

North Eastern River Basin Management Plan

Connswater Transitional Waterbody Classification

December 2009



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Northern Ireland
Environment
Agency


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

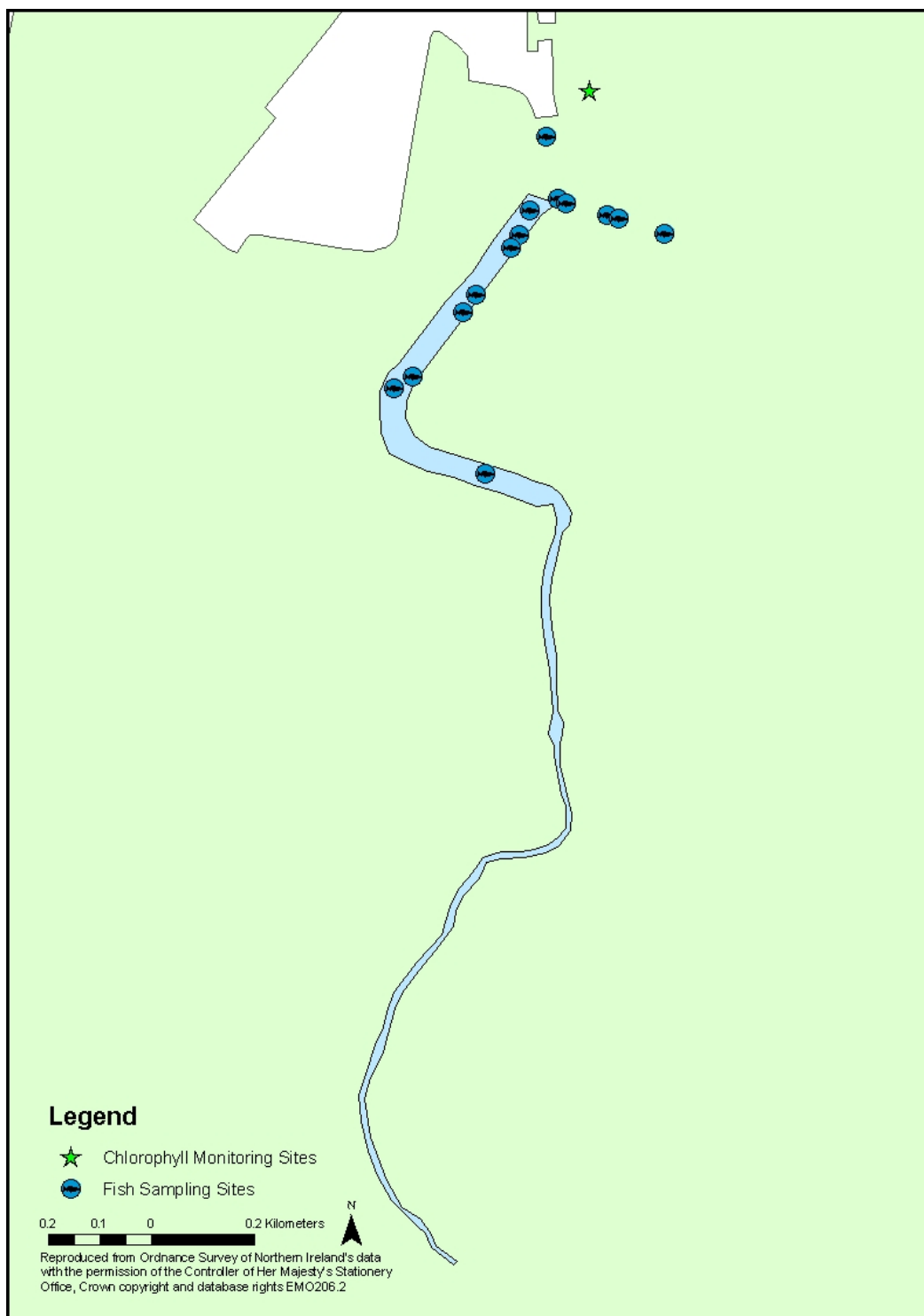
CONNSWATER (TRANSITIONAL WATER)

Water body Information


- River Basin District: North Eastern
- Water body type: Transitional Water 2 (TW2)
- Water body code: UKGBNI5NE100020
- Water body characteristics: Partly mixed/stratified, mesotidal, sand and mud, mesohaline
- Water body area: 0.07 km²
- Heavily Modified Water Body: Yes

