

RIVER BASIN MONITORING PLAN

# WATER FRAMEWORK DIRECTIVE 1<sup>ST</sup> CYCLE CLASSIFICATION SUMMARY

2009-2015

Coastal Water Body – Strangford Lough  
North

31/05/2015

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	<b>Version Date:</b> 31/05/2015
<b>MONITORING &amp; ASSESSMENT TEAM</b>	

**STRANGFORD LOUGH NORTH**

Water body Information

- *River Basin District:* NE
- *Water body type:* CW8
- *Water body code:* UKGBNI6NE140
- *Water body characteristics:* Euhaline, mesotidal, sheltered
- *Water body area:* 47.55 km<sup>2</sup>
- *Heavily Modified Water Body:* No
- *2015 Classification Objective:* Moderate

<b>FINAL CLASSIFICATION</b>	<b>MODERATE</b>	<b>PASS/FAIL 2015 OBJECTIVE</b>	<b>PASS</b>
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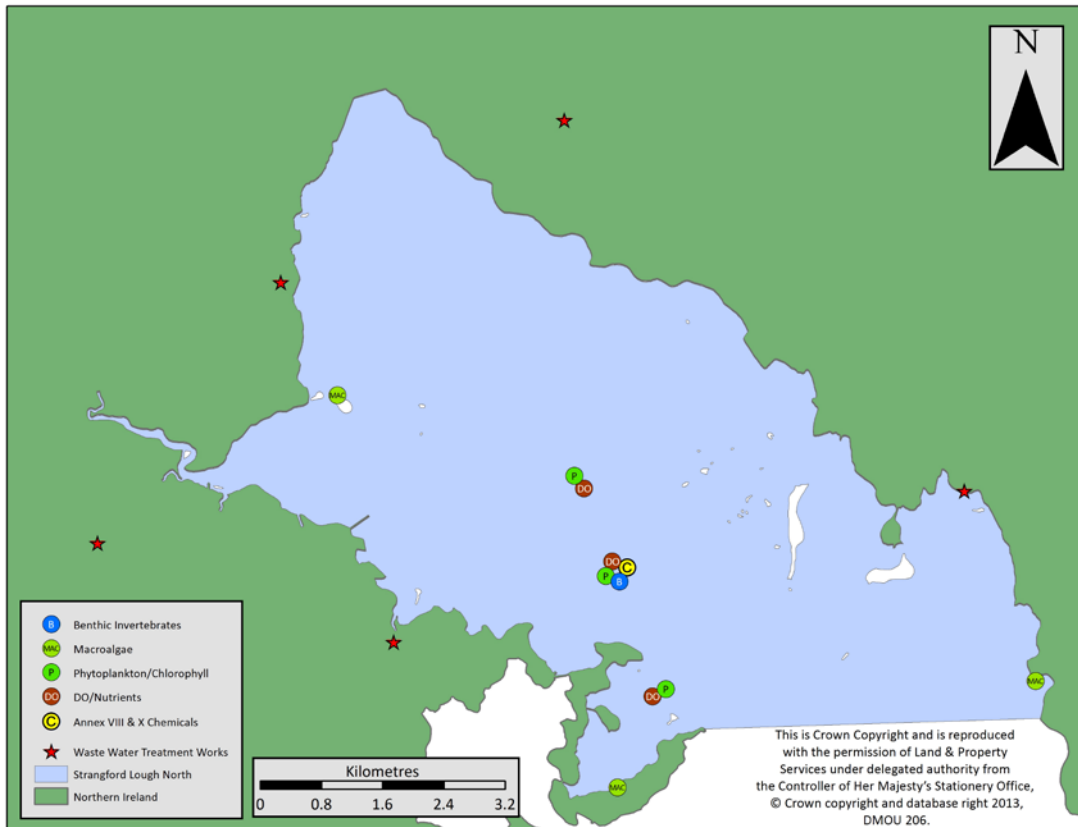


Figure 1: Waste water treatment pressures and monitoring points within Strangford Lough North (Coastal Water).

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Table 1: Parameters for which classification systems are available and have been used in this 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)	Reduced Species List	✓	
	Opportunistic Macroalgae	✓	
Angiosperms	Seagrass	<input type="checkbox"/>	Data from previous assessments
	Saltmarsh	<input type="checkbox"/>	
Phytoplankton	Biomass	✓	
	Elevated Taxa Count Index	✓	
Benthic Invertebrates	Infaunal Quality Index	✓	
	Imposex	<input type="checkbox"/>	No suitable sites
Physico-chemical (water)	<b>General Conditions</b>	✓	
	-Dissolved Oxygen	✓	
	-Nutrients	✓	
	<b>Specific Pollutants</b> (Annex VIII subs)	✓	
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	✓	

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Table 2: Sampling frequency for each quality element.

