

North Western River Basin Management Plan

Foyle and Faughan Classification

December 2009




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Northern Ireland
Environment
Agency


RIVER BASIN MANAGEMENT PLAN		
	WFD TRANSITIONAL WATER BODY CLASSIFICATION Foyle and Faughan	
	Version Date:	22/12/09
	MARINE ASSESSMENT AND LICENSING TEAM	

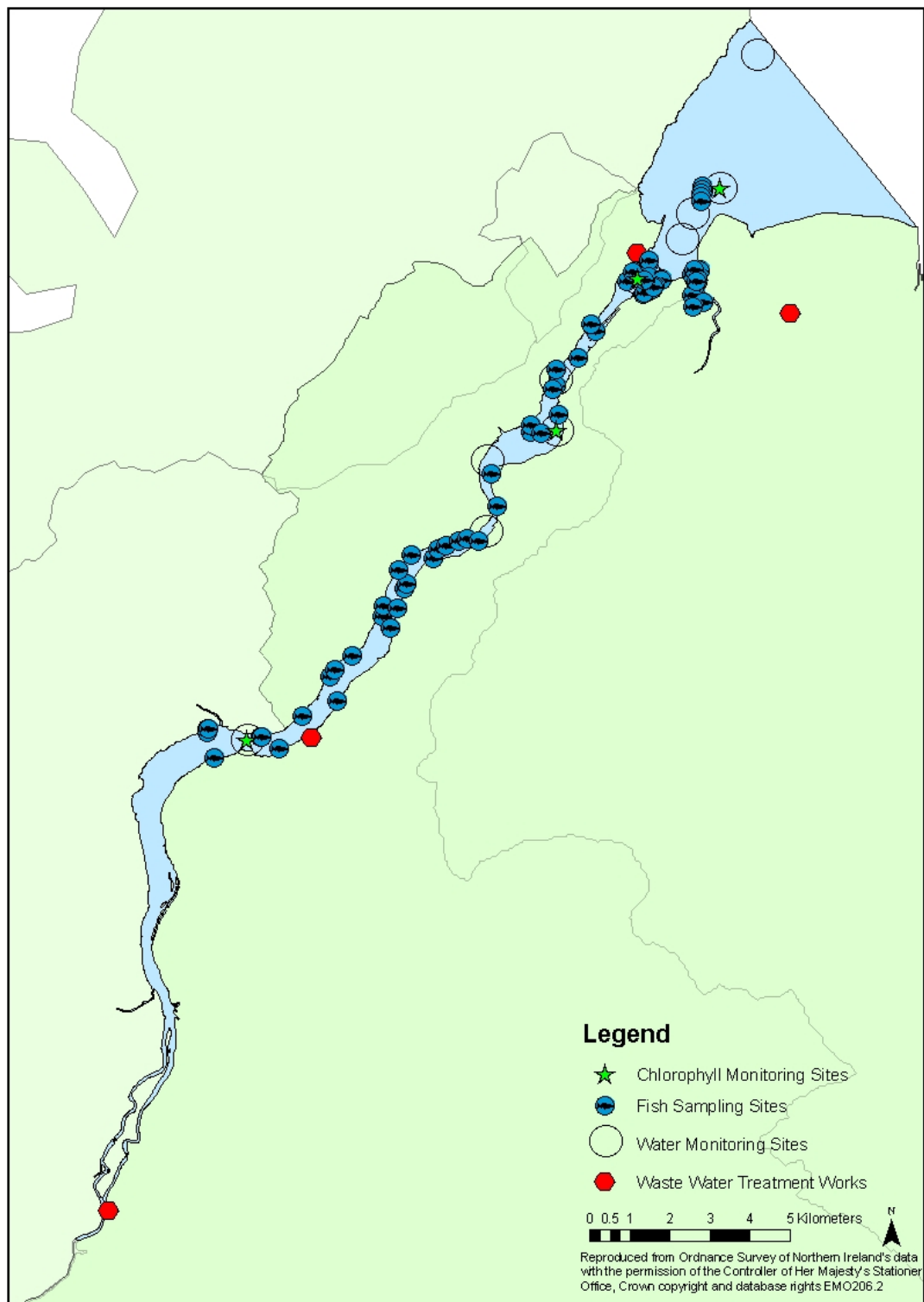
FOYLE AND FAUGHAN (TRANSITIONAL WATER)

