

North Eastern River Basin Management Plan

Larne Lough North Classification

December 2009



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Northern Ireland
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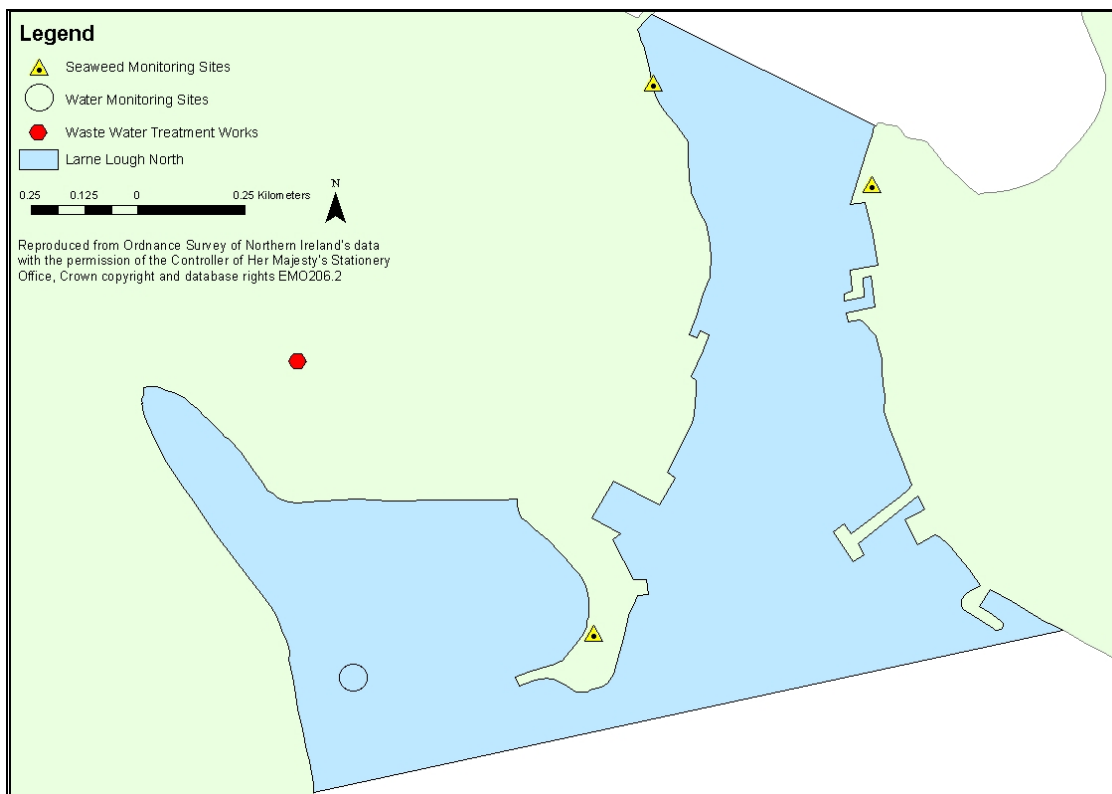
RIVER BASIN MANAGEMENT PLAN		
	WFD TRANSITIONAL WATER BODY CLASSIFICATION Larne Lough North	
	Version Date:	22/12/09
	MARINE ASSESSMENT AND LICENSING TEAM	

