

North Western River Basin Management Plan

# Roe Estuary Classification

December 2009




An Agency within the Department of the  
**Environment**  
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[www.ni-environment.gov.uk](http://www.ni-environment.gov.uk) Agency

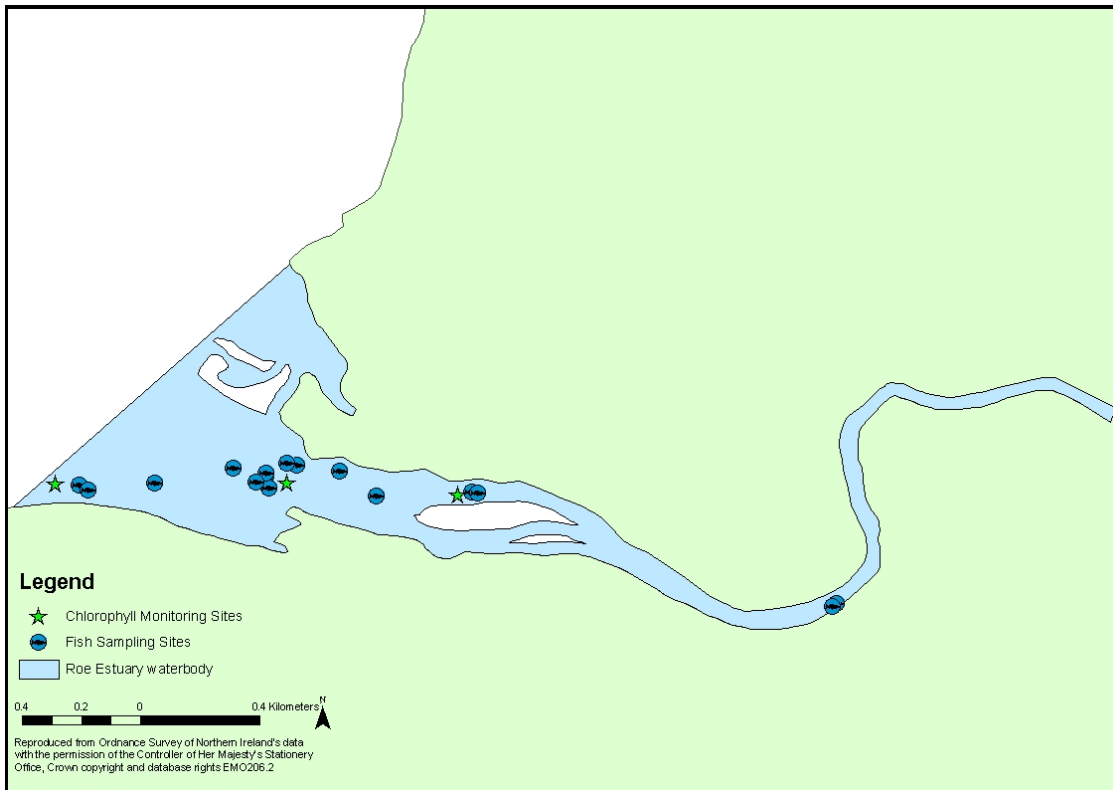
<b>RIVER BASIN MANAGEMENT PLAN</b>	
	<b>WFD TRANSITIONAL WATER BODY CLASSIFICATION</b> <b>Roe Estuary</b>
	Version Date: 22/12/09
	<b>MARINE ASSESSMENT AND LICENSING TEAM</b>

