

North Eastern River Basin Management Plan

North Channel Classification

December 2009



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Northern Ireland
Environment
Agency

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

NORTH CHANNEL

Water body Information

- River Basin District: North Eastern
- Water body type: CW5
- Water body code : UKGBNI6NE030
- Water body characteristics: Euhaline, mesotidal, moderately exposed
- Water body area: 141.91 km²
- Heavily Modified Water Body: No

OVERALL WATERBODY CLASSIFICATION	(H/G/M/P/B): (PASS/FAIL):	GOOD PASS	
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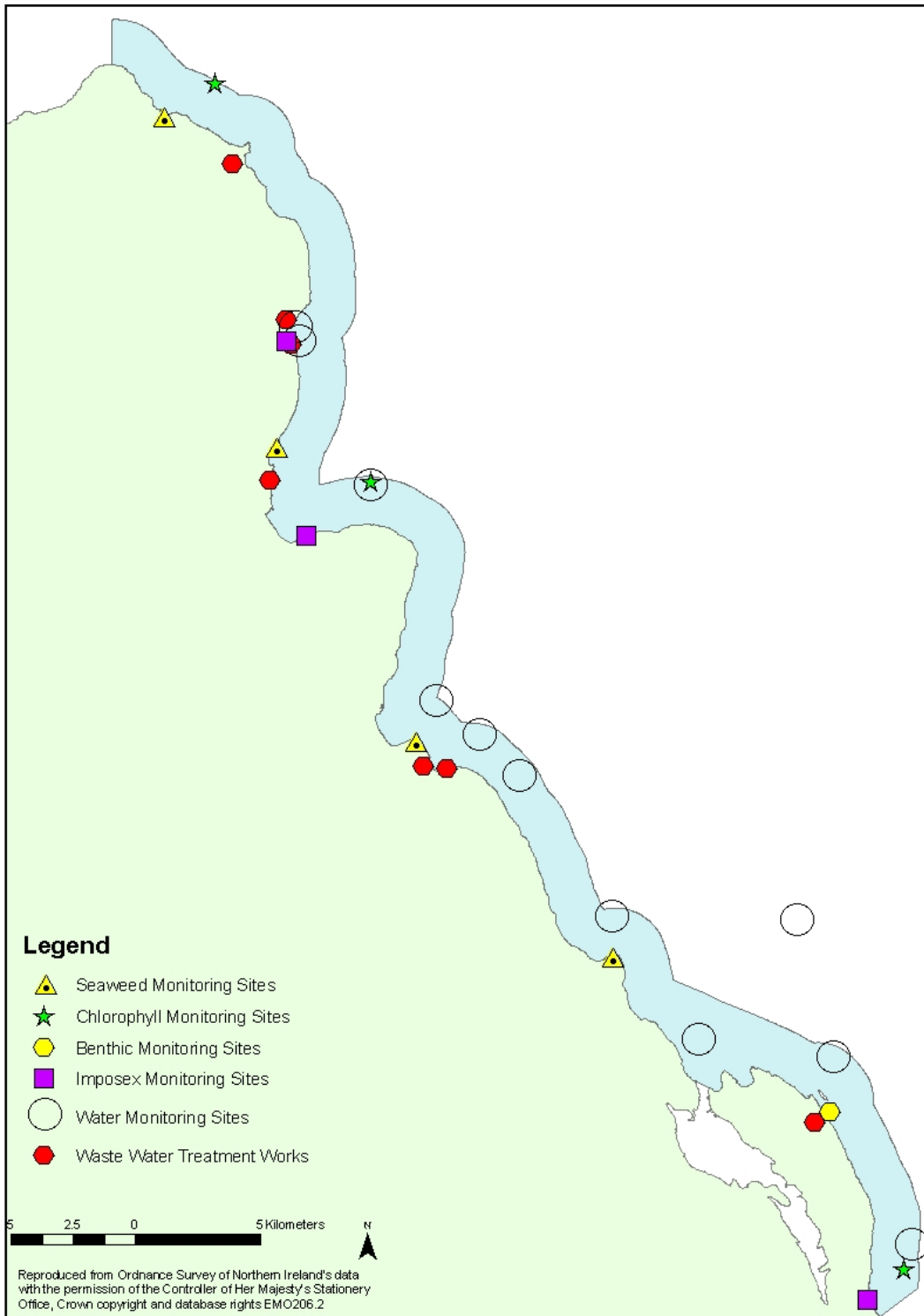
RIVER BASIN MANAGEMENT PLAN



