Department of the Environment
Marine Division

Pollution Reduction Programme

Killough Harbour

May 2015

DOE
Department of the Environment
www.doeni.gov.uk

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1.0 Introduction

Pollution Reduction Programmes were established under Article 5 of the Shellfish Waters Directive (2006/113/EC) which stated that all member states should establish programmes in order to reduce pollution in designated shellfish waters.

As the Shellfish Waters Directive has been repealed and subsumed into the Water Framework Directive, the Pollution Reduction Programmes will be reviewed in 2018 which is in line with the midterm of the second River Basin Cycle under Water Framework Directive.

2.0 Description of catchment

Killough Harbour is located on the southeast coast of County Down between St. John's Point and Ardglass in the North Eastern River Basin District. Killough Harbour forms part of the Ards Peninsula water body in the Strangford Local Management Area (LMA). The Strangford Lough LMA includes the eastern part of the Mourne Mountains, as well as the land draining to Dundrum Bay and Killough Harbour. Ballyviggis Stream runs into Strand Lough which is the only freshwater body that drains into the Harbour. Killough Harbour is a designated Shellfish Water Protected Area. The 2012 Sanitary Survey www.food.gov.uk/sites/default/files/multimedia/pdfs/killougharboursurvey.pdf reported that land cover along the coastal regions of the catchment area is a mixture of discontinuous urban fabric, pastures and agriculture/natural vegetation. Within Killough Harbour there is one shellfish farm licensed by the Department of Agriculture and Rural Development in the Shellfish Water Protected Area which was designated in 2009.

3.0 Objectives for Shellfish Protected Areas

The Shellfish Waters Directive was subsumed into the Water Framework Directive (2000/60/EC) in December 2013. Since then all shellfish waters are protected under the Water Framework Directive (WFD) and are hereafter referred to as Shellfish Water Protected Areas. All Shellfish Water Protected Areas must be managed to ensure that they meet their objectives under WFD and meet at least Class B status under the EU Hygiene Regulations, whilst making progress towards the WFD guideline standard. The Food Standards Agency in NI is responsible for the

implementation of Classification and monitoring programmes for shellfish for the protection of public health.

3.1 Water Framework Directive status and objectives

Comprehensive monitoring programmes are in place to assess the status of Shellfish Water Protected Areas under the WFD and Classification under the EU Hygiene Regulations. A suite of determinands are assessed to determine ecological status and the overall objective under WFD.

Table 1 shows the current WFD ecological status and future objectives for Ards Peninsula water body. Ards Peninsula will meet its 2015 WFD Objective of Good Ecological Status.

Table 1 WFD Ecological Status and Objectives for Ards Peninsula Water Body

2013 Status	2015 Objective	2021 Objective	2027 Objective
Good Ecological Status	Good Ecological Status & Class B under the EU Hygiene Regulations	Good Ecological Status & Class B under the EU Hygiene Regulations	Good Ecological Status & Class B under the EU Hygiene Regulations

Table 2 shows the Classification status at Killough Harbour under WFD (colour) and the licensed shellfish bed under the EU Hygiene Regulations (text).

Table 2 Classification status of shellfish production areas in Killough Harbour

	2014	2013	2012	2011	2010	2009
Killough Harbour (Oysters)	B	B	B	B	B	B

Key to WFD Status

	High		
	Good		Good Ecological Potential
	Moderate		Moderate Ecological Potential
	Poor		Poor Ecological Potential
	Bad		Bad Ecological Potential

4.0 Monitoring Programmes for Shellfish Water Protected Areas and shellfish flesh

4.1. Monitoring of *E. coli* in shellfish flesh

FSA conducts monthly analysis of *E. coli* in shellfish flesh as part of its Official Control monitoring. This analysis is used to classify the quality of shellfish production areas. The classification determines the level of post-harvest treatment required before placing shellfish product from that area on the market. The FSA in NI's Official Control monitoring programme is solely for the purpose of classification of shellfish production areas, it is not intended as an indication of the end product standard of shellfish. Responsibility for ensuring the safety of shellfish which are placed on the market for human consumption rests solely with the food business operator (FBO).

www.food.gov.uk/enforcement/monitoring/shellfish/nibiotoxin#toc-3

Table 3 Shellfish classification and post harvest treatment

Classification of harvesting areas		
Category	**E.coli per 100g flesh and intravalvular liquid**	**Post-harvest treatment required**
A	<230	May go directly for human consumption if end product standard met.
B	90% results <4600 Remaining 10% results <46000 100% results <46000	Must be subject to purification or cooked by an approved method.
C	<46,000	Must be subject to relaying for a period of at least 2 months or cooked by an approved method.
	>46,000 E.coli/100g of flesh	Prohibited. Harvesting not permitted.