Water body Information


- River Basin District: NE
- Water body type: Transitional Water 2 (TW2)
- Water body code: UKGBNI16NE110
- Water body characteristics: Partly mixed/stratified, mesotidal, sand and mud, mesohaline
- Water body area: 34.29 km²
- Heavily Modified Water Body: Yes

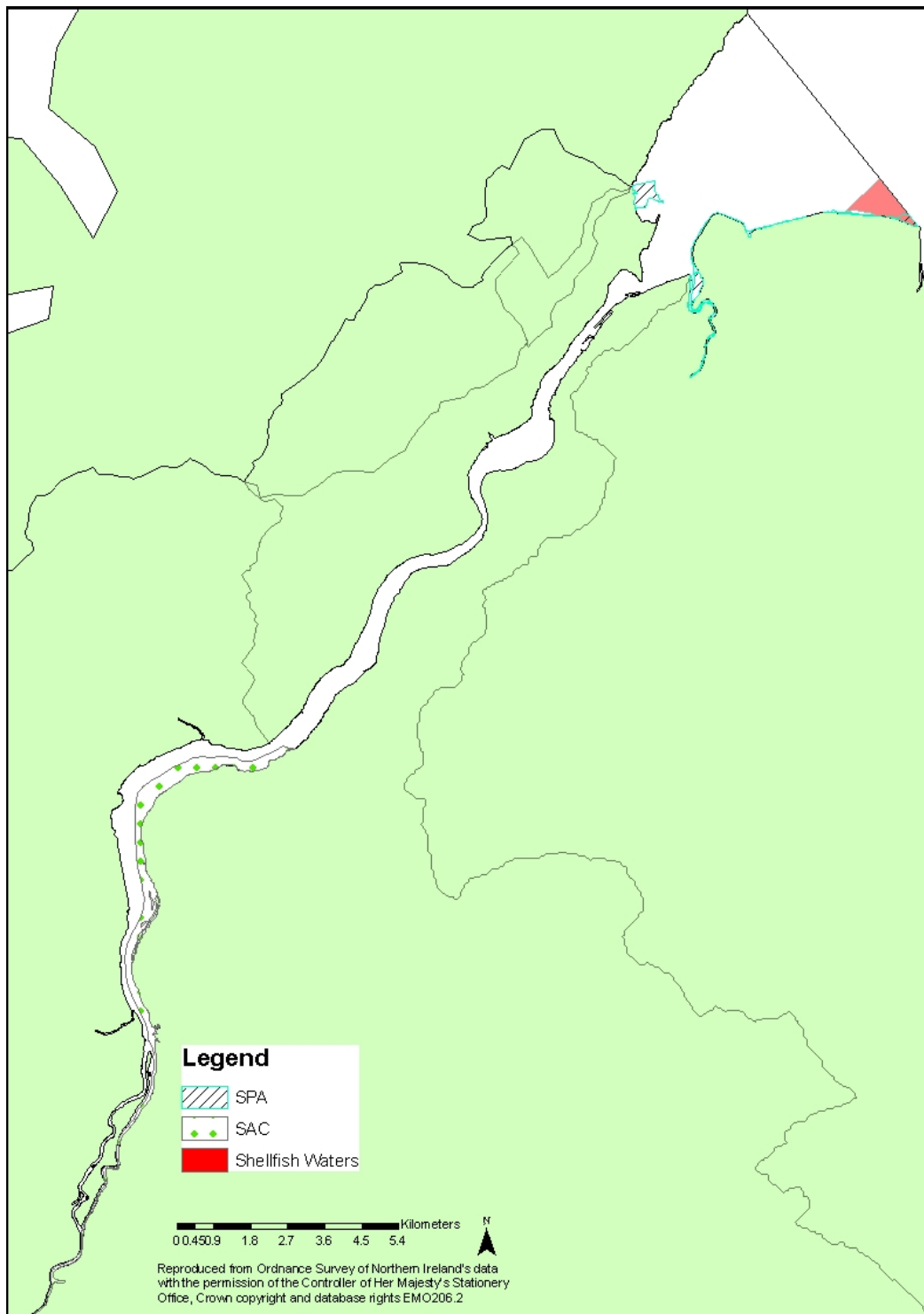
OVERALL WATERBODY CLASSIFICATION	MODERATE or worse ECOLOGICAL POTENTIAL (MEP)	
PASS/FAIL	FAIL	
<p>In this round of classification HMWBs can only be classified as 'good EP or better' or 'moderate EP or worse'. Foyle and Faughan TW has POOR classification for Dissolved Inorganic Nitrogen (DIN), but as this is only a supporting element the overall classification is Moderate EP or worse.</p> <p>The hydromorphological assessment for the water body is that it could meet Good Ecological Potential (GEP) due to management and mitigation measures undertaken within the harbour and channel. As the biological and supporting elements do not pass the assessment it does not reach GEP at this time.</p> <p>A recommendation is to split this waterbody, in recognition that only the lower end of the estuary is heavily modified. This will be addressed in a following classification round.</p>		

