

North Eastern River Basin Management Plan

Dundrum Bay Outer Classification

December 2009



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Northern Ireland
Environment
Agency

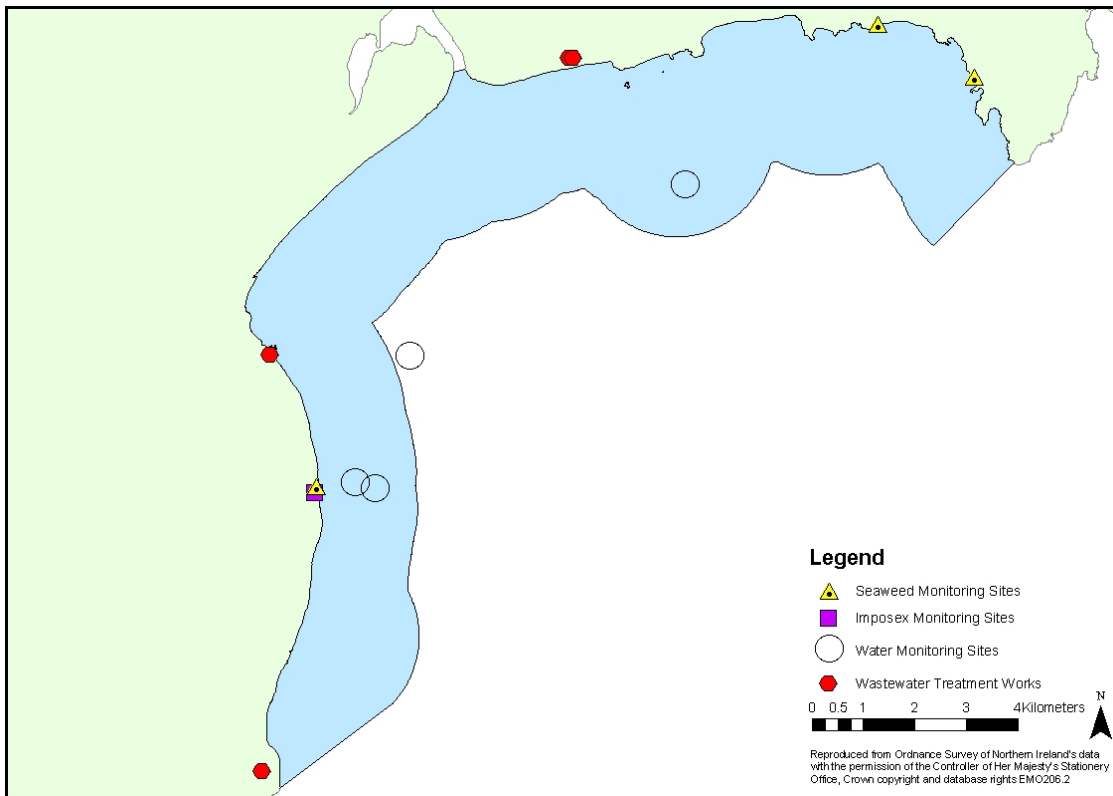
RIVER BASIN MANAGEMENT PLAN	
	WFD COASTAL WATER BODY CLASSIFICATION Dundrum Bay Outer
	Version Date: 22/12/09
	MARINE ASSESSMENT AND LICENSING TEAM