LARNE LOUGH NORTH


Water body Information

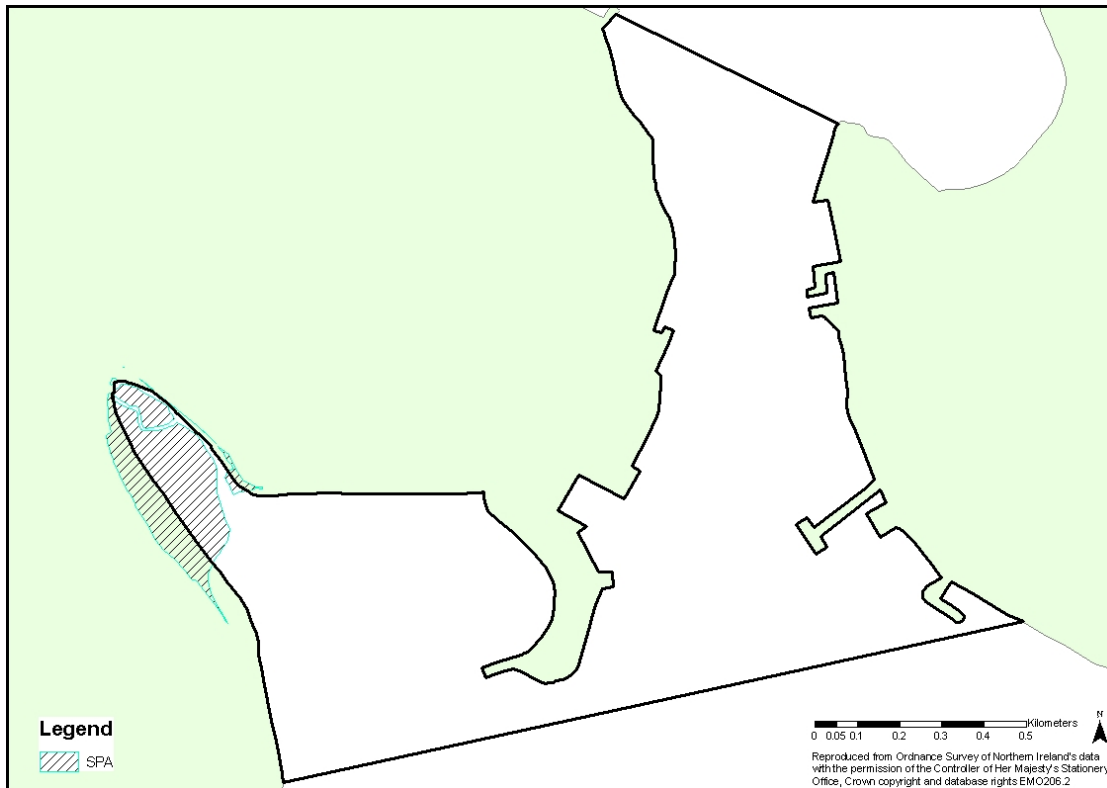
- River Basin District: North Eastern
- Water body type: CW8
- Water Body Code:UKGBNI6NE050
- Water body characteristics: Euhaline, mesotidal, sheltered
- Water body area: 1.29 km²
- Heavily Modified Water Body (HMWB): Yes

OVERALL WATERBODY CLASSIFICATION	Good Ecological Potential PASS	
<p>The hydromorphological assessment for the water body is that it meets Good Ecological Potential (GEP) due to management and mitigation measures undertaken within the harbour. As the biological and supporting elements also pass the assessment it reaches GEP at this time.</p> <p>In this round of classification HMWBs can only be classified as 'good EP or better' or 'moderate EP or worse'.</p>		




Map showing pressures and monitoring points within Larne Lough North (Coastal Water).

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Map of protected areas within Larne Lough North (Coastal Water), see Annex F.

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PARAMETERS TABLE

Parameters for which classification systems are available and have been used in the first round of classification. Some biological assessment tools are not suitable for all water bodies due to habitat type.

Ecological Quality Element			
Main Element	Sub-Element	Applied	Comment
Macroalgae (seaweed)	-Opportunistic Macroalgae	<input checked="" type="checkbox"/>	Tool Not Applicable
	-Reduced Species List	<input checked="" type="checkbox"/>	
Angiosperms		<input checked="" type="checkbox"/>	Tool Not Applicable
Phytoplankton	Biomass	<input checked="" type="checkbox"/>	
Benthic Invertebrates	Infaunal Quality Index	<input checked="" type="checkbox"/>	No data available
	Imposex	<input checked="" type="checkbox"/>	No data available
Physico-Chemical (water)	General Conditions	<input checked="" type="checkbox"/>	
	-Dissolved Oxygen	<input checked="" type="checkbox"/>	
	-Nutrients		
	Specific Pollutants (Annex VIII subs)	<input checked="" type="checkbox"/>	
Hydromorphological Quality Elements	SEPA Rapid Designation	<input checked="" type="checkbox"/>	
	TraC MIMAS	<input checked="" type="checkbox"/>	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	<input checked="" type="checkbox"/>	