4.2 Monitoring of contaminants in shellfish flesh

Annual analysis of a suite of contaminants in shellfish flesh is carried out in all seven of the sea loughs in Northern Ireland in which shellfish are cultivated and harvested. This is a joint programme of monitoring currently in place with FSA in NI and DOE to meet both organisations' requirements under EU legislative requirements and OSPAR (Oslo/Paris convention *(for the Protection of the Marine Environment of the North-East Atlantic*)) and to enable DOE to determine compliance with a range of environmental obligations relating to Shellfish Water Protected Areas.

The suite of contaminants tested for includes some trace metals, lipids, polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorinated pesticides and dioxins. See Annex A.

4.3 Guideline microbiological standard (DOE)

The shellfish flesh monitoring programme is operated by FSA in NI. The analyses in shellfish flesh are carried out by Northern Ireland Public Health Laboratories and results are reported back to both DOE and FSA in NI.

In addition to being used for the Official Control monitoring for the microbiological shellfish classification carried out by the FSA in NI, this information is also used by DOE to determine the status of Shellfish Water Protected Areas against a guideline microbiological standard for shellfish flesh which is set in the Water Framework Directive (Priority Substances and Classification) (Amendment) Regulations (Northern Ireland) 2015. This guideline standard requires that 75% of samples contain ≤ 230 *E. coli* per 100ml of shellfish flesh and intervalvular liquid.

Table 4 shows the status of Killough Harbour against the WFD Guideline standard.

Table 4 Killough Harbour – Guideline microbiological standard

Shellfish Water Protected Area	2014	2013	2012	2011	2010	2009
Killough Harbour (Oysters)						
Number of Samples	13	12	22	24	24	24