DUNDRUM BAY OUTER


Water body Information

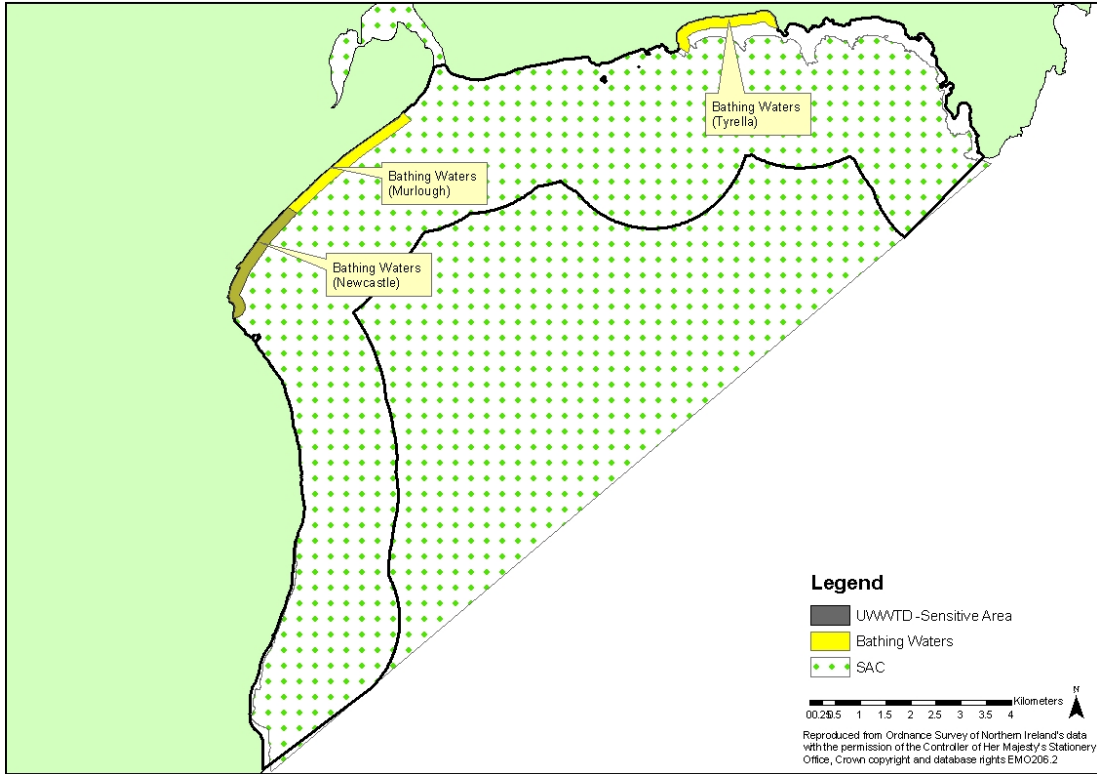
- River Basin District: North Eastern
- Water Body Code: UKGBNI6NE150
- Water body type: CW5
- Water body characteristics: Euhaline, mesotidal, moderately exposed
- Water body area: 59.43 km²
- Heavily Modified Water Body: No

OVERALL WATERBODY CLASSIFICATION	(H/G/M/P/B): (PASS/FAIL):	MODERATE FAIL	
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Map showing pressures and monitoring points within Dundrum Bay Outer (Coastal Water).

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Map illustrating protected areas within Dundrum Bay Outer (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 (Seaweeds)	Opportunistic Macroalgae	<input checked="" type="checkbox"/>	Tool Not Applicable
	Reduced Species List	✓	
Phytoplankton	Biomass	<input checked="" type="checkbox"/>	
Angiosperms	Saltmarsh	<input checked="" type="checkbox"/>	Tool Not Applicable
	Seagrass	<input checked="" type="checkbox"/>	Tool Not Applicable
Benthic Invertebrates	Infaunal Quality Index	<input checked="" type="checkbox"/>	
	Imposex	✓	
Physico-Chemical (Water)	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