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Waterbody Classification

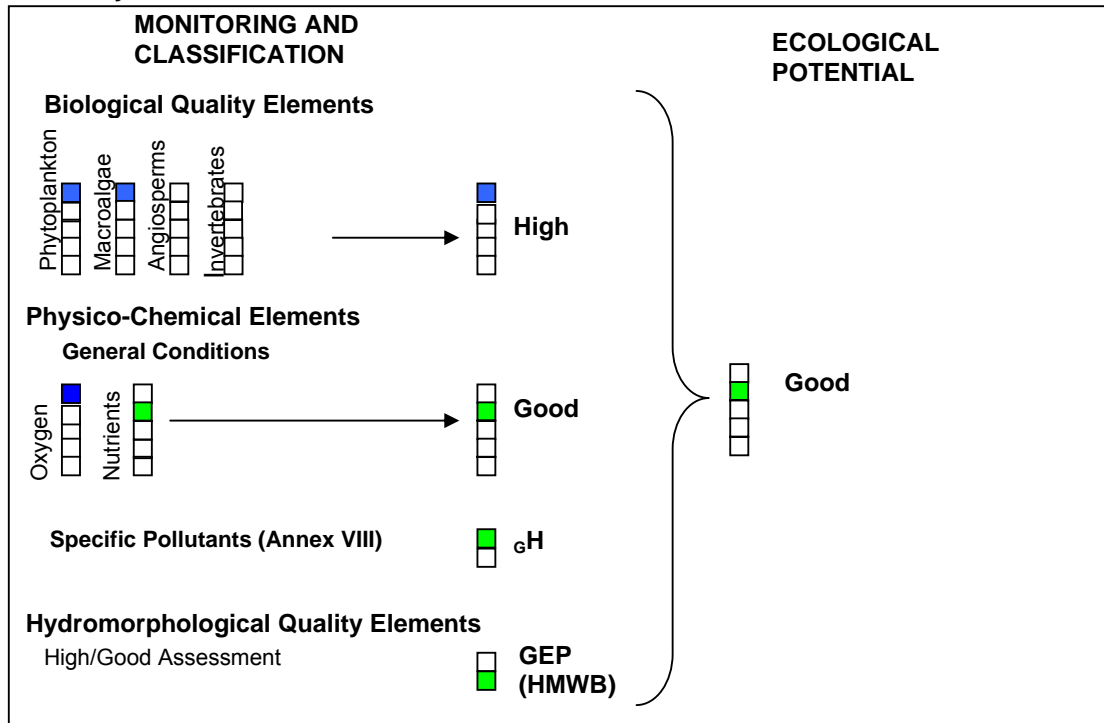


Figure showing ecological classification of Larne Lough North (Coastal Water).

