

draft RIVER BASIN MONITORING PLAN

# CLASSIFICATION PAMPHLET

## Coastal Waterbody Strangford Narrows

22<sup>nd</sup> December 2008



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



INVESTOR IN PEOPLE



Northern Ireland  
**Environment**  
Agency

## STRANGFORD NARROWS

### Water body Information

- River Basin District: NE
- Water body type: CW8
- Water body characteristics: Euhaline, mesotidal, sheltered
- Water body area: 13.35 km<sup>2</sup>
- Heavily Modified Water Body: No

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

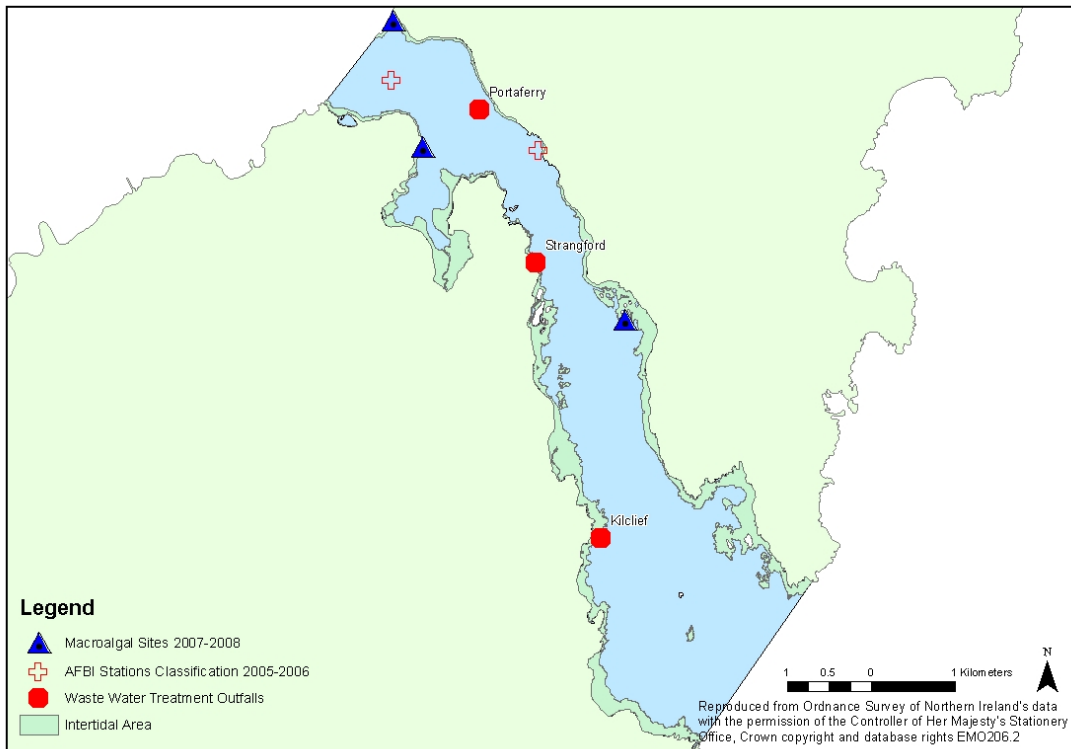


Figure showing pressures and monitoring points within Strangford Narrows (Coastal Water).