*Monitoring Level: Surveillance*

Quality Elements		Data years contributing to classification	No. of sites/samples
<b>Biological</b>			
Phytoplankton	Chlorophyll Biomass Index	2009-2014	5 sites 58 samples
	Elevated Taxa Count Index	2009-2014	5 sites 57 samples
Macroalgae	Reduced Species List	2014	3 sites 3 surveys
	Macroalgal Blooming Tool	2009-2010	n/a*
Benthic Invertebrates	Infaunal Quality Index	2010-2013	12 sites 29 samples
<b>Physico-chemical</b>			
Nutrients		2010-2013	4 sites 44 samples
Dissolved Oxygen (DO)		2010-2015	95 daily averages
Other polluting substances (Annex VIII)		2010-2014	1
<b>Hydromorphology</b>		2007	
<b>Water chemistry</b>			
(Annex X)		2010-2014	1

\*Assessment made at a whole water body level

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	<b>Version Date:</b> 31/05/2015
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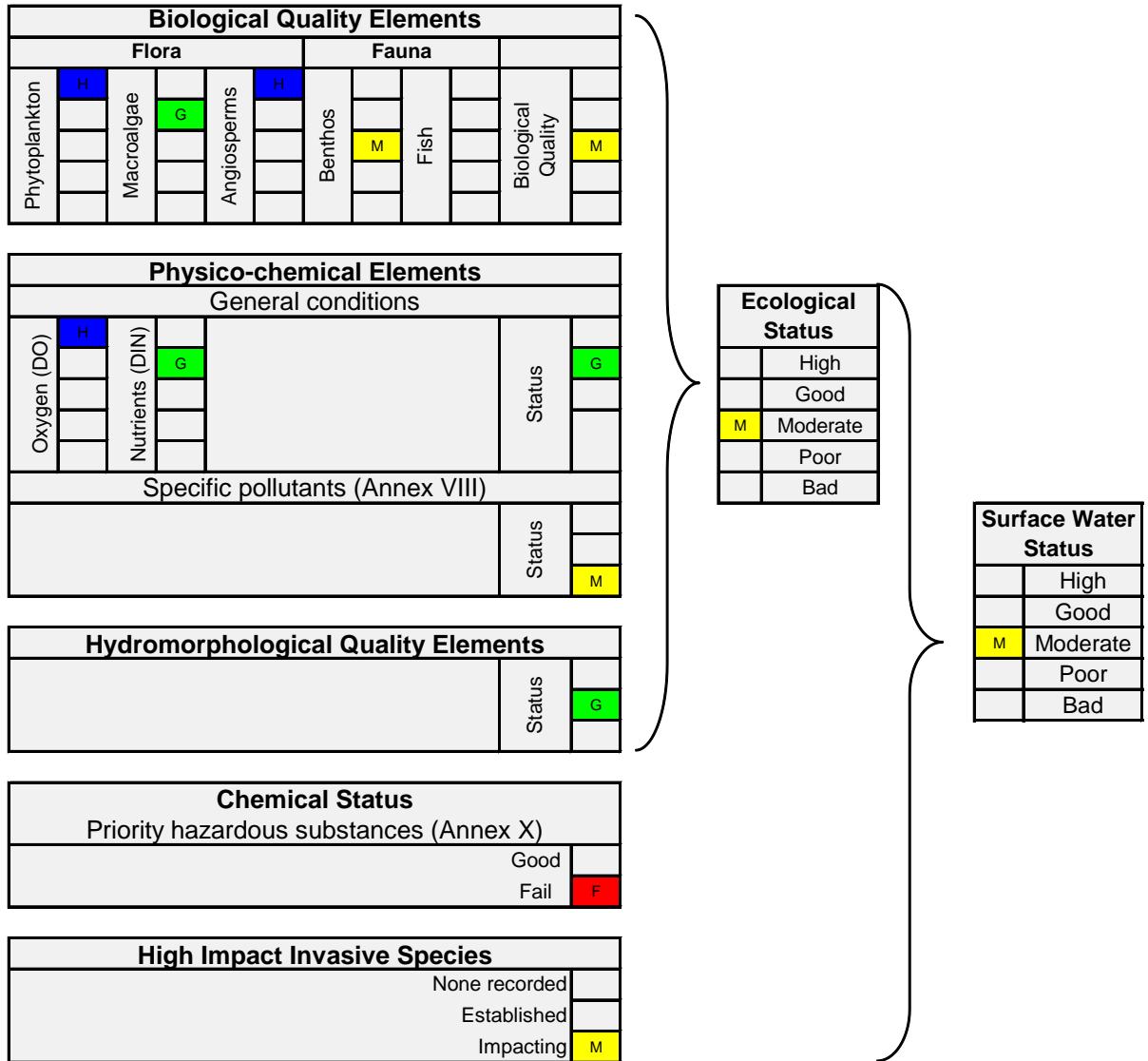



Figure 3: Overall classification of Strangford Lough North (Coastal Water)

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### ANNEX A: Classification of Biological Quality Elements

#### QE: Phytoplankton

<b>QE Phytoplankton assessment (+ data confidence):</b>	<b>HIGH (87.8%)</b>	
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#### Classification metrics:

1. Chlorophyll biomass index (90%ile)
2. Elevated taxa count index:
3. Seasonal succession: Not applied, insufficient data.

