutants/priority substances (specifically ammonia).

Fifteen river water bodies were identified as affected by **changes to morphology (physical habitat)** and this was also likely to affect the invertebrate element. Six of these were classified as heavily modified. Reasons for this classification included urbanisation. The main rivers affected were: Blackstaff River, Connswater River, River Lagan and Clowney River. Although the other nine river water bodies were not classified as heavily modified, they did show impacts from changes to morphology. The main rivers affected were: Hillsborough Burn, Ravernet River, River Lagan and Purdy's Burn River.

The water environment in Northern Ireland has been impacted by the introduction of **invasive alien species**. Species which have already become established in this area include:

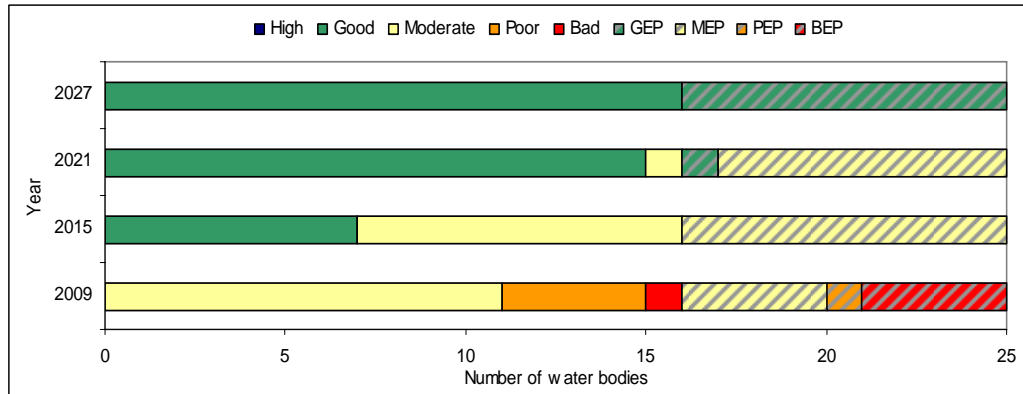
- Himalayan Balsam (*Impatiens glandulifera*)
- Japanese Knotweed (*Fallopia japonica*)
- Giant Hogweed (*Heracleum mantegazzianum*)

## What improvements do we plan to achieve?

We have set environmental objectives to deliver improvements as shown below.

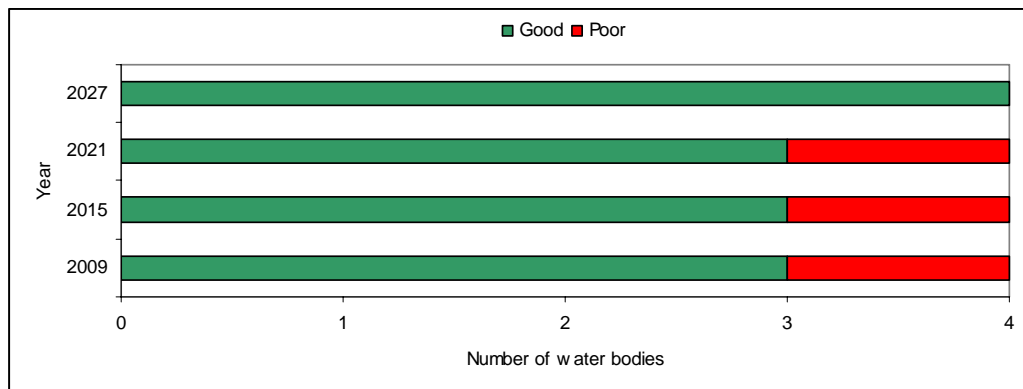
We aim to achieve good status or better in 28% of our surface waters by 2015 and GEP (for Heavily Modified Water Bodies) in 4% of our surface waters by 2021.

### Current status and proposed objectives for surface waters in Lagan LMA



We aim to achieve good status in 100% of our groundwaters by 2027.

### Current status and proposed objectives for groundwater bodies in Lagan LMA



## How are we going to maintain and improve the water environment in Lagan LMA?

There are a number of measures which will be implemented in Lagan LMA in order to maintain and improve the water environment.

