

North Eastern River Basin Management Plan

# Ards Peninsula Classification

December 2009



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



INVESTOR IN PEOPLE



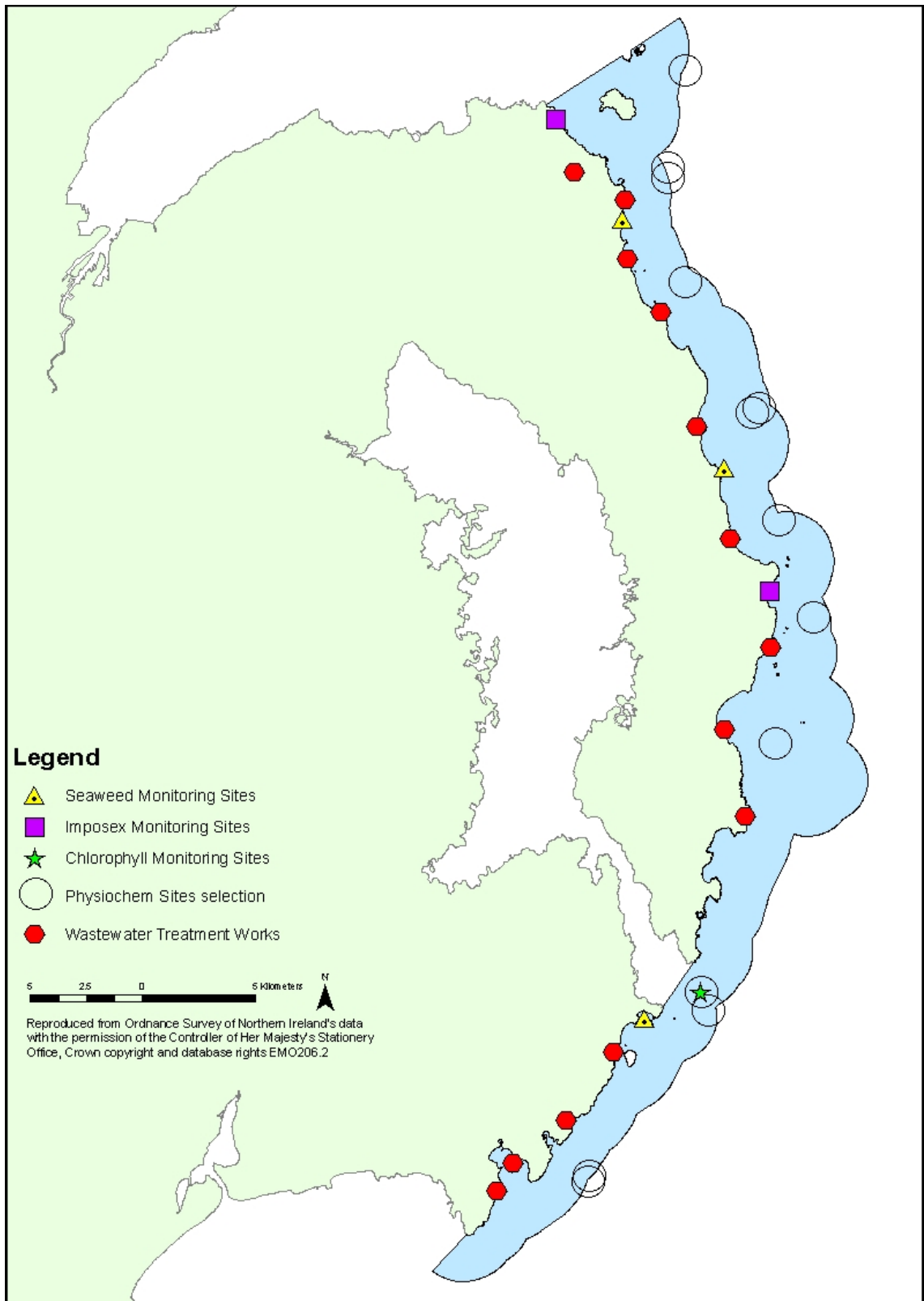
**NIEA** Northern Ireland  
**Environment**  
[www.ni-environment.gov.uk](http://www.ni-environment.gov.uk) Agency

**ARDS PENINSULA**

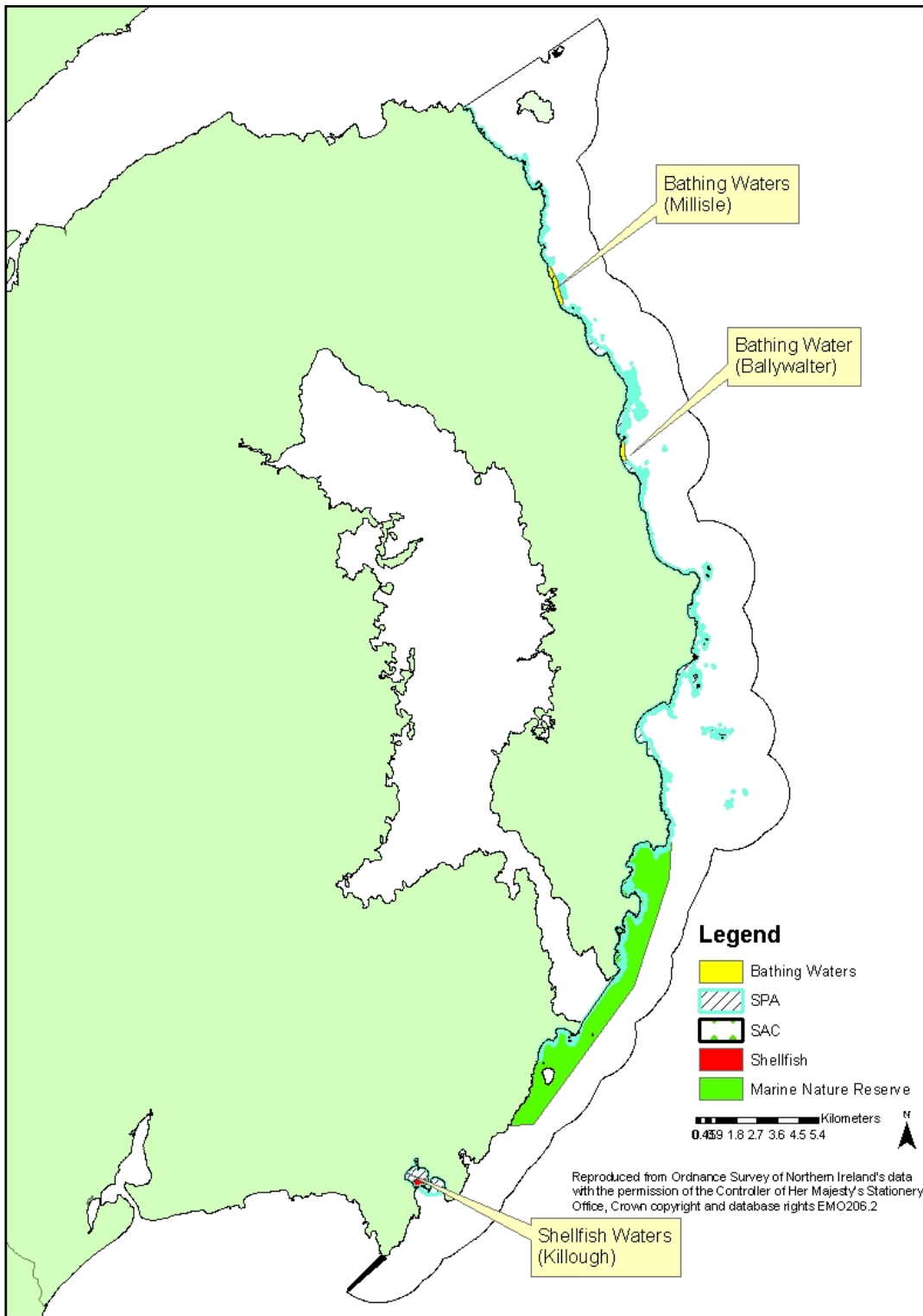
Water body Information

- River Basin District: North Eastern
- Water Body Code: UKGBNI6NE110
- Water body type: CW5
- Water body characteristics: Euhaline, mesotidal, moderately exposed
- Water body area: 185.73 km<sup>2</sup>
- Heavily Modified Water Body: No

<b>OVERALL WATERBODY CLASSIFICATION</b>	<b>(H/G/M/P/B): (PASS/FAIL):</b>	<b>MODERATE FAIL</b>	
---	--------------------------------------	--------------------------	--



Map showing waste water treatment pressures and monitoring sites within Ards Peninsula (Coastal Water).



Map showing protected areas within Ards Peninsula (Coastal Water), see Annex F.

## 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			
<i>Main Element</i>	<i>Sub-Element</i>	<i>Applied</i>	<i>Comment</i>
<b>Phytoplankton</b>	Biomass	✓	
<b>Macroalgae (Seaweeds)</b>	Opportunistic Macroalgae	☒	Tool not suitable.
	Reduced Species List	✓	
<b>Angiosperms</b>	Seagrass	☒	Tool not suitable.
	Saltmarsh	Assessed under protected areas.	See Annex F
<b>Benthic Invertebrates</b>	Infaunal Quality Index	☒	Tool not applied in this report.
	Imposex	✓	
<b>Physico-chemical (Water)</b>	-Dissolved Oxygen	✓	
	-Nutrients	✓	
	Specific Pollutants ( Annex VIII substances)	✓	
<b>Hydromorphological Quality Elements</b>	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
<b>Priority Hazardous Substances</b>	Annex X substances	✓	

## Waterbody Classification

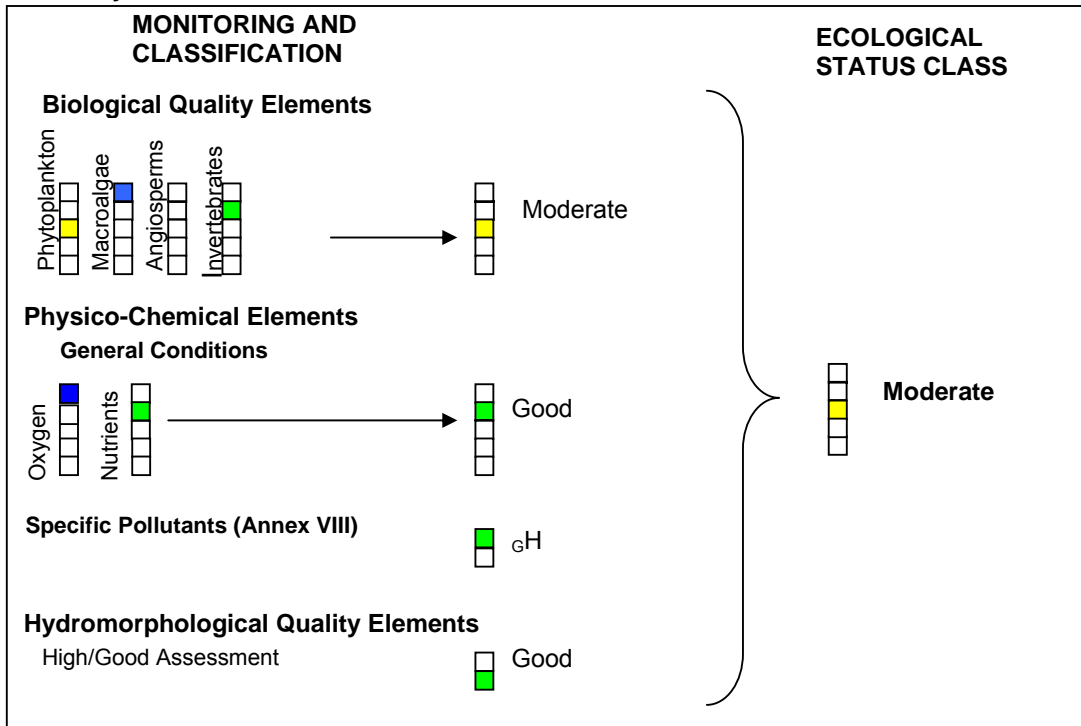


Figure showing ecological classification of Ards Peninsula (Coastal Water).