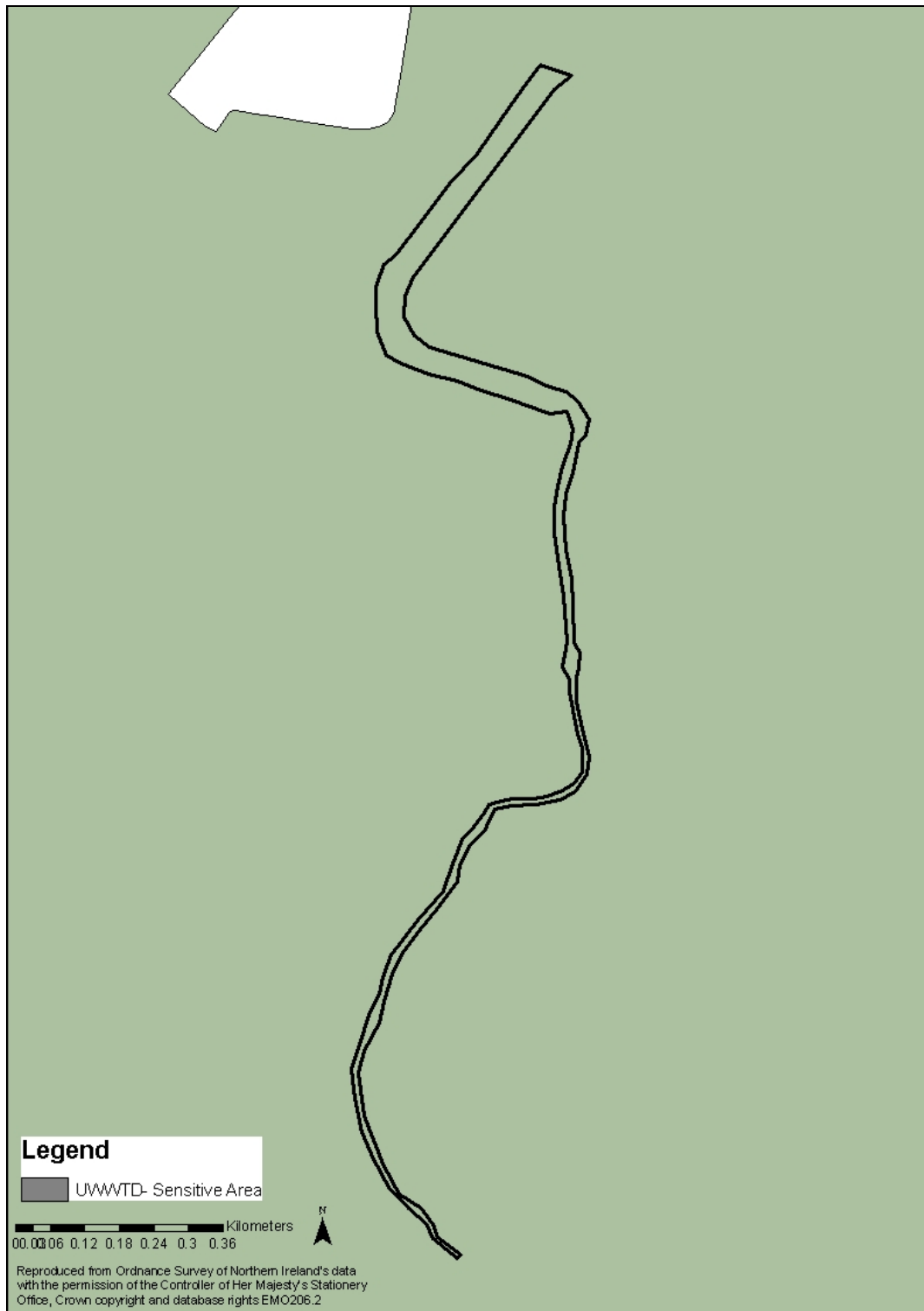
OVERALL WATERBODY CLASSIFICATION (PASS/FAIL):	MODERATE or worse FAIL	
<p>The marine DIN assessment for the waterbody cannot be completed due to low salinity (<5).</p> <p>The hydromorphological assessment for the water body is that it could not achieve Good Ecological Potential (GEP).</p> <p>In this round of classification HMWBs can only be classified as 'good EP or better' or 'moderate EP or worse'.</p>		

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

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Map illustrating protected areas within Connswater (Transitional Water).


