RIVER BASIN MONITORING PLAN

WATER FRAMEWORK DIRECTIVE 2ND CYCLE CLASSIFICATION SUMMARY

2015-2021

Coastal Water Body – Dundrum Bay Inner

31/05/2015

An Agency within the Department of the Environment
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NIEA Northern Ireland Environment Agency
www.doeni.gov.uk/niea

Department of the Environment www.doeni.gov.uk Marine Environment Division	WFD COASTAL WATER BODY CLASSIFICATION Dundrum Bay Inner	
	Version Date:	31/05/2015
	MONITORING AND ASSESSMENT TEAM	

DUNDRUM BAY INNER

Water body Information

- River Basin District: North Eastern
- Water Body Code: UKGBNI6NE160
- Water body type: CW8
- Water body characteristics: Euhaline, mesotidal, sheltered
- Water body area: 3.92 km^2
- Heavily Modified Water Body: No
- 2021 Classification Objective: Moderate

2015 CLASSIFICATION	**MODERATE**	***PASS/FAIL 2021 OBJECTIVE***	**PASS**

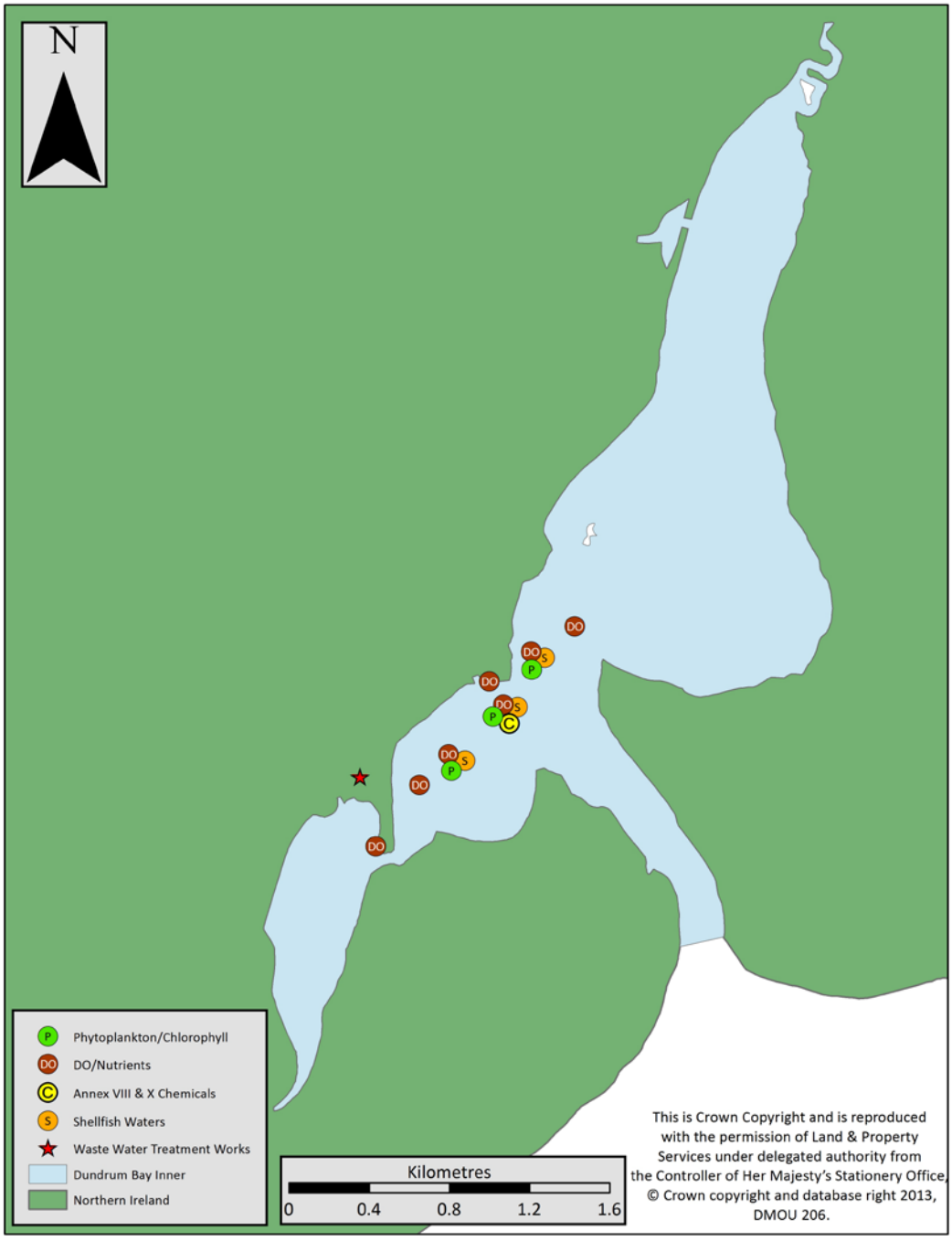


Figure 1: Waste water treatment pressures and monitoring points within Dundrum Bay Inner (Coastal Water).

Table 1: Parameters for which classification systems are available and have been used in this 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***
Phytoplankton	Biomass	✓	
	Elevated Taxa Count Index	✓	
Macroalgae (Seaweed)	Opportunistic Macroalgae	✓	
	Reduced Species List	☒	Tool Not Applicable
Angiosperms	Seagrass	☒	
	Saltmarsh	☒	
Benthic Invertebrates	Infaunal Quality Index	✓	
	Imposex	☒	Tool Not Applicable
Physico-Chemical (Water)	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	✓	

Table 2: Sampling frequency for each quality element

Monitoring Level: Surveillance

Quality Elements		Data year contributing to classification	No. of sites/samples
Biological			
Phytoplankton		2009-2014	68 samples 3 sites
Macroalgae	Macroalgal Blooming Tool	2009, 2013	n/a*
Angiosperms	Seagrass	2012-2013	n/a*
Physico-chemical			
Nutrients		2010-2014	46 samples 3 sites
Dissolved Oxygen (DO)		2010-2015	166 daily averages
Other polluting substances (Annex VIII)		2010-2014	3
Hydromorphology		2007	
Water chemistry			
(Annex X)		2010-2014	3

