

North Eastern River Basin Management Plan

Strangford Narrows Classification

December 2009



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Northern Ireland
Environment
Agency

RIVER BASIN MANAGEMENT PLAN		
	WFD COASTAL WATER BODY CLASSIFICATION Strangford Narrows	
	Version Date:	22/12/09
	MARINE ASSESSMENT AND LICENSING TEAM	


STRANGFORD NARROWS

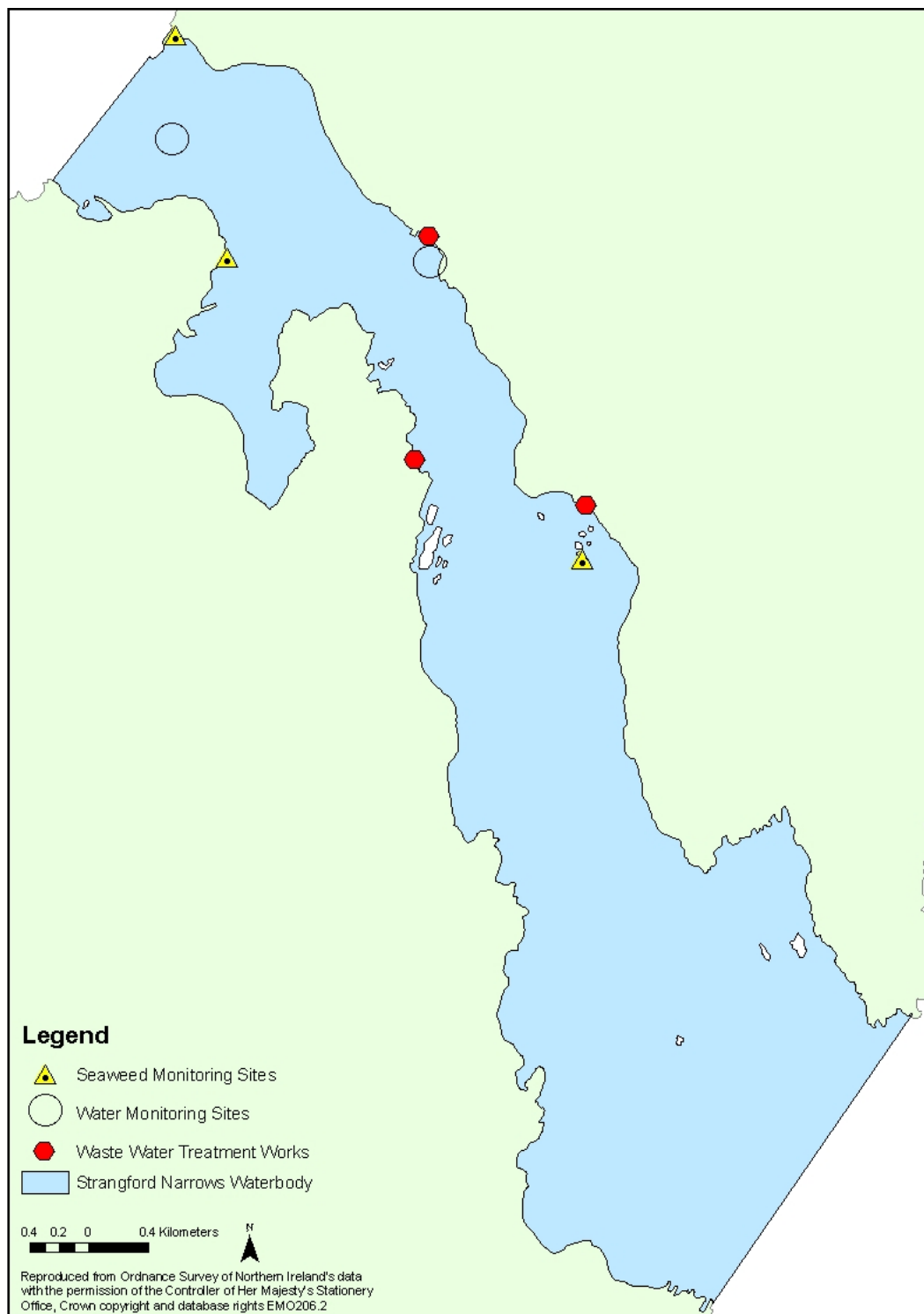
Water body Information

- River Basin District: North Eastern
- Water body type: CW8
- Waterbody Code:GBNI6NE120
- Water body characteristics: Euhaline, mesotidal, sheltered
- Water body area: 13.35 km²
- Heavily Modified Water Body: No


