

RIVER BASIN MONITORING PLAN

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

2009-2015

Coastal Water Body – Strangford Lough  
Narrows

31/05/2015




An Agency within the Department of the  
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	<b>Version Date:</b>	31/05/2015
<b>MONITORING AND ASSESSMENT TEAM</b>		

**STRANGFORD LOUGH 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 km<sup>2</sup>
- Heavily Modified Water Body: No
- 2015 Classification Objective: Good

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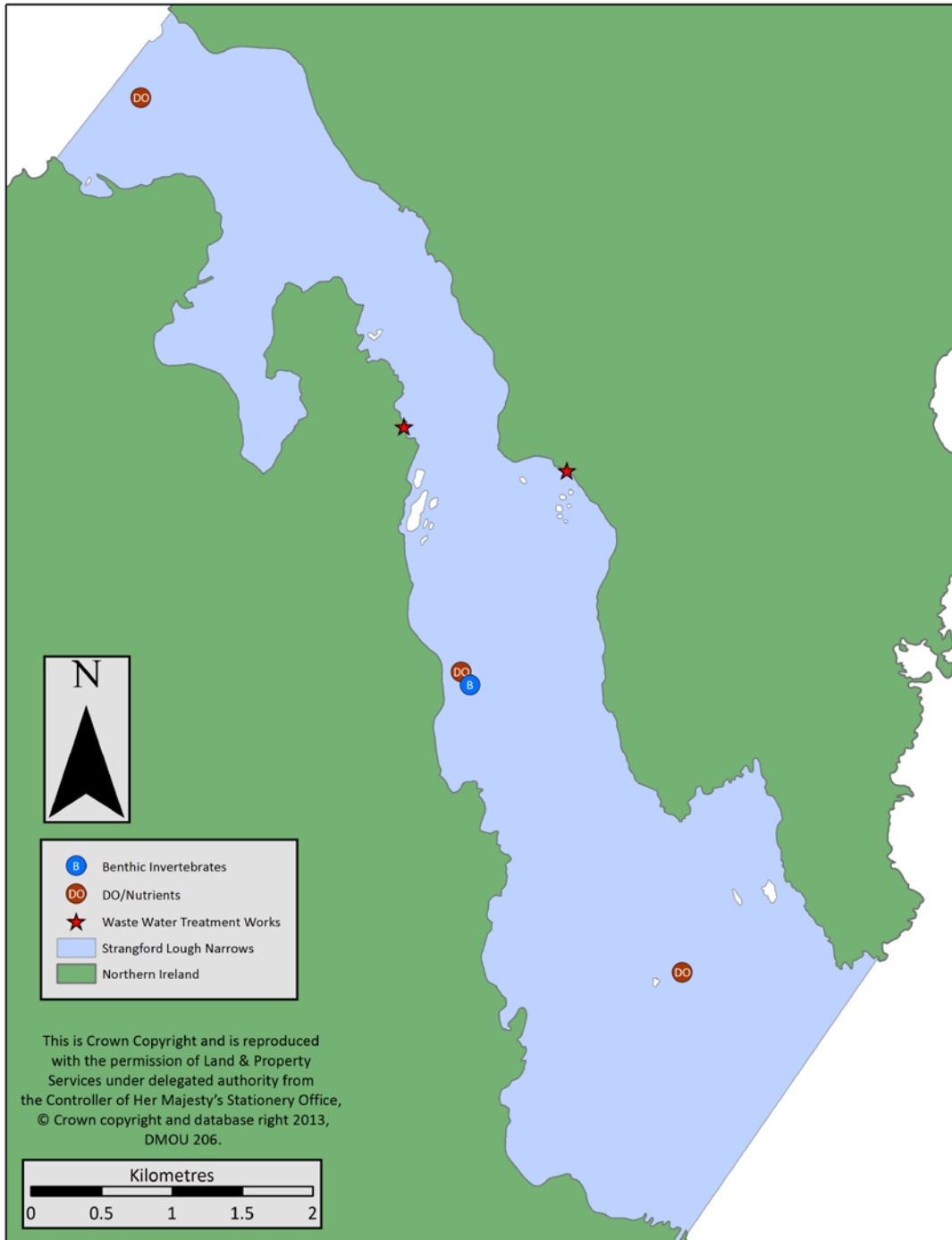


Figure 1: Waste water treatment pressures and monitoring points within Strangford Lough Narrows (Coastal Water).


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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.