*Assessment is made at a whole water body level

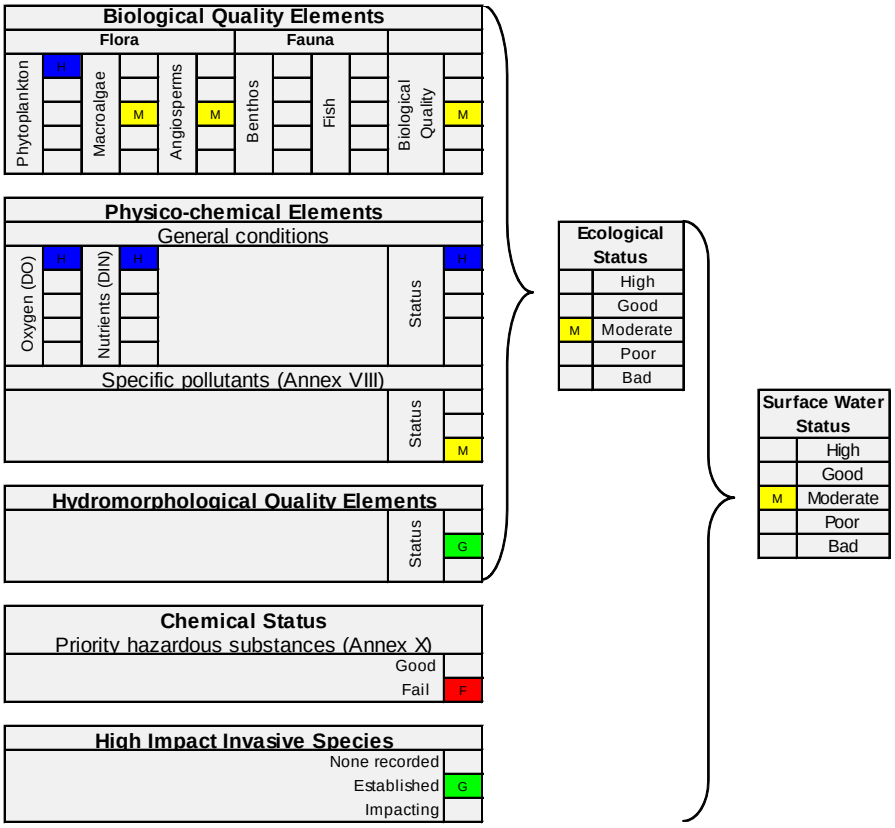


Figure 2: Overall classification of Dundrum Bay Inner (Coastal Water).

ANNEX A: Classification of Biological Quality Elements

QE: Phytoplankton

QE phytoplankton assessment (+ Data confidence):	HIGH (100%)	

ANNEX A: Classification of Biological Quality Elements

Classification tools:
1. Chlorophyll biomass index (90%ile)
2. Elevated taxa count index – not applied.

Data store (classification): M:\Projects 14\Phycology 2014\MM14-14 Phytoplankton and Chlorophyll\classification 15\Coastal data\DUNDRUM INNER 2015.XLS

M:\Projects 14\Phycology 2014\MM14-14 Phytoplankton and Chlorophyll\classification 15\Coastal data\Dundrum Bay Inner 90th Percentile.xls
Data Availability (spot & continuous samples):
Phytoplankton =NA
Chl = spot (*2009-2014) NIEA/MD*

1. Chlorophyll Biomass Index - 90%ile (Chl μg l^{-1})
(Growing Season 1st Mar – 31st Oct)

Waterbody Chl. biomass assessment ***HIGH (99.3%)***

Thresholds:

Water Ref. Area		Status				
		High	Good	Moderate	Poor	Bad
North/Irish Sea	Chl μg l^{-1}	<5	5-10	10-15	15-20	>20
	EQR	0 -1.0	1.0-0.8	0.8-0.6	0.6-0.4	0.4-0.2

Results:

90%ile	Status	EQR	Data Years	No. of Sites	No. of Samples	Data Confidence
3.64	HIGH	0.85	2009-2014	3	68	99.3%

Data confidence: **99.3%**

.Data analysed using M:\Projects 14\Phycology 2014\MM14-14 Phytoplankton and Chlorophyll\classification 15\2015CW_Phytoplankton_CoC_tool_v10 7_UKTAG.xls

2. Elevated Taxa Count Index

Waterbody Elevated Taxa Assessment

Thresholds:

Tool	Thresholds	
	North/Irish Sea	Atlantic
I_1 - Individual Species Count (excl. Phaeocystis) (%)	500,000 (cells l^{-1})	
I_2 – Total Taxa Count (%)	10^7 (cells l^{-1})	
I_3– Elevated Biomass Count (%)	>10 (µg l^{-1})	>5 (µg l^{-1})

EQR Boundaries:

% exceedances (Face value range)	Metric range (0-1)	Class
0 - <10	≥0.8 - 1.0	High
≥10 - < 20	≥0.6 - < 0.8	Good
≥20 - < 40	≥0.4 - < 0.6	Moderate
≥40 - <60	≥0.2 - < 0.4	Poor
≥60 - 100	≥0 - < 0.2	Bad

Results % Exceedence:

I_1	I_2	I_3	Elevated Count EQR	Status	Data Years	No. of phytoplankton samples	Data confidence
6.5%	0%	0%	0.928	HIGH	2009-2014	37	97.2%

Data confidence: 97.2%

Data analysed using M:\Projects 14\Phycology 2014\MM14-14 Phytoplankton and Chlorophyll\classification 15\2015CW_Phytoplankton_CoC_tool_v10 7_UKTAG.xls

Prescence of alien/ nuisance species: *none*

Overall Waterbody Status

HIGH (100%)

QE: Macroalgae Inner Dundrum Bay

QE macroalgal assessment (+ data confidence):	MODERATE (66.3%)	

Classification tools:

1. Reduced species list (RSL) – Not applicable.
2. Macroalgal Blooming Tool (MBT).

2. Macroalgal Blooming Tool

MBT assessment: **MODERATE (66.3%)**

- WFD surveillance monitoring: 2009 & 2013
- Data Availability: 2009 & 2013
- Data Store: ..\..\..\Projects 13\Phycology 2013\Macroalgal Blooming & Seagrass surveys\Dundrum hovercraft survey\Results\2013 Dundrum% ZosteraCover & Density Data.xls

Boundaries:

Parameters	Quality Status	High	Good	Moderate	Poor	Bad
	Sub-metric EQR	≥0.8 – 1.0	≥0.6 – 0.8	≥0.4 – 0.6	≥0.2 – 0.4	0.0 – 0.2
Available Intertidal Habitat (AIH) %		0 – 5	5 – 15	15 – 25	25 – 75	75 – 100
Affected Area (ha)		0 – 10	10 – 50	50 – 100	100 – 1000	1000 – 2000
Biomass of AIH (g m^2)		0 – 100	100 – 500	500 – 1000	1000 – 3000	3000 - 6000
Biomass of affected area (g m^2)		0 – 100	100 – 500	500 – 1000	1000 – 3000	3000 - 6000
Presence of entrained algae (% of quadrats)		0 – 1	1 – 5	5 – 20	20 – 50	50 – 100

Results

Sites	Sub-metric EQR					Mean EQR	Status
	% cover of AIH	Affected Area	Biomass of AIH	Biomass of affected area	Entrained algae		
Dundrum Bay Inner (2009)	0.770	0.680	0.795	0.383	0.096	0.545	Moderate
Dundrum Bay Inner (2013)	0.762	0.591	0.808	0.535	0.384	0.616	Good
					Mean	0.581	Moderate

Macroalgae cont'd

Data Confidence: Moderate (66.3%)

Analysed using -Opportunistic Macroalgae_ CoC_tool _CAPTAIN_v12.8_UKTAG.xlsm

2009 Survey carried out on foot alone, while 2013 survey completed using hovercraft and land based team so a better coverage especially in the soft sediment areas was achieved. This could explain the higher status achieved in 2013.

Alien taxa: *Gracillaria vermiculophylla* & *Sargassum muticum*

Waterbody Angiosperm Classification + (data confidence):	MODERATE (56%)	

Classification Tools:

1. Seagrass A. Taxonomic composition
   B. Shoot density
   C. Bed spatial extent

2. Saltmarsh – monitored but no classification tool established for first round.

1. Seagrass

Data store: G:\MARINE\Projects 13\Phycology 2013\Macroalgal Blooming & Seagrass surveys\Dundrum hovercraft survey\Results\2013 Dundrum% ZosteraCover & Density Data.xls
SAILOR_v2.3_CLASSIFICATION2015.xlsx

Data Availability (classification): 2012 & 2013

- **EQR Boundaries:**

Status	Mean Score Ranges
High	0.8-1.0
Good	0.6-0.79
Moderate	0.4-0.59
Poor	0.2-0.39
Bad	0.0-0.19

Sub-Metric Boundaries:
A. Taxonomic composition

Disturbance	Change in taxonomic composition	Metric score (mid-point of EQR range)
No detectable change	All taxa present	0.9
Slight signs of disturbance	Loss of ¼ to ⅓ of species	0.7
Moderate distortions	Loss of ½ of species	0.5
Major distortions	Loss of ⅔ to ¾ of species	0.3
Severe distortions	Loss of all species	0.1

B. Shoot Density

Disturbance	% Shoot Loss		Score
	Annual	5 Year Mean	
No detectable change	0-10	0-5	0.8
Slight signs of disturbance	11-30	6-15	0.6
Moderate distortions	31-50	16-25	0.4
Major distortions	51-70	26-35	0.2
Severe distortions	70-100	36-100	0.1

Angiosperms (cont'd)

C. Bed spatial extent

Disturbance	% Area Loss	Score
No detectable change	0-10	0.8
Slight signs of disturbance	11-30	0.6
Moderate distortions	31-50	0.4
Major distortions	51-70	0.2
Severe distortions	70-100	0.1