**ROE ESTUARY (TRANSITIONAL WATER)**


Water body Information

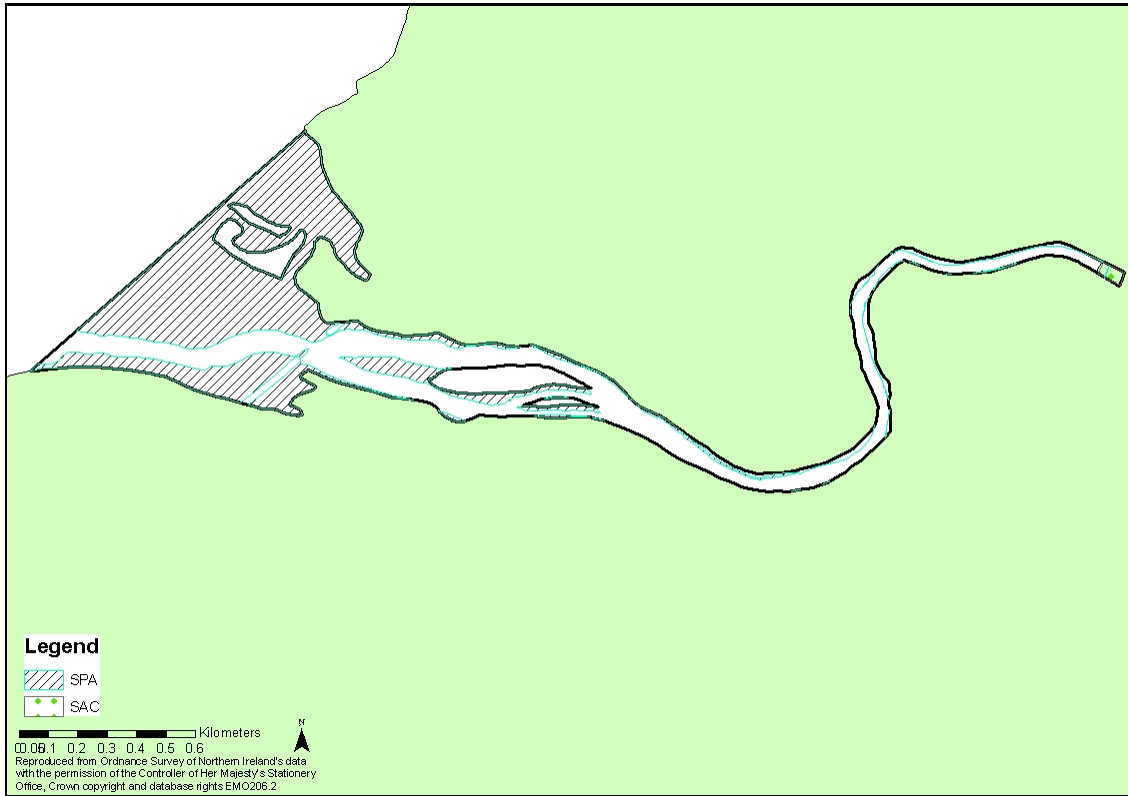
- River Basin District: North Eastern
- Water body type: Transitional Water 2 (TW2)
- Water body Code: UKGBNI5NW250020
- Water body characteristics: Partly mixed/stratified, mesotidal, sand and mud, mesohaline
- Water body area: 2.56 km<sup>2</sup>
- Heavily Modified Water Body: No

<b>OVERALL WATERBODY CLASSIFICATION</b>	<b>(H/G/M/P/B): (PASS/FAIL):</b>	<b>MODERATE FAIL</b>	
Transitional waters are recognised across Europe as being difficult to classify as each one is unique. Transitional environments are naturally stressed systems with high spatial and temporal variability.			




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

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Map of protected areas within Roe Estuary (Transitional Water).

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## Parameters Requiring Assessment

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




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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
<b>Ecological</b>		
Phytoplankton - 90 %ile	2004-7	3 sites 7 samples
Fish	Spring	2008
	Autumn	2008
<b>Physio-chemical</b>		
Nutrients	TNA	
Salinity	2006-7	
Temperature	2006-7	
Dissolved Oxygen	2006-7	
Specific polluting substances (Annex VIII)	ND	
<b>Hydromorphology</b>	2007	
<b>Water chemistry (Annex X)</b>		
Priority hazardous substances	ND	

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	<table border="1"> <tr> <td><b>Version Date:</b></td> <td>22/12/09</td> </tr> </table>	<b>Version Date:</b>	22/12/09
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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 – Roe**

<b>Overall transitional fish assessment (+ Data confidence):</b>	<b>MODERATE (L)</b>	
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Classification tools: Transitional Fish Classification Index (TFCI)

Data store: 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	2
3	Species relative abundance	3
4	No. of taxa making up 90% of the abundance	3
5	No. of estuarine resident taxa	3
6	No. of estuarine-dependent marine taxa	2
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	28
	EQR	0.45

Data confidence: Low

- 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

<b>Dissolved oxygen (+ data confidence):</b>	<b>Good (L)</b>	
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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: 2006/7
- Data Availability (spot & continuous samples): Spot. Physico-chemical data collected in conjunction with fish sampling programme at fish sampling locations.

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*)
5.22	GOOD	2006/7	**	1	16.6%

\* 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: GOOD (ND)


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

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


Data availability : No data

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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


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**ANNEX E: Chemical Status**

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

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

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#### ANNEX F: Protected Area Objectives

Water body	Protected area	Designation	Status	Reason for non-compliance
Roe Estuary	Lough Foyle	SPA	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

None reported for this water body.

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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 10</b>	Annex 10 Priority Hazardous Substances
<b>Annex 8</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

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