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Map of pressures and monitoring points within Foyle and Faughan (Transitional Water).

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Map of protected areas within Foyle and Faughan (Transitional Water).

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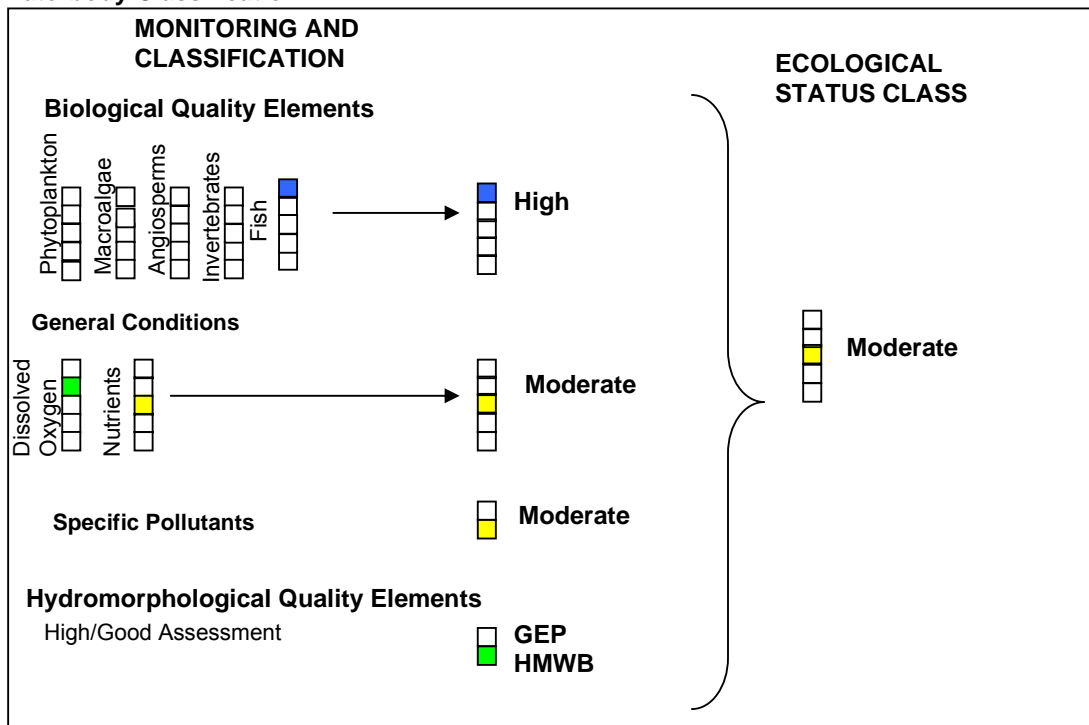
PARAMETERS TABLE

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.

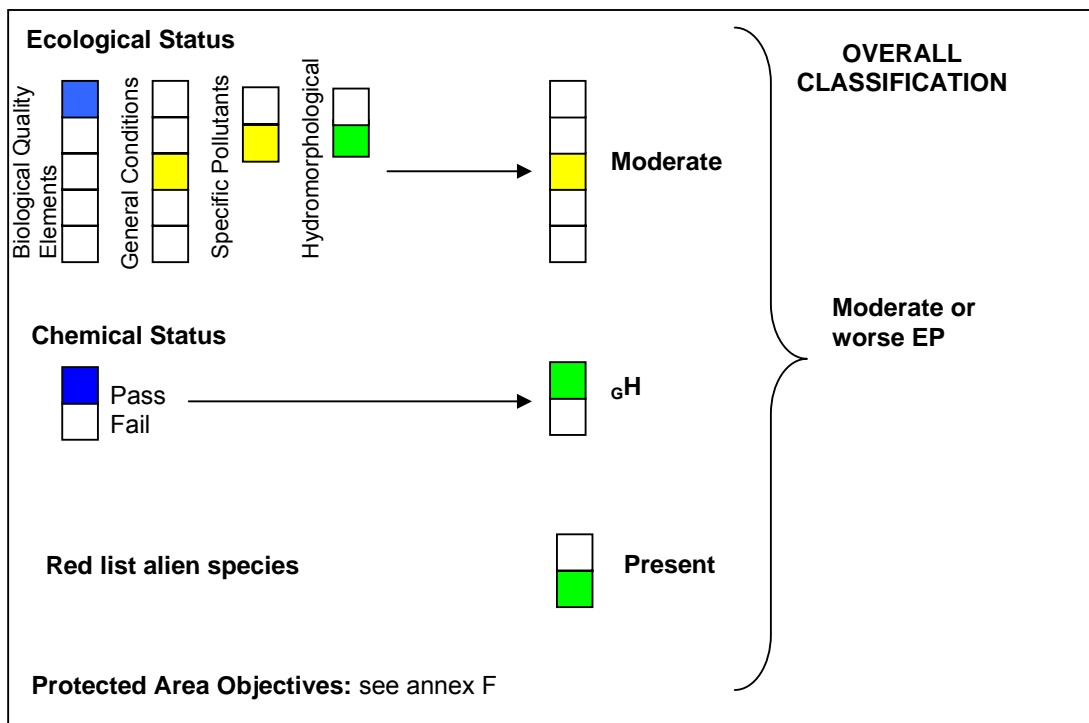
Ecological Quality Element			
<i>Main Element</i>	<i>Sub-Element</i>	<i>Applied</i>	<i>Comment</i>
Fish	Transitional Fish Classification Index	✓	
Physico-Chemical	General Conditions		
	-Dissolved Oxygen	✓	
	-Nutrients	✓	
	Specific Pollutants (Annex VIII subs)	✓	
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	✓	

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Waterbody Classification



Ecological classification of Foyle and Faughan (Transitional Water)



Overall classification of Foyle and Faughan (Transitional 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 years)	No. of sites
Phytoplankton - 90 %ile		2007	
Fish	Spring	2008	
	Autumn	2008	
Physio-chemical			
Nutrients		2003-8	15 samples 3 sites
Salinity		2003-8	
Temperature		2003-8	
Dissolved Oxygen		2006-8	6
Specific polluting substances (Annex VIII)		2002-2007	
Hydromorphology		2007	
Water chemistry (Annex X)			
Priority hazardous substances		2002-2007	

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ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton **NO CURRENT REF CONDITIONS FOR TWs**

QE: Macroalgae – tool not applicable/ tool under development

QE Angiosperms – tool not applicable

QE: Benthic Invertebrates – tool under development for transitional waters

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QE: Transitional Fish – Foyle/Faughan

Fish assessment (+ data confidence):	HIGH (L)	
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Classification tools: Transitional Fish Classification Index (TFCI)

Data store:

- **Fish:** NIEA fish data – MS Excel
- **Supporting Parameters:** NIEA physico-chemical parameters – MS Excel

Data Availability:

- WFD surveillance monitoring 2006 (Faughan), 2007, and 2008 (Foyle & Faughan); Faughan - two surveys in 2006, 2007, and 2008; Foyle - single survey in 2007 and two surveys in 2008; sampling methods – seine netting & fyke nets.
- CSSEG fish monitoring 1999-2008 (Foyle); single annual survey; sampling method – beam trawling.

