

draft RIVER BASIN MONITORING PLAN

CLASSIFICATION PAMPHLET

Coastal Waterbody Portstewart Bay

22nd December 2008



An Agency within the Department of the
Environment
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PORTSTEWART BAY

Water body Information

- River Basin District: NB
- Water body type: CW2
- Water body characteristics: Euhaline, mesotidal, exposed
- Water body area: 122.09 km²
- Heavily Modified Water Body: No

**OVERALL WATERBODY CLASSIFICATION. (H/G/M/P/B):GOOD
(PASS/FAIL):PASS**

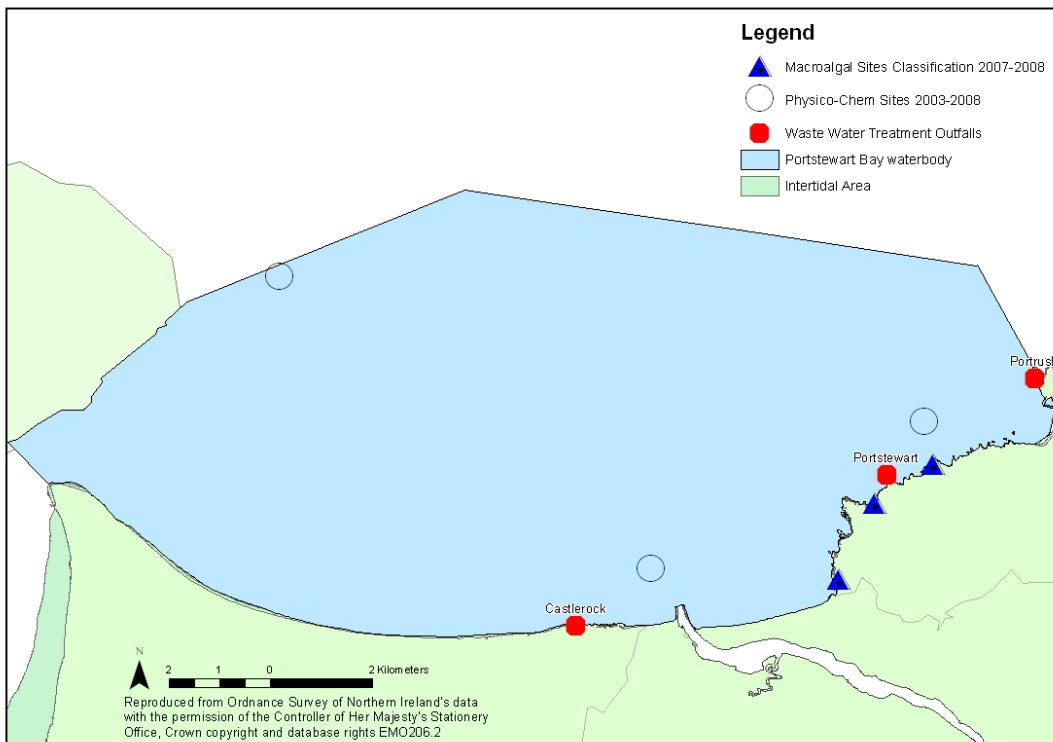


Figure showing pressures and monitoring points within Portstewart Bay (Coastal Water).

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WFD COASTAL WATER BODY CLASSIFICATION
Portstewart Bay