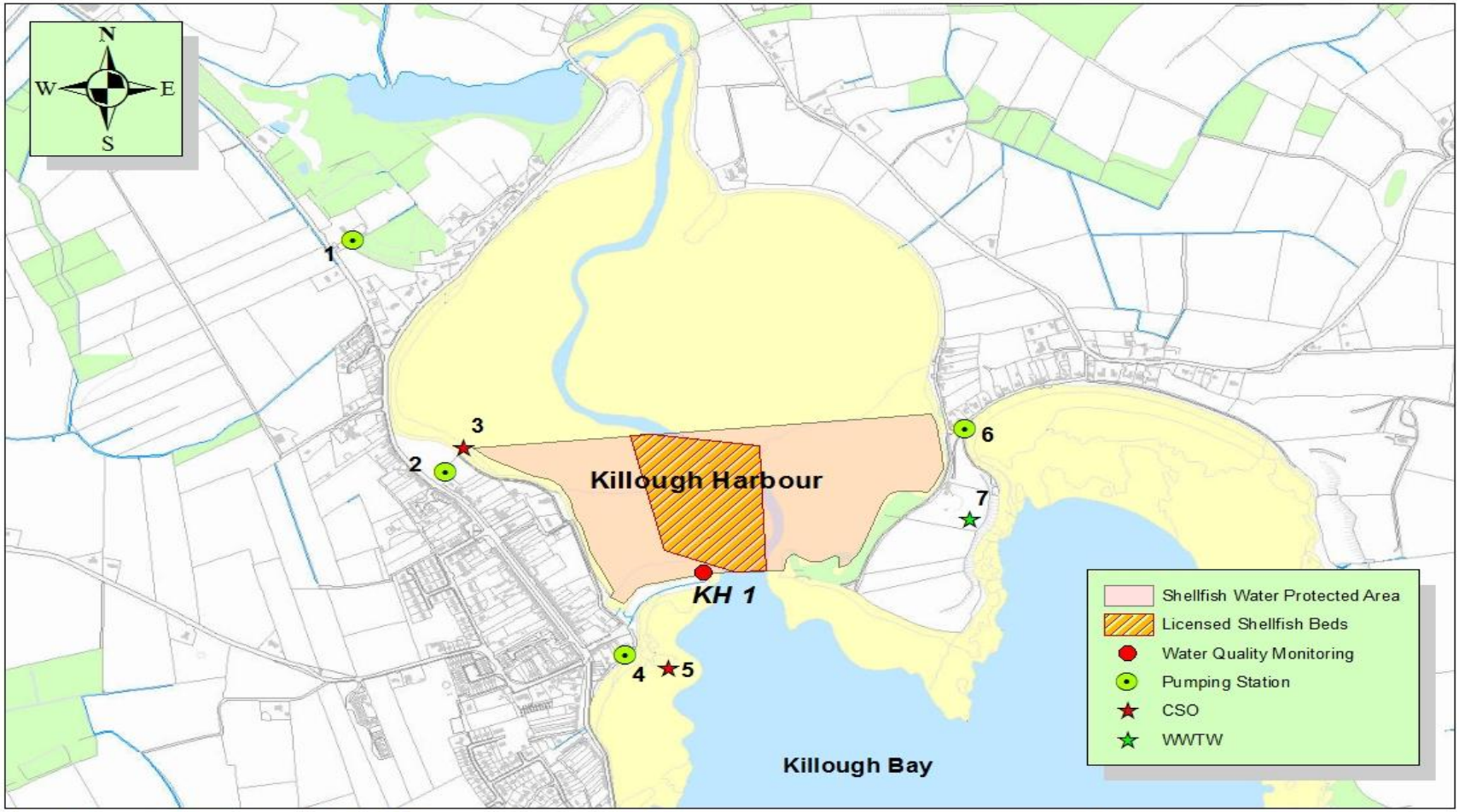
	Met Guideline
	Did not Meet Guideline

4.4 Water Quality Monitoring

In addition to the shellfish flesh monitoring, DOE carries out a water quality monitoring programme on a quarterly basis looking at bacteria and some metal and organic pollutants. These are linked to the specific pollutant monitoring programme within WFD catchment areas.

Where Shellfish Water Protected Areas are at risk of failing to meet objectives, additional investigative monitoring is undertaken of the protected areas, rivers and any other potential sources of pollution identified.

Figure 1 Licensed shellfish production areas showing water sampling points, Shellfish Water Protected Area and potential point pollution sources.



Key – Killough Harbour

1: Downpatrick Rd WwPS

2: Killough Village WwPS

3: Main St Killough CSO

4: Killough Shore WWPS

5: Quay Lane CSO

6: Coney Island WwTW

7: Seaview WwPS

5.0 Improvement actions carried out to date

5.1 Consenting wastewater treatment works

NIEA is responsible for regulating NI Water and sets the relevant discharge standards in respect of Waste Water Treatment Works (WWTW). Shellfish Water Protected Areas must meet their WFD water quality objective and meet at least class B FSA in NI shellfish classification, whilst making progress towards WFD guideline.

In order to meet these requirements, the microbiological impact of any new outfall should not result in more than 230 colony forming units (cfu) of *E. coli* on more than 25% of occasions within the Shellfish Water Protected Area.

Marine modelling is carried out by NI Water at all new or upgraded WWTW discharging to, or in the vicinity of a Shellfish Water Protected Area. The model must demonstrate compliance with the microbiological standards required in order protect the Shellfish Water Protected Area. A restriction on the number of spills from intermittent discharges is also required.

5.2 Current sewerage infrastructure

Coney Island Waste Water Treatment Works (WWTW) is sited on the eastern side of Killough Harbour and provides secondary treatment. The WWTW currently treats a population equivalent (PE) of 99 and discharges into Coney Island Bay. Killough WWTW is sited on the western side of Killough Bay providing primary treatment for a PE of 1445 and discharges at the entrance to Killough Harbour.

5.3 Investigative and remedial works carried out to date

There have been no investigative or remedial works carried out to date.

6.0 Planned Improvement Actions

The Price Control (PC) process is the mechanism through which NI Water is funded in order to deliver its priorities and plans for the period of the Price Control. PC13 covers 2 years running from April 2013 to March 2015. The next planned round of investment falls under PC 15 which runs for 6 years from April 2015 to March 2021.

6.1 PC15 Planned upgrades to WWTWs and NI Water Infrastructure

There are no planned upgrades to either Coney Island WWTW or Killough WWTW under the PC15 process. Monitoring of all CSOs within 2km of Shellfish Water Protected Areas is to be introduced by NI Water during the PC15 period.

6.2 Producer responsibility

Shellfish producers and harvesters have obligations under the EU Hygiene Regulations to ensure the quality of the product which they place on the market for human consumption. Producers should have an understanding and awareness of the environment in which product is being produced. Producers should use, where possible their own testing regimes to inform business management decisions. It is acknowledged that in order to make sound decisions, producers need access to appropriate and timely information relating to the quality of the shellfish water and anything which has the potential to impact upon it.

7.0 Other Protection Measures

7.1 Protection measures against agricultural pollution

The Nitrates Directive (91/676/EEC) requires EU Member States to set out action programmes to reduce nitrates from agricultural sources entering the aquatic environment and address both high nitrate levels in surface and groundwaters and eutrophication in surface waters. The Directive allows Member States to either designate discrete areas of land as Nitrate Vulnerable Zones (NVZs) or establish an action programme to be applicable to the whole territory.