The programme of measures described in the North Eastern River Basin Management Plan has been categorised into two types of measures: **existing and planned** and **supplementary**. Existing and planned measures aim to ensure that existing water uses are appropriately managed and that the water environment remains at good status.

**Existing and planned measures** include those which have been put in place to meet legal requirements. Those which apply in this LMA include:

- The Drinking Water Directive (80/778/EEC) as amended by Directive (98/83/EC);
- The Environmental Impact Assessment Directive (85/337/EEC);
- The Major Accidents Directive (96/82/EC);
- The Sewage Sludge Directive (86/278/EEC);
- The Urban Waste-water Treatment Directive (91/271/EEC);
- The Plant Protection Products Directive (91/414/EEC)
- The Nitrates Directive (91/676/EEC) and
- The Integrated Pollution Prevention Control Directive.

A number of **other existing and planned measures** apply in this LMA:

- Cost recovery for water use and promotion of efficient and sustainable water use;
- Protection of drinking water sources;
- Abstraction and impoundment control;
- Point source and diffuse source discharge control;
- Controls on physical modifications to surface waters;
- Prevention or reduction of the impact of accidental pollution incidents;
- Authorisation of discharges to groundwater;
- Priority substances control;
- Controls on other activities impacting on water status; and
- Controls to avoid increase in pollution of marine waters.

Further information on existing and planned measures for each sector is available on the **programme of measures** section of the website.

The following measures are in place to manage the problems with alien species:

- Rivers Agency Management protocols (Giant Hogweed, Himalayan Balsam and Japanese Knotweed)
- NIEA/National Parks and Wildlife Service best practice management guidance for Japanese Knotweed, Giant Hogweed and the Himalayan Balsam.

[www.ni-environment.gov.uk/wfd](http://www.ni-environment.gov.uk/wfd)

- A number of codes of practice, educational and awareness leaflets have been prepared and are available to download from [www.invasivespeciesireland.com](http://www.invasivespeciesireland.com)

## **What measures are agreed for water dependent Natura 2000 sites in unfavourable condition?**

**Special Areas of Conservation** (Habitats Directive) and **Special Protection Areas** (Birds Directive) are assessed as being in favourable or unfavourable condition. These areas have been examined to determine if **water dependent features** are present.

There are no Special Areas of Conservation in Lagan LMA.

Belfast Lough Special Protection Areas is in unfavourable condition. Unfavourable Special Protection Areas require investigation to identify external and internal factors. The issues affecting this Special Protection Area are unclear. The unfavourable condition may be caused by changes in migratory patterns, disturbance to high tide roost sites, water quality and/or ecological factors. Further details on Special Areas of Conservation and Special Protection Areas in the Lagan LMA are available in the **protected areas** section of the website.

**Supplementary measures** required to achieve environmental objectives for rivers, lakes, transitional and coastal water bodies have been identified for a number of sectors and pressures in this LMA. Supplementary measures will be applied during the implementation phase of the River Basin Management Plans subject to necessary funding and tests to justify technical feasibility and cost effectiveness.