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

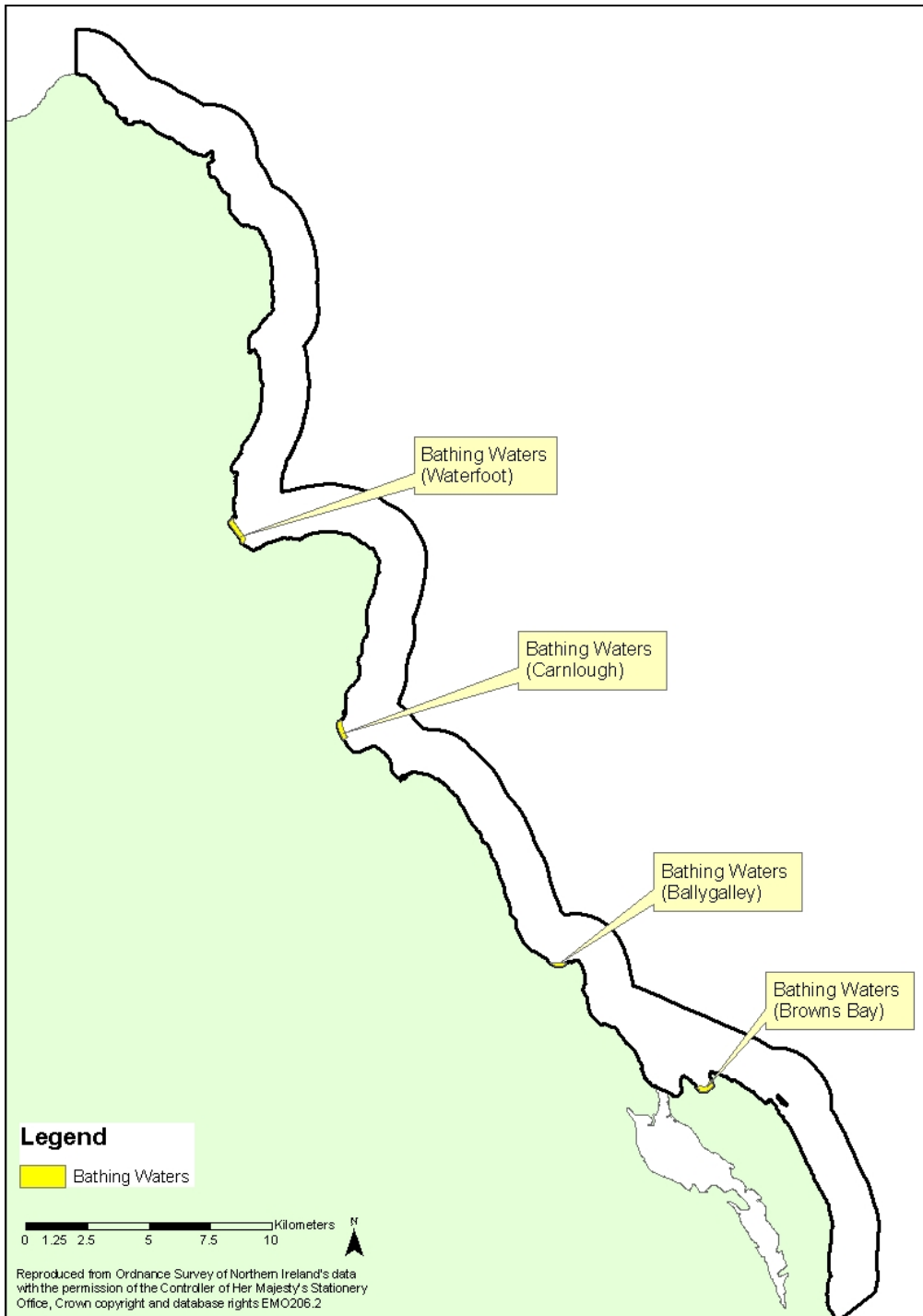
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Map showing protected areas within North Channel (Coastal Waters), see Annex F.

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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
Phytoplankton	Biomass	<input checked="" type="checkbox"/>	
Macroalgae (Seaweeds)	Opportunistic Macroalgae	<input checked="" type="checkbox"/>	Tool not suitable.
	Reduced Species List	✓	
Angiosperms	Seagrass	<input checked="" type="checkbox"/>	Tool not suitable.
	Saltmarsh	Assessed under protected areas.	See Annex F
Benthic Invertebrates	Infaunal Quality Index	✓	
	Imposex	✓	
Physico-chemical (Water)	-Dissolved Oxygen	✓	
	-Nutrients	✓	
	Specific Pollutants (Annex VIII substances)	<input checked="" type="checkbox"/>	
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances	Annex X substances	<input checked="" type="checkbox"/>	

