

draft RIVER BASIN MONITORING PLAN

CLASSIFICATION PAMPHLET

Transitional Waterbody Quoile Pondage

22nd December 2008

QUOILE PONDAGE (TRANSITIONAL WATER)

Water body Information

- River Basin District: NE
- Water body type: Transitional Water 2 (TW2)
- Water body characteristics: Partly mixed/stratified, mesotidal, sand and mud, mesohaline
- Water body area: 0.59 km²
- Heavily Modified Water Body: Yes

WATERBODY CLASSIFICATION: MODERATE (FAIL) – limited data.

Classification based on AFBI continuous recording of dissolved oxygen.

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. Tools for assessment are not well developed for this classification. However additional tools may be available for March 2009.

Quoile Pondage is an unusual system as it has a flood defence barrage, built in the 1950s which results in heavily modified status. The seaward barrage means the pondage area does not behave as a saline or freshwater system and monitoring techniques are currently under review. In 2001 it was classed as a sensitive area under the Urban Waste Water Treatment Directive, due to elevated nutrient and chlorophyll concentrations with known depressions of dissolved oxygen, particularly in saline bottom waters, and associated occasional fish kills.

As this water body is heavily modified, ecological potential has to be determined. This stage has not yet been completed, and this classification is based on ecological status.

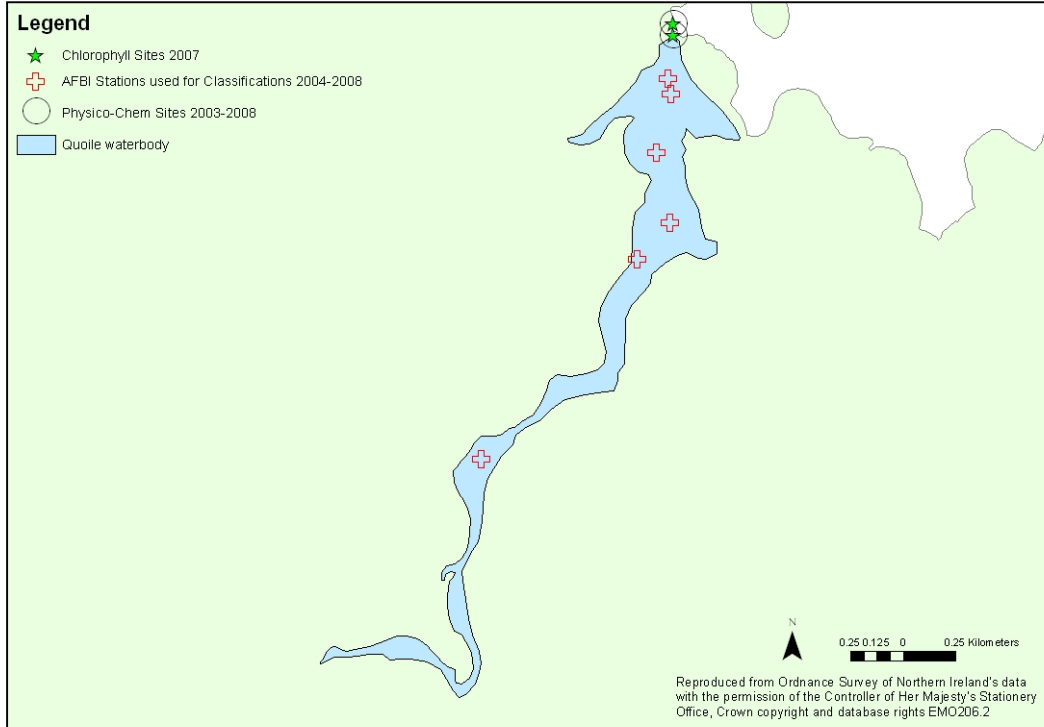
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WFD TRANSITIONAL WATER BODY CLASSIFICATION
Quoile Pondage

Version Date: 22/12/08

MARINE ASSESSMENT AND LICENSING TEAM



Pressures and monitoring points (historic and planned) within Quoile Pondage (Transitional Water).

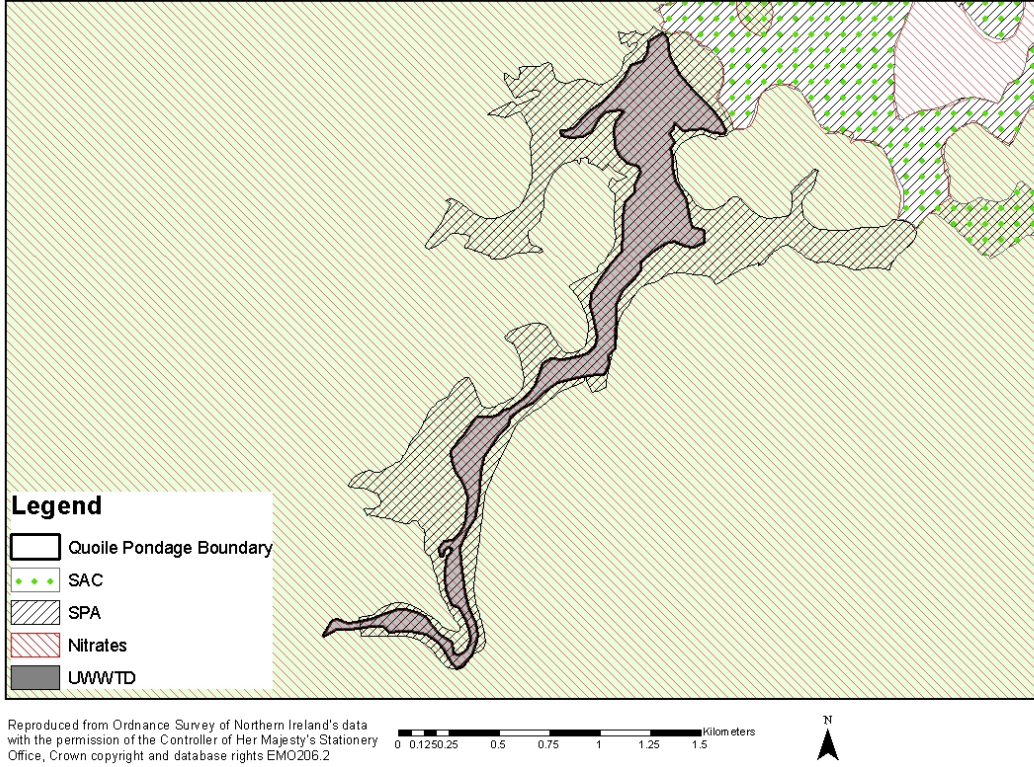
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Protected areas within Quoile Pondage (Transitional Water).

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 |
| Plants | Macro Algae | | |
| | -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 | ✓ | 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 | <input checked="" type="checkbox"/> | No data available |
| Physico-Chemical | General Conditions | | |
| | -Dissolved Oxygen | ✓ | |
| | -Nutrients | <input checked="" type="checkbox"/> | Tool not applicable (salinity) |
| | 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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First River Basin Cycle (2004 – 2008) – WFD specific data

Monitoring Level:

Surveillance

Sampling frequency for each quality element.

| Quality Elements | Surveillance | | |
|---|---------------------------|------------------------|-----------------------|
| | Year (if 1 in 3 years) | Frequency (if p.a.) | No. of sites |
| Ecological | | | |
| Phytoplankton - 90 %ile | 2004-7 | | 9 sites 73 samples |
| Macroalgae | Fucoid extent | TUD | |
| | MBT | TNA | |
| Angiosperms | Seagrass | TNA | |
| | Saltmarsh | TUD | |
| Benthic Invertebrates | Infaunal Quality Index | TUD | |
| Fish | | ND | |
| | | ND | |
| Physio-chemical | | | |
| Nutrients | TNA | | |
| Salinity | | | |
| Temperature | | | |
| Dissolved Oxygen | 2002-3, 2006-8 | | 6 |
| Suspended Particulate Matter | | | |
| Light (Kd) | | | |
| Other polluting substances (Annex VIII) | Yes | | |
| Hydromorphology | Yes | | |
| Water chemistry (Annex X) | | | |
| Priority hazardous substances | Yes | | |

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QUOILE PONDAGE

ANNEX A: Classification of Biological Quality Elements


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

QE Macrophytes: – tool not applicable/ tool under development

QE Angiosperms: – tool not applicable

QE: Benthic Invertebrates – tool under development for transitional waters

QE: Transitional Fish – no data available

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

Dissolved Oxygen

ADDITIONAL DATA TO BE ADDED!

Waterbody DO assessment:

Good (M)

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:** 02,03 06,07,08
- **Data Availability (spot & continuous samples):**
Spot

• **Thresholds:**

| WFD Status | Marine 5%ile | Objectives |
|------------|----------------|--|
| HIGH | ≥5.7 mg/L | All life stages of salmonoids and transitional fish |
| GOOD | ≥4.0 <5.7 mg/L | Presence of salmonoids and transitional fish |
| MODERATE | ≥2.4 <4.0 mg/L | Most life stages of non-salmonoid adults |
| POOR | ≥1.6 <2.4 mg/L | Presence of non-salmonoids, poor survival of salmonoids |
| BAD | <1.6 mg/L | No salmonoids 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*) |
|------------------|--------|----------------|--------------|-----------------------|--|
| 5.09 | GOOD | 02,03,06,07,08 | ** | 19 | 31.6% |

* Proportion of possible months for which data are available

****Data Quality**

Medium

- Instruments subject to regular calibration checks and quality assurance programme, but databases not QA'd. Once databases checked and sampling procedures gain UKAS accreditation, we should be able to raise the confidence.
- Medium = 5 – 10 (daily averages) x n (no. of assessment years in reporting cycle)

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Nutrients – Winter DIN

| | |
|--|-----------|
| Winter DIN assessment (+Data confidence) | GOOD (ND) |
| The data collected for this assessment was outside the current salinity limits of this tool. | |


- Classification tools:
- Data store:
- Data Availability:
- Data Availability (spot & continuous samples):
- N regulation thresholds:

| Area | Salinity range | DIN (uM) Winter mean H/G | DIN (uM) Winter mean G/M |
|-------------------------------|----------------|--------------------------------|--------------------------------|
| Transitional (at salinity 25) | <30 | 20 | 30 |

Results:

| Mean Winter DIN (uM) (normalised to salinity 25) | 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: Other specific Pollutants

Overall specific pollutants assessment cH

| | |
|---------------------------------------|------|
| Annex VIII: Overall Compliance | Good |
| Annex VIII: Pass/Fail | Good |

Classification tools: Comparison with EQS levels.

Data Availability: 2007 WFD Dedicated monitoring data only.

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 | ND | ND | ND | ND | ND | <0.025 | 100 | GH |
| 112 tri | ND | ND | ND | ND | ND | <0.75 | 300 | 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 | ND | ND | ND | ND | ND | ND | | |
| As | ND | ND | ND | ND | ND | ND | | |
| 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 | ND | ND | | |
| Cu | ND | ND | ND | ND | ND | ND | | |
| Cy | ND | ND | ND | ND | ND | ND | | |
| Cyfluthrin | ND | ND | ND | ND | ND | ND | | |
| cyper | ND | ND | ND | ND | ND | ND | | |
| diazinon | ND | ND | ND | ND | ND | ND | | |
| dichlorvos | ND | ND | ND | ND | ND | ND | | |
| dimethoate | ND | ND | ND | ND | ND | ND | | |
| fenitrothion | ND | ND | ND | ND | ND | ND | | |
| Fe | ND | ND | ND | ND | ND | ND | | |
| linuron | ND | ND | ND | ND | ND | ND | | |
| malathion | ND | ND | ND | ND | ND | ND | | |
| 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 | ND | | |
| toluene | ND | ND | ND | ND | ND | ND | | |
| Vn | ND | ND | ND | ND | ND | ND | | |
| xylenes | ND | ND | ND | ND | ND | ND | | |
| Zn | ND | ND | ND | ND | ND | ND | | |

| | |
|-----------|--|
| 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 D: Hydromorphological quality elements

Overall hydromorphology assessment: Heavily Modified Water Body (HMWB)

Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

| | | | |
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ANNEX E: Chemical Status

| | |
|--|-------------|
| Overall water chemistry assessment: | PASS |
|--|-------------|

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

Classification tools: Comparison with EQS levels

Data Availability: 2007 WFD Dedicated monitoring data only.

Data confidence: Low until 2008 data incorporated.

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Quoile

| ANNEX X | Value | | | | | | EQS | Chemical Status | Ecological Status |
|------------------|-------|------|------|------|------|-------|-----|-----------------|-------------------|
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | | | |
| 12_Dichloro | ND | ND | ND | ND | ND | <2 | 10 | G | GH |
| anthracene | ND | ND | ND | ND | ND | ND | | | |
| atrazine | ND | ND | ND | ND | ND | ND | | | |
| benzene | ND | ND | ND | ND | ND | ND | | | |
| benzo | ND | ND | ND | ND | ND | ND | | | |
| benzo a | ND | ND | ND | ND | ND | ND | | | |
| Cadmium | ND | ND | ND | ND | ND | ND | | | |
| Chlorfenvos | ND | ND | ND | ND | ND | ND | | | |
| Chlorpyr | ND | ND | ND | ND | ND | ND | | | |
| 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 | ND | ND | ND | ND | ND | ND | | | |
| hcbd | ND | ND | ND | ND | ND | <0.01 | 0.1 | G | GH |
| hch | ND | ND | ND | ND | ND | ND | | | |
| hch calc | ND | ND | ND | ND | ND | ND | | | |
| Hg | ND | ND | ND | ND | ND | ND | | | |
| Indeno | ND | ND | ND | ND | ND | ND | | | |
| ISP | ND | ND | ND | ND | ND | ND | | | |
| Napthalene | ND | ND | ND | ND | ND | ND | | | |
| Ni | ND | ND | ND | ND | ND | ND | | | |
| Nonyl | ND | ND | ND | ND | ND | ND | | | |
| Octyl | ND | ND | ND | ND | ND | ND | | | |
| Pb | ND | ND | ND | ND | ND | ND | | | |
| pcp | ND | ND | ND | ND | ND | ND | | | |
| simazine | ND | ND | ND | ND | ND | ND | | | |
| TBT | ND | ND | ND | ND | ND | ND | | | |
| TCB | ND | ND | ND | ND | ND | <0.15 | 0.4 | G | GH |
| TCB calc | ND | ND | ND | ND | ND | ND | | | |
| trichloromethane | ND | ND | ND | ND | ND | ND | | | |
| trifluralin | ND | ND | ND | ND | ND | ND | | | |

| | |
|-----------|--|
| 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 |
|----------------|------------------|-------------|----------------|---------------------------|
| Quoile Pondage | Strangford Lough | SPA | Favourable | |
| Quoile Pondage | Quoile Pondage | UWWTD | Sensitive area | |

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.

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 |