OVERALL WATERBODY CLASSIFICATION	(H/G/M/P/B): (PASS/FAIL):	GOOD PASS	
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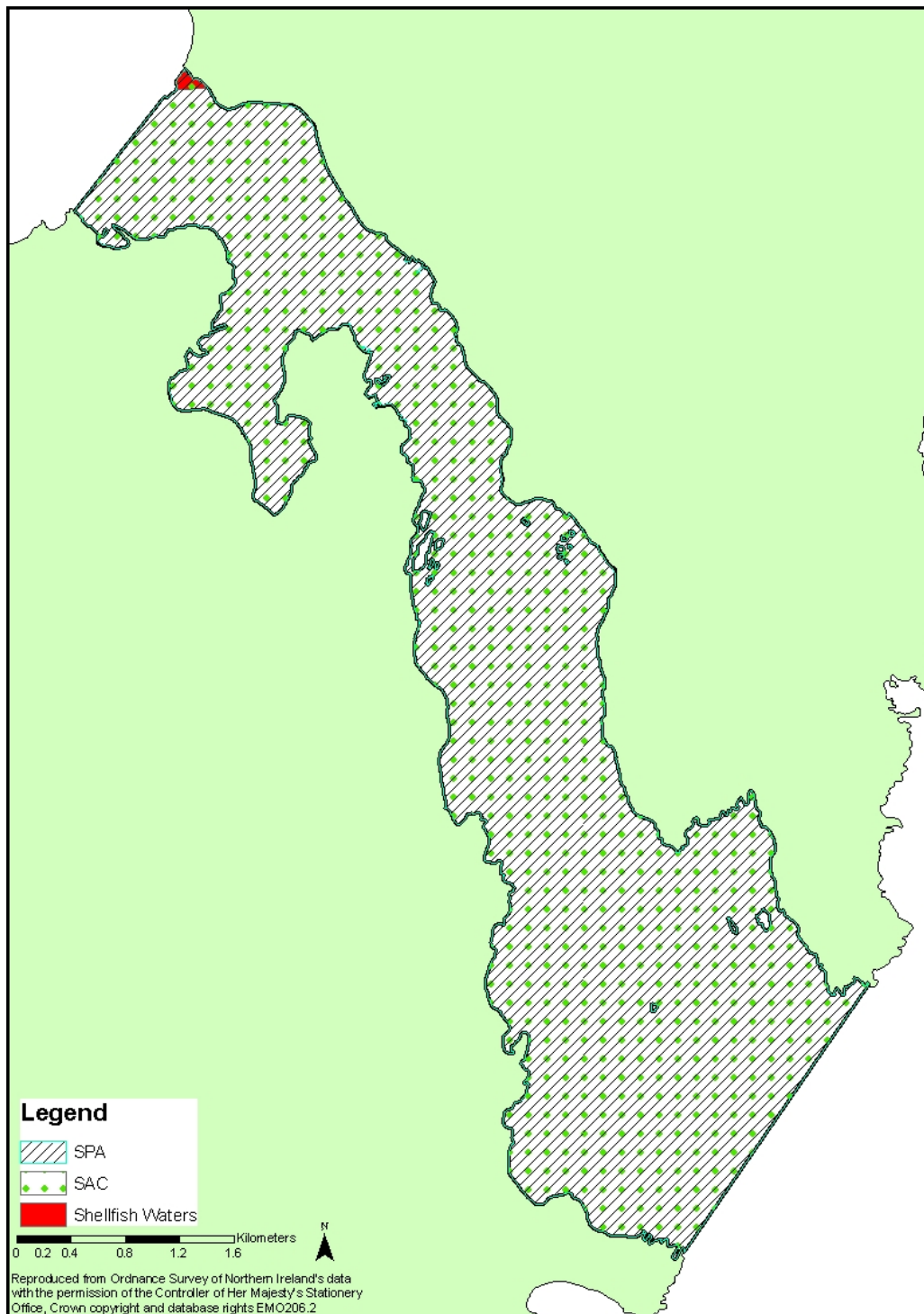
This water body cannot reach high status due to the presence of *Sargassum muticum*, *Spartina anglica* and *Crassostrea gigas* (proposed red list alien species).