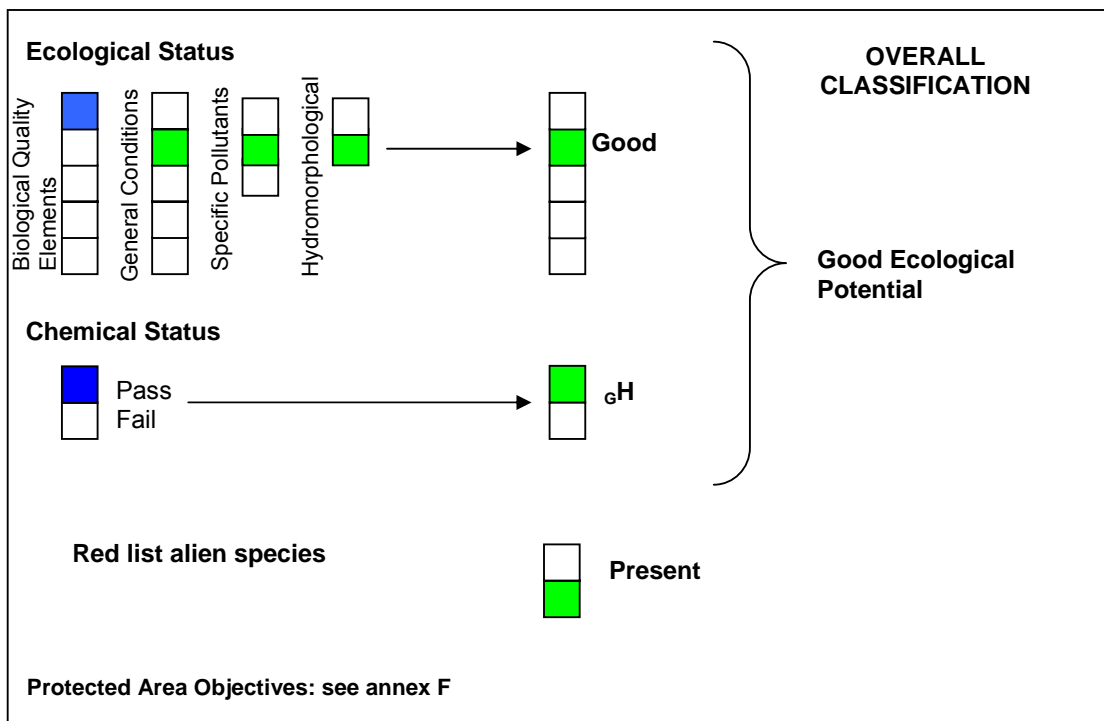



Figure showing overall classification of Larne Lough North (Coastal Water).


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First River Basin Cycle (2004 – 2008)

Monitoring Level: Surveillance

Sampling frequency for each quality element

Quality Elements		Year (if 1 in 3 yrs)	No. of sites
Phytoplankton		2005-8	1 sites 8 samples
Macroalgae	RSL	2008	3
Physico-chemical			
Nutrients		2005-2008	7 samples 4 site
Salinity		2005-2006	
Temperature		2005-2006	
Dissolved Oxygen (DO)		2003-2004	9
Specific polluting substances (Annex VIII)		2007	
Hydromorphology		2007	
Water chemistry			
(Annex X)		2007	

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ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton

QE phytoplankton assessment (+ Data confidence):	HIGH (L)	
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Classification tools:

1. Chlorophyll biomass index (90%ile).
 2. Species composition, abundance and bloom frequency will be reported in the next classification round.
- Data store (classification):
MARINE\Water Framework Directive\DRAFT WFD CLASSIFICATION REPORTS\QE Phytoplankton\Chlla 90th Percentile\Final 90th Percentile Phytoplankton-
 - Data Availability (spot & continuous samples): spot

Thresholds

Water Ref. Area		Status				
		High	Good	Moderate	Poor	Bad
North/Irish Sea	Chl $\mu\text{g l}^{-1}$	<5	5-10	10-15	15-20	>20
	EQR	0 -1.0	1.0-0.8	0.8-0.6	0.6-0.4	0.4-0.2


Results

90%ile	Status	Data Years	Data Quality	No. of daily averages	No. of Sites	No. of Samples	Data Confidence (proportion of possible months with data*)
4.14	HIGH	2005-2007	Low	0	1	8	28.57%

* proportion of possible months (of growing season in years assessed) for which data are available

Data confidence: Low

- The proportion of possible months sampled and the number of spatial samples collected yielded a low confidence in data confidence.
- Data collected was from AFBINI.

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QE: Macroalgae Larne North

QE macroalgal assessment (+ Data confidence):	HIGH (M)
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Classification tools: Reduced species list (RSL),
Macroalgal Blooming Tool – not applicable

Reduced Species List (RSL)

Waterbody RSL assessment: *HIGH (Medium)*

- WFD surveillance monitoring: 2008
- Data Availability (classification): 2008, 3sites
- Data Store: G:\MARINE\Projects 08\Marine Macrophytes

Boundaries

Parameters	Quality Status	Bad	Poor	Moderate	Good	High
	Sub-metric quality status	0.0 – 0.2	0.21 – 0.4	0.41 – 0.6	0.61 – 0.8	0.81 – 1.0
Species richness (adj. for shore)		0 – 3	3 – 10	10 – 20	20 – 34	34 – 68
Proportion of Chlorophyta (% G)		80 – 100	45 – 80	30 – 45	20 – 30	0 – 20
Proportion of Rhodophyta (% R)		0 – 10	10 – 25	25 – 35	35 – 45	45 – 100
Ecological Status Group ratio (ESG)		0.0 – 0.2	0.2 – 0.4	0.4 – 0.6	0.6 – 0.8	0.8 – 1.2
Proportion of opportunists (% opp)		50 – 100	35 – 50	25 – 35	15 – 25	0 – 15

Results


Shore	Sub-Metric EQR							RSL EQR	Status
	Shore desc.	Sp. richness	Adj. Sp. Richness	% G	% R	ESG	% Opp		
Chaine Monument 2008	15	41	41	12.2	56.1	1.28	9.76	0.873	HIGH
Curran Point 2008	12	35	42	17.1	45.7	0.84	11.4	0.809	HIGH
Ferris Point 2008	12	40	48.4	17.5	55.0	1.35	12.5	0.849	HIGH
Mean								0.84 ±0.03	HIGH

Data Confidence: Medium

- Standard Deviation (±) are included with the mean EQR.
- Data QA (expert team).
- WFD specific data (Reduced species list completed; Full species list not yet carried out, tool not yet completed).
- 3 shores (good spatial coverage) over single year (poor temporal trend assessment).
- FSL not yet carried out.

Alien taxa present (*Sargassum muticum*): Not present


QE: Angiosperms – Tool not applicable

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QE: Benthic Invertebrates – Larne North

Overall benthic invertebrate assessment: *GOOD (ND)*

Alien taxa present: *Styela clava*

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ANNEX B: Classification of physico-chemical quality elements: general

Dissolved Oxygen

Dissolved oxygen (+ data confidence):	HIGH (L)	
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Classification tools: Comparison of 5% ile against reference standards

- Data store: \\marine on ehslis2k \Water Framework Directive\DRAFT WFD CLASSIFICATION REPORTS\Dissolved Oxygen
- Data Availability: 2003,2004
- Data Availability (spot & continuous samples): Spot

Thresholds:

WFD Status	Marine 5%ile	Objectives
HIGH	≥5.7 mg/L	All life stages of salmonids and transitional fish
GOOD	≥4.0 <5.7 mg/L	Presence of salmonids and transitional fish
MODERATE	≥2.4 <4.0 mg/L	Most life stages of non-salmonid adults
POOR	≥1.6 <2.4 mg/L	Presence of non-salmonids, poor survival of salmonids
BAD	<1.6 mg/L	No salmonids present, marginal survival of resident species


Results:

5% ile DO (mg/L)	Status	Data years	Data Quality	No. of daily averages	Data Coverage (proportion of possible months with data*)
8.00	HIGH	03, 04	**	9	12.5%

* Proportion of possible months for which data are available

**Data Quality: LOW

- Instruments subject to regular calibration checks and quality assurance programme.
- Sampling frequency, low.

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Nutrients – Winter Dissolved Inorganic Nitrogen DIN

Winter DIN (+ Data confidence):	Good (L)	
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- Data store: \\marine on ehslis2k \Water Framework Directive\Nuala-Lesley Nutrients\DIN for Classification\Coastal Water
- Data Availability: 2005 to 2006, DIN & salinity (November to February)
- Data Availability (spot & continuous samples): spot

Winter DIN thresholds:


Area	Salinity range	DIN (uM)	DIN (uM)	DIN (uM)
		HIGH	GOOD	MODERATE
Coastal (at salinity 32)	30-34.5	<12	≥12 ≤18	>18

Results:

Mean Winter DIN (uM) (Avg DIN)	Winter DIN Daily average (n)	No. of samples (n)	No. of sites	Data Years	Data Quality	Status
14.16	4	7	4	2005 - 2008	Database not yet QA'd	Good

Data confidence: Low

- Low sample frequency.

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**ANNEX C: Classification of physico-chemical quality elements: Specific Pollutants
(Annex VIII)**

Specific pollutants assessment (+data confidence)	gH (L)	
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Classification tools: Comparison with EQS levels


Data Availability: 2007 WFD Dedicated Monitoring

Data confidence: Low

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ANNEX VIII		EQS ug/l	Ecological Status
	2007		
111_tri			
112_tri			
24_D			
2_chloro			
4_chloro_3			
ammonia			
As			
Bentazone			
bipheyl			
boron			
chlorine			
chloronit			
chloronit_cal c			
Cr			
Cu			
Cy			
Cyfluthrin			
cyper			
diazinon	0.001	0.01	GH
dichlorvos			
dimethoate			
fenitrothion	0.002	0.01	GH
Fe			
linuron			
malathion	0.0025	0.02	GH
Mn			
mecoprop			
permethrin			
phenol	<4	7.7	GH
toluene			
Vn			
xylenes			
Zn			

G	Good	Mean includes LOD data
F	Fail	Mean based on actual values
GH	Good or better and is normally treated as high	
M	Moderate	

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ANNEX D: Hydromorphological quality elements

Overall hydromorphology assessment	HMWB - GEP	
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Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

Alternative approach assessment (CIS guidance 2006): Good Ecological Potential.

