

Neagh Bann River Basin Management Plan

Bann Estuary Classification

December 2009



An Agency within the Department of the
Environment
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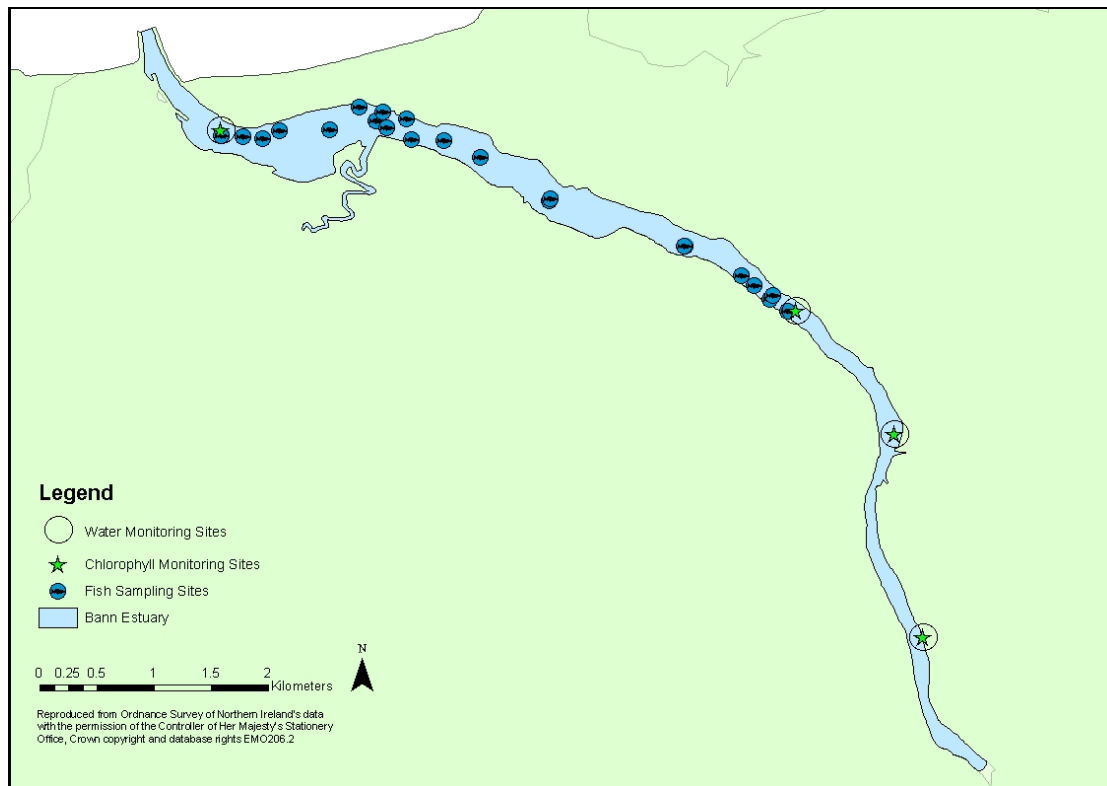
Northern Ireland
Environment
Agency

BANN ESTUARY (TRANSITIONAL WATER)

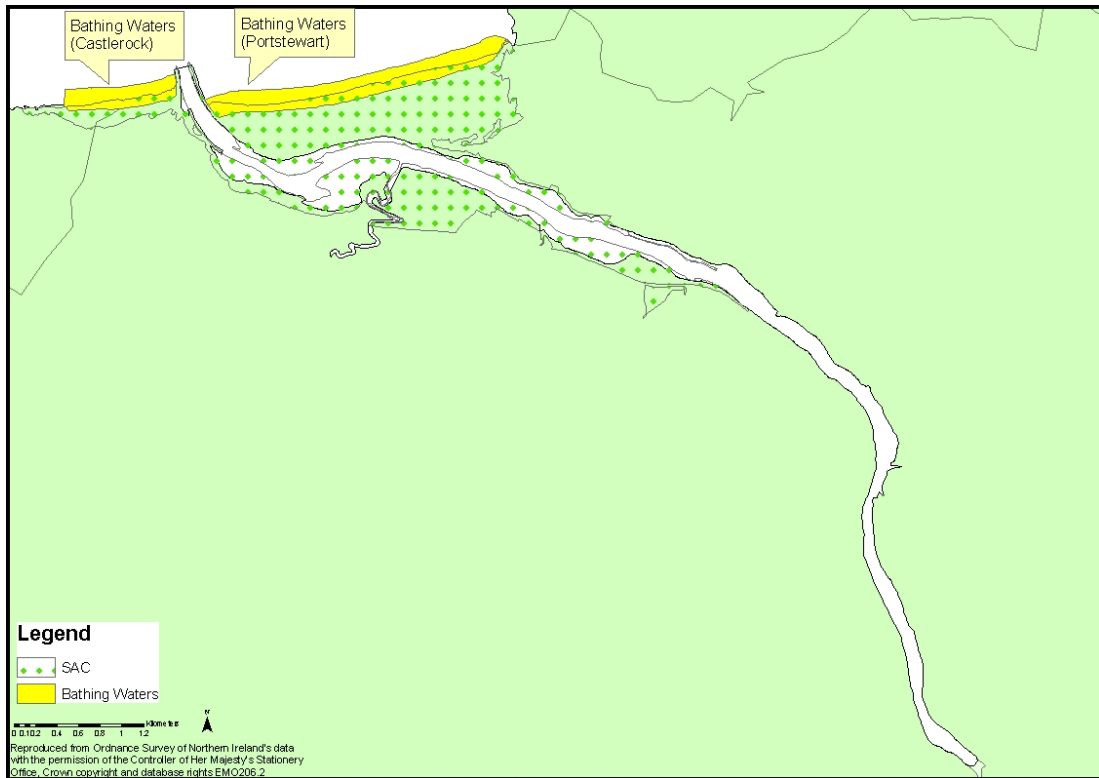
Water body Information

- River Basin District: North Eastern
- Water body type: Transitional Water 2 (TW2)
- Water body code: UKGBNI5NB10010
- Water body characteristics: Partly mixed/stratified, mesotidal, sand and mud, mesohaline
- Water body area: 2.50 km²
- Heavily Modified Water Body: Yes

OVERALL WATERBODY CLASSIFICATION	MODERATE or worse	
(PASS/FAIL):	FAIL	
<p>The marine DIN assessment for the waterbody cannot be completed due to low salinity (<5 psu). The waterbody has been classified as MODERATE ECOLOGICAL POTENTIAL on previous eutrophication status of adjacent upstream water body.</p> <p>The hydromorphological assessment for the water body is that it could meet Good Ecological Potential (GEP). As the biological and supporting elements do not pass the assessment it does not reach GEP at this time.</p> <p>In this round of classification HMWBs can only be classified as 'good EP or better' or 'moderate EP or worse'.</p>		



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



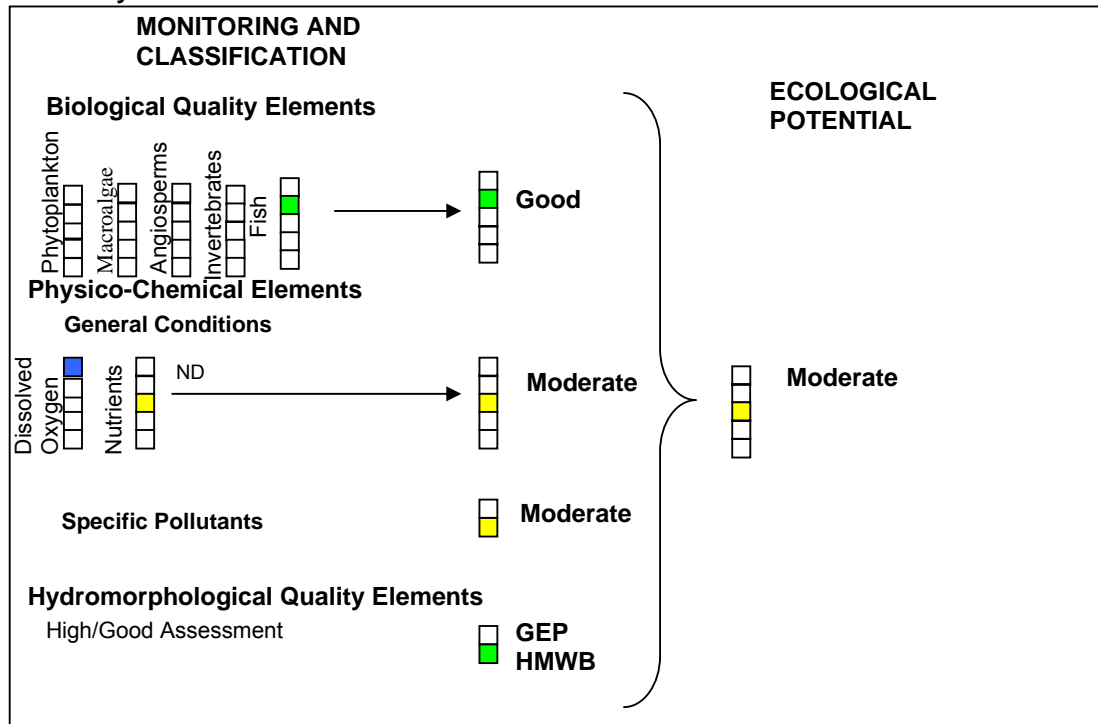
Map of protected areas within Bann Estuary (Transitional Water).

PARAMETERS TABLE

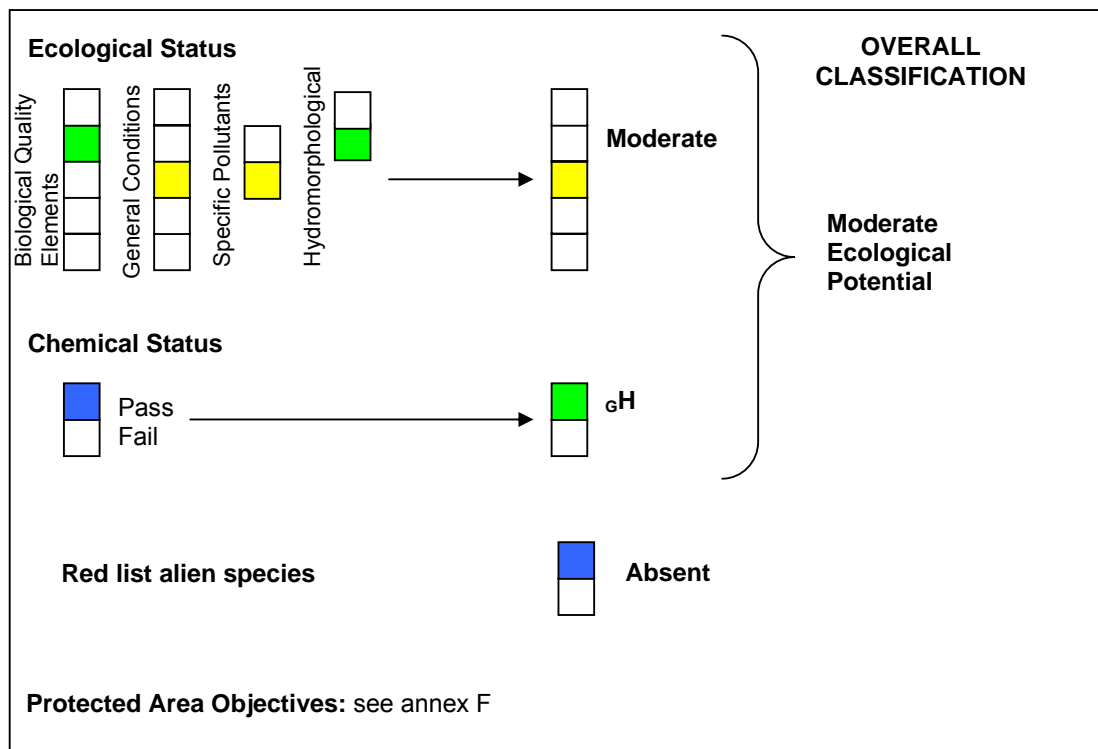
Parameters for which classification systems are available and have been used in the first round of classification. Some biological assessment tools are not suitable for all water bodies due to habitat type.

Ecological Quality Element			
<i>Main Element</i>	<i>Sub-Element</i>	<i>Applied</i>	<i>Comment</i>
Fish	Transitional Fish Classification Index	✓	
Physico-Chemical (waters)	General Conditions		
	-Dissolved Oxygen	✓	
	-Nutrients	✓	Tool not applicable (salinity) – expert judgement
	Specific Pollutants (Annex VIII subs)	✓	
Hydromorphological Quality Elements	SEPA Rapid Designation	✓	
	TraC MIMAS	✓	
Chemical Status			
Priority Hazardous Substances (Annex X)	Annex X Substances	✓	

Waterbody Classification



Ecological classification of Bann Estuary (Transitional Water).



Overall classification of Bann Estuary (Transitional Water).

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
Fish	Spring	2008	
	Autumn	2008	
Physio-chemical			
Nutrients		TNA	
Salinity		2000-8	
Temperature		2000-8	
Dissolved Oxygen		2000-8	23 daily averages
Specific polluting substances (Annex VIII)		2005-2007	
Hydromorphology		2007	
Water chemistry (Annex X)		2005-2007	
Priority hazardous substances		2005-2007	

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

QE: Transitional Fish – Bann

QE transitional fish assessment (+ Data confidence):	GOOD (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 2005-2007; one survey in 2005, two surveys in 2006, 2007 and 2008; sampling methods – seine netting & fyke nets.
- CSSEG fish monitoring 1993-2008; between one and three surveys per year; 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	2
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	4
7	Functional guild composition	5
8	No. of benthic invertebrate feeding taxa	3
9	No. of piscivorous taxa	5
10	Feeding guild composition	4
TFCI		35
EQR		0.63

Data confidence: Medium

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

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

Dissolved Oxygen

Dissolved oxygen (+ data confidence):	HIGH (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: 2000 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*)
7.74	HIGH	00/08	**	23	18.3%

* 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.
- Medium = 5 – 10 (daily averages) x n (no. of assessment years in reporting cycle)

Nutrients – Winter DIN

Winter DIN - NRegs (+ Data confidence):	MODERATE (ND)	
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The marine DIN assessment for the waterbody cannot be completed due to low salinity (<5). The waterbody has been classified as MODERATE ECOLOGICAL POTENTIAL on previous eutrophication status of adjacent upstream water body.

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:

2005-2007 CSSEG Monitoring data.
2007 WFD Dedicated monitoring data.

Data confidence: Low

ANNEX VIII	2005	2006	2007	EQS ug/l	Ecological Status
111_tri	ND	ND	<0.025	100	GH
112_tri	ND	ND	<0.75	300	GH
24_D	ND	ND	ND		
2_chloro	ND	ND	ND		
4_chloro_3	ND	ND	ND		
ammonia	121.68	ND	28.52	21	M
As	0.3375	0.6	<1	25	GH
Bentazone	ND	ND	ND		
biphenyl	ND	ND	ND		
boron	ND	ND	ND		
chlorine	ND	ND	ND		
chloronit	ND	ND	ND		
chloronit_calc	ND	ND	ND		
Cr	ND	0.3546	0.58	0.6	GH
Cu	1.1375	1.4025	1.865	5	GH
Cy	ND	ND	ND		
Cyfluthrin	ND	ND	ND		
cyper	ND	ND	ND		
diazinon	0.004	0.001	0.0012	0.01	GH
dichlorvos	<0.001	0.001	<0.004	0.04	GH
dimethoate	ND	ND	ND		
fenitrothion	<0.005	0.003	0.002	0.01	GH
Fe	ND	ND	ND		
linuron	ND	ND	ND		
malathion	<0.005	0.002	0.0025	0.02	GH
Mn	ND	ND	ND		
mecoprop	ND	ND	ND		
permethrin	ND	ND	ND		
phenol	ND	ND	<4	7.7	GH
toluene	ND	ND	ND		
Vn	ND	ND	ND		
xylenes	ND	ND	ND		
Zn	ND	3.23	5.12	40	GH

G
F
GH
M

	Mean includes LOD data
	Mean based on actual values

ANNEX D: Hydromorphological quality elements


Overall hydromorphology assessment	HMWB	
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Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

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

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:
2005-2007 CSSEG Data
2007 WFD Dedicated Monitoring
Data confidence: Low

				Bann Estuary					
ANNEX X	Value						EQS	Chemical Status	Ecological Status
	2002	2003	2004	2005	2006	2007	ug/l		
12_Dichloro	ND	ND	ND	ND	ND	<2	10	G	GH
anthracene	ND	ND	ND	ND	ND	ND			
atrazine	ND	ND	ND	0.022	0.011	0.01	0.6	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	ND	ND	ND	<0.035	0.04	0.0255	0.2	G	GH
Chlorfenvos	ND	ND	ND	ND	ND	ND			
Chloropyrifos	ND	ND	ND	ND	ND	0.0013	0.03	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	ND	ND	ND	<0.001	<0.001	<0.001	0.01	G	GH
hcbd	ND	ND	ND	ND	<0.002	ND	0.1	G	GH
hch	ND	ND	ND	<0.001	<0.001	<0.001	0.002	G	GH
hch_calc	ND	ND	ND	ND	ND	ND			
Hg	ND	ND	ND	0.013	ND	0.01	0.05	G	GH
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	1.13	1.6775	2.0925	20	G	GH
Nonyl	ND	ND	ND	ND	ND	ND			
Octyl	ND	ND	ND	ND	ND	ND			
Pb	ND	ND	ND	0.0865	0.323	0.467	7.2	G	GH
pcp	ND	ND	ND	<0.04	<0.04	<0.04	0.4	G	GH
simazine	ND	ND	ND	0.0056	0.0049	0.007	1	G	GH
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	<0.002	<0.002	<0.002	0.03	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

ANNEX F: Protected Area Objectives

Water body	Protected area	Designation	Status	Reason for non-compliance
Bann Estuary	Bann Estuary	Saltmarsh	Unfavourable	Vegetation composition and structure - sward height

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
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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Our aim is to protect, conserve and promote
the natural environment and built heritage for
the benefit of present and future generations.

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