Northern Ireland has a widespread problem of eutrophication of surface waters and a large proportion of this nutrient enrichment is attributable to agriculture. Following a scientific report and extensive consultation in 2004 and 2005, the total territory of Northern Ireland was established as the area to which an action programme would be applied.

In Northern Ireland the action programme is currently set out in the Nitrates Action Programme Regulations (Northern Ireland) 2010 (NAP Regulations). The action programme establishes closed periods for the application of organic and inorganic fertilisers, a livestock manure application limit of 170kg nitrogen/ha/year, a requirement for sufficient slurry storage capacity on farms and controls on the

management of manure storage and manure and chemical fertiliser application. As well as helping to address eutrophication and nitrate levels in water bodies, the action programme measures can improve bacteriological quality in river catchments and also in downstream shellfish waters. The action programme is supported by a water quality monitoring programme and guidance and training offered to farm businesses. The aims of the action programme are also supported by other legislation concerning agricultural nutrient management – the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations (Northern Ireland) 2003 (SSAFO Regulations) and the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2006 (the Phosphorus Regulations). The NAP Regulations are the joint responsibility of the Department of the Environment (DOE) and the Department of Agriculture and Rural Development (DARD). The SSAFO and Phosphorus Regulations are the responsibility of DOE.

The three sets of Regulations apply to all farm businesses in Northern Ireland and are enforced by the Northern Ireland Environment Agency (NIEA). Compliance with the NAP Regulations is also one of the Cross-Compliance Statutory Management Requirements, therefore farmers claiming the single farm payment or other direct aid payments risk a financial penalty if they do not comply with them. Non-compliance with the measures has the potential to cause harm to the environment and human health and to negatively impact upon Shellfish Water Protected Areas. Breaches of these controls should therefore be reported to NIEA through the NIEA Water Pollution Hotline (0800 80 70 60), so that they can be investigated.

Table 5 Summary of the closed spreading periods for fertilisers

Fertiliser type	Closed period starts	Closed period ends
Chemical nitrogen fertiliser	Midnight 15 September	Midnight 31 January
Slurry, poultry litter and other organic manures, e.g. sewage sludge and abattoir waste	Midnight 15 October	Midnight 31 January
Farmyard manure	Midnight 31 October	Midnight 31 January

In addition to these restrictions, other general restrictions apply to the application of fertilisers to land. The following is a summary of some of the key restrictions.

- Application rates of fertilisers are capped, e.g. no more than 50m^3/ha of organic manures to spread at one time, with a minimum of three weeks between applications.
- All fertilisers, Chemical and organic, must not be applied:
  - On waterlogged soils, flooded land or land liable to flood;
  - On frozen ground or snow covered ground;
  - If heavy rain is falling or forecast in the next 48 hours;
  - On steep slopes where there is a risk of water pollution
- Organic manures and dirty water must not be applied within:
  - 20m of lakes;
  - 50m of a borehole, spring or well;
  - 250m of a borehole used for a public water supply;
  - +10m of a waterway other than lakes; this distance may be reduced to 3m where slope is less than 10% towards the waterway and where organic manures are spread by bandspreaders, trailing shoe, trailing hose or soil injection or where adjoining area is less than 1 ha in size or not more than 50m in width.

Further information is available at:

www.doeni.gov.uk/niea/summary-of-nitrates-action-programme-2015-18-and-phosphorus-regulations.pdf

7.2 River Basin Management Plans – Programme of Measures

A North Eastern River Basin Management Plan which covers the period 2009-2015 was published in December 2009, as required by the Water Framework Directive. It identifies where the water environment needs to be protected or improved, the timeframe to make these improvements and how that can be achieved through a Programme of Measures. The water environment in the North Eastern River Basin District is being managed at a local level through Local Management Area action plans, including the Strangford Lough Local Management Area action plan.

Catchment Stakeholder groups provide forums for stakeholders to discuss water management issues in their local area and to work in partnership to address them.
A draft update to the North Eastern River Basin Management Plan is available for consultation. The plans set out the existing and proposed measures that are needed to improve water quality www.doeni.gov.uk/niea/2015-wfd-north-eastern-river-basin-management-plan
A second cycle North Eastern River Basin Management Plan will be published in December 2015. The Local Management Area Plan and 2013 update for Strangford Lough can be found at: www.doeni.gov.uk/niea/strangford-swmi-joined.pdf

7.3 Other Designations within the Area

Habitats Directive (92/43/EEC) - There are 3 water dependant Special Areas of Conservation in the Strangford Lough catchment area, Turmennan and Lecale Fens.
Birds Directive (79/409/EEC) – There are 2 water dependant Special Protection Areas in the Strangford Lough catchment area – Strangford Lough and Ards Outer.
Bathing Waters Directive (76/160/EEC) – There are 2 identified bathing waters in the Strangford Lough Catchment however these are on the outer edge of the Ards Penninusla – Ballywalter and Millisle.