Results:

Site	Tool			Mean Metric Score	Mean Status
	Taxonomic composition	*Shoot Density*	*Bed Spatial Extent*		
Inner Dundrum 2012	0.9	0.28	0.30	0.49	Moderate
Inner Dundrum 2013	0.75	0.31	0.71	0.59 (0.08)	Moderate
			Mean	**0.54**	Moderate

Parentheses refer to the Standard Error of the final EQR

Data confidence: Moderate (55.8%)

Only 4 quadrats were collected in 2003 for shoot density (13 ha areal coverage), as opposed to 52 quadrats in 2012, so baseline data was used from 2012. Two different methods of data collection were used for these years data. Data was collected by foot in 2003 & 2012, whereas 2013 data was mainly collected by hovercraft & some by foot.

Alien taxa :*Spartina anglica, Gracilaria vermicullophylla & Sargassum muticum* present

QE: Benthic Invertebrates

QE benthic invertebrate assessment (+ Data confidence):	GOOD (NO DATA)	

Classification tools: 1. Infaunal Quality Index (IQI)

1. IQI (UKTAG v01 20140228)

Water body IQI assessment: Good (no data)

WFD surveillance monitoring:

- **Data store:** N/A
- **Benthic invertebrates** UNICORN (NMMT) Database
- Supporting Parameters Water Quality Data Set
- Digital images AMAP Project folder
- Data Availability (classification): no data post 2005.

Boundaries (Intercalibrated NEAGIG):

Class	Bad	Poor	Moderate	Good	High
IQI	>0.0 ≤0.24	≥0.24 <0.44	≥0.44 <0.64	≥0.64 <0.75	≥0.75

Results:

Year	Survey	Station	n	Mean	± S.D	Status
Overall 6 year waterbody means						

* IQI derived from data averaged minus Standard Deviation (see issues with tools paper). This figure is used for classification.

Data confidence: Low

- Sample analysis QA'd through NMBAQC (Good)
- Database QA'd (Good)
- No specific WFD data (single point with reps rather than spatial coverage)

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

QE: Dissolved Oxygen

Dissolved oxygen (+ data confidence):	HIGH (High 100%)	

Classification tools: Comparison of 5% ile against reference standards

- Data Availability: 2010- 2015
- Data Store: ..\..\DO Classification 2012\Shortcut to DO FIELD VALUES 2006 -2010.lnk
- 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*)
7.6	HIGH	2010-2015	**	166	

***** Proportion of possible months for which data are available

QE: Nutrients – N regulation

QE N regulation assessment (+ Data confidence):	HIGH (84%)	

- **Data store:** ..\Coastal WB inc AFBI 15.xls
- **Data Availability:** 2010 - 2014
  DIN & salinity (Nov to Feb)
- **Data Source (spot & continuous samples):** spot

Thresholds:

Area	Salinity range	DIN (uM) Winter mean H	DIN (uM) Winter mean G	DIN (uM) Winter mean M
Coastal (at salinity 32)	30-34.5	<12	12-18	18 +

Results:

Mean Winter DIN (uM) (Avg DIN)	Winter DIN Daily average (n)	No. of samples (n)	No. of sites	Data Years	Data Quality	Status
11.18*	13	46	3	2010 - 2014	Database not yet QA'd	HIGH

*Average DIN used as r^2 value of regression model is less than 0.75

Data confidence source: ..\CofCDINth.xlsx

ANNEX C: Classification of physico-chemical quality elements: Specific Pollutants (Annex VIII)

Specific pollutants assessment (+data confidence)	MODERATE	

Classification tools: Comparison with EQS levels.