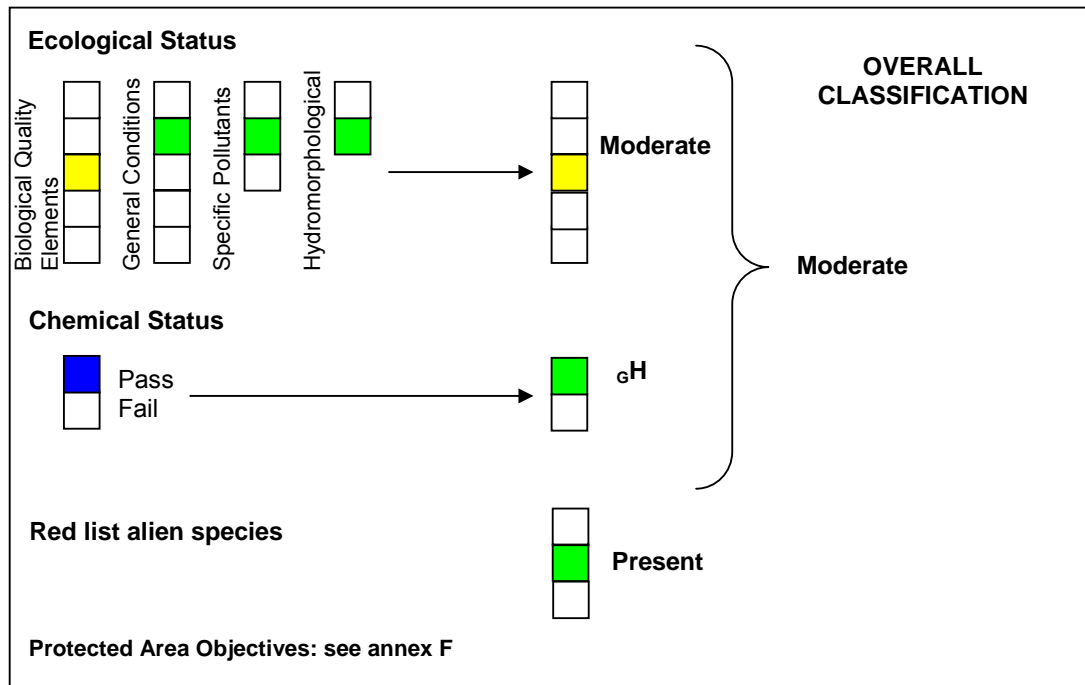


Figure showing overall classification of Ards Peninsula (Coastal Water).

**First River Basin Cycle (2004 – 2008)**

*Monitoring Level: Surveillance*

Sampling frequency for each quality element

QUALITY ELEMENT		Year (if 1 in 3 yrs)	No. of sites
<b>Biological</b>			
Phytoplankton		2004-6	1 sites 10 samples
Macroalgae (Seaweeds)	Reduced Species List	2007	3
	MBT	n/a	
Angiosperms	Seagrass	n/a	
Benthic Invertebrates	Infaunal Quality Index	n/a	
	Imposex	2007	2
<b>Physico-chemical</b>			
Nutrients		2004-9	8 sites plus transect 92 samples
Dissolved Oxygen		2007-8	8
Specific polluting substances (Annex VIII)		2007	
<b>Hydromorphology</b>		2007	
<b>Water chemistry</b>			
(Annex X)		2007	

## ANNEX A: Classification of Biological Quality Elements

### QE: Phytoplankton

<b>QE phytoplankton assessment (+ data confidence):</b>	<b>MODERATE (L)</b>	
---	---------------------	--

Classification tools:

1. Chlorophyll biomass index (90%ile).
  2. Species composition, abundance and bloom frequency will be reported in the next classification round.
- NIEA data store (classification): MARINE\Water Framework Directive\WFD CLASSIFICATION REPORTS\QE Phytoplankton\Chlla 90th Percentile\Final 90th Percentile
  - Data Availability (spot & continuous samples): spot, 2004-2006, AFBI.

Chlorophyll Biomass Index - 90%ile (Chl  $\mu\text{g l}^{-1}$ ), growing season 1<sup>st</sup> Mar – 30<sup>th</sup> Sept.

Chlorophyll biomass assessment: Moderate

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*)
11.21	MODERATE	2004-2006	Low	0	1	10	35.7%

\* 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.
- No data is available for the 2007 period reducing the data confidence.
- Data collected by AFBI.

**QE: Macroalgae: Ards Peninsula**

QE macroalgal assessment (+ data confidence):	<b>HIGH (M)</b>	
---	-----------------	--

Classification tools:

1. Reduced species list (RSL).
2. Macroalgal Blooming Tool (MBT) – not suitable.

*Reduced Species List (RSL)*

- WFD surveillance monitoring: 2007
- Data Availability (classification): 2007, 3 sites.

**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							EQR	
	Shore description	Species richness	Adj. Sp. Rich.	% G	% R	ESG	% Opp.		
Wallace Rocks	16	48	45	10.42	54.17	1.40	4.00	0.885	HIGH
Craiglewey Point	18	57	46	15.79	49.12	1.28	5.00	0.870	HIGH
Galloway Rocks	18	51	41	15.69	52.94	1.22	5.00	0.863	HIGH
<b>Mean</b>								0.873 ±0.01	<b>HIGH</b>

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).
- Three shores (good spatial coverage) over single year (temporal trend assessment).

Alien taxa present (*Sargassum muticum*): Yes

**QE Angiosperms: Ards Peninsula – tool not applicable**

## QE: Benthic Invertebrates – Ards Peninsula

QE benthic invertebrate assessment (+ Data confidence):	GOOD (L)	
---	----------	--

Classification tools:

1. Infaunal Quality Index (IQI)
2. Imposex tool (VDSI)

### 1. IQI

Water body IQI assessment: Good (ND)

No data is available for this water body for this round of classification.