#### 1. Chlorophyll Biomass Index

**Data store:** [M:\Projects\\_14\Phycology\\_2014\MM14-14\\_Phytoplankton and Chlorophyll\classification\\_15\Coastal\\_data\Strangford\\_90th\\_Percentile\\_2011.xls](M:\Projects_14\Phycology_2014\MM14-14_Phytoplankton_and_Chlorophyll\classification_15\Coastal_data\Strangford_90th_Percentile_2011.xls)

[M:\Projects\\_14\Phycology\\_2014\MM14-14\\_Phytoplankton and Chlorophyll\classification\\_15\Coastal\\_data\STRANGFORD\\_NORTH\\_2015.XLS](M:\Projects_14\Phycology_2014\MM14-14_Phytoplankton_and_Chlorophyll\classification_15\Coastal_data\STRANGFORD_NORTH_2015.XLS)

**Data Availability (spot & continuous samples):** spot (2009-2014) NIEA/MD

#### 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	EQR	Data Years	No. of Sites	No. of Samples	Data Confidence
5.74	<b>GOOD</b>	0.77	2009-2014	5	58	76.3%

**Data confidence: 76.3%**

Data analysed for Confidence of Classification using [M:\Projects\\_14\Phycology\\_2014\MM14-14\\_Phytoplankton and Chlorophyll\classification\\_15\2015CW\\_Phytoplankton\\_CoC\\_tool\\_v107\\_UKTAG.xls](M:\Projects_14\Phycology_2014\MM14-14_Phytoplankton_and_Chlorophyll\classification_15\2015CW_Phytoplankton_CoC_tool_v107_UKTAG.xls)

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	<b>Version Date:</b> 31/05/2015
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## 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) (%)	500,000 (cells l <sup>-1</sup> )	
I <sub>2</sub> - Total Taxa Count (%)	10 <sup>7</sup> (cells l <sup>-1</sup> )	
I <sub>3</sub> - Elevated Biomass Count (%)	>10 (µg l <sup>-1</sup> )	>5 (µg l <sup>-1</sup> )

### EQR Boundaries:

% exceedances (Face value range)	Metric range (0-1)	Class
0 - <10	≥0.8 - 1.0	High
≥10 - < 20	≥0.6 - < 0.8	Good
≥20 - < 40	≥0.4 - < 0.6	Moderate
≥40 - <60	≥0.2 - < 0.4	Poor
≥60 - 100	≥0 - < 0.2	Bad

### Results % Exceedance:

I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	Elevated Count EQR	Status	Data Years	No. of phytoplankton samples	Data confidence
10.5%	0%	3.5%	0.912	HIGH	2009-2014	57	98.7%


Data confidence: 98.7%

Data analysed using [M:\Projects 14\Phycology 2014\MM14-14 Phytoplankton and Chlorophyll\classification 15\2015CW Phytoplankton CoC tool v107 UKTAG.xls](#)

Presence of alien/ nuisance species: *none*

### Overall Waterbody Status

HIGH (87.8%)

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 <p>Department of the <b>Environment</b> www.doeni.gov.uk Marine Environment Division</p>	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Lough North
	<b>Version Date:</b> 31/05/2015  <b>MONITORING &amp; ASSESSMENT TEAM</b>

**QE: Macroalgae**

<b>QE macroalgal assessment (+ data confidence):</b>	<b>GOOD( 63.7%)</b>	
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**Classification tools:** Reduced species list (RSL)  
Macroalgae Blooming Tool (MBT)

**1. Reduced Species List**

- WFD surveillance monitoring: 2014
- Data Availability (classification): 2014, 3 sites  
Data Store [..\\..\\..\\Projects 14\\Phycology 2014\\MM14-12 Intertidal Rocky Shore\\FSL-RSL Classification update 2015 \(09-14\)\\Datasheet.xls](..\\..\\..\\Projects 14\\Phycology 2014\\MM14-12 Intertidal Rocky Shore\\FSL-RSL Classification update 2015 (09-14)\\Datasheet.xls)

**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		
Herring Bay 14	12	38	45.98	18.4 2	36.84	1.24	13.16	0.799	GOOD
Rough Island 14	8	22	33.22	31.8 2	36.36	0.69	36.36	0.599	MOD
Mahee Island 14	12	47	56.87	8.51	55.32	1.14	14.89	0.852	HIGH
<b>Mean</b>								<b>0.750 +/-0.13</b>	<b>GOOD</b>

**Confidence of Classification: (63.7%)**

- Data analysed for Confidence of Class using [..\\..\\..\\Projects 14\\Phycology 2014\\MM14-12 Intertidal Rocky Shore\\PIRATES v04 - Class update 2015 \(09-14\) for UKTAG.xls](..\\..\\..\\Projects 14\\Phycology 2014\\MM14-12 Intertidal Rocky Shore\\PIRATES v04 - Class update 2015 (09-14) for UKTAG.xls)
- Standard Deviation ( $\pm$ ) is 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 (poor temporal trend assessment).