Data assessed for 2013 Update:

Specific Pollutants:

Suite	Parameter	Data Availability
Trace Metals	Chromium	SWMP 2012
Trace Metals	Iron	SWMP 2012
Trace Metals	Copper	SWMP 2012
Trace Metals	Zinc	SWMP 2012
Trace Metals	Arsenic	SWMP 2012
Trace Organics (OPONS)	Dimethoate	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Diazinon	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Fenitrothion	OCT 2010 – JUN 2011
Urea Herbicides	Linuron	OCT 11, FEB 12, JUN 12
Nutrients (Winter Nutrients)	Unionised Ammonia (at pH8)	WIN NUTS 2012-2013
Candidate Specific pollutant	Glyphosate	DEC 2012 – APR 2013

Other Pollutants – DSD list 2 (with existing EQS):

Suite	Parameter	Data Availability
Trace Organics (OPONS)	Mevinphos	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Triazaphos*	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Dichlorvos	OCT 2010 – JUN 2011

Triazaphos* LOD above the EQS.

Link to Data, Assessment and EQSs

G:\MARINE\Water Framework Directive\WFD ANNUAL CLASSIFCATION UPDATE 2013\Chemistry

Data assessed for 2014 Update:

Suite	Parameter	Data Availability
Trace Metals	Chromium	SWMP 2013
Trace Metals	Copper	SWMP 2013
Trace Metals	Zinc	SWMP 2013
Trace Metals	Arsenic	SWMP 2013

No EQS failures

Link to Data, Assessment and EQSs

..\..\Data

Data assessed for 2015 Update:

Suite	Parameter	Data Availability
Trace Organics	Permethrin	June 2013 – June 2014
Trace Organics	Cypermethrin	June 2013 – June 2014
Trace Organics	Toluene	Nov 2013 – Sept 2014
Trace Organics	Xylene	Nov 2013 – Sept 2014
Trace Metals	Chromium	Sept 2014 – Dec 2014
Trace Metals	Copper	Sept 2014 – Dec 2014
Trace Metals	Zinc	Sept 2014 – Dec 2014
Trace Metals	Arsenic	Sept 2014 – Dec 2014

Other Pollutants – DSD list 2 (with existing EQS):

Suite	Parameter	Data Availability

EQS failures:

Cypermethrin

Link to Data, Assessment and EQSs:

G:\MARINE\Water Framework Directive\WFD ANNUAL CLASSIFICATION UPDATE 2015\2015 QE sheets

ANNEX D: Hydromorphological quality elements

Overall hydromorphology assessment	$_{G}$H	

Classification tools:

1. TRaC Hydromorphology metrics
2. MIMAS

ANNEX E: Chemical Status – Annex X Chemicals

Priority hazardous substances (+data confidence)	FAIL	

Classification tools: Comparison with EQS levels.

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

Data Assessed for 2013 Update:

Suite	Parameter	Data Availability
Trace Metals	Nickel	SWMP 2012
Trace Metals	Cadmium	SWMP 2012
Trace Metals	Lead	SWMP 2012
Trace Metals	Mercury	SWMP 2012
Trace Organics (OPONS	Atrazine	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Chlorfenvinphos	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Chlorpyrifos	OCT 2010 – JUN 2011
Trace Organics (OPONS)	Simazine	OCT 2010 – JUN 2011
Urea Herbicides	Isoproturon	OCT 2011 – JUN 2012
Urea Herbicides	Diuron	OCT 2011 – JUN 2012
PAH	Anthracene	OCT 2010 – JUN 2011
PAH	Fluoranthene	OCT 2010 – JUN 2011
PAH	Naphthalene	OCT 2010 – JUN 2011
PAH	Benzo (a) pyrene	OCT 2010 – JUN 2011
PAH	*Benzo(b)fluoranthene	OCT 2010 – JUN 2011
PAH	*Benzo(k)fluoranthene	OCT 2010 – JUN 2011
PAH	*Benzo(g,h,i)perylene	OCT 2010 – JUN 2011
PAH	*Indeno(1,2,3 cd) pyrene	OCT 2010 – JUN 2011

*AA - EQS = Sum of Benzo(b)fluoranthene and Benzo(k)fluoranthene = 0.03ug/l (No Marine MAC – EQS)

*AA - EQS = Sum of Benzo(g,h,i)perylene and Indeno(1,2,3 cd) pyrene = 0.002ug/l (No Marine MAC – EQS)

EQS Failures:
AA – EQS failure for the sum of Benzo(g,h,i)perylene and Indeno(1,2,3 cd) pyrