

Northern Ireland
Environment Agency

BELFAST LOUGH

Local Management Area Information Leaflet



Information Leaflet - Belfast Lough 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

Belfast Lough is a semi-closed inter-tidal sea lough at the mouth of the River Lagan. Although the River Lagan has an influence on the Lough its catchment lies within Lagan LMA which is dealt with separately. The other main rivers entering Belfast Lough are Woodburn River, Kilroot River, Ballyholme River, Crawfordsburn River and Three Mile Water. Numerous smaller streams exist throughout the area and enter the Lough at various points.

The inner region of the Lough contains an inter-tidal area comprising of a series of mudflats, while the outer area is mainly rocky shores, with some sandy bays. The mudflats provide a valuable habitat for a range of bird species and the shallow waters on either side of the main shipping channel, which runs through the middle of the Lough, sustains a growing shellfish industry.

The city of Belfast is located at the south western end of Belfast Lough and has one of the busiest ports in Northern Ireland.

The dominant land use is improved grassland (33%), suburban and urban development (18%), arable farming (13%) and dense dwarf shrub heath (7%).

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Key Facts

LMA area: 399km²

WFD water bodies:

- 6 river water bodies
- 1 lake water body
- 2 coastal water bodies
- 3 groundwater bodies

Main Land use:

- Agriculture (Improved grassland and arable 46%)
- Urban development 18%

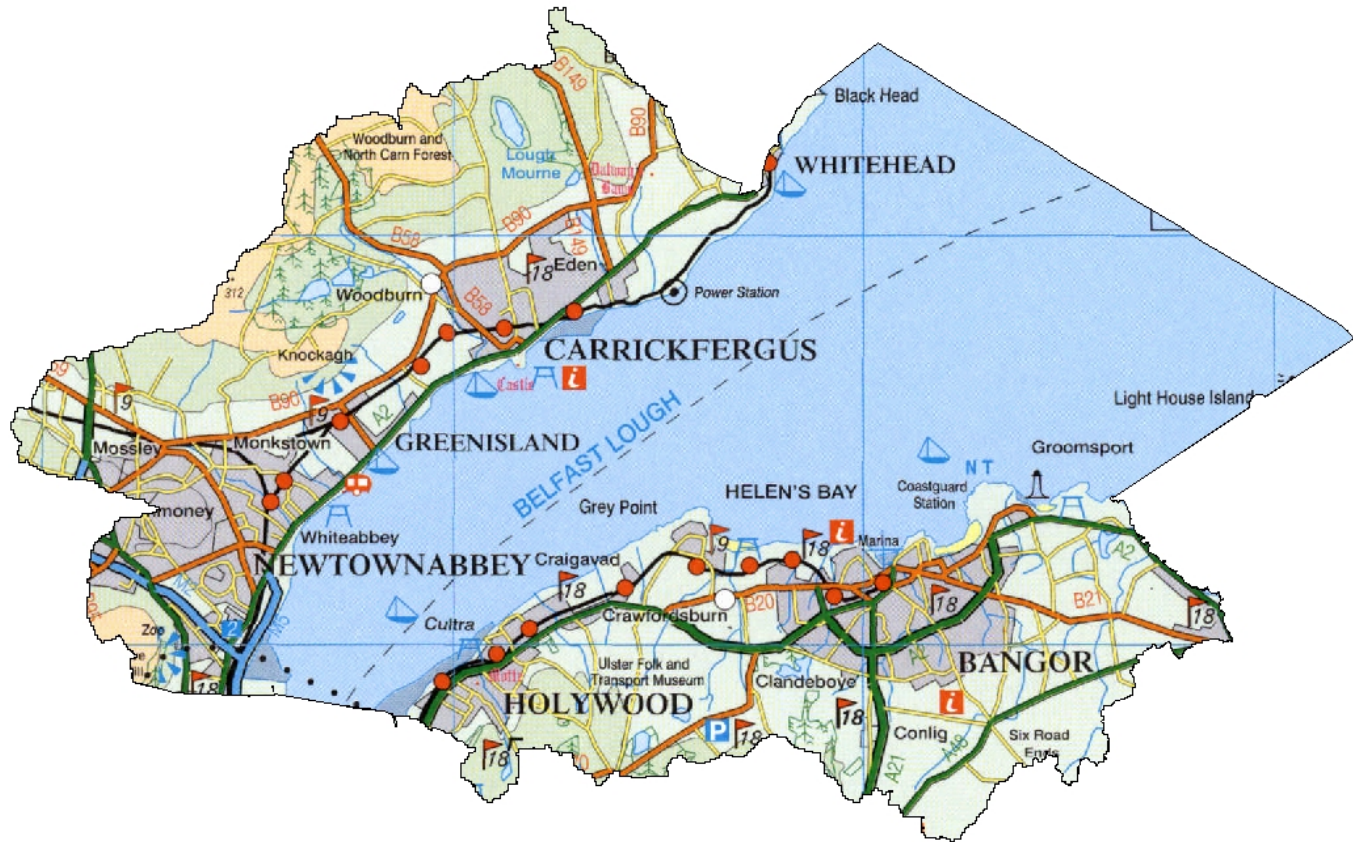
Key industries:

- Agriculture
- Tourism
- Fishing
- Marine transport

Main cities/towns and populations:

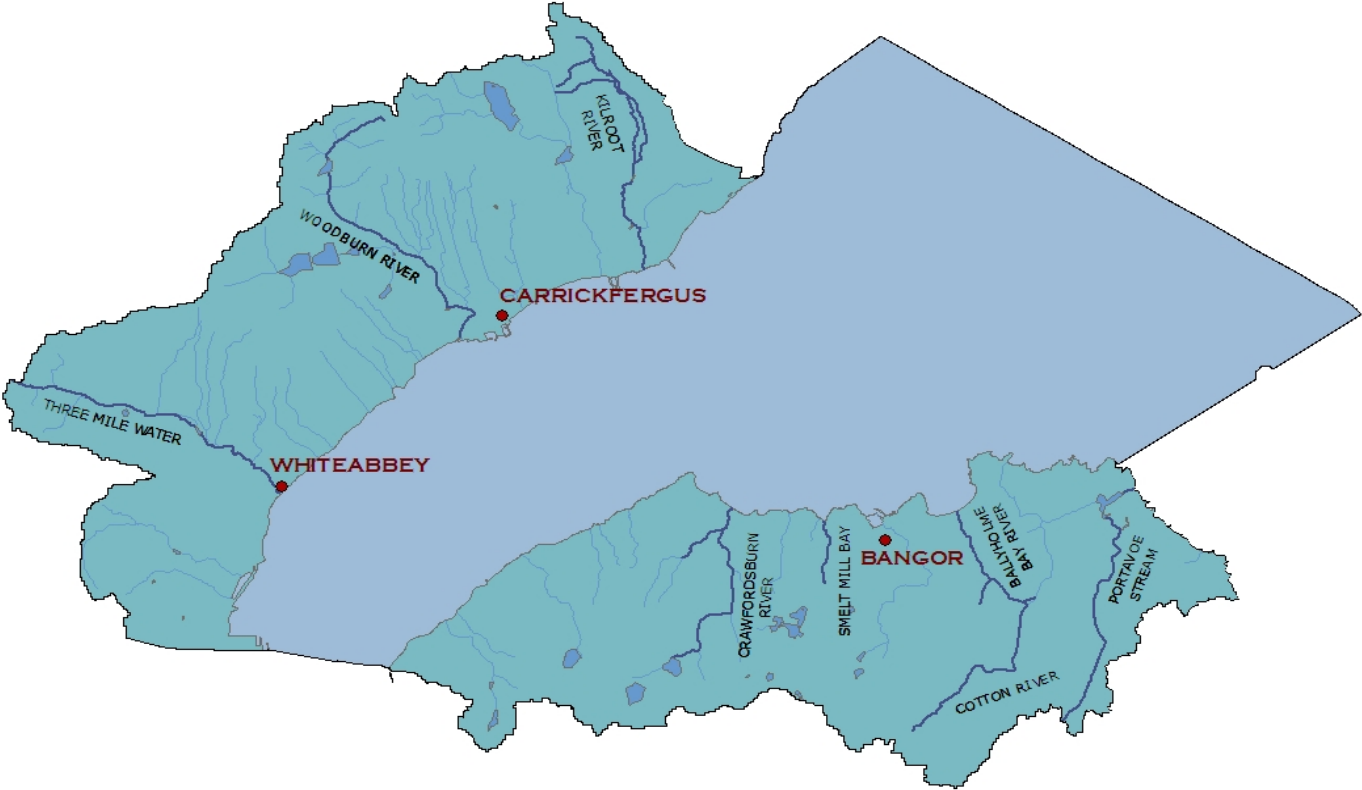
- Belfast (276459*)
- Carrickfergus (27201*)
- Newtownabbey (62056*)
- Bangor (58388*)
- Holywood (12037*)
- Greenisland (5050*)

*Figures based on 2001 census.