**Alien taxa:** *Sargassum muticum*, *Colpomenia peregrine*, *Chondracanthus acicularis* present.



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	Version Date: 31/05/2015  <b>MONITORING &amp; ASSESSMENT TEAM</b>

## 2. Macroalgal Blooming Tool

Waterbody MBT assessment:

**Good (80.9%)**

WFD surveillance monitoring: 2009 & 2010

Data Store: [M:\Projects 10\Phycology 2010\2010 SEAGRASS MBT\Extent & %Cover\OGA\OGA from Hovercraft Survey.xls](#)

### Boundaries:

Parameters	Quality Status	High	Good	Moderate	Poor	Bad
	Sub-metric EQR	$\geq 0.8 - 1.0$	$\geq 0.6 - 0.8$	$\geq 0.4 - 0.6$	$\geq 0.2 - 0.4$	$0.0 - 0.2$
Available Intertidal Habitat (AIH) %		0 – 5	5 – 15	15 – 25	25 – 75	75 – 100
Affected Area (ha)		0 – 10	10 – 50	50 – 100	100 – 1000	1000 – 2000
Biomass of AIH (g m <sup>2</sup> )		0 – 100	100 – 500	500 – 1000	1000 – 3000	3000 – 6000
Biomass of affected area -AA (g m <sup>2</sup> )		0 – 100	100 – 500	500 – 1000	1000 – 3000	3000 – 6000
Presence of entrained algae (% of quadrats)		0 – 1	1 – 5	5 – 20	20 – 50	50 – 100

### Results:


Years	Sub-metric EQR					Mean EQR	Status
	% cover of AIH	Affected Area (Ha)	Biomass of AIH (g m <sup>-2</sup> )	Biomass of AA (g m <sup>-2</sup> )	% Entrained algae		
2010	0.887	0.441	0.984	0.786	0.370	0.694	Good
						<b>Mean</b>	<b>Good</b>

Data Confidence: **Good (80.9%)**

Data analysed using [M:\Projects 14\Phycology 2014\MM14-16 Intertidal Macroalgal blooming assessment\2015 Opportunistic Macroalgae CoC tool CAPTAIN v12 8 UKTAG - Copy.xlsm](#)

In 2009 a visual assessment indicated that the MAB cover was lower than the previous year, 3.1%, as a result no further survey was carried out. The affected area however was still >50Ha which from the UKTAG guidance means the waterbody was given a Classification status of Good.

The visual assessment is a rough guide and needs to be repeated to increase data confidence. Photographic proof of areas <5% is recorded.

RIVER BASIN MANAGEMENT PLAN		
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	Version Date:	31/05/2015
	MONITORING & ASSESSMENT TEAM	

**QE: Angiosperms**

QE Angiosperm assessment + (data confidence):	<b>HIGH (High 96%)</b>	
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**Classification Tools:**

- Seagrass
  - Taxonomic composition
  - Shoot density
  - Bed spatial extent
- Saltmarsh – monitored but no classification tool established for first round.

**1. Seagrass**

Data store: [Strangford Zostera 2010.xls](#)  
[SAILOR v2.3 CLASSIFICATION2015.xlsx](#)

Data Availability (classification): 2010

• **EQR Boundaries:**

Status	Mean Score Ranges
High	0.8-1.0
Good	0.6-0.79
Moderate	0.4-0.59
Poor	0.2-0.39
Bad	0.0-0.19


**Sub-Metric Boundaries:**

**A. Taxonomic composition**

Disturbance	Change in taxonomic composition	Metric score (mid-point of EQR range)
No detectable change	All taxa present	0.9
Slight signs of disturbance	Loss of ¼ to ⅓ of species	0.7
Moderate distortions	Loss of ½ of species	0.5
Major distortions	Loss of ⅔ to ¾ of species	0.3
Severe distortions	Loss of all species	0.1

**B. Shoot Density**

Disturbance	% Shoot Loss		Score
	Annual	5 Year Mean	
No detectable change	0-10	0-5	0.8
Slight signs of disturbance	11-30	6-15	0.6
Moderate distortions	31-50	16-25	0.4
Major distortions	51-70	26-35	0.2
Severe distortions	70-100	36-100	0.1

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	<b>Version Date:</b> 31/05/2015  <b>MONITORING &amp; ASSESSMENT TEAM</b>

### Angiosperms (cont'd)

#### C. Bed spatial extent

Disturbance	% Area Loss	Score
No detectable change	0-10	0.8
Slight signs of disturbance	11-30	0.6
Moderate distortions	31-50	0.4
Major distortions	51-70	0.2
Severe distortions	70-100	0.1

#### Results:

Site	Tool			Mean Metric Score	Mean Status
	Taxonomic composition	Shoot Density	Bed Spatial Extent		
Strangford North 2010	0.9	0.99	0.92	0.94 (+/- 0.05)	<b>HIGH</b>

**Data confidence:** High ( 95.6%)

**Alien taxa:** *Spartina anglica* & *Sargassum muticum* present.

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	Version Date: 31/05/2015  <b>MONITORING &amp; ASSESSMENT TEAM</b>

**QE: Benthic Invertebrates**

QE benthic invertebrate assessment (+ Data confidence):	<b>MODERATE (L)</b>	
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Classification tools:

1. Infaunal Quality Index (IQI)

1. IQI (UKTAG v01 20140228)

Water body IQI assessment:

**Moderate (Low)**

WFD surveillance monitoring:

- **Data store:** [..\Strangford Lough North water body\Strangford Lough North Water Body 08-13 fauna data 1mm.xlsx](#)
- **Benthic invertebrates** UNICORN (NMMT) Database
- **Supporting Parameters** Water Quality Data Set
- **Digital images** AMAP Project folder
- **Data Availability (classification):** 12 sites, 5,3 & 1 reps, 4 years, Day Grab, 1 mm sieve, n=29.

Boundaries (Intercalibrated NEAGIG):

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

Results:

Year	Survey	Station	n	Annual Mean	Annual ± S.D	Status
2010	MM-Benthos	SL1 (3)	3	0.47	0.01	Moderate
2011	MM-Benthos	SL1 (5)	5	0.58	0.02	Moderate
2012	MM-Benthos, BSSP12	SL1 (5), SSp1-11	16	0.64	0.10	Good
2013	MM-Benthos	SL1 (5)	5	0.64	0.03	Good
2014	MM-Benthos (Not analysed)	SL1 (5)	-	-	-	-
2015	MM-Benthos (No resource)	SL1 (5)	-	-	-	-
<b>Overall 6 year waterbody means</b>			<b>7.3</b>	<b>0.58 (0.54*)</b>	<b>0.04</b>	<b>Moderate</b>


\* IQI derived from data averaged minus Standard Deviation (see issues with tools paper). This figure is used for classification.

Data confidence:

**Low**

- Sample analysis QA'd through NMBAQC (Good)
- Database QA'd (Good)
- No specific WFD data (single point with reps with additional spatial coverage in 2012 with 11 sites)

Aliens species present: *Crassostrea gigas*, *Spartina anglica*.

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	<b>Version Date:</b> 31/05/2015
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## ANNEX B: Classification of physico-chemical Quality Elements: General

### QE: Dissolved Oxygen

Dissolved oxygen (+ data confidence):	<b>HIGH (100%)</b>	
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**Classification tools:** Comparison of 5% ile against reference standards

- **Data Availability:** 2010-2015
- **Data Store:** [..\\DO Classification 2012\\Shortcut to DO FIELD VALUES 2006 - 2010.lnk](#)
- **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*)
7.62	HIGH	2010-15	**	95	

\* Proportion of possible months for which data are available

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	<b>Version Date:</b> 31/05/2015  <b>MONITORING &amp; ASSESSMENT TEAM</b>

**QE: Nutrients – N regulation**

<b>QE N regulation assessment (+ Data confidence):</b>	<b>GOOD (79%)</b>	
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- **Data store:** [..\Coastal WB inc AFBI 15.xls](#)
- **Data Availability:** 2010-2013  
DIN & salinity (Nov to Feb)
- **Data Availability (spot & continuous samples):** spot

**Thresholds:**


Area	Salinity range	DIN (uM) Winter mean H	DIN (uM) Winter mean G	DIN (uM) Winter mean M
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
12.42		44	4	2010 - 2013	Database not yet QA'd	<b>GOOD</b>

\* Average DIN used as  $r^2$  value of regression model is less than 0.75

**Data confidence source:** [..\CofCDINth.xlsx](#)

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

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

**Data assessed for 2013 Update:**

**Specific Pollutants:**

Suite	Parameter	Data Availability
Trace Metals	Chromium	CSEG 2012
Trace Metals	Iron	CSEG 2012
Trace Metals	Copper	CSEG 2012
Trace Metals	Zinc	CSEG 2012
Trace Metals	Arsenic	CSEG 2012
Trace Organics (OPONS)	Dimethoate	NOV 2010 – APR 2011
Trace Organics (OPONS)	Diazinon	NOV 2010 – APR 2011
Trace Organics (OPONS)	Fenitrothion	NOV 2010 – APR 2011
Urea Herbicides	Linuron	OCT 2011 – MAY 2012
Nutrients (Winter Nutrients)	Unionised Ammonia (at pH8)	WIN NUTS 2012-2013
Candidate Specific pollutant	Glyphosate	NOV 2012 – FEB 2013