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ANNEX E: Chemical Status

Overall water chemistry assessment: Good


Annex X Chemicals (+data confidence)	gH (L)	
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Annex X: Overall Compliance	Pass
Annex X: Pass/Fail	Pass


Classification tools: Comparison against EQS.

Data Availability: 2007 WFD Dedicated Monitoring

Data confidence: Low

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ANNEX X		EQS ug/l	Chemical Status	Ecological Status
	2007			
12_Dichloroanthracene				
atrazine	0.001	0.6	G	GH
benzene				
benzo				
benzo_a				
Cadmium				
Chlorfenvos				
Chloropyrifos	0.001	0.03	G	GH
Dichloro				
Diuron				
endosulphan				
floranthene				
hcb				
hcbd				
hch				
hch_calc				
Hg				
Indeno				
ISP				
Napthalene				
Ni				
Nonyl				
Octyl				
Pb				
pcp				
simazine	0.001	1	G	GH
TBT				
TCB				
TCB_calc				
trichloromethane				
trifluralin				
G	Good			
F	Fail			
GH	Good or better and is normally treated as high			
M	Moderate			
				Mean includes LOD data
				Mean based on actual values

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ANNEX F: Protected Area Objectives


Water body	Protected area	Designation	Status	Reason for non-compliance
Larne Lough North	Larne Lough	SPA	Favourable	
Larne Lough North	Larne Lough	Saltmarsh	Favourable-maintained	

Nitrates Directive

Until 1 January 2007, Northern Ireland had designated seven NVZs on the basis of elevated nitrate levels in groundwaters. These NVZs were very small and covered less than 1% of Northern Ireland's area. However, Northern Ireland also has a widespread problem of eutrophication of surface waters and a large proportion of this nutrient enrichment is attributable to agriculture. Following extensive consultation, the total territory of Northern Ireland was established as the area to which an action programme would be applied under the Protection of Water Against Agricultural Nitrate Pollution Regulations (Northern Ireland) 2004 with effect from 29 October 2004.

ANNEX G: Red list Alien Species

Styela clava is present in this water body (NIEA survey).

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GLOSSARY

AFBI	Agri-Food and Biosciences Institute (under contract to NIEA)
AMBI	AZTI Marine Biotic Index
Annex 10	Annex 10 Priority Hazardous Substances
Annex 8	Annex 8 Specific Pollutants
Article 5	Characterisation, typology, pressures and impacts analysis
ASSI	Area of Special Scientific Interest
CIS	Common Implementation Strategy
DIN	Dissolved Inorganic Nitrogen
DO	Dissolved Oxygen
EQR	Ecological Quality Ratio
EQS	Ecological Quality Status
EUNIS	European Nature Information System
FSL	Full Species List
GEP	Good Ecological Potential
GH	Good/High
H/G/M/P/B	High/Good/Moderate/Poor/Bad (Classification Status)
H/M/L	High/Medium/Low (Confidence)
HMWB	Heavily Modified Water Body
IQI	Infaunal Quality Index
IRBD	International River Basin District
LOD	Limit of Detection
MBT	Macroalgal Blooming Tool
MEP	Moderate Ecological Potential
NB	Neagh Bann
ND	No data
NE	North Eastern
NEAGIG	North Eastern Atlantic Geographical Intercalibration Group
NIEA	Northern Ireland Environment Agency
N-regs	Nitrogen Regulation
NVZ	Nitrate Vulnerable Zone
NW	North Western
Physico-chem	Physical and chemical monitoring
RSL	Reduced Species List
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SPA	Special Protected Area
TNA	Tool Not Applicable
TraC MImAS	Transitional and Coastal Morphology Impact Assessment System
TUD	Tool Under Development
UKAS	United Kingdom Accreditation Service
UKTAG	United Kingdom Technical Advisory Group for Water Framework Directive
UNICORN	Database for marine organisms.
UWWTD	Urban Waste Water Treatment Directive (91/271/EEC)
VDSI	Vas Deferens Sequence Index
WFD	Water Framework Directive

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