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Belfast Lough LMA with main rivers identified



The quality of water bodies in Belfast Lough LMA

Our understanding of the state of Northern Ireland's water environment and Belfast Lough 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 Belfast Lough LMA, Copeland Water, Woodburn River, Ballyholme River and Lough Mourne have all been designated as heavily modified.

What is the current status of surface waters in Belfast Lough LMA?

88.8% of surface water bodies in Belfast Lough LMA have been classified as less than good status and half of these were identified as heavily modified. Most of the rivers and lakes failed to achieve good status due to impacts on invertebrate communities and elevated phosphorus levels.

In the case of the coastal waters the downgrading was due to elevated levels of inorganic nitrogen.

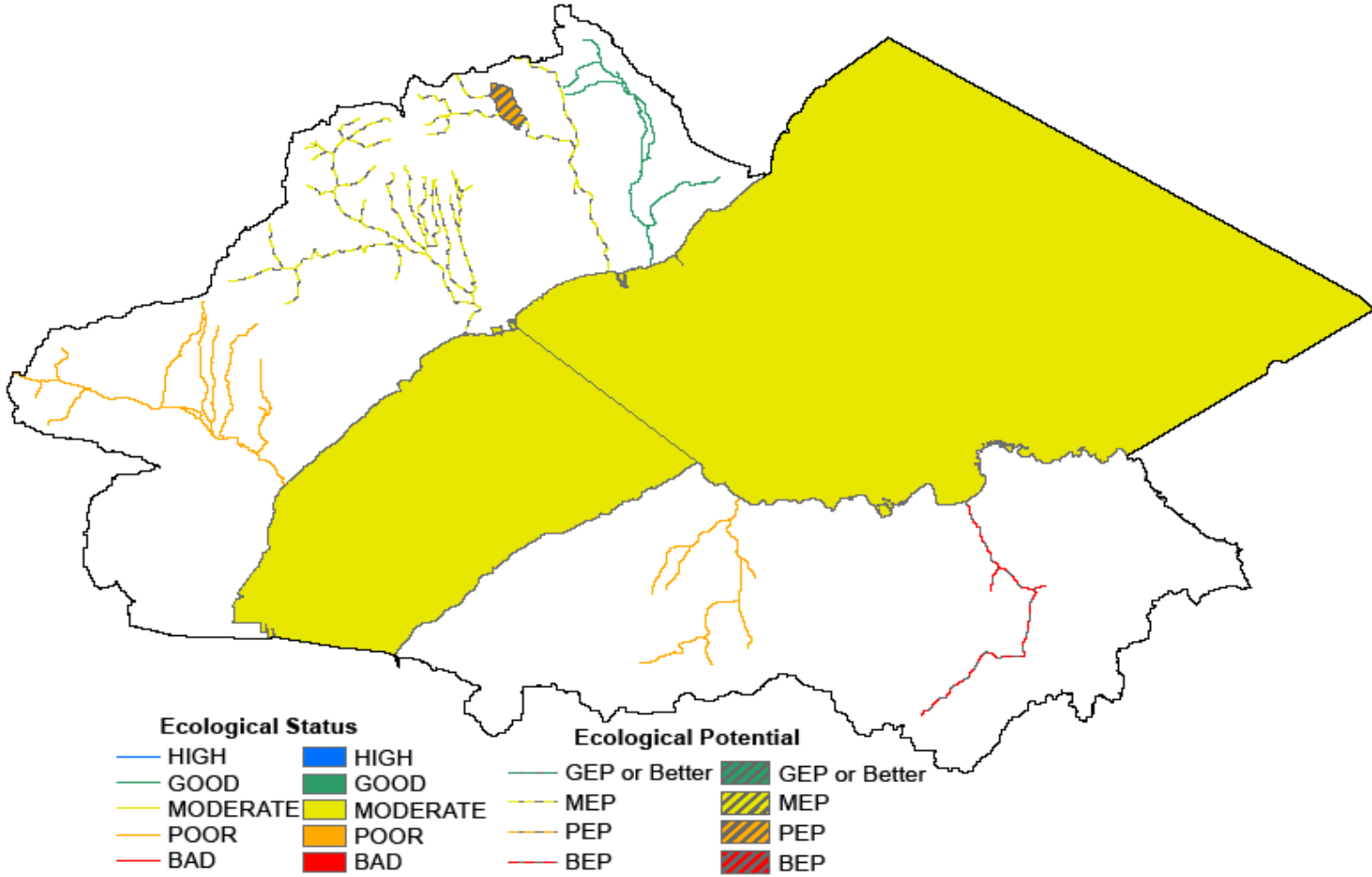
Table 1: Status of surface waters in Belfast Lough LMA

| Water body type | High | Good | Moderate | Poor | Bad | GEP | MEP | PEP | BEP |
|----------------------|------|------|----------|------|-----|-----|------|------|------|
| River | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 1 |
| % | 0 | 16.7 | 0 | 33.3 | 0 | 0 | 33.3 | 0 | 16.7 |
| Lake | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 |
| Coastal | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| % | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Surface Waters | 0 | 1 | 2 | 2 | 0 | 0 | 2 | 1 | 1 |
| % | 0 | 11.1 | 22.2 | 22.2 | 0 | 0 | 22.2 | 11.1 | 11.1 |