draft RIVER BASIN MANAGEMENT PLAN



WFD COASTAL WATER BODY CLASSIFICATION  
Strangford Narrows

Version Date: 22/12/08

MARINE ASSESSMENT AND LICENSING TEAM

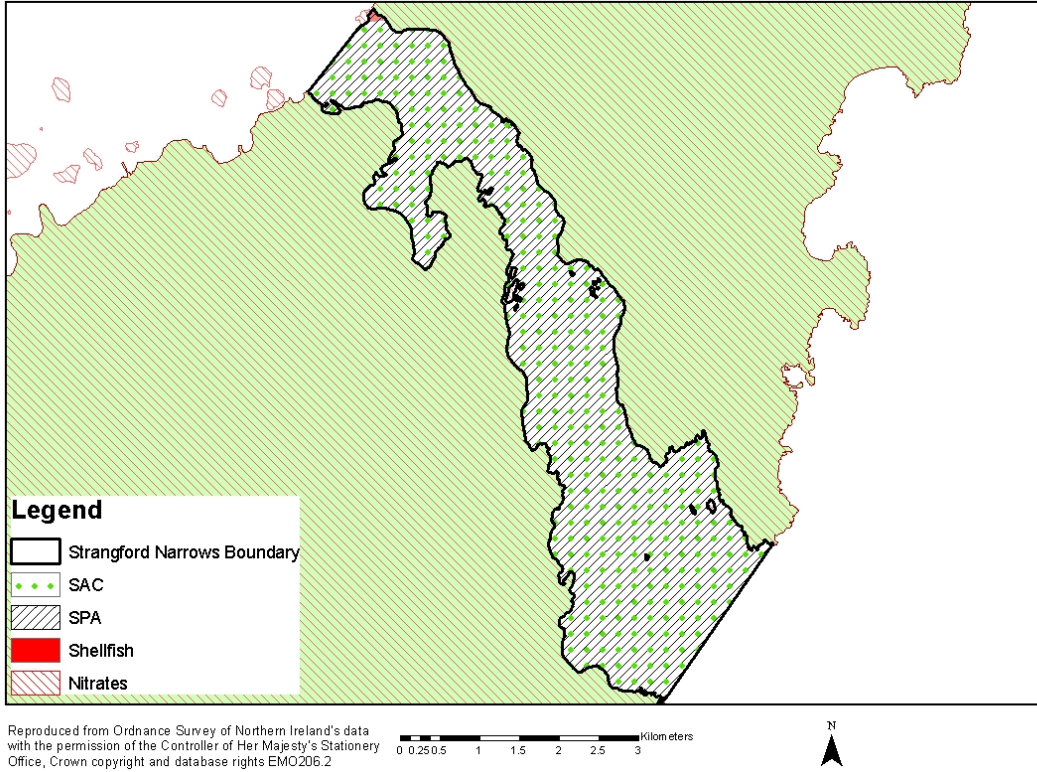



Figure showing protected areas within Strangford Narrows (Coastal Water), see Annex F.

draft RIVER BASIN MANAGEMENT PLAN

	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows	
	Version Date:	22/12/08
	<b>MARINE ASSESSMENT AND LICENSING TEAM</b>	

**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
<b>Plants</b>	<b>Macro Algae</b>	✓	
	-Opportunistic Macroalgae	☒	Tool Not Applicable
	-Reduced Species List	✓	
	<b>Angiosperms</b>	☒	Tool Not Applicable
	<b>Phytoplankton</b>	✓	
<b>Benthic Invertebrates</b>	<b>Infaunal Quality Index</b>	☒	No data available
	<b>Imposex</b>	☒	No data available
<b>Fish</b>	<b>Transitional Fish Classification Index</b>		
<b>Physico-Chemical</b>	<b>General Conditions</b>	✓	
	-Dissolved Oxygen	✓	
	-Nutrients	✓	No data available
	<b>Specific Pollutants</b> (Annex VIII subs)	☒	No data available
<b>Hydromorphological Quality Elements</b>	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
<b>Priority Hazardous Substances (Annex X)</b>	Annex X Substances	☒	No data available