8.0 Regulation and Enforcement

In addition to the measures set out in this Pollution Reduction Programme, DOE will investigate any pollution incident and/or deterioration in water quality. Formal arrangements are in place between DOE, NI Water and the FSA in NI to investigate and respond to incidents relating to water quality at Shellfish Water Protected Areas. This includes responding to requests for investigations of FSA in NI microbiological official control samples which are outwith the classification of the shellfish production area and any pollution incident in the proximity of a Shellfish Water Protected Area.
It is an offence under the terms of the Water (Northern Ireland) Order 1999 to cause pollution to a waterway. Pollution incidents will be investigated in accordance with the DOE Enforcement and Prosecution Policy, which can be found at:

www.doeni.gov.uk/niea/niea_enforcement_policy.pdf.

8.1 Reporting Water Pollution Incidents

Any incident should be reported to the **NIEA Water Pollution Hotline**

0800 80 70 60

9.0 Summary of current and planned controls at Killough Harbour

Current Control	**Responsible Group**
Water Framework Directive ecological objectives	DOE
E. coli in shellfish flesh monitoring and classification programme	FSA in NI
UWWT Directive Sensitive Area Review	DOE
Chemical contaminant monitoring in shellfish flesh	DOE & FSA in NI
Nitrates Action Programme control of fertiliser use across Northern Ireland	DOE & DARD
SSFAO Regulations and Phosphorus Regulations	DOE
River basin management plan – programme of measures	DOE
Planned Control	**Responsible Group**
Monitoring of CSOs within 2km of Shellfish Water Protected Area	NI Water

Further Information:

Further Information is available at:

www.doeni.gov.uk

Or by Emailing :

MarineDivision.InfoRequests@doeni.gov.uk

Annex A

Contaminants in shellfish flesh monitored by DOE and FSA in NI

Metals	**Polyaromatic Hydrocarbons**
Arsenic	Naphthalene
Silver	Phenanthrene
Cadmium	Anthracene
Chromium	Fluoranthene
Copper	Pyrene
Iron	Benzo (a) Anthracene
Mercury	Chrysene
Nickel	5 Methyl Chrysene
Lead	Benzo (b) Fluoranthene
Zinc	Benzo (k) Fluoranthene
	Benzo (j) Fluoranthene
	Benzo (c) Fluorene
	Benzo (a) Pyrene
	Indeno (123,cd) Pyrene
	Dibenzo (a,h) Anthracene
	Benzo (ghi) Perylene
	Dibenzo (a,l) Pyrene
	Dibenzo (a,e) Pyrene
	Dibenzo (a,i) Pyrene
	Dibenzo (a,h) Pyrene
	Cylcopenta (c,d) Pyrene

Organochlorinated Pesticides	**Polychlorinated Biphenyls**
Aldrin	PCB 28
Dieldrin	PCB 52
Endrin	PCB 101
HCB	PCB 105
Heptachlor	PCB 118
a HCH	PCB 138
b HCH	PCB 153
g HCH	PCB 156
Oxychlordane	PCB 180
cis Heptachlor Epoxide	PCB 77
trans Heptachlor Epoxide	PCB 81

a Chlordane	PCB 126
g Chlordane	PCB169
op DDT	PCB 114
pp DDE	PCB 118
pp DDT	PCB 123
pp TDE	PCB 157
	PCB 167
	PCB 189

Dibenzo-p-dioxins (PCDDs)	**Dibenzofurans (PCDFs)**
2,3,7,8-TCDD	2,3,7,8-TCDF
1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDF
1,2,3,4,7,8-HxCDD	2,3,4,7,8-PeCDF
1,2,3,6,7,8-HxCDD	1,2,3,4,7,8-HxCDF
1,2,3,7,8,9-HxCDD	1,2,3,6,7,8-HxCDF
1,2,3,4,6,7,8-HpCDD	1,2,3,7,8,9-HxCDF
OCDD	2,3,4,6,7,8-HxCDF
	1,2,3,4,6,7,8-HpCDF
	1,2,3,4,7,8,9-HpCDF
	OCDF

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