**Other Pollutants – DSD list 2 (with existing EQS):**


Suite	Parameter	Data Availability
Trace Metals (DSD list 2)	Vanadium	CSEG 2012
Trace Organics (OPONS)	Mevinphos	NOV 2010 – APR 2011
Trace Organics (OPONS)	Triazaphos*	NOV 2010 – APR 2011
Trace Organics (OPONS)	Dichlorvos	NOV 2010 – APR 2011

Triazaphos\* LOD above the EQS.

\*Further data is available but cannot be used for classification until the assessment of 2011 Ballyrickard WWTW trace organics monitoring data is completed.

**Link to Data, Assessment and EQSs:**

[G:\MARINEWater Framework Directive\WFD ANNUAL CLASSIFICATION UPDATE 2013\Chemistry](#)

RIVER BASIN MANAGEMENT PLAN		
 <p>Department of the <b>Environment</b> www.doeni.gov.uk Marine Environment Division</p>	WFD COASTAL WATER BODY CLASSIFICATION Strangford Lough North	
	Version Date:	31/05/2015
	MONITORING & ASSESSMENT TEAM	

**Data assessed for 2014 Update:**

Suite	Parameter	Data Availability
Trace Metals	Chromium	CSEG 2013
Trace Metals	Iron	CSEG 2013
Trace Metals	Copper	CSEG 2013
Trace Metals	Zinc	CSEG 2013
Trace Metals	Arsenic	CSEG 2013

**Other Pollutants – DSD list 2 (with existing EQS):**

Suite	Parameter	Data Availability
Trace Metals (DSD list 2)	Vanadium	CSEG 2013
Trace Metals (DSD list 2)	Boron	CSEG 2013

No EQS failures

**Link to Data, Assessment and EQSs:**

[..\\Data](#)

**Data assessed for 2015 Update:**

Suite	Parameter	Data Availability
Trace Organics	Permethrin	June 2013 – June 2014
Trace Organics	Cypermethrin	June 2013 – June 2014
Trace Organics	Toluene	Nov 2013 – Sept 2014
Trace Organics	Xylene	Nov 2013 – Sept 2014
Trace Metals	Chromium	Sept 2014 – Dec 2014
Trace Metals	Iron	Sept 2014 – Dec 2014
Trace Metals	Copper	Sept 2014 – Dec 2014
Trace Metals	Zinc	Sept 2014 – Dec 2014
Trace Metals	Arsenic	Sept 2014 – Dec 2014

**Other Pollutants – DSD list 2 (with existing EQS):**

Suite	Parameter	Data Availability
Trace Metals (DSD list 2)	Vanadium	Sept 2014 – Dec 2014

**EQS failures:**

Cypermethrin

**Link to Data, Assessment and EQSs:**

[G:\MARINE\Water Framework Directive\WFD ANNUAL CLASSIFICATION UPDATE 2015\2015 QE sheets](#)




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	<b>Version Date:</b> 31/05/2015
	<b>MONITORING &amp; ASSESSMENT TEAM</b>

#### 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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	<b>Version Date:</b> 31/05/2015  <b>MONITORING &amp; ASSESSMENT TEAM</b>

### ANNEX E: Chemical Status – Annex X Chemicals

Priority hazardous substances (+data confidence)	FAIL (L)	
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**Classification tools:** Comparison with EQS levels.

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

#### Data Assessed for 2013 Update:

Suite	Parameter	Data Availability
Trace Metals	Nickel	CSEG 2012
Trace Metals	Cadmium	CSEG 2012
Trace Metals	Lead	CSEG 2012
Trace Metals	Mercury	CSEG 2012
Trace Organics (OPONS)	Atrazine	NOV 2010 – APR 2011
Trace Organics (OPONS)	Chlorfenvinphos	NOV 2010 – APR 2011
Trace Organics (OPONS)	Chlorpyrifos	NOV 2010 – APR 2011
Trace Organics (OPONS)	Simazine	NOV 2010 – APR 2011
Urea Herbicides	Isoproturon	OCT 2011- MAY 2012
Urea Herbicides	Diuron	OCT 2011- MAY 2012
PAH	Anthracene	NOV 10 – JUN11
PAH	Fluoranthene	NOV 10 – JUN11
PAH	Naphthalene	NOV 10 – JUN11
PAH	Benzo (a) pyrene	NOV 10 – JUN11
PAH	*Benzo(b)fluoranthene	NOV 10 – JUN11
PAH	*Benzo(k)fluoranthene	NOV 10 – JUN11
PAH	*Benzo(g,h,i)perylene	NOV 10 – JUN11
PAH	*Indeno(1,2,3 cd) pyrene	NOV 10 – JUN11

\*AA - EQS = Sum of Benzo(b)fluoranthene and Benzo(k)fluoranthene = 0.03ug/l  
(No Marine MAC – EQS)

\*AA - EQS = Sum of Benzo(g,h,i)perylene and Indeno(1,2,3 cd) pyrene = 0.002ug/l (No Marine MAC – EQS)

#### EQS Failures:


AA – EQS failure for the sum of Benzo(g,h,i)perylene and Indeno(1,2,3 cd) pyrene.

**Calculated mean = 0.0173 ug/l**

There is low confidence as the EQS is an annual average and the mean is calculated with only 4 months of monitoring data (Nov 10, Jan11, Apr 11 and Jun 11).  
There is no marine maximum allowable concentration (MAC) for comparison.

#### Link to Data, Assessment and EQSs

[G:\MARINE\Water Framework Directive\WFD ANNUAL CLASSIFICATION UPDATE 2013\Chemistry](#)

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 <p>Department of the <b>Environment</b> www.doeni.gov.uk Marine Environment Division</p>	WFD COASTAL WATER BODY CLASSIFICATION Strangford Lough North	
	Version Date:	31/05/2015
	MONITORING & ASSESSMENT TEAM	

**Data Assessed for 2014 Update:**

Suite	Parameter	Data Availability
Trace Metals	Nickel	CSEG 2013
Trace Metals	Cadmium	CSEG 2013
Trace Metals	Lead	CSEG 2013
Trace Metals	Mercury	CSEG 2013

**No EQS failures**

**Link to Data, Assessment and EQSs:**

[..\Data](#)

**Data Assessed for 2015 Update:**

Suite	Parameter	Data Availability
Trace Metals	Nickel	Sep 2014 – Dec 2014
Trace Metals	Cadmium	Sep 2014 – Dec 2014
Trace Metals	Lead	Sep 2014 – Dec 2014
Trace Metals	Mercury	Sep 2014 – Dec 2014
Trace Organics	Benzene	Nov 2013 – Sept 2014
Trace Organics	Nonylphenol	April 2014 – Dec 2014
Trace Organics	Octylphenol	April 2014 – Dec 2014

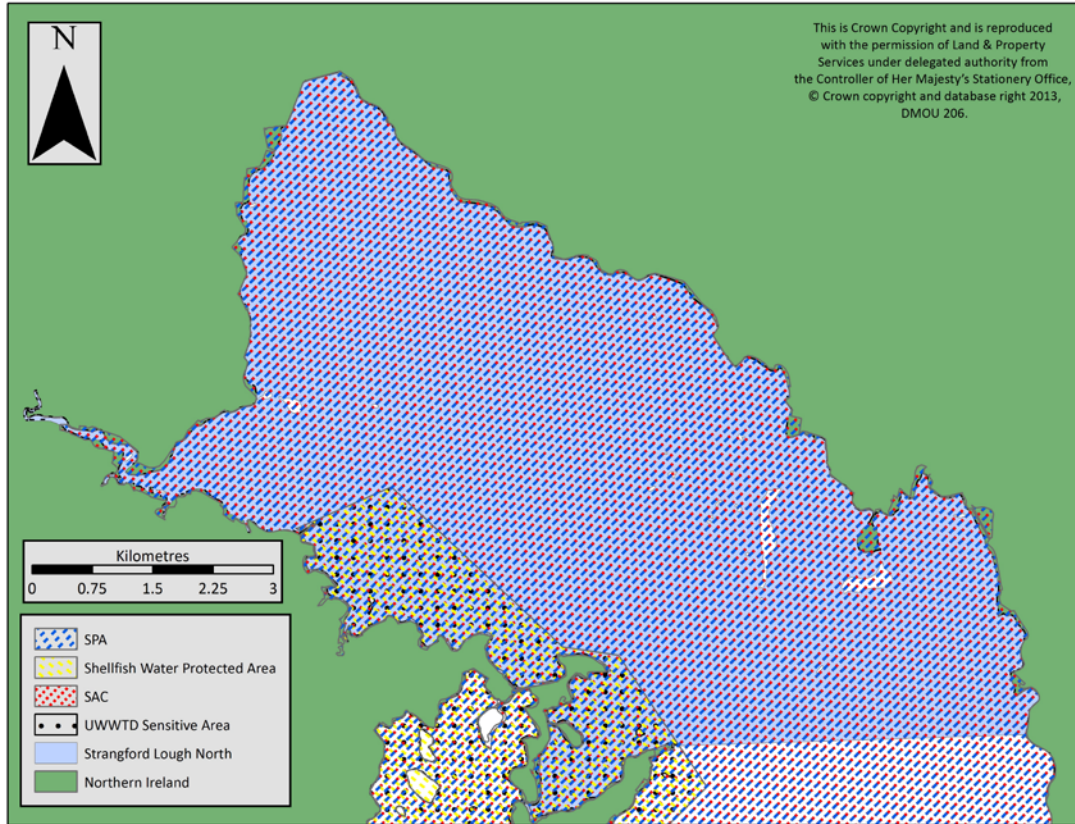
**No EQS failures**

**Link to Data, Assessment and EQSs:**


[G:\MARINEWater Framework Directive\WFD ANNUAL CLASSIFICATION UPDATE 2015\2015 QE sheets](#)