### Waterbody Classification

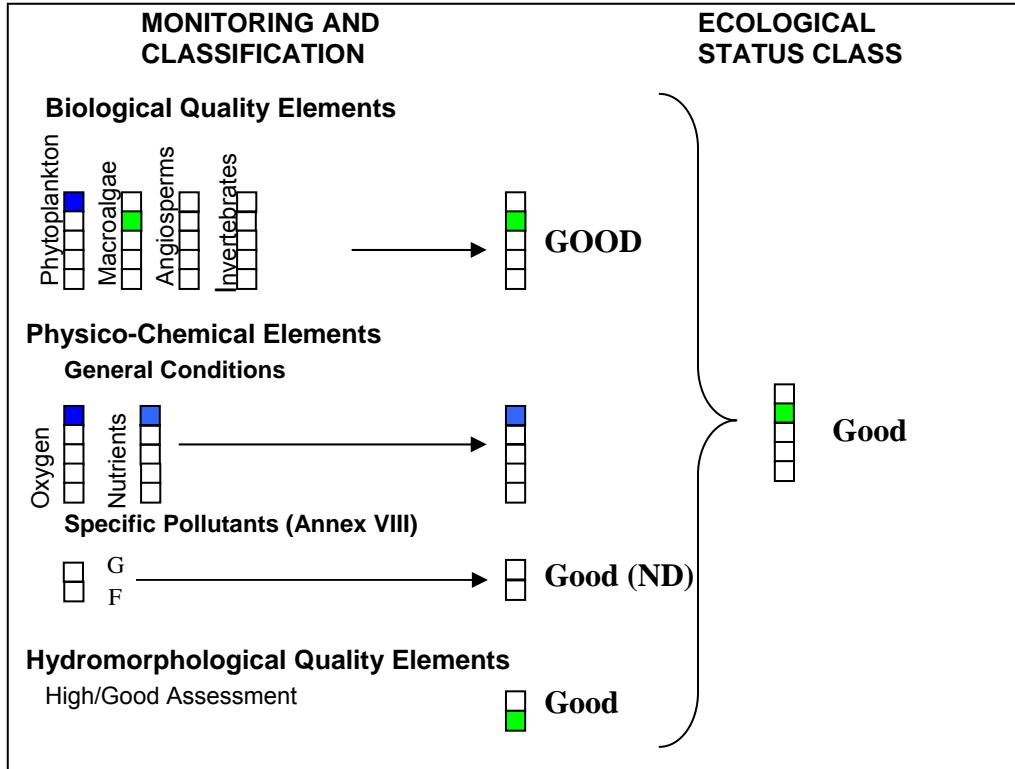


Figure showing ecological classification of Strangford Narrows (Coastal Water)

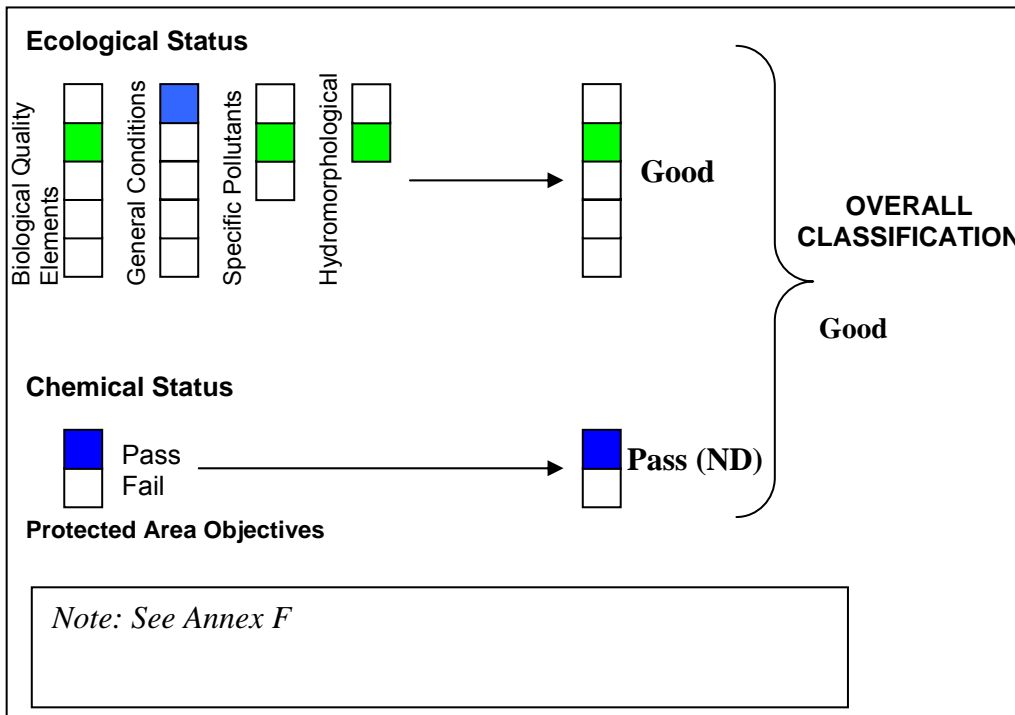


Figure showing overall classification of Strangford Narrows (Coastal Water)

draft RIVER BASIN MANAGEMENT PLAN



**WFD COASTAL WATER BODY CLASSIFICATION**  
Strangford Narrows

**Version Date:** 22/12/08

**MARINE ASSESSMENT AND LICENSING TEAM**


**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
<b>Biological</b>			
Phytoplankton	2004-8		1 site 12 samples
Macroalgae	Reduced Species List		
Benthic Invertebrates	Infaunal Quality Index	ND	
	Imposex	ND	
<b>Physico-chemical</b>			
Nutrients	2005-2006		1 site 6 samples
Salinity	2005-2006		
Temperature	2005-2006		
Dissolved Oxygen (DO)	2008		
Suspended particulate matter (SPM)			
Light (Kd)			
Other polluting substances (Annex VIII)	ND		
<b>Hydromorphology</b>			
<b>Water chemistry</b>			
(Annex X)	ND		