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

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Map showing protected areas within Strangford Narrows (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"/>	
	-Reduced Species List	✓	
Angiosperms	Seagrass	<input checked="" type="checkbox"/>	Tool Not Applicable
	Saltmarsh	<input checked="" type="checkbox"/>	Tool Not Applicable
Phytoplankton	Biomass	✓	
Benthic Invertebrates	Infaunal Quality Index	<input checked="" type="checkbox"/>	No data available
	Imposex	<input checked="" type="checkbox"/>	No data available
Physico-Chemical	General Conditions	✓	
	-Dissolved Oxygen	✓	
	-Nutrients	✓	
	Specific Pollutants (Annex VIII subs)	<input checked="" type="checkbox"/>	No data available
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	<input checked="" type="checkbox"/>	No data available

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Waterbody Classification

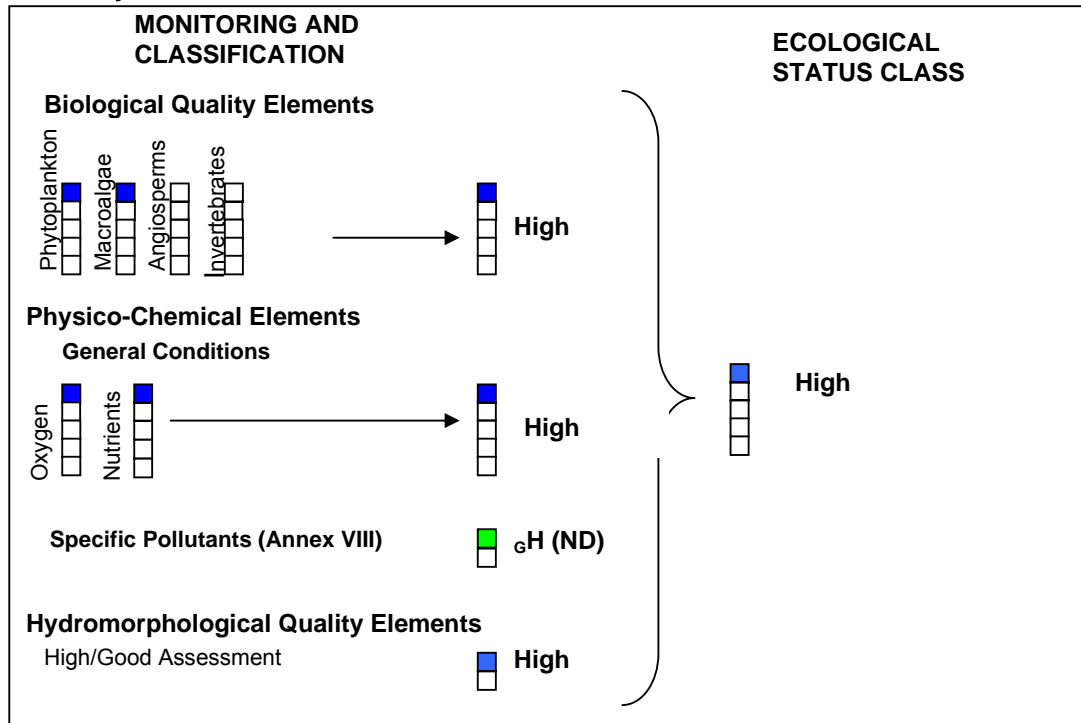


Figure showing ecological classification of Strangford Narrows (Coastal Water).