**Table 4: <sup>1</sup> Supplementary measures in Lagan LMA**

Key sectors	Supplementary measures	Additional information
Agriculture	Targeted education, advice and regulatory action	See Table 3 for number of water bodies where invertebrates are less than good
Collection & treatment of sewage	Assess the significance of septic tanks and take action accordingly	See Table 3 for number of water bodies where invertebrates are less than good
	Upgrade WWTWs under the Rural Wastewater Investment Programme	<sup>2</sup> Pinehill Road to be completed by 2010
	Upgrade WWTWs with a population equivalent of greater than 250	<sup>2</sup> Dunmurry WWTW (not in this water body but discharges to it) upgrade under PC10 Newtownbreda WWTW upgrade under PC10 New Holland WWTW upgrade under PC10 Hillsborough WWTW upgrade under PC10 Hook's Corner WWTW upgrade under PC10
	Upgrade sewer network	<sup>2</sup> Upgrades to Lisburn sewer network under PC10 Upgrades to East Belfast sewer network under PC10
Industry & other business	Improve compliance with discharge consents	There are 24 non compliant discharges based on 2008 compliance data.
Agriculture, Collection & treatment of sewage and Industry & Other Business	Assess point source phosphorus loads	See Table 3 for number of water bodies where SRP, diatoms or macrophytes are less than good
	Target further phosphorus controls from point sources	
	Assess diffuse nutrient loads using mathematical modelling	
	Target further phosphorus controls from diffuse sources	
Specific & priority substances	Develop and implement Pollution Reduction Programmes	See Table 3 for number of water bodies impacted by specific pollutants/priority substances
Pressures	Supplementary measures	Additional information
Abstraction & flow regulation Morphology	Develop mitigation measures identified for hydromorphology pressures	There are 9 HMWB at <GEP and 15 water bodies are affected by changes to morphology.
Groundwater	Further investigation of the recovery time with respect to elevated nitrate levels	
	Further investigation of the water balance for the groundwater body, taking into account recharge estimate and abstraction levels	
Pressure Unknown	Carry out further investigation	There are 3 water bodies where confidence in class is low.

<sup>1</sup> Strategic Environmental Assessment has considered the impacts associated with the suite of supplementary measures proposed. Where impacts were identified, mitigation measures were proposed and are detailed in the SEA Mitigation Measures document which is available on the website.

<sup>2</sup> The dates/works upgrades may be subject to change. PC10 upgrades cover the period April 2010 – March 2013

Responses from the draft River Basin Plan consultation were used to identify the measures below:

- promote efficient use of water;
- introduce seasonal discharge consents, where possible, to promote installation of reed beds and constructed wetlands for sewage treatment;
- improve septic tank maintenance, installation and design;
- review and investigate the effectiveness of wetlands in the reduction of nutrient loadings;
- facilitate River Trusts across Northern Ireland.

The improvements in water quality proposed above will be delivered through a programme of measures coordinated by the Department of the Environment. Some of these measures are already being carried out in Lagan LMA.

**Local measures** are also being applied in this LMA. There are a number of projects and initiatives run, for example, by local communities, angling groups and voluntary environmental organisations that will contribute to achieving the objectives we have set for our waters. Some of those happening in Lagan LMA are shown below.

The **Belfast Hills Partnership** has been undertaking a project to map, manage and control Japanese Knotweed and Himalayan Balsam in the Colin Valley.

This has involved:

- surveying and mapping their distribution in the valley;
- identifying and mapping other invasive species;
- deciding priorities for control and eradication;
- controlling known problem areas to immediately halt further encroachment and damage;
- drafting and agreeing long term species eradication programmes; and
- sourcing and directing adequate resources to carry out this programme

This project is in its second year of activity and is funded by NIEA. Further work will continue throughout 2010. The project has been carried out with the support of Colin Glen Trust, The National Trust, Cemex Ltd, Bryson Charitable Group and McQuillans Ltd.

The **Connswater Community Greenway** project has been developed by the East Belfast Partnership. NIEA have been working closely with this project to help to resolve local water management problems and provide guidance on environmental management issues.

The Connswater Community Greenway aims to create a 9km linear park through East Belfast following the course of the Connswater, Knock and Loop Rivers. This will connect the open and green spaces and aims to improve the Connswater River itself.

Following a series of significant flood events affecting East Belfast, the Rivers Agency has been investigating potential solutions to reduce flood risk from the Loop, Knock and Connswater rivers. The Rivers Agency is working in partnership with the East Belfast Partnership, to ensure an integrated design of any flood alleviation measures with the Connswater Community Greenway Project. NIEA is working with Rivers Agency and the Connswater Community Greenway on this joint project to ensure that the project meets environmental expectations. NIEA have brought in a number of external advisors to help to guide the project on best practice environmental options.

NIEA have carried out a series of catchment investigations into poor water quality monitoring results affecting the Knock, Loop and Connswater Rivers in East Belfast. A number of problems affecting the rivers have been identified. NIEA have worked with Northern Ireland Water to resolve a number of problems and are continuing to work with them to resolve additional combined sewer overflow and infrastructure problems in the catchment.