<b>draft RIVER BASIN MANAGEMENT PLAN</b>	
	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows
	Version Date: 22/12/08
	<b>MARINE ASSESSMENT AND LICENSING TEAM</b>

## STRANGFORD LOUGH NARROWS

### ANNEX A: Classification of Biological Quality Elements

#### QE: Phytoplankton

<b>QE phytoplankton assessment (+ Data confidence):</b>	<b>High (L)</b>
---	-----------------

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 Phytoplankton- MARINE\Water Framework Directive\DRAFT WFD CLASSIFICATION REPORTS\QE Phytoplankton\Elevated Taxa\SL phytotools2004-2007

- Data Availability (spot & continuous samples):  
Phytoplankton = spot (2001-2007)  
Chl = spot (2004-2008) AFBINI

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

Waterbody Chl. biomass assessment

*HIGH (L)*

- 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*)
3.35	HIGH	2004-2008	Low	0	1	12	28.6%

\* 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 number of daily averages carried out over the 6 year reporting period yielded low temporal and spatial coverage.
- Data collected was from AFBINI. No records of chlorophyll data from NIEA could be found within this waterbody.

## 2. Elevated Taxa Count Index

### Waterbody Elevated Taxa Assessment

- **Thresholds:**

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

Waterbody Elevated count (%) = [I<sub>1</sub> (%) + I<sub>2</sub> (%) + I<sub>3</sub> (%) + I<sub>4</sub> (%)] / 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 <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	Elevated Count Mean	Status	Data Years	No. of sampling occasions	No. of phytoplankton samples

Data confidence:

No data

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

### QE: Macroalgae Strangford Narrows

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

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

Classification tools: 1.Reduced species list (RSL)  
2. Macroalgal Blooming Tool (MBT) – not applicable

#### 1. Reduced Species List (RSL)

Waterbody RSL assessment:


*High (Medium)*  
2007, 2008

- WFD surveillance monitoring:
- Data Availability (classification): 2007 - 2 sites, 2008 – 3 sites
- Data Store:G:\MARINE\Projects 07\MM07-03 Marine Plants\Macrophyte Survey 07
- G:\MARINE\Projects 08\Marine Macrophytes
- Boundaries:

Parameter s	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		
Audleys Castle 2007	15	49	49.0	14.29	55.10	1.04	12.24	0.843	HIGH
Granagh Bay Rocks 2007	16	48	44.6	14.58	50.00	1.29	10.42	0.864	HIGH
Audleys Castle 2008	15	47	47.0	12.77	55.32	1.04	10.64	0.857	HIGH
Granagh Bay Rocks 2008	16	39	36.3	15.38	53.85	0.95	12.82	0.811	HIGH
Ballyhenry Island 2008	9	45	64.8	13.33	55.56	0.96	8.89	0.877	HIGH
<b>Mean</b>								<b>0.85 ±0.02</b>	<b>HIGH</b>

<b>draft RIVER BASIN MANAGEMENT PLAN</b>	
	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows
	Version Date: 22/12/08
	<b>MARINE ASSESSMENT AND LICENSING TEAM</b>

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).
- 2 shores (poor spatial coverage) over two years (poor temporal trend assessment)
- Standard Deviation ( $\pm$ ) are included with the mean EQR
  
- FSL not yet carried out

Alien taxa present (*Sargassum muticum*): Yes

**QE: Angiosperms Strangford Narrows – tool not applicable**

**QE: Benthic Invertebrates – Strangford Lough Narrows**

Overall benthic invertebrate assessment: *Good (ND)*  
 Classification tools: 1. Infaunal Quality Index (IQI)  
2. Imposex tool (VDSI) – No data

1. IQI (v4)

Water body IQI assessment: *Good ( no data)*  
 No data is available for this water body.