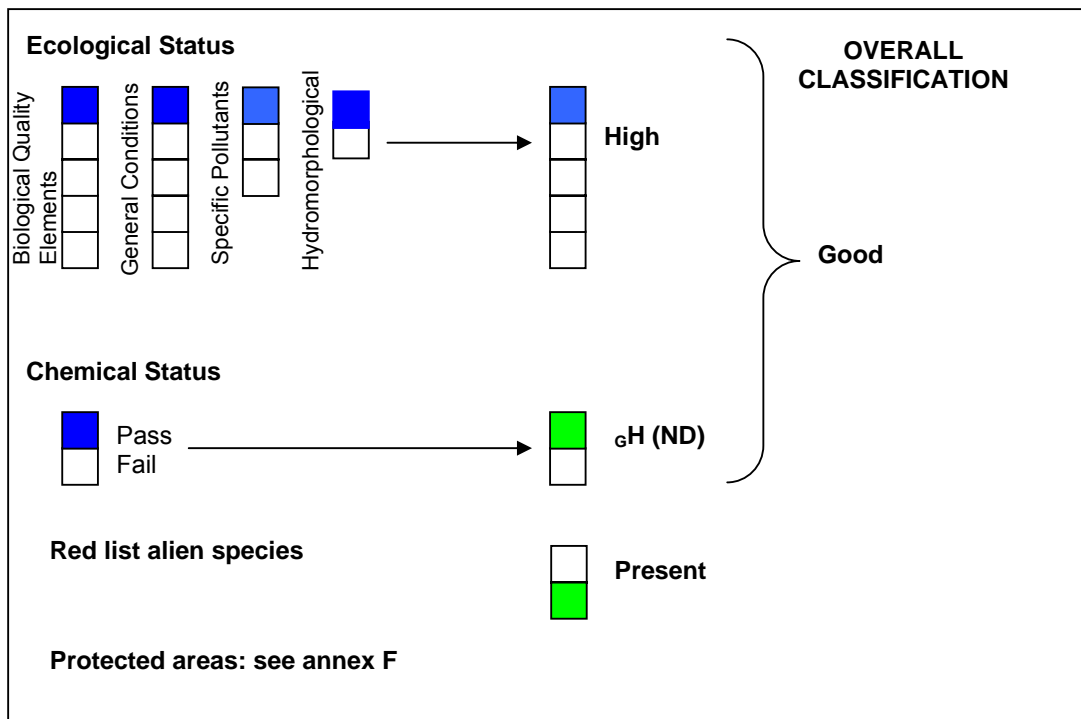



Figure showing overall classification of Strangford Narrows (Coastal Water)


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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
Biological			
Phytoplankton		2004-8	1 site 12 samples
Macroalgae (seaweed)	Reduced Species List	2008	3
Physico-chemical (water)			
Nutrients		2005-2006	1 site 6 samples
Salinity		2005-2006	
Temperature		2005-2006	
Dissolved Oxygen (DO)		2008	
Other polluting substances (Annex VIII)		ND	
Hydromorphology		2007	
Water chemistry			
(Annex X)		ND	

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STRANGFORD LOUGH NARROWS

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- MARINE\Water Framework Directive\DRAFT WFD CLASSIFICATION REPORTS\QE Phytoplankton\Elevated Taxa\SL phytotools2004-2007
 - Data Availability (spot & continuous samples): Chl = spot (2004-2008) AFBINI
 1. *Chlorophyll Biomass Index - 90%ile (Chl $\mu\text{g l}^{-1}$)*
(Growing Season 1st Mar – 30th Sept)

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.

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QE: Macroalgae Strangford Narrows

QE macroalgal assessment (+ data confidence):	HIGH (M)	
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- Classification tools:
- 1.Reduced species list (RSL)
 2. Macroalgal Blooming Tool (MBT) – no data
- WFD surveillance monitoring: 2007, 2008
 - 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

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		
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
Mean								0.85 ±0.02	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).
- 2 shores (poor spatial coverage) over two years (poor temporal trend assessment)
- Standard deviations (±) 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 – Good (ND)

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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:** WFD_Nutrients database
- **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*)
8.21	High	05 - 08		12	18.75%

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

Data confidence: Low

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Nutrients – Winter Dissolved Inorganic Nitrogen DIN

Winter DIN (+ Data confidence):	HIGH (L)
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- **Data store:** \\marine on ehslis2k \Water Framework Directive\Nuala-Lesley Nutrients\DIN for Classification\Coastal Water
- **Data Availability:** 2004 to 2008, DIN & salinity (November to February)
- **Data Availability (spot & continuous samples):** spot


Winter DIN thresholds:

Area	Salinity range	DIN (uM) HIGH	DIN (uM) GOOD	DIN (uM) 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
9.6	4	9	4	2004 - 2008		High

Data confidence: Low


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

Specific pollutants assessment (+data confidence)	GH (ND)	
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Classification tools: Comparison with EQS levels.

Data availability : No data


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ANNEX D: Hydromorphological quality elements

Overall hydromorphology assessment	gH	
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Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS


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ANNEX E: Chemical Status – Annex X Chemicals

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

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

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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.

ANNEX G: Red List Alien Species

Sargassum muticum, *Spartina anglica* and *Crassostrea gigas* are all present in this water body and therefore it cannot reach high status.

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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
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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