


draft RIVER BASIN MONITORING PLAN

CLASSIFICATION PAMPHLET

Coastal Waterbody, Maidens

22nd December 2008

draft RIVER BASIN MANAGEMENT PLAN	
	WFD COASTAL WATER BODY CLASSIFICATION Maidens
	Version Date: 22/12/08
	MARINE ASSESSMENT AND LICENSING TEAM

MAIDENS

Water body Information

- *River Basin District:* NE
- *Water body type:* CW5
- *Water body characteristics:* Euhaline, mesotidal, moderately exposed
- *Water body area:* 29.99 km²
- *Heavily Modified Water Body:* No

**OVERALL WATERBODY CLASSIFICATION. (H/G/M/P/B):GOOD
(PASS/FAIL):PASS**

DOWNGRADE TO GOOD, due to lack of data. More data will be available for the final classification and it may be upgraded.

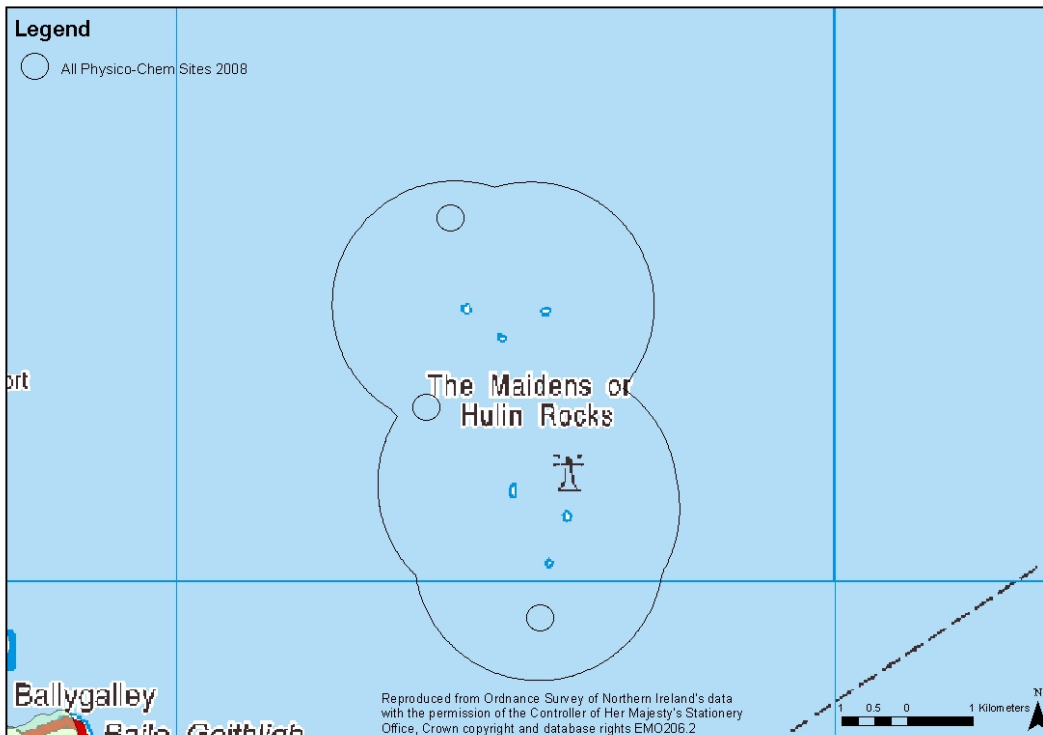



Figure showing pressures and monitoring points within Maidens (Coastal Water).

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PARAMETERS TABLE

(Parameters for which classification systems are available and have been used in the first round of classification. Note: for some parameters data is not yet available hence the tools have not been applied).

Ecological Quality Element			
Main Element	Sub-Element	Applied	Comment
Plants	Macro Algae	<input checked="" type="checkbox"/>	No data
	-Opportunistic Macroalgae	<input checked="" type="checkbox"/>	Tool Not Applicable
	-Reduced Species List	<input checked="" type="checkbox"/>	No data
	Angiosperms	<input checked="" type="checkbox"/>	Tool Not Applicable
	Phytoplankton	<input checked="" type="checkbox"/>	Awaiting Data
Benthic Invertebrates	Infaunal Quality Index	<input checked="" type="checkbox"/>	Tool Under Development
	Imposex	<input checked="" type="checkbox"/>	No data
Fish	Transitional Fish Classification Index		
Physico-Chemical	General Conditions	✓	
	-Dissolved Oxygen	✓	
	-Nutrients	<input checked="" type="checkbox"/>	No data
	Specific Pollutants (Annex VIII subs)	<input checked="" type="checkbox"/>	No data
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	<input checked="" type="checkbox"/>	No data

Waterbody Classification

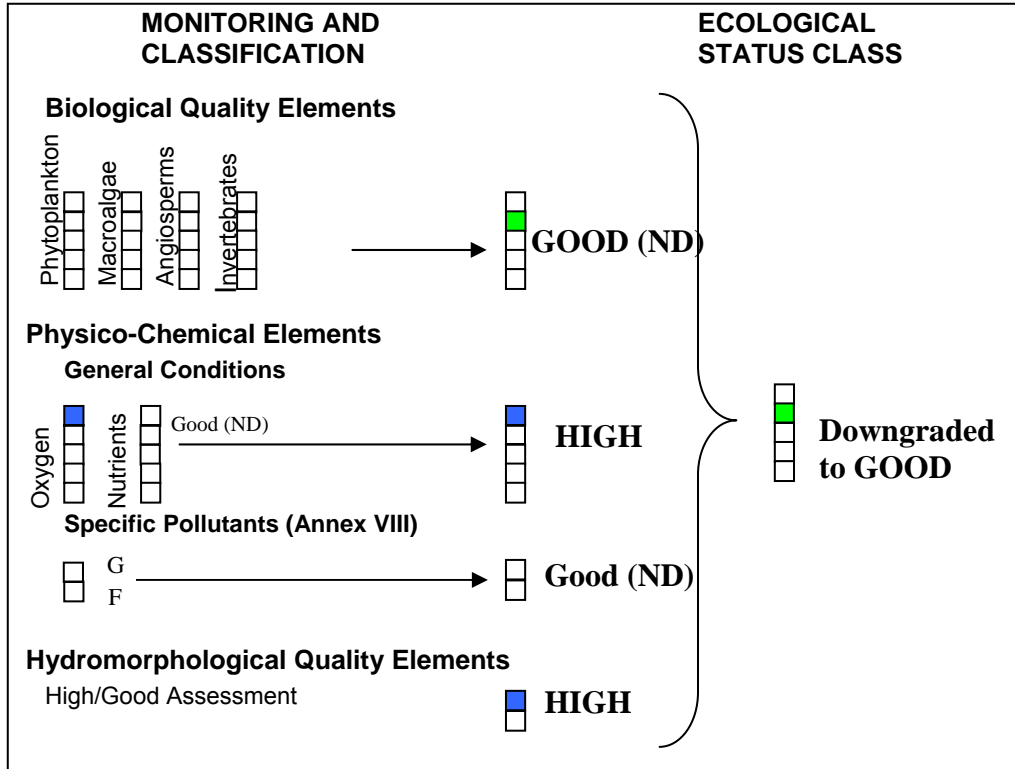


Figure showing ecological classification of Maidens (Coastal Water)

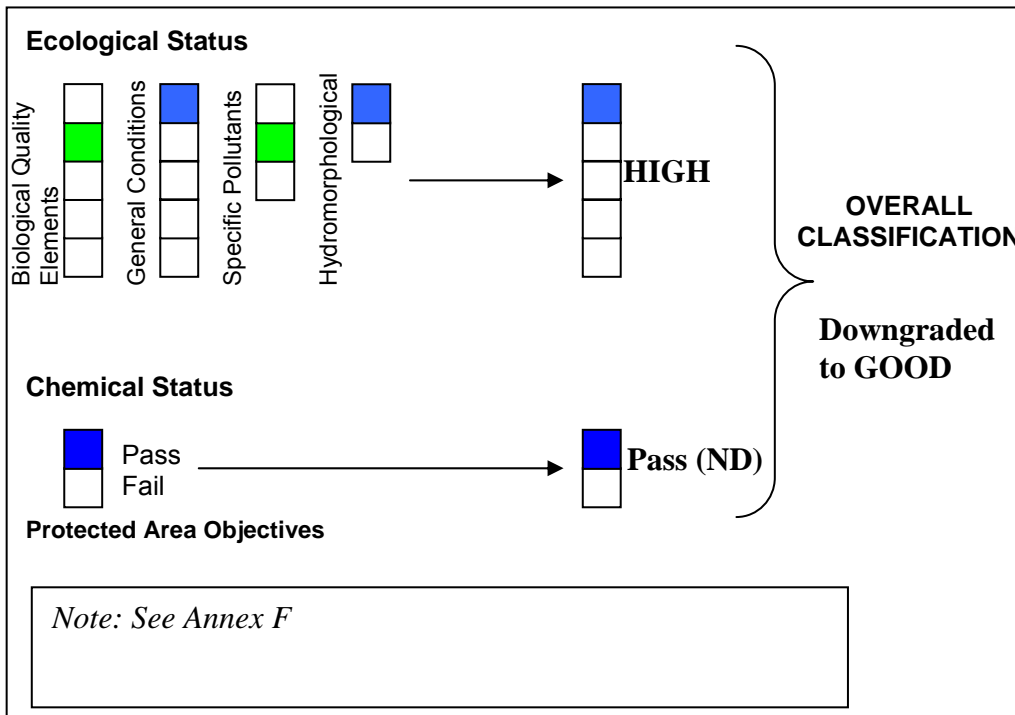


Figure showing overall classification of Maidens (Coastal Water)

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First River Basin Cycle (2004 – 2008)

Monitoring Level:

Surveillance

Sampling frequency for each quality element

Quality Elements	Surveillance		
	Year (if 1 in 3 yrs)	Frequency (if p.a.)	No. of sites
Biological			
Phytoplankton	ND		
Macroalgae	Reduced Species List	ND	
Benthic Invertebrates			
	Imposex	ND	
Physico-chemical			
Nutrients	ND		
Salinity	2008		
Temperature	2008		
Dissolved Oxygen (DO)	2008		3
Suspended particulate matter (SPM)			
Light (Kd)			
Other polluting substances (Annex VIII)	ND		
Hydromorphology			
Water chemistry			
(Annex X)	ND		

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THE MAIDENS

ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton

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

Classification tools:

First round reporting now

1. Chlorophyll biomass index (90%ile)
2. Elevated taxa count index

- Data store (classification):
MARINE\Water Framework Directive\DRAFT WFD CLASSIFICATION REPORTS\QE Phytoplankton\Chlla 90th Percentile\Final 90th Percentile Phytoplankton-
- Data Availability (spot & continuous samples):
Phytoplankton =

1. *Chlorophyll Biomass Index - 90%ile (Chl $\mu\text{g l}^{-1}$)*
(Growing Season 1st Mar – 30th Sept)

Waterbody Chl. biomass assessment *GOOD (No data)*

- 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*)

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

Data confidence: No data

2. Elevated Taxa Count Index

Waterbody Elevated Taxa Assessment

- Thresholds:

Tool	Thresholds	
	North/Irish Sea	Atlantic
I ₁ - Individual Species Count (excl. Phaeocystis) (%)	250,000 (cells l ⁻¹)	
I ₂ - Phaeocystis Counts (%)	10 ⁶ (cells l ⁻¹)	
I ₃ - Total Taxa Count (%)	10 ⁷ (cells l ⁻¹)	
I ₄ - Elevated Biomass Count (%)	>10 (µg l ⁻¹)	>5 (µg l ⁻¹)

$$\text{Waterbody Elevated count (\%)} = [I_1 (\%) + I_2 (\%) + I_3 (\%) + I_4 (\%)] / 4$$


- EQR Boundaries:

Class	% Exceedance	EQR
High	0-15	0.67-1.0
Good	15-30	0.33-0.67
Moderate	30-40	0.28-0.33
Poor	40-50	0.20-0.33
Bad	>50	0-0.20

Results

I ₁	I ₂	I ₃	I ₄	Elevated Count Mean	Status	Data Years	No. of sampling occasions	No. of phytoplankton samples

Data confidence:

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QE: Benthic Invertebrates – The Maidens Islands

Overall benthic invertebrate assessment: *GOOD (N/D)*

Classification tools: 1. Infaunal Quality Index (IQI) –Not applicable
2. Imposex tool (VDSI) – ND

2. VDSI (Nucella lapillus)

Waterbody VDSI assessment: Good (ND)

- Data store:
- Data availability:


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

Data confidence: No data

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

Dissolved Oxygen

Waterbody DO assessment: **HIGH (L)**

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*)
7.85	HIGH	2008	**	1	11.1%

* 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)



Nutrients – Winter DIN
Winter DIN assessment

Good (ND)

Data store:

- Data Availability:
- Data Availability (spot & continuous samples):
- N regulation thresholds: 25 Trans and 32 coastal


Area	Salinity range	DIN (uM) Winter mean H/G	DIN (uM) Winter mean G/M
Coastal (at salinity 32)	30-34.5	12	18

Results:

Mean Winter DIN (uM) (normalised to salinity 32)	Winter DIN Daily average (n)	SPM	SPM (n)	Data Years	Data Quality	Status

Data confidence:

No data

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

Overall specific pollutants assessment (ND) **GH**

Annex VIII: Overall Compliance	PASS- No data
Annex VIII: Pass/Fail	PASS- No data

Classification tools: Comparison with EQS levels.

Data Availability: 2008 data to be assessed for 2009 .


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ANNEX D: Hydromorphological quality elements

Overall hydromorphology assessment: HIGH

Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

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ANNEX E: Chemical Status – Annex X Chemicals

Overall water chemistry assessment:


Good (No Data)

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

PASS- No
data
PASS- No
data

Classification tools: Comparison with EQS levels.

Data Availability: 2008 data to be assessed for 2009.


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ANNEX F: Protected Area Objectives

Water body	Protected area	Designation	Status	Reason for non-compliance
Maidens	Maidens	Proposed SAC	(likely to be favourable)	

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.

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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
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