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	<b>Version Date:</b> 31/05/2015
<b>MONITORING &amp; ASSESSMENT TEAM</b>	

### ANNEX F: Protected Areas



Protected areas within Strangford North (Coastal Water).

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 <p>Department of the <b>Environment</b> www.doeni.gov.uk Marine Environment Division</p>	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Lough North
	<b>Version Date:</b> 31/05/2015
<b>MONITORING &amp; ASSESSMENT TEAM</b>	

The following Protected Areas are situated either wholly or partly within the Strangford Lough North water body:

**Natura 2000 sites (Habitats Directive and Birds Directive):**

Site Name	2014 Condition Status	Designated Water Dependant habitat/species	Feature(s) not meeting objective	Reason for not meeting objective
Strangford Lough SAC	Unfavourable	Coastal lagoons; Large shallow inlets and bays; Annual vegetation of driftlines; Atlantic salt meadows ( <i>Glauco-Piccinellietalia maritimae</i> ); Mudflats and sandflats not covered by seawater at low tide; Perennial vegetation of stony banks; Reefs; <i>Salicornia</i> and other annuals colonising mud and sand; <i>Phoca vitulina</i>	Atlantic salt meadows ( <i>Glauco-Piccinellietalia maritimae</i> );  <i>Salicornia</i> and other annuals colonising mud and sand;  Reefs;  Perennial vegetation of stony banks;  Large shallow inlets and bays;  Coastal lagoons	Invasive species <i>Spartina anglica</i>  Invasive species <i>Spartina anglica</i>  Non marine water quality related  Agricultural operations (Ploughing, fertiliser, pesticides)  Non marine water quality related  Increased siltation and non native species
Strangford Lough SPA	Favourable	Sandwich tern; Common tern; Arctic tern; Knot; Light bellied brent goose; Redshank; water bird assemblage	None	n/a


**Shellfish Protected Areas:**

Shellfish Water Protected Area	Met Guideline Microbiological Standard* in 2014
Paddy's Point/Reagh Bay	Yes (n=13)

\*75% of samples contain  $\leq 230$  *E. coli* /100ml of shellfish flesh and intervalvular liquid

**Nitrates Directive/ Urban Waste Water Treatment Directive Sensitive Areas:**

- Ardmillan Shellfish Water UWWTD Sensitive Area

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 <p>Department of the <b>Environment</b> www.doeni.gov.uk Marine Environment Division</p>	<b>WFD COASTAL WATER BODY CLASSIFICATION</b> Strangford Lough North
	<b>Version Date:</b> 31/05/2015
<b>MONITORING &amp; ASSESSMENT TEAM</b>	

### ANNEX G: High Impact Invasive Species

QE High Impact Invasive Species assessment	<b>MODERATE</b>
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#### Ecoregion 17 Marine High Impact Invasive Species List

Phylum	Species	P	E	I	Record
Chordata	<i>Didemnum</i> spp.				
Chordata	<i>Styela clava</i>				
Crustacea	<i>Eriocheir sinensis</i>				
Mollusca	<i>Crassostrea gigas</i>		Y		W
Mollusca	<i>Crepidula fornicata</i>				
Phaeophyceae	<i>Sargassum muticum</i>		Y		W
Angiosperms	<i>Spartina anglica</i>			Y*	W/ HABITATS


P= Present; E= Established; I= Impacting

\*Presence of *Spartina anglica* cited as reason for Atlantic salt meadows (*Glauco-Piccinellietalia maritima*), and *Salicornia* mud and sand reefs features not meeting objectives under Habitats Directive.

NB Established populations of high impact species automatically downgrade overall surface water classification from 'high' to 'good'.

Record should be inputted as follows. PO= personal observation outside of surveys; W= WFD survey; M= museum / institute records.

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	<b>Version Date:</b>	31/05/2015
	<b>MONITORING &amp; ASSESSMENT TEAM</b>	

**GLOSSARY**

<b>AFBI</b>	Agri-Food and Biosciences Institute (under contract to NIEA)
<b>AMBI</b>	AZTI Marine Biotic Index
<b>Annex X</b>	Annex 10 Priority Hazardous Substances
<b>Annex VIII</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
<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