### 2. VDSI (*Nucella lapillus*)

Waterbody VDSI assessment: *Good (L)*

- Data store: NIEA imposex shoreline data.xls; MERMAN
- Data availability: 2004/2007 NI survey

Boundaries:

Class	Moderate	Good	High
VDSI	≥4.0	≥0.3 <4.0	<0.3
EQR	<0.33 -0	≥0.33 <0.95	0.95 – 1.0

Results:

Year	Shore	VDSI	EQR	Status
2007	Portavogie	2.09	0.65	GOOD
2007	Sandy Bay	2.12	0.65	GOOD

Data confidence: Low

- Sample analysis QA through QUASIMEME (High).
- <3 sites (Low).
- Two assessment periods (2004; 2007) (High).

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

### Dissolved Oxygen

<b>Dissolved oxygen (+ data confidence):</b>	<b>HIGH (L)</b>	
--	-----------------	--

Classification tools: Comparison of 5%ile against reference standards.

- Data store: \\marine.on.ehslis2k\Water Framework Directive\WFD CLASSIFICATION REPORTS\Dissolved Oxygen
- Data Availability: 2007/2008
- Data source (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*)
6.38	HIGH	07/08	**	8	33.3%

\* Proportion of possible months for which data are available

\*\*Data confidence: 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).

## Nutrients – Winter Dissolved Inorganic Nitrogen (DIN)

Winter DIN (Data confidence):	GOOD (L)	
-------------------------------	----------	--

**Data store:** \\marine on ehslis2k \Water Framework Directive\Nuala-Lesley Nutrients\DIN for Classification\Coastal Water

**Data Availability:** 2004 to 2009, DIN & salinity (November to February).

**Data Availability:** spot and transect.

### 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) (normalised to salinity 32)	Winter DIN Daily average (n)	No. of samples (n)	No. of sites	Data Years	Data Quality	Status
14.68	8	92	8 sites plus transect	2004 - 2009	Database not yet QA'd	Good

**Data confidence:** Low

- Limited transect monitoring.

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

Specific pollutants assessment (+data confidence)	GH (L)	
---	--------	---

Classification tools: Comparison with EQS levels.

Data Availability: 2007 WFD dedicated monitoring, determinants are assessed on a rolling programme.


Data confidence: Low

### Ards Peninsula

ANNEX VIII	Value µg/l	EQS µg/l	Ecological Status
Year	2007		
111_tri			
112_tri			
24_D			
2_chloro			
4_chloro_3			
ammonia			
As			
Bentazone			
bipheyl			
boron			
chlorine			
chloronit			
chloronit_calc			
Cr			
Cu			
Cy			
Cyfluthrin			
cyper			
diazinon	0.001	<b>0.01</b>	GH
dichlorvos			
dimethoate			
fenitrothion	0.0015	<b>0.01</b>	GH
Fe			
linuron			
malathion	0.002	<b>0.02</b>	GH
Mn			
mecoprop			
permethrin			
phenol	<4	<b>7.7</b>	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		


## ANNEX D: Hydromorphological quality elements

Overall hydromorphology assessment	gH	
------------------------------------	----	---

Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

## ANNEX E: Chemical Status – Annex X Chemicals

Specific pollutants assessment (+data confidence)	gH (L)	
---	--------	---

Classification tools: Comparison with EQS levels.



Annex X: Overall Compliance	Pass
Annex X: Pass/Fail	Pass

Data Availability: 2007 WFD dedicated monitoring, determinants are assessed on a rolling programme.

Data confidence: Low

ANNEX X Year	Value $\mu\text{g/l}$ 2007	EQS $\mu\text{g/l}$	Chemical Status	Ecological Status
12_Dichloro				
anthracene				
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

















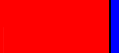

 Mean includes LOD data  
 Mean based on actual values

## ANNEX F: Protected Area Objectives

Water body	Protected area	Designation	Status	Reason for non-compliance
Ards Peninsula	Outer Ards	SPA	Favourable	
Ards Peninsula	Killough Bay	SPA	Favourable	
Ards Peninsula	Ards Peninsula	Saltmarsh	Favourable	

### Bathing Water Directive Compliance

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

Water Body		2008	2007	2006	2005	2004	2003
Ards Peninsula	Millisle						
Ards Peninsula	Ballywalter						
Ards Peninsula	Ballyhalbert						

### Nitrates Directive

Until 1 January 2007, Northern Ireland had designated seven Nitrate Vulnerable Zones (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: Alien Species

*Sargassum muticum* is present in this water body (NIEA macroalgal surveys).

## GLOSSARY

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

Northern Ireland Environment Agency  
17 Antrim Road  
Lisburn  
BT28 3AL

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

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



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



INVESTOR IN PEOPLE