<b>Ecological Quality Element</b>			
<b>Main Element</b>	<b>Sub-Element</b>	<b>Applied</b>	<b>Comment</b>
<b>Phytoplankton</b>	Chlorophyll Biomass	<input checked="" type="checkbox"/>	No data available
	Elevated Taxa Count Index	<input checked="" type="checkbox"/>	No data available
<b>Macroalgae (seaweed)</b>	Opportunistic Macroalgae	<input checked="" type="checkbox"/>	No data available
	Reduced Species List	<input checked="" type="checkbox"/>	No data available
<b>Angiosperms</b>	Seagrass	<input checked="" type="checkbox"/>	No data available
	Saltmarsh	<input checked="" type="checkbox"/>	No data available
<b>Benthic Invertebrates</b>	Infaunal Quality Index	<input checked="" type="checkbox"/>	
	Imposex	<input checked="" type="checkbox"/>	No suitable sites
<b>Physico-Chemical (water)</b>	<b>General Conditions</b>		
	-Dissolved Oxygen	<input checked="" type="checkbox"/>	
	-Nutrients	<input checked="" type="checkbox"/>	
	Specific Pollutants (Annex VIII subs)	<input checked="" type="checkbox"/>	No data available
<b>Hydromorphological Quality Elements</b>	SEPA Rapid Designation	<input checked="" type="checkbox"/>	
	TraC MIMAS	<input checked="" type="checkbox"/>	
<b>Chemical Status</b>			
<b>Priority Hazardous Substances (Annex X)</b>	Annex X Substances	<input checked="" type="checkbox"/>	No data available



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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>		
Benthic Invertebrates   Infaunal Quality Index	2010	1 site, 3 replicates
<b>Physico-chemical</b>		
Nutrients	2010-2012	6 sites 13 samples
Dissolved Oxygen (DO)	2010-2011	12 daily averages
Other polluting substances (Annex VIII)	n/a	
<b>Hydromorphology</b>	2007	
<b>Water chemistry</b> (Annex X)	n/a	




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**ANNEX A: Classification of Biological Quality Elements**

**QE: Phytoplankton:** QE not assessed.

**QE: Macroalgae:** QE not assessed.

**QE: Angiosperms** – No Data

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

QE benthic invertebrate assessment (+ data confidence):	<b>GOOD (L)</b>	
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**Classification tools:**

1. Infaunal Quality Index (IQI)

1. IQI (UKTAG v01 20140228)

**WFD surveillance monitoring:**

- **Data store:** [..\Strangford Lough Narrows waterbody\Strangford Lough Narrows 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):** 1 site, 3 reps, 1 years, Day Grab, 1 mm sieve, n=3.

**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	SLN (3)	3	0.76	0.03	High
2011						
2012						
2013						
2014						
2015						
<b>Overall 6 year waterbody means</b>			<b>3</b>	<b>0.76 (*0.73)</b>	<b>0.03</b>	<b>Good</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)



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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 – 2011, [DO FIELD VALUES 2013 update.xls](#)
- **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*)
8.23	High	2010 - 11		12	23.81%

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

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**QE: Nutrients – N regulation**

<b>QE N regulation assessment (+ Data confidence):</b>	<b>HIGH (100%)</b>	
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- **Data store:** [..\Coastal WB inc AFBI 15.xls](#)
- **Data Availability:** 2010- 2012  
DIN & salinity (Nov to Feb)
- **Data Availability (spot & continuous samples):** Spot

**N regulation 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
8.93		13	6	2010-2012	Database not yet QA'd	<b>HIGH</b>

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

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


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

<b>Specific pollutants assessment (+data confidence)</b>	<b>NO DATA</b>	
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Classification tools: Comparison with EQS levels.


Data availability: No Data

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### ANNEX D: Hydromorphological quality elements

<b>Overall hydromorphology assessment</b>	GH	
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- Classification tools:**
1. TRaC Hydromorphology metrics
  2. MIMAS