Waterbody Classification

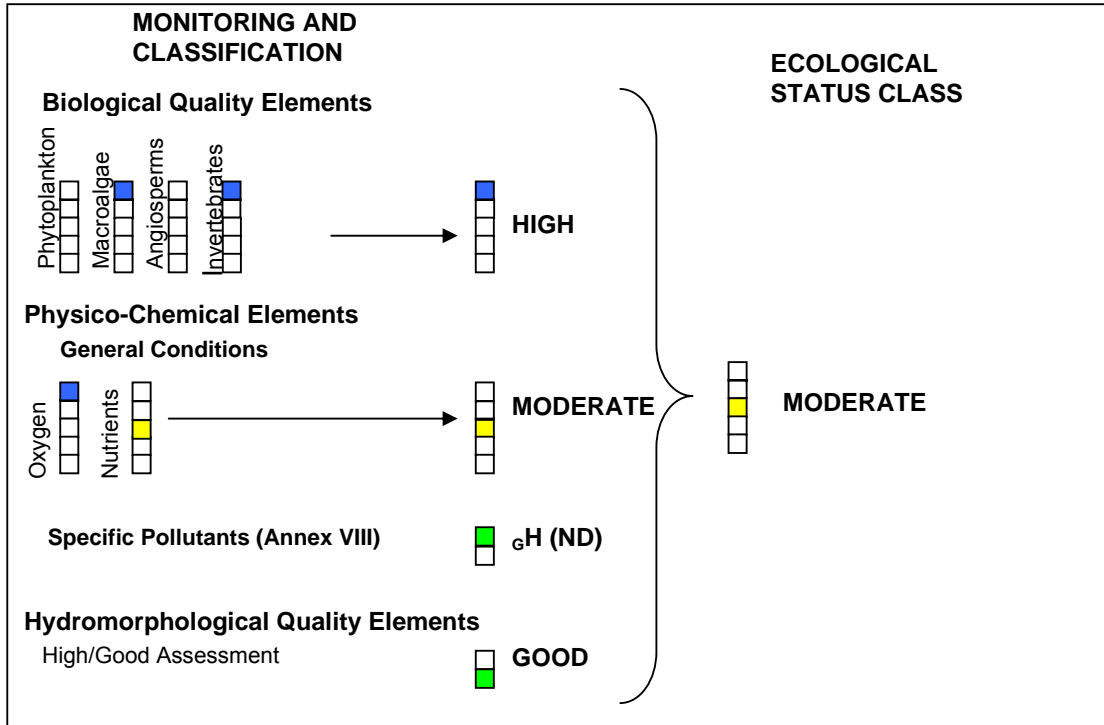


Figure showing ecological classification of Dundrum Bay Outer (Coastal Water)

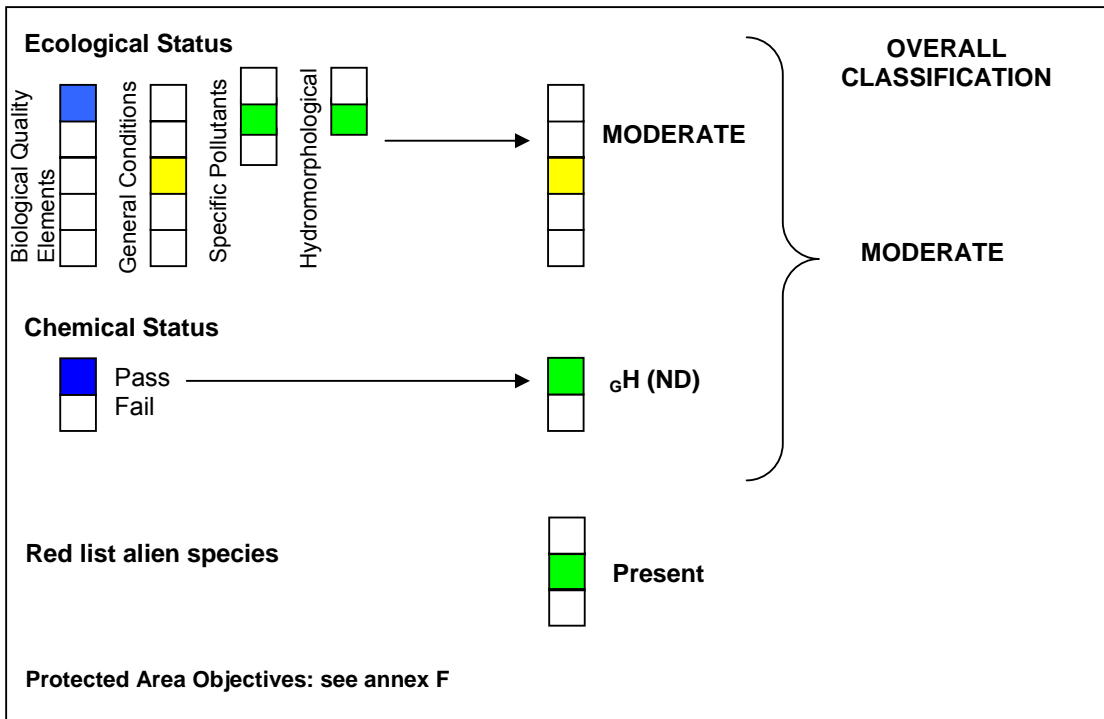



Figure showing overall classification of Dundrum Bay Outer (Coastal Water)


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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			
Macroalgae (Seaweeds)	RSL	2007-8	3 sites 4 surveys
Benthic Invertebrates	Infaunal Quality Index	ND	
	Imposex	2007	1 site
Physico-chemical			
Nutrients		2008-9	5 sites 23 samples
Salinity		2008-9	1
Temperature		2008-9	1
Dissolved Oxygen (DO)		2008-9	1
Other polluting substances (Annex VIII)		ND	
Hydromorphology		2007	
Water chemistry (Annex X)		ND	


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	Version Date:	22/12/09	
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DUNDRUM BAY OUTER

ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton

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

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QE: Macroalgae Dundrum Bay Outer

QE macroalgal assessment (+ data confidence):	HIGH (M)	
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Classification tools:

Reduced species list (RSL), Macroalgal Blooming Tool (MBT) not applicable.