Version Date: 22/12/08

MARINE ASSESSMENT AND LICENSING TEAM

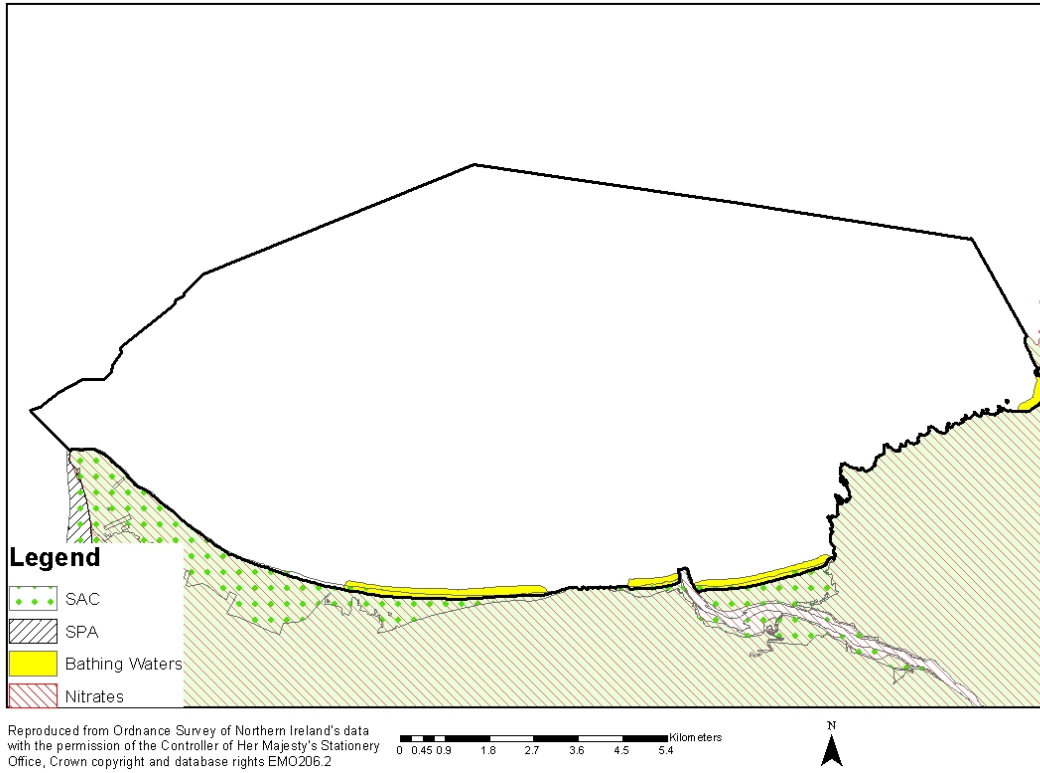



Figure illustrating protected areas in Portstewart Bay (Coastal Waters), see Annex F.

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	WFD COASTAL WATER BODY CLASSIFICATION	
	Portstewart Bay	
	Version Date:	22/12/08
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PARAMETERS TABLE

(Parameters for which classification systems are available and have been used in the first round of classification. Note: for some parameters data is not yet available hence the tools have not been applied).

Ecological Quality Element			
Main Element	Sub-Element	Applied	Comment
Plants	Macro Algae	✓	
	-Opportunistic Macroalgae	☒	Tool Not Applicable
	-Reduced Species List	✓	
	Angiosperms	☒	Tool Not Applicable
	Phytoplankton	☒	Data Not Available
Benthic Invertebrates	Infaunal Quality Index	☒	Tool Under Development
	Imposex	☒	Tool Not Applicable
Fish	Transitional Fish Classification Index		
Physico-Chemical	General Conditions	✓	
	-Dissolved Oxygen	✓	
	-Nutrients	☒	Data Not Available
	Specific Pollutants (Annex VIII subs)	☒	Data Not Available
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	☒	Data Not Available

Waterbody Classification

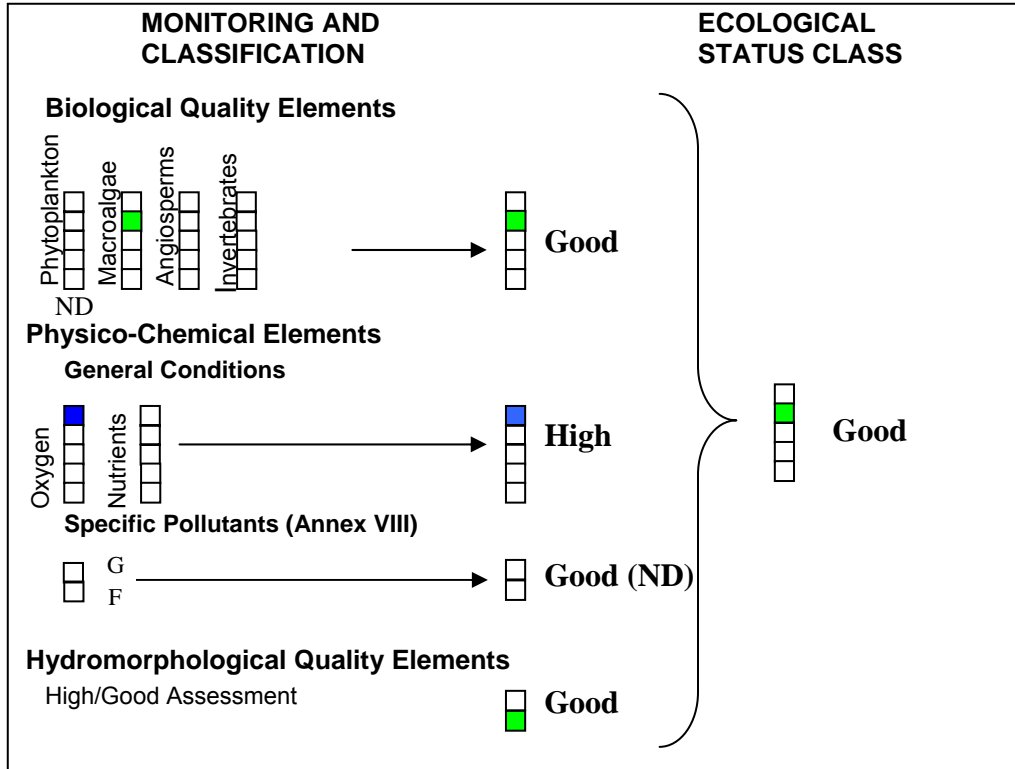


Figure showing ecological classification of Portstewart Bay (Coastal Water)

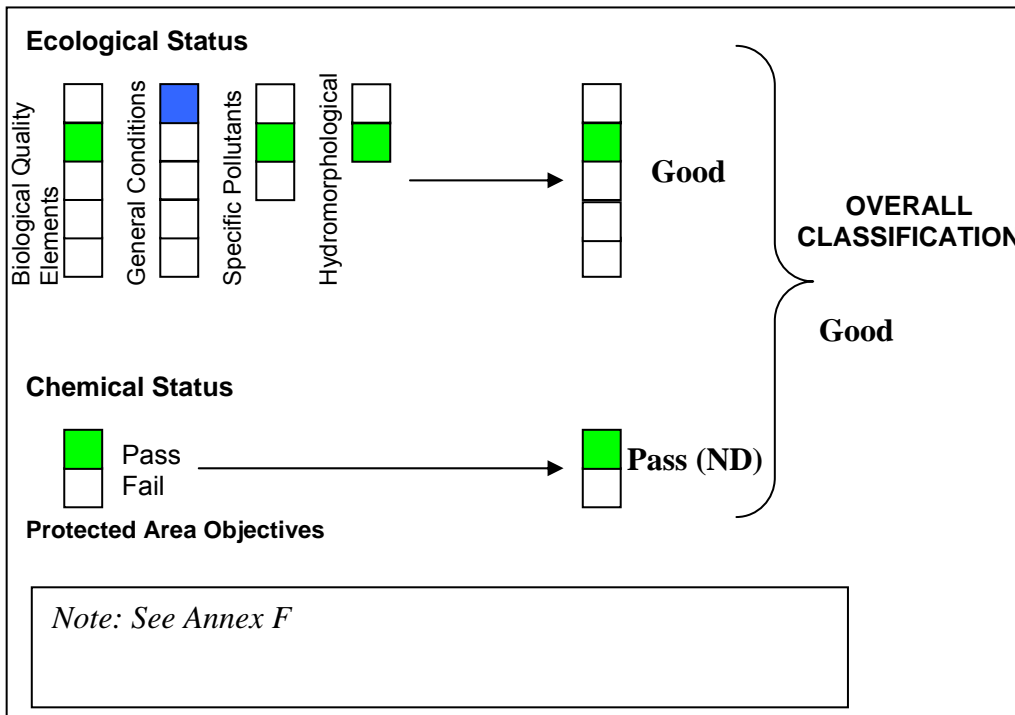


Figure showing overall classification of Portstewart Bay (Coastal Water)

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Portstewart Bay

Version Date: 22/12/08

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First River Basin Cycle (2004 – 2008)

Monitoring Level:

Surveillance

Sampling frequency for each quality element

Quality Elements		Surveillance		
		Year (if 1 in 3 yrs)	Frequency (if p.a.)	No. of sites
Biological				
Phytoplankton		ND		
Macroalgae	Reduced Species List	2007-8		3 sites 5 surveys
Benthic Invertebrates	Infaunal Quality Index	TUD		
Physico-chemical				
Nutrients		ND		
Salinity				
Temperature				
Dissolved Oxygen (DO)		2007-8		3
Suspended particulate matter (SPM)				
Light (Kd)				
Other polluting substances (Annex VIII)		ND		
Hydromorphology				
Water chemistry				
(Annex X)		ND		

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	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay
	Version Date: 22/12/08
	MARINE ASSESSMENT AND LICENSING TEAM

ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton

QE phytoplankton assessment (+ Data confidence): *GOOD (No data)*

Classification tools:

First round reporting now

1. Chlorophyll biomass index (90%ile)
2. Elevated taxa count index

- Data store (classification):
MARINE\Water Framework Directive\DRAFT WFD CLASSIFICATION REPORTS\QE Phytoplankton\Chlla 90th Percentile\Final 90th Percentile

- Data Availability (spot & continuous samples):

1. *Chlorophyll Biomass Index - 90%ile (Chl $\mu\text{g l}^{-1}$)*
(Growing Season 1st Mar – 30th Sept)

Waterbody Chl. biomass assessment

GOOD (No data)

- **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*)

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

Data confidence:

No data

2. Elevated Taxa Count Index

Waterbody Elevated Taxa Assessment

- **Thresholds:**

Tool	Thresholds	
	North/Irish Sea	Atlantic
I ₁ - Individual Species Count (excl. Phaeocystis) (%)	250,000 (cells l ⁻¹)	
I ₂ - Phaeocystis Counts (%)	10 ⁶ (cells l ⁻¹)	
I ₃ - Total Taxa Count (%)	10 ⁷ (cells l ⁻¹)	
I ₄ - Elevated Biomass Count (%)	>10 (µg l ⁻¹)	>5 (µg l ⁻¹)

Waterbody Elevated count (%) = [I₁ (%) + I₂ (%) + I₃ (%) + I₄ (%)] / 4


- **EQR Boundaries:**

Class	% Exceedance	EQR
High	0-15	0.67-1.0
Good	15-30	0.33-0.67
Moderate	30-40	0.28-0.33
Poor	40-50	0.20-0.33
Bad	>50	0-0.20

Results

I ₁	I ₂	I ₃	I ₄	Elevated Count Mean	Status	Data Years	No. of sampling occasions	No. of phytoplankton samples

Data confidence:

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	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay
	Version Date: 22/12/08
	MARINE ASSESSMENT AND LICENSING TEAM

QE: Macroalgae Portstewart Bay

QE Macroalgae assessment (+ Data confidence): GOOD (M)

Downgraded due to presence of *Sargassum muticum*, awaiting further guidance on alien species from UKTAG.

Classification tools: Reduced species list (RSL), MBT – tool not applicable

Reduced Species List (RSL)

Waterbody RSL assessment:

High (M)

- WFD surveillance monitoring: 2007,2008
- Data Availability (classification): 2007 - 1 site, 2008 - 3 sites
- Data Store: Data Store: G:\MARINE\Projects 07\MM07-03 Marine Plants\Macrophyte Survey 07
- 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		
Rinagree Point 2007	18	48	38.4	22.92	41.67	1.00	14.58	0.764	GOOD
Rinagree Point 2008	18	50	40.0	18.00	48.00	0.92	12.00	0.810	HIGH
Berrins 2008	17	48	41.8	18.75	54.17	1.00	10.42	0.835	HIGH
Clubhouse 2008	17	47	40.9	14.89	53.19	1.04	10.64	0.844	HIGH
Rinagree Point 2008 NH	18	43	34.4	13.95	44.19	1.15	18.60	0.790	GOOD
Mean								0.81 ±0.03	HIGH


Data Confidence:

Medium

- Data QA (expert team)
- WFD specific data (Reduced species list completed; Full species list not yet carried out, tool not yet completed).
- 3 shores (very poor spatial coverage) over 2 years (poor temporal trend assessment).
- Standard Deviation (±) are included with the mean EQR
- FSL not yet carried out


Alien taxa present (*Sargassum muticum*):

Present

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	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay		
	<table border="1"> <tr> <td>Version Date:</td> <td>22/12/08</td> </tr> </table>	Version Date:	22/12/08
	Version Date:	22/12/08	
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QE: Angiosperms Portstewart Bay – Tool not applicable

QE: Benthic Invertebrates – Portstewart Bay – tools not applicable

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	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay
	Version Date: 22/12/08
	MARINE ASSESSMENT AND LICENSING TEAM

ANNEX B: Classification of physico-chemical Quality Elements: General

Dissolved Oxygen

Waterbody DO assessment: **HIGH (L)**

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:** 2007/2008
- **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*)
6.83	HIGH	07/08	**	3	14.3%

* Proportion of possible months for which data are available

**Data Quality

Low

- Instruments subject to regular calibration checks and quality assurance programme, but databases not QA'd.
- Low = ≤ 4 daily averages x n (no. of assessment years)

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WFD COASTAL WATER BODY CLASSIFICATION
Portstewart Bay

Version Date: 22/12/08

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Nutrients – Winter DIN

Winter DIN assessment

Good (ND)

Data store:

- Data Availability:
 - Data Availability (spot & continuous samples):

- N regulation thresholds: 25 Trans and 32 coastal


Area	Salinity range	DIN (µM) Winter mean H/G	DIN (µM) Winter mean G/M
Coastal (at salinity 32)	30-34.5	12	18

Results:

Mean Winter DIN (µM) (normalised to salinity 32)	Winter DIN Daily average (n)	SPM	SPM (n)	Data Years	Data Quality	Status

Data confidence:

No data

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	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay		
	<table border="1"> <tr> <td>Version Date:</td> <td>22/12/08</td> </tr> </table>	Version Date:	22/12/08
	Version Date:	22/12/08	
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ANNEX C: Classification of physico-chemical quality elements: Specific Pollutants (Annex VIII)

Overall specific pollutants assessment **gH (ND)**

Annex VIII: Overall Compliance	PASS-No data
Annex VIII: Pass/Fail	PASS-No data

Classification tools: Comparison with EQS levels

Data Availability: 2008 data available for 2009 classification.


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	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay		
	<table border="1"> <tr> <td>Version Date:</td> <td>22/12/08</td> </tr> </table>	Version Date:	22/12/08
	Version Date:	22/12/08	
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ANNEX D: Hydromorphological quality elements

Overall hydromorphology assessment: GOOD

Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

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	Version Date:	22/12/08	
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ANNEX E: Chemical Status – Annex X Chemicals

Overall water chemistry assessment:

Good (No Data)

**Annex X: Overall
Compliance**


PASS-No data

Annex X: Pass/Fail

PASS-No data

Classification tools: Comparison with EQS levels

Data Availability: 2008 data available for 2009 classification.

draft RIVER BASIN MANAGEMENT PLAN	
	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay
	Version Date: 22/12/08
	MARINE ASSESSMENT AND LICENSING TEAM

ANNEX F: Protected Area Objectives

Water body	Protected area	Designation	Status	Reason for non-compliance
Portstewart Bay	Magilligan	SAC	No marine features, though the boundary includes the intertidal.	


<i>Water Body</i>		2008	2007	2006	2005	2004	2003
Portstewart Bay	Benone						
Portstewart Bay	Castlerock						
Portstewart Bay	Portstewart						
Portstewart Bay	Portrush (Mill) West						
Portstewart Bay	Downhill						

Bathing Water Directive

	Compliance with Guideline standards
	Compliance with Mandatory standards
	Failure to comply with Mandatory standards
	Not on monitoring programme

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.

	WFD COASTAL WATER BODY CLASSIFICATION Portstewart Bay	
	Version Date:	22/12/08
	MARINE ASSESSMENT AND LICENSING TEAM	

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
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
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