Waterbody Classification

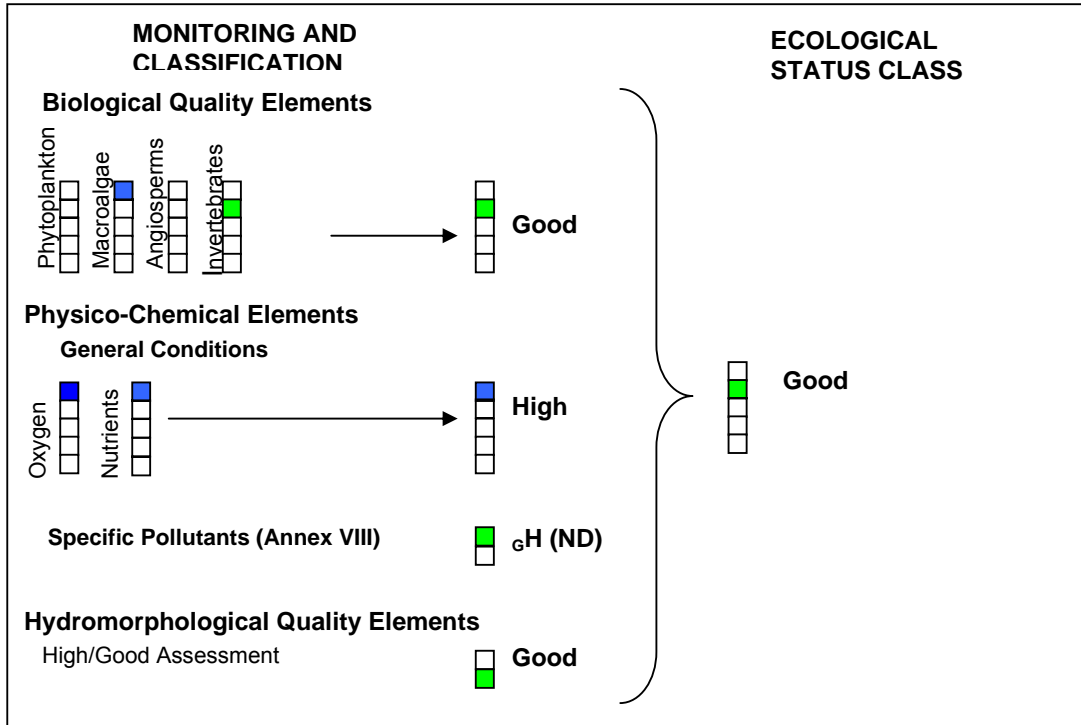


Figure showing ecological classification of North Channel (Coastal Water).

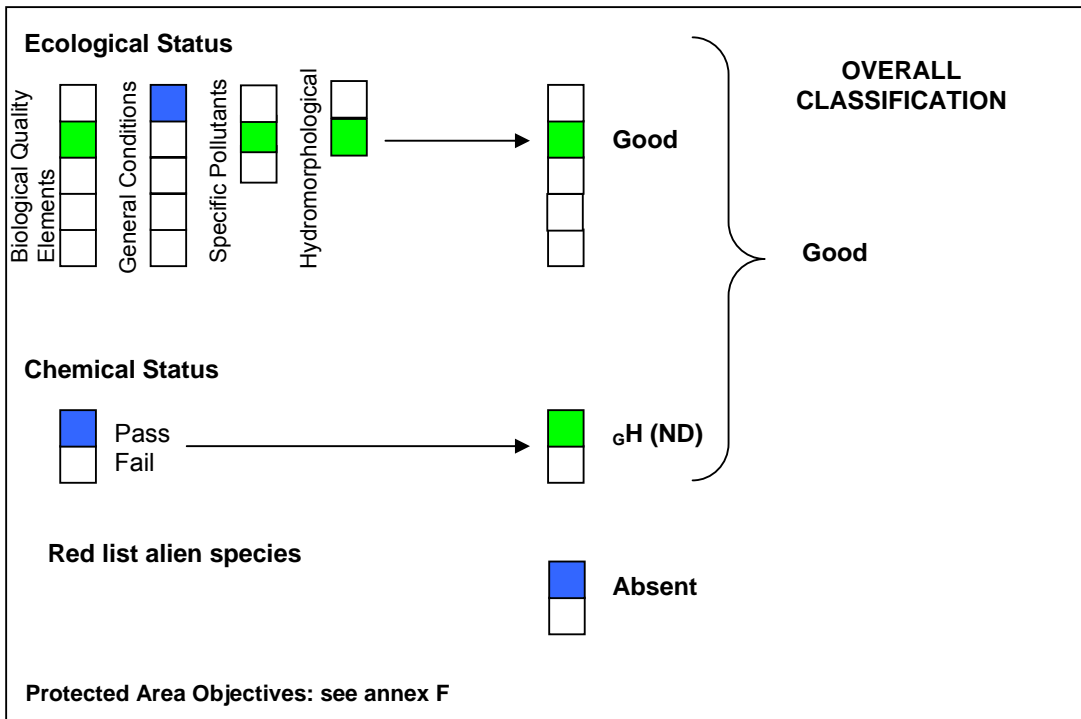



Figure showing overall classification of North Channel (Coastal Water).