Waterbody RSL assessment: High (Medium)

- WFD surveillance monitoring: 2007,2008
- Data Availability (classification): 2007 - 1 site, 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		
Bloody Bridge (2007)	17	47	40.9	17.0	53.2	0.96	12.8	0.814	HIGH
Bloody Bridge (2008)	16	41	38.1	14.6	51.2	0.86	9.76	0.827	HIGH
Corels Point (2008)	16	45	41.9	15.6	51.1	1.14	13.3	0.830	HIGH
Ringmore Point (2008)	18	45	36.0	11.1	51.1	1.14	13.3	0.832	HIGH
Mean								0.85 ± 0.01	HIGH

Data Confidence:

Medium

- Standard Deviation (±) are included with the mean EQR
- Data QA (expert team)
- WFD specific data data (Reduced species list completed; Full species list not yet carried out, tool not yet completed).
- 4 shores over two years yielded a medium confidence in classification.
- FSL not yet carried out

Alien taxa present (*Sargassum muticum*): Not present.

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QE: Angiosperms Dundrum Outer – tool not applicable

QE: Benthic Invertebrates – Dundrum Outer

QE benthic invertebrate assessment (+ Data confidence):	HIGH (L)	
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Classification tools: 1. Infaunal Quality Index (IQI) – good no data.
2. Imposex tool (VDSI).

1. IQI (v4)

Water body IQI assessment: *Good (no data)*

No data is available for this water body, though a site at Bloody Bridge was initiated in 2007.

2. VDSI (*Nucella lapillus*)

Waterbody VDSI assessment: High (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	Bloody Bridge	0.19	0.97	High

Data confidence:

Low

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

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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: 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*)
8.42	HIGH	2008	**	1	8.3%

* 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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Nutrients - Winter Dissolved Inorganic Nitrogen (DIN)

Winter DIN (+ Data confidence):	MODERATE (L)	
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- **Data store:**
\\marine on ehslis2k \Water Framework Directive\Nuala-Lesley Nutrients\DIN for Classification\Coastal Water
- **Data Availability:** 2008-2009
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) (normalised to salinity 32)	Winter DIN Daily average (n)	No. of samples (n)	No. of sites	Data Years	Data Quality	Status
25.72	5	23	5 (plus transect)	2008	Database not yet QA'd	Moderate

Data confidence: Low


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

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

Data Availability: No data. Determinants are being assessed on a rolling programme.


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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

Chemical status (+data confidence)	_e H (ND)	
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Annex X: Overall Compliance	Pass – No data
Annex X: Pass/Fail	Pass – No data

Classification tools: Comparison with EQS levels

Data Availability: Determinants are being assessed on a rolling programme.

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ANNEX F: Protected Area Objectives

Water body	Protected area	Designation	Status	Reason for non-compliance
Dundrum Outer	Murlough	SAC	Favourable	
Dundrum Outer	Murlough	Saltmarsh	Unfavourable	Vegetation composition - indicators of negative change (<i>Spartina</i>)
Dundrum Outer	Dundrum Outer	UWWTD	Sensitive area for bathing water	

Bathing Water Directive

Water Body	Identified	2008	2007	2006	2005	2004	2003
Dundrum Outer	Tyrella						
Dundrum Outer	Newcastle						
Dundrum Outer	Murlough						

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

Newcastle Bathing Water suffers from intermittent bathing water quality. This has been attributed to inadequate sewerage infrastructure in Newcastle town. Although Newcastle waste water treatment works has full secondary treatment, this is not enough to guarantee good bathing water quality at the beach. For this reason, the area was designated as sensitive in 2005, which means that more investment will be required to ensure improve bathing water quality.

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: Alien species

Spartina anglica is present in this waterbody.

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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 status
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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