Groundwaters (underground water) 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 three groundwater bodies contained within Belfast Lough LMA is failing to achieve good status and this was due to water balance and nitrate levels.

Overall status of water bodies in Belfast Lough LMA



Protected areas in Belfast Lough 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 Belfast Lough LMA

| Protected Area Type | Location |
|---|---|
| <p>Waters used for the abstraction of drinking water (drinking water protected areas)</p> | <p>There are 5 drinking water protected rivers.</p> <p>There is 1 drinking water protected lake.</p> <p>There are 3 drinking water protected groundwaters.</p> |
| <p>Areas designed to protect economically significant aquatic species</p> <p>Freshwater Fish Directive (78/659/EEC)</p> <p>Shellfish Waters Directive (79/923/EC)</p> | <p>There are 17 km rivers and 0.5 km² of lakes identified under the Freshwater Fish Directive, all designated Salmonid.</p> <p>There is 1 designated shellfish water; Belfast Lough.</p> |
| <p>Bathing Waters</p> <p>These are bathing waters identified under the Bathing Waters Directives (76/160/EEC)</p> | <p>There are 4 identified bathing waters; Ballyholme, Crawfordsburn, Groomsport and Helen's Bay.</p> |
| <p>Nutrient Sensitive Areas</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 is 1 Urban Waste Water Treatment Directive sensitive area; Inner Belfast Lough.</p> <p>A total territory approach has been adopted in Northern Ireland for the Nitrates Directive.</p> |
| <p>Areas designated for the protection of habitats or species (Natura 2000 sites)</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 are 2 water dependent Special Protection Areas; Belfast Lough and Outer Ards.</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**

Four river water bodies were identified as being impacted by **abstraction and flow regulation**.

Three of these have been classified as heavily modified. Some have been modified to allow for use in flood risk management. These water bodies are Copeland Water, Woodburn River and Ballyholme River.

Although Crawfordsburn River and was not classified as heavily modified, it did show impacts from abstraction and flow regulation.

One lake water body has also been impacted by abstraction and flow regulation, Lough Mourne, which has been classified as heavily modified.

One coastal water body, Outer Belfast Lough, has been impacted by abstraction and flow regulation due to its use for cooling water.

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 | Lake | Coastal |
| Macrophytes | 1 | 1 | N/A |
| Diatoms | 2 | 0 | N/A |
| Phytoplankton | N/A | 1 | 0 |
| Macroalgae | N/A | N/A | 0 |
| Angiosperms | N/A | N/A | 0 |
| Invertebrates | 4 | N/A | 0 |
| Fish | 2 | 0 | N/A |
| DIN | N/A | N/A | 2 |
| Phosphorous | 3 | 1 | N/A |
| Dissolved Oxygen | 0 | 0 | 0 |
| Specific Pollutants/Priority Substances | 0 | 0 | 0 |

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

In Belfast Lough LMA the main impact was observed in invertebrate communities. This element is associated with organic enrichment. The rivers affected were: Three Mile Water, Woodburn River, Crawfordsburn River and Ballyholme River

There was also evidence of nutrient enrichment within the catchment. The main impacts were observed in phosphorous levels and macrophyte and diatom communities. These elements are associated with nutrient enrichment. The rivers affected were: Three Mile Water, Crawfordsburn River, Ballyholme River and Woodburn River

In Lough Mourne, the main impacts were observed in phosphorous levels and macrophyte and phytoplankton communities.

Evidence of nutrient enrichment was also observed in coastal water bodies. In Inner and Outer Belfast Lough the main impacts were observed in Dissolved Inorganic Nitrogen (DIN) levels.

Three river water bodies were identified as affected by **changes to morphology (physical habitat)**.

Ballyholme River has been classified as a Heavily Modified Water Body. It has been affected by the presence of a weir and level gauge at Sandhurst, historical engineering, urbanisation, culverting and straightening along the Cotton River.