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Parameters Requiring Assessment (for this exercise)

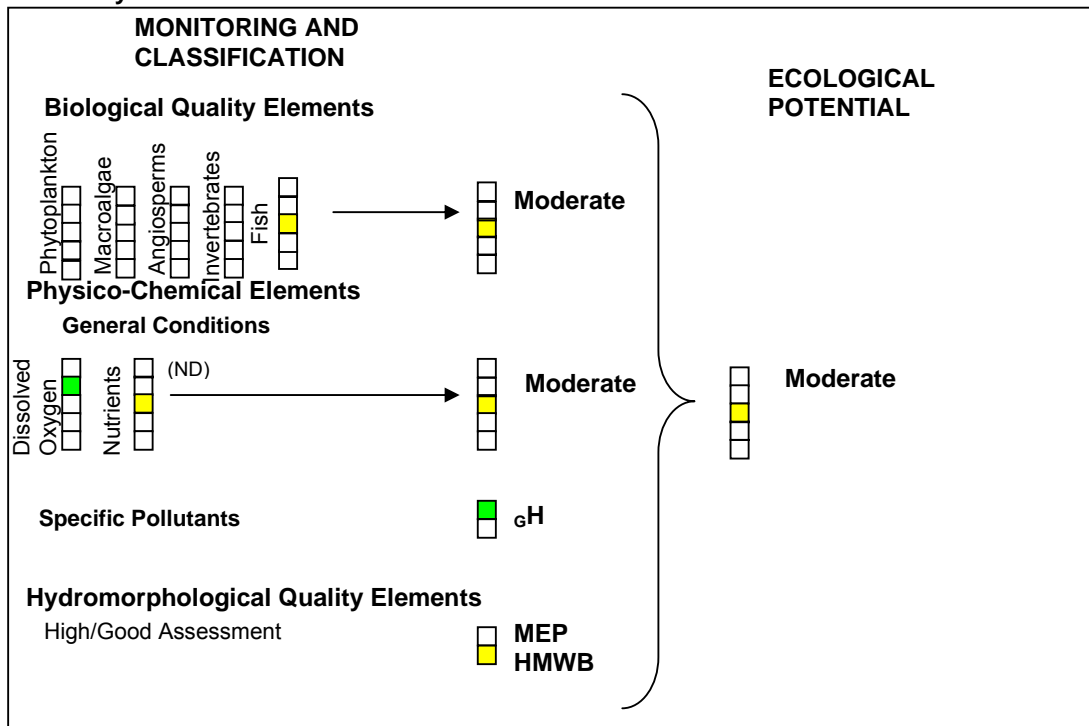
PARAMETERS TABLE

(Parameters for which classification systems are available and have been used in the first round of classification)

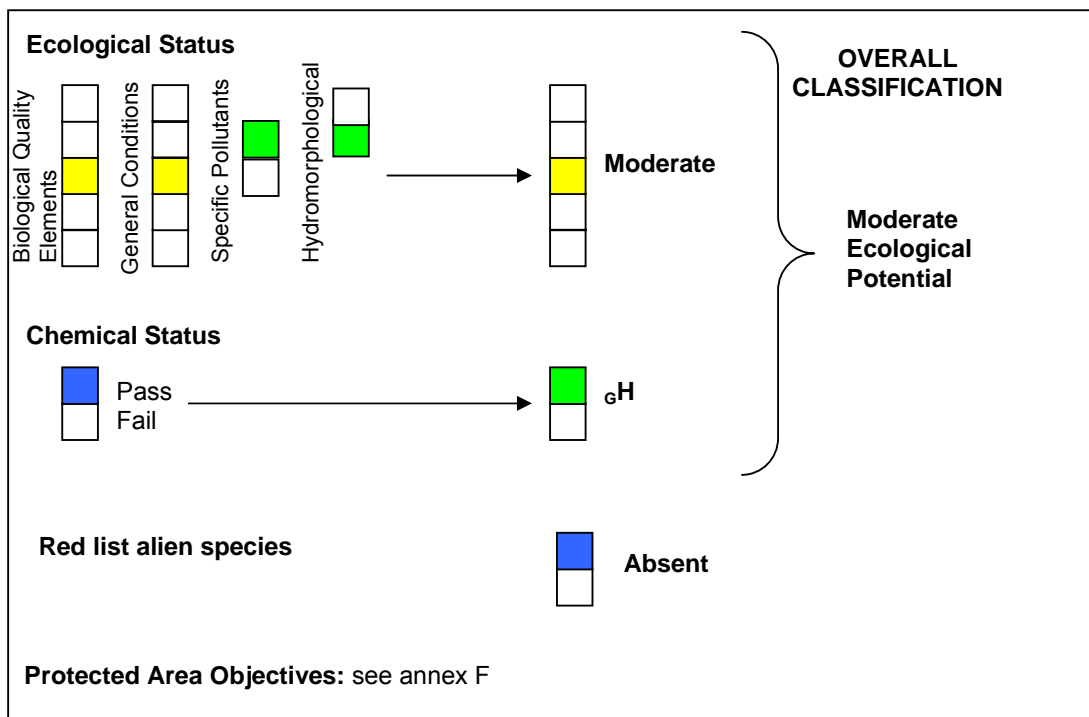
Ecological Quality Element			
Main Element	Sub-Element	Applied	Comment
Macroalgae (seaweed)	-Opportunistic Macroalgae	<input checked="" type="checkbox"/>	Tool not applicable
	-Reduced Species List	<input checked="" type="checkbox"/>	Tool not applicable
Angiosperms		<input checked="" type="checkbox"/>	Tool not applicable
Phytoplankton		<input checked="" type="checkbox"/>	Tool under development
Benthic Invertebrates	Infaunal Quality Index	<input checked="" type="checkbox"/>	Tool under development
	Imposex	<input checked="" type="checkbox"/>	Tool not applicable
Fish	Transitional Fish Classification Index	✓	
Physico-chemical (water)	General Conditions		
	-Dissolved Oxygen	✓	
	-Nutrients	<input checked="" type="checkbox"/>	Tool not applicable (salinity)
	Specific Pollutants (Annex VIII subs)	<input checked="" type="checkbox"/>	
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	<input checked="" type="checkbox"/>	