More information is available about the Connswater Community Greenway on their website: [www.communitygreenway.co.uk](http://www.communitygreenway.co.uk).

Enhancement works associated with the Connswater Greenway project:

- Rivers Agency is currently involved in the project on the Loop, Knock and Connswater Rivers, in conjunction with the Connswater Greenway Project. The Agency's role is in the provision of flood defences, whilst the Connswater Greenway Project is concerned with improving the river for people, aesthetics, wildlife and morphology. The two schemes are running together to provide a synergy which will create improved habitat, flood alleviation and aesthetics with minimal impact on the current ecological value of the river.
- River enhancement measures have been designed following a geomorphological assessment. Measures include the retention of important mudflats in the lower reaches, in channel features such as woody deflectors and channel narrowing to create a low flow thalweg, and an area of wetland and flood storage within a public park. This will be achieved through the creation of a new three staged channel and will provide the opportunity for wetland creation in Orangefield Park.
- Out of channel measures such as woodland management, invasive species work and landscaping will also be carried out to improve the ecological value of the river.

The **Bog Meadows Wetland Restoration Project** is a major wetland restoration and flood alleviation project. Its first phase is underway at the Ulster Wildlife Trust's Bog Meadows Nature Reserve in West Belfast.

Following flash floods in August 2008 which swamped the Reserve and the newly opened Westlink underpass, the Bog Meadows Wetland Restoration

Project was set up. The Project aims to help manage this wetland ecosystem so that it can adapt to the impacts of such extreme weather events and benefit both people and wildlife.

NIEA have been working with staff at Bog Meadows to help to address a series of water pollution problems in the Ballymurphy catchment which feeds into the Nature Reserve. A number of pressures have been identified and NIEA staff are working to resolve these with other government departments and agencies.

For further information about Bog Meadows and the Wetland Restoration Project visit their website: [www.ulsterwildlifetrust.org](http://www.ulsterwildlifetrust.org).

Through the **Lagan Targeted Catchment Action Plan** NIEA have been working with the Iveagh Angling Club and the Ulster Angling Federation to identify problem stretches of the River Lagan and its tributaries. Catchment investigations into water management and pollution problems are being carried out by NIEA staff. A number of issues have been identified and NIEA staff are working to resolve these with other government departments and agencies.

### **National Trust**

- Environmental Compliance Audit of all National Trust owned sites. Emergency remedial action has been completed. Action on the remaining assets presenting a risk to water quality completed or in progress. Issue a code of practice to septic tank users. Sites include Crown Liquor Salon, Minnowburn,
- Ongoing advice to farm tenants on resource management, waste control and environmental performance. Encouraging tenants to adhere to best practice for pollution control. Sites include Minnowburn.
- Control of invasive species on National Trust Land. Participation in invasive species control forums and provide advice on good practice in invasive species control. Ongoing at Minnowburn and Creagh Glen.
- Audit of water use at all NT sites to establish a baseline then set targets for reduction and introduce water efficiency measures. Abstraction and flow pressure. Ongoing at Crown Liquor Salon and Minnowburn,
- Site specific projects to improve fish habitats and access for salmonids, main pressure is fishing. Ongoing projects for Colin Glen.
- Site specific projects to improve river corridor habitats and create new wetlands and habitats. Ongoing projects for Minnowburn, Divis and the Black Mountain.

[www.ni-environment.gov.uk/wfd](http://www.ni-environment.gov.uk/wfd)

If you are running a project or carrying out work that will assist in protecting the water environment or water dependant features, or restoring natural waters then we would encourage you to let us know.

Contact details for your **Catchment Stakeholder Group** are available on the **public participation** section of the website.

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

Northern Ireland Environment Agency  
Water Management Unit  
17 Antrim Road  
Lisburn  
BT28 3AL



An Agency within the Department of the  
**Environment**  
[www.doeni.gov.uk](http://www.doeni.gov.uk)



**INVESTORS  
IN PEOPLE**