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

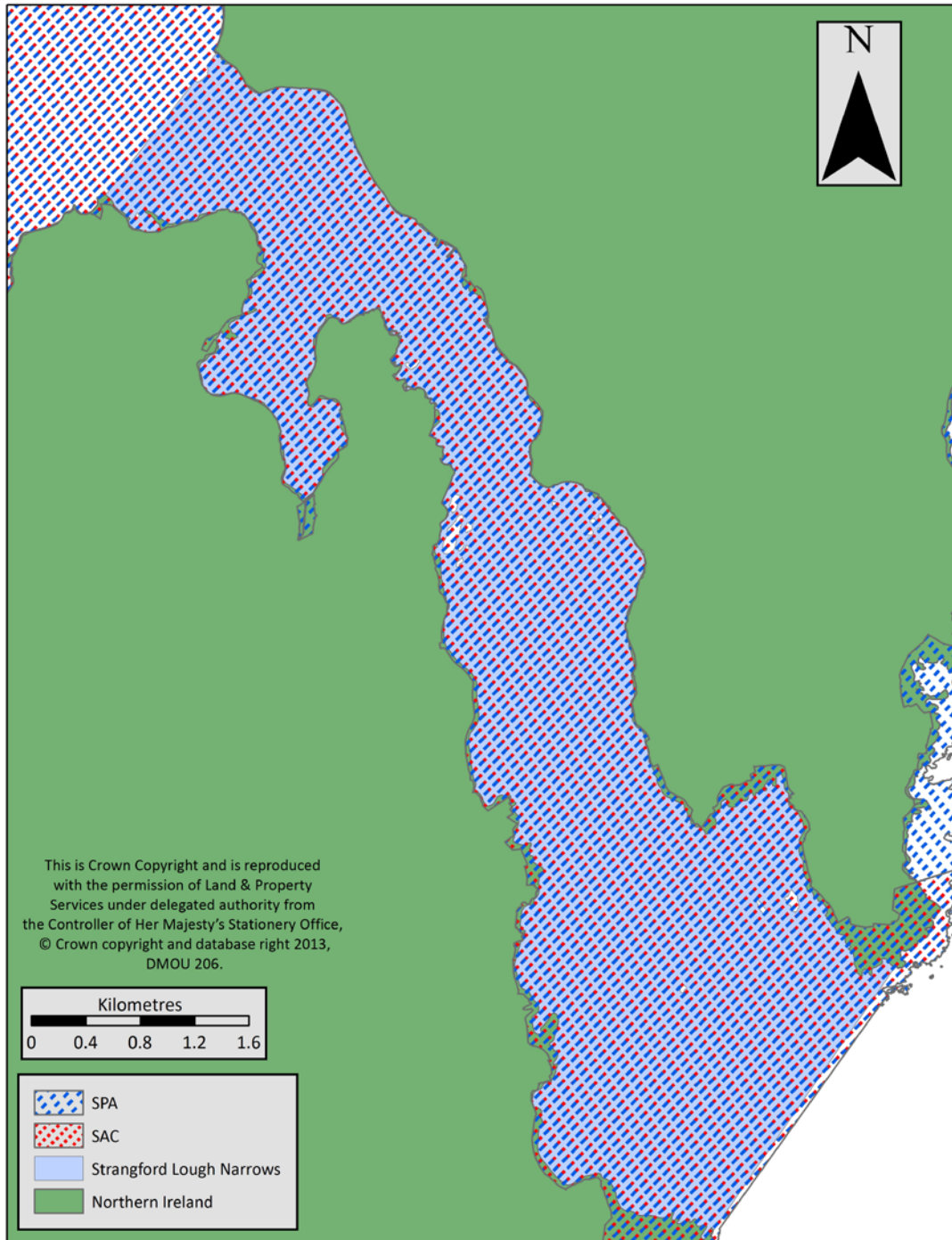
<b>Priority hazardous substances (+data confidence)</b>	<b>NO DATA</b>	
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**Classification tools:** Comparison with EQS levels.


Annex X: Overall Compliance	No Data
Annex X: Pass/Fail	No Data

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### ANNEX F: Protected Areas




Protected areas within Strangford Lough Narrows (Coastal Water).

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The following Protected Areas are situated either wholly or partly within the Strangford Lough Narrows 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>Glaucopiccinellietalia 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>Glaucopiccinellietalia maritimae</i> )  <i>Salicornia</i> and other annuals colonising mud and sand  Reefs  Perennial vegetation of stony banks	Invasive species <i>Spartina anglica</i>  Invasive species <i>Spartina anglica</i>  Non marine water quality related  Agricultural operations (Ploughing, fertiliser, pesticides)
Strangford Lough SPA	Favourable	Sandwich tern; Common tern; Arctic tern; Knot; Light bellied brent goose; Redshank; water bird assemblage	None	n/a

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### ANNEX G: High Impact Invasive Species

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


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

P= Present; E= Established; I= Impacting

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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### 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