Although Three Mile Water was not classified as heavily modified, it did show impacts from changes to morphology. These changes include historical engineering, culverting and an impoundment at Mossely Mill.

The changes to morphology in the Kilroot River were not impacting sufficiently to downgrade the overall status. However, we will continue to monitor this river for any further changes.

One lake water body was identified as affected by changes to morphology, Lough Mourne, which has been designated as a Heavily Modified Water Body.

Inner Belfast Lough was also judged as subject to changes to morphology due to its use as a major shipping port.

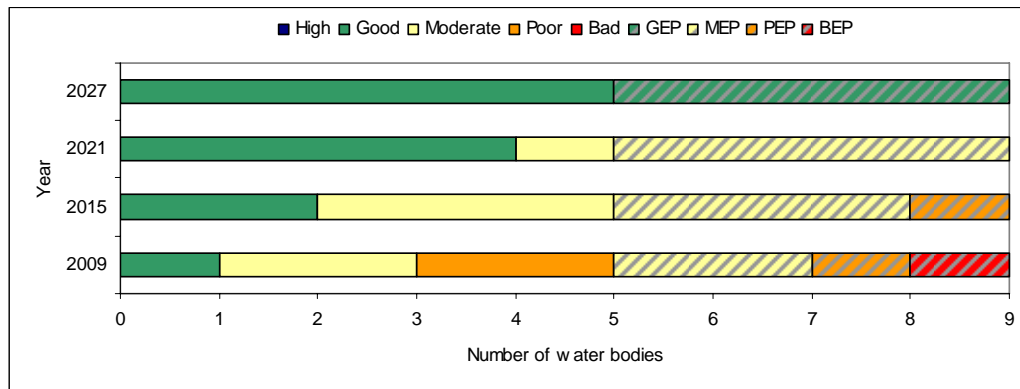
The water environment in Northern Ireland has been impacted by the introduction of **invasive alien species**. Species which have already become established in this area include:

- Japanese weed (*Sargassum muticum*)
- Slipper Limpet (*Crepidula fornicata*)
- Himalayan Balsam (*Impatiens glandulifera*)

What improvements to we plan to achieve?

We have set environmental objectives to deliver improvements as shown below. We aim to achieve good status or better in 22% of our surface waters by 2015 and GEP (for Heavily Modified Water Bodies) in 44% of our surface waters by 2027.

Current status and proposed objectives for surface water bodies in Belfast Lough LMA



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

Current status and proposed objectives for groundwater bodies in Belfast Lough LMA



How are we going to maintain and improve the water environment in Belfast Lough LMA?

There are a number of measures which will be implemented in Belfast Lough 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 current Bathing Water Directive (76/106/EEC) and revised Bathing Water Directive (2006/7/EEC);
- The Birds Directive (79/409/EEC);
- The Drinking Water Directive (80/778/EEC) as amended by Directive (98/83/EC);
- The Major Accidents Directive (96/82/EC);
- The Environmental Impact Assessment Directive (85/337/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 (96/61/EC).

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 (Himalayan Balsam and Japanese Knotweed)
- NIEA/National Parks and Wildlife Service best practice management guidance for Japanese Knotweed and Himalayan Balsam.

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

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 water dependent SACs in Belfast Lough LMA.

Outer Ards Special Protection Area is in favourable condition. Part of Belfast Lough LMA lies within the Belfast Lough Special Protection Area which is in unfavourable condition. Unfavourable Special Protection Areas require investigation to identify external and internal factors. The issues are unclear; may be 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 Belfast Lough 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: ¹Supplementary measures in Belfast Lough LMA

| Key sectors | Supplementary measures | Additional information |
|--|---|---|
| Agriculture | Target education, advice and regulatory action | See Table 3 for number of water bodies where invertebrates are less than good |
| Collection & treatment of sewage | Assess significance of septic tanks and take action accordingly | See Table 3 for number of water bodies where invertebrates are less than good |
| | Upgrade sewer network | ² Upgrades to Bangor Sewer Network under PC10 |
| Agriculture Collection & treatment of sewage 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 | |
| Pressures | Supplementary measures | Additional information |
| Abstraction & flow regulation Morphology | Develop mitigation measures identified for hydromorphology pressures | There are 4 HMWBs at <GEP and 3 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 2 water bodies where confidence in class is low. |

¹ 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.

² 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 Belfast Lough 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 Belfast Lough LMA are shown below.

The **Three Mile Water Conservation and Angling Trust** is one of a number of clubs that carry out river improvement works in their local river; whether it is through aquatic surveys, fish stocking, removing litter from the banks or habitat improvement works

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.

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