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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		ND	
Macroalgae	Reduced Species List	2007	4 sites
Benthic Invertebrates	Infaunal Quality Index	2004-2006	1 site 9 samples
	Imposex	2007	3
Physico-chemical			
Nutrients		2008	109 samples, 16 sites plus transect
Salinity		2008	
Temperature		2008	
Dissolved Oxygen (DO)		2003-8	9
Other polluting substances (Annex VIII)		ND	
Hydromorphology		2007	
Water chemistry			
(Annex X)		ND	


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ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton

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

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QE: Macroalgae North Channel

QE macroalgal assessment (+ data confidence):	HIGH (M)
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Classification tools: Reduced species list (RSL), MBT – not applicable

- WFD surveillance monitoring: 2007
- Data Availability (classification): 2007, 4 sites
- Data Store: G:\MARINE\Projects 07\MM07-03 Marine Plants\Macrophyte Survey 07

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	Shore desc.	Sub-Metric EQR						RSL EQR	Status
		Sp. richness	Adj. Sp. Richness	% G	% R	ESG	% Opp		
Murlough Bay	13	39	44.5	15.38	48.72	1.05	10.26	0.847	HIGH
Port Vinegar	15	57	57.0	10.53	56.14	1.28	7.02	0.906	HIGH
Straidkelly Point	14	41	43.9	17.07	53.66	0.95	9.76	0.840	HIGH
Ballygalley Point	9	45	64.8	20.00	51.11	0.96	13.33	0.830	HIGH
Mean								0.86 ±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).
- Four 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 North Channel – Tool not applicable

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QE: Benthic Invertebrates – North Channel

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

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

1. IQI (v4)

Water body IQI assessment: *Good (L)*

Data available for this water body for 2004-6.

The samples from 2004 and 2005 fall outside EUNIS classification and therefore the classification needs to be treated with caution. These samples were collected as controls for the North Channel Disposal Site. (SDCS)

15 sites (3 reps) are available from 2000, but have yet to be classified for EUNIS.

- **WFD surveillance monitoring:**
- **Data store:**
 - **Benthic invertebrates:** UNICORN NIEA Database
 - **Supporting Parameters:** Particle Size Analysis, Water Quality Data Set
 - **Digital images:** AMAP Project folder
 - **Data Availability (classification):** 1 sites (3 reps)
- **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
2004	SDCS	SDCS	3	0.8	0.01	HIGH
2005	SDCS	SDCS	3	0.75	0.01	GOOD
2006	SDCS	SDCS	3	0.66	0.02	GOOD
Overall Mean				0.74	0.06	GOOD

Data confidence: Low

- Sample analysis QA'd through NMBAQC (Good)

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2. VDSI (*Nucella lapillus*)

Waterbody VDSI assessment: *Good (M)*

- 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	Cloughfin Port	0.85	0.86	Good
2007	Cushendun	0.25	0.96	High
2007	Redbay	1.76	0.71	Good

Data confidence: Medium

- Sample analysis QA through QUASIMEME (High)
- ≥3 sites (High)
- One assessment period

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

Dissolved Oxygen

Dissolved oxygen (+ data confidence):	HIGH (M)	
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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: 03,04,07,08
- 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*)
6.69	HIGH	03/04 07/08	**	9	22.9%

* Proportion of possible months for which data are available

**Data Quality: Medium

- Instruments subject to regular calibration checks and quality assurance programme, but databases not QA'd.

Medium = 5 – 10 (daily averages) x n (no. of assessment years in reporting cycle)

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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:** 2008, DIN & salinity (November to February)
- **Data Availability (spot & continuous samples):** spot and transect

Winter DIN thresholds:

Area	Salinity range	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
9.17	16	109	16 (plus transect)	2005 - 2008	Database not yet QA'd	High


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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 (WFD)	Area of protection	Protection	Status	Reason for non-compliance
North Channel	Red Bay, maerl bed.	Candidate SAC	Favourable	

Bathing Water Directive

Water Body		2008	2007	2006	2005	2004	2003
North Channel	Browns Bay						
North Channel	Cushendall						
North Channel	Cushendun						
North Channel	Waterfoot						
North Channel	Carnlough		**				
North Channel	Ballygally						

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

****abnormal weather waiver applied**

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

No alien species are recorded from this water body.

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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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