EQR boundaries:


	Bad	Poor	Moderate	Good	High
EQR	<0.2	≥0.2; < 0.4	≥0.4; <0.6	≥0.6; < 0.8	≥0.8

Results: Transitional Fish Classification Index (TFCI) – 2008 data

Metric Number	Metric	Score
1	Species composition	4
2	Presence of Indicator species	3
3	Species relative abundance	3
4	No. of taxa making up 90% of the abundance	3
5	No. of estuarine resident taxa	5
6	No. of estuarine-dependent marine taxa	5
7	Functional guild composition	5
8	No. of benthic invertebrate feeding taxa	5
9	No. of piscivorous taxa	5
10	Feeding guild composition	4
TFCI		42
EQR		0.80

Data confidence: Low

- Survey methodologies and protocols (High)
- Realistic type-specific reference conditions (Medium)
- Data QA (Medium)
- Statistical testing and intercalibration (Low)

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

Dissolved Oxygen

Dissolved oxygen (+ data confidence):	GOOD (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: 2006 to 2007
- 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*)
4.97	Good	06 to 07	**	10	29.2%

* Proportion of possible months for which data are available

**Data Quality: Medium

- Instruments subject to regular calibration checks and quality assurance programme.
- Medium = 5 – 10 (daily averages) x n (no. of assessment years in reporting cycle)

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Nutrients – Winter Dissolved Inorganic Nitrogen

Winter DIN (+ Data confidence):	Moderate (M)	
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- Data store:
\\marine on ehslis2k \Water Framework Directive\Nuala-Lesley Nutrients\DIN for Classification\Coastal Water
- Data Availability: 2003 to 2008, DIN & salinity (November to February)
- Data Availability (spot & continuous samples): spot

Winter DIN thresholds:

Area	Salinity range	DIN (uM) HIGH	DIN (uM) GOOD	DIN (uM) MODERATE
Transitional (at salinity 25)	<30	<20	≥20 ≤30	>30


Results:

Mean Winter DIN (uM) (normalised to salinity 25)	Winter DIN Daily average (n)	No. of samples (n)	No. of sites	Data Years	Data Quality	Status
45.83	24	42	9	2003 - 2008	Database not yet QA'd	Moderate

Data confidence: Medium

- Database not QA'd.

As this is a supporting element it cannot bring the classification down below MODERATE.

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ANNEX C: Classification of physico-chemical quality elements: Other specific Pollutants

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


Data Availability: 2007 WFD Dedicated monitoring. CSSEG data 2002-2007

Data confidence: Low until 2008 data incorporated.

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ANNEX VIII	Value						EQS ug/l	Ecological Status
	2002	2003	2004	2005	2006	2007		
111_tri	<0.04	<0.04	<0.04	<0.04	<0.04	<0.025	100ug/l	GH
112_tri	ND	ND	ND	ND	ND	<0.75	300ug/l	GH
24_D	ND	ND	ND	ND	ND	ND		
2_chloro	ND	ND	ND	ND	ND	ND		
4_chloro_3	ND	ND	ND	ND	ND	ND		
ammonia	112.37	102.25	101.83	101.24	ND	52.7	21ug/l	M
As	ND	0.825	0.55	0.6375	0.875	1.02	25ug/l	GH
Bentazone	ND	ND	ND	ND	ND	ND		
biphenyl	ND	ND	ND	ND	ND	ND		
boron	ND	ND	ND	ND	ND	ND		
chlorine	ND	ND	ND	ND	ND	ND		
chloronit	ND	ND	ND	ND	ND	ND		
chloronit_calc	ND	ND	ND	ND	ND	ND		
Cr	ND	ND	ND	ND	0.069	1.52	0.6 ug/l	M
Cu	1.185	1.0525	1.08	0.593	0.9565	1.11	5 ug/l	GH
Cy	ND	ND	ND	ND	ND	ND		
Cyfluthrin	ND	ND	ND	ND	ND	ND		
cyper	ND	ND	ND	ND	ND	ND		
diazinon	ND	ND	0.002	0.002	0.001	0.0015	0.01ug/l	GH
dichlorvos	ND	ND	ND	ND	0.001	<0.004	0.04ug/l	GH
dimethoate	ND	ND	ND	ND	ND	ND		
fenitrothion	ND	ND	ND	ND	0.003	0.002	0.01ug/l	GH
Fe	ND	ND	ND	ND	ND	ND		
linuron	ND	ND	ND	ND	ND	ND		
malathion	ND	ND	ND	ND	0.002	0.0025	0.02ug/l	GH
Mn	ND	ND	ND	ND	ND	ND		
mecoprop	ND	ND	ND	ND	ND	ND		
permethrin	ND	ND	ND	ND	ND	ND		
phenol	ND	ND	ND	ND	ND	<4	7.7ug/l	GH
toluene	ND	ND	ND	ND	ND	ND		
Vn	ND	ND	ND	ND	ND	ND		
xylenes	ND	ND	ND	ND	ND	ND		
Zn	3.6	5.813	2.9625	ND	2.63	5.23	40ug/l	GH