- WFD surveillance monitoring:
- Data store:
  - Benthic invertebrates Database UNICORN (NMMT)
  - Supporting Parameters Data Set Water Quality
  - Digital images AMAP Project folder
- Data Availability (classification):
- Habitat max values (sub-tidal mud): 1-(AMBI/7) = 0.78, 1-Lambda' = 0.72, Taxa = 24
- Boundaries (Intercalibrated NEAGIG):

Class	Bad	Poor	Moderate	Good	High
IQI	>0.0 ≤0.24	≥0.24 <0.44	≥0.44 <0.64	≥0.64 <0.75	≥0.75

Results

Year	Survey	Station	n	Mean	± S.D	Status
Overall Mean						

Data confidence: No data Low

Aliens present:

<i>Eriocheir sinensis</i> (Chinese mitten crab)	ND
<i>Crepidula fornicata</i> (Slipper limpet)	ND



WFD COASTAL WATER BODY CLASSIFICATION  
Strangford Narrows

Version Date: 22/12/08

MARINE ASSESSMENT AND LICENSING TEAM

*Strangford Narrows*

2. VDSI (*Nucella lapillus*)

Waterbody VDSI assessment:

Good (ND)

- Data store:
- Data availability:

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

Data confidence:

No data

<b>draft RIVER BASIN MANAGEMENT PLAN</b>	
	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows
	<b>Version Date:</b> 22/12/08
	<b>MARINE ASSESSMENT AND LICENSING TEAM</b>

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

### Dissolved Oxygen

<b>Waterbody DO assessment:</b>	<b><i>HIGH (L)</i></b>
---------------------------------	------------------------

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

- **Data store:** WFD\_Nutrients database (NMMT)
- **Data Availability:** 2004 to 2007
- **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*)

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

**Data confidence:** Low

- Database not QA'd.

## Nutrients – Winter DIN

### Winter DIN assessment

*High (L)*

- **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
- **N regulation thresholds:**

Area	Salinity range	DIN (uM) Winter mean H/G	DIN (uM) Winter mean G/M	DIN (uM) Winter mean M/P	DIN (uM) Winter mean P/B
Coastal (at salinity 32)	30-34.5	12-18	18-30	30-40.5	>40.5


### 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
12.34	1	6	1	2005 - 2006	Database not yet QA'd	High

Data confidence:

Low

- Database not QA'd.

<b>draft RIVER BASIN MANAGEMENT PLAN</b>			
	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows		
	<table border="1"> <tr> <td><b>Version Date:</b></td> <td>22/12/08</td> </tr> </table>	<b>Version Date:</b>	22/12/08
	<b>Version Date:</b>	22/12/08	
<b>MARINE ASSESSMENT AND LICENSING TEAM</b>			

## **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.


<b>draft RIVER BASIN MANAGEMENT PLAN</b>			
	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows		
	<table border="1"> <tr> <td><b>Version Date:</b></td> <td>22/12/08</td> </tr> </table>	<b>Version Date:</b>	22/12/08
	<b>Version Date:</b>	22/12/08	
<b>MARINE ASSESSMENT AND LICENSING TEAM</b>			

## ANNEX D: Hydromorphological quality elements

<b>Overall hydromorphology assessment:</b>	<b>Good</b>
--	-------------

**Classification tools:**

1. TRaC Hydromorphology metrics
2. MIMAS

<b>draft RIVER BASIN MANAGEMENT PLAN</b>			
	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Narrows		
	<table border="1"> <tr> <td><b>Version Date:</b></td> <td>22/12/08</td> </tr> </table>	<b>Version Date:</b>	22/12/08
	<b>Version Date:</b>	22/12/08	
<b>MARINE ASSESSMENT AND LICENSING TEAM</b>			

## ANNEX E: Chemical Status – Annex X Chemicals

**Overall water chemistry assessment:  
Data)**

**Good (No**


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

PASS-No data

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 Strangford Narrows
	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
Strangford Lough Narrows	Strangford Lough	SPA	Favourable	
Strangford Lough Narrows	Strangford Lough	SAC	Unfavourable	<i>Modiolus</i> reefs
Strangford Lough Narrows	Strangford Lough	Saltmarsh	Unfavourable	Vegetation composition - indicators of negative change ( <i>Spartina</i> )

#### 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.

	<b>WFD COASTAL WATER BODY CLASSIFICATION</b>	
	Strangford Narrows	
	<b>Version Date:</b>	22/12/08
<b>MARINE ASSESSMENT AND LICENSING TEAM</b>		

### 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>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