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Waterbody Classification



Ecological classification of Connswater (Transitional Water)



Overall classification of Connswater (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		2005-8	2 sites 11 samples
Fish	Spring	2008	
	Autumn	2008	
Physio-chemical			
Nutrients		TNA	
Salinity		2006-8	
Temperature		2006-8	
Dissolved Oxygen		2006-8	1
Specific polluting substances (Annex VIII)		2006-8	
Hydromorphology		2007	
Water chemistry (Annex X)			
Priority hazardous substances		2006-8	

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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 not developed

QE Angiosperms: – tool not applicable

QE: Benthic Invertebrates – tool under development for transitional waters

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QE: Transitional Fish – Connswater

QE transitional fish assessment (+ Data confidence):	Moderate (M)	
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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 2005-2008; one survey in 2005, two surveys in 2006, 2007, and 2008; sampling methods – seine netting & fyke nets.

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	3
2	Presence of Indicator species	1
3	Species relative abundance	3
4	No. of taxa making up 90% of the abundance	2
5	No. of estuarine resident taxa	3
6	No. of estuarine-dependent marine taxa	3
7	Functional guild composition	4
8	No. of benthic invertebrate feeding taxa	2
9	No. of piscivorous taxa	2
10	Feeding guild composition	4
TFCI		27
EQR		0.43

Data confidence: Medium

- Survey methodologies and protocols (Medium)
- 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 (L)	
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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 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*)
5.25	GOOD	06 to 08	**	21	54.5%


* 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 - NRegs (+ Data confidence):	MODERATE (ND)	
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ANNEX C: Classification of physico-chemical quality elements: Other specific Pollutants

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


Data Availability: 2007 WFD Dedicated monitoring data only

Data confidence: Low

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ANNEX VIII	Value						EQS ug/l	Ecological Status
	2002	2003	2004	2005	2006	2007		
111_tri								
112_tri								
24_D								
2_chloro								
4_chloro_3								
ammonia								
As								
Bentazone								
bipheyl								
boron								
chlorine								
chloronit								
chloronit_calc								
Cr								
Cu								
Cy								
Cyfluthrin								
cyper								
diazinon						0.001	0.01	GH
dichlorvos								
dimethoate								
fenitrothion						0.0018	0.01	GH
Fe								
linuron								
malathion						0.0023	0.02	GH
Mn								
mecoprop								
permethrin								
phenol						<4	7.7	GH
toluene								
Vn								
xlenes								
Zn								

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	HMWB - MEP	
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Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

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

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ANNEX E: Chemical Status

Specific pollutants assessment (+data confidence)	gH (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
Data confidence: Low

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ANNEX X	Value						EQS ug/l	Chemical Status	Ecological Status
	2002	2003	2004	2005	2006	2007			
12_Dichloro									
anthracene									
atrazine						0.003	0.6	G	GH
benzene									
benzo									
benzo_a									
Cadmium									
Chlorfenvos									
Chloropyrifos						0.001	0.03	G	GH
Dichloro									
Diuron									
endosulphan									
floranthene									
hcb									
hcbd									
hch									
hch_calc									
Hg									
Indeno									
ISP									
Napthalene									
Ni									
Nonyl									
Octyl									
Pb									
pcp									
simazine						0.011	1	G	GH
TBT									
TCB									
TCB_calc									
trichloromethane									
trifluralin									

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

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
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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