G	Good		Mean includes LOD data
F	Fail		Mean based on actual values
GH	Good or better and is normally treated as high		
M	Moderate		

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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

Alternative approach assessment (CIS guidance 2006): Good Ecological Potential

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ANNEX E: Chemical Status


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

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

Data Availability: 2007 WFD Dedicated Monitoring. CSSEG/NMMP monitoring data 2002-2007.


Data confidence: Low.

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ANNEX X	Value						EQS	Chemical Status	Ecological Status
	2002	2003	2004	2005	2006	2007			
12_Dichloro	<5	<5	<5	<5	<5	<2	10ug/l	G	GH
anthracene	ND	ND	ND	ND	ND	ND			
atrazine	ND	ND	ND	ND	0.005	0.003	0.6ug/l	G	GH
benzene	ND	ND	ND	ND	ND	ND			
benzo	ND	ND	ND	ND	ND	ND			
benzo_a	ND	ND	ND	ND	ND	ND			
Cadmium	0.025	0.0283	0.0238	0.0283	<0.04	<0.04	0.2ug/l	G	GH
Chlorfenvos	ND	ND	ND	ND	ND	ND			
Chloropyrifos	ND	ND	ND	ND	ND	0.001	0.03 ug/l	G	GH
Dichloro	ND	ND	ND	ND	ND	ND			
Diuron	ND	ND	ND	ND	ND	ND			
endosulphan	ND	ND	ND	ND	ND	ND			
floranthene	ND	ND	ND	ND	ND	ND			
hcb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.01ug/l	G	GH
hcbd	<0.002	<0.002	<0.002	ND	<0.002	<0.001	0.1ug/l	G	GH
Hch	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002ug/l	G	GH
hch_calc	ND	ND	ND	ND	ND	ND			
Hg	<0.05	0.01	0.005	0.01	ND	0.01	0.05ug/l	G	GH
Indeno	ND	ND	ND	ND	ND	ND			
ISP	ND	ND	ND	ND	ND	ND			
Napthalene	ND	ND	ND	ND	ND	ND			
Ni	0.685	0.835	0.5775	0.65	0.649	1.10	20ug/l	G	GH
Nonyl	ND	ND	ND	ND	ND	ND			
Octyl	ND	ND	ND	ND	ND	ND			
Pb	<5	<5	0.1143	0.097	0.037	0.99	7.2ug/l	G	GH
pcp	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.4ug/l	G	GH
simazine				0.008	0.003	0.005	1ug/l	G	GH
TBT	ND	ND	ND	ND	ND	ND			
TCB	ND	ND	ND	ND	ND	<0.15	0.4ug/l	G	GH
TCB_calc	ND	ND	ND	ND	ND	ND			
trichloromethane	ND	ND	ND	ND	ND	ND			
trifluralin	<0.002	<0.002	<0.002	<0.002	<0.002	ND	0.03ug/l	G	GH

G	Good
F	Fail
GH	Good or better and is normally treated as high
M	Moderate

	Mean includes LOD data
	Mean based on actual values

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ANNEX F: Protected Area Objectives


Water body	Protected area	Designation	Status	Reason for non-compliance
Foyle and Faughan	Foyle and Faughan	SAC	Assessment ongoing, River Foyle 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.

ANNEX G: Red list alien species

Crassostrea gigas is present in this water body (proposed red list alien).

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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
CIS	Common Implementation Strategy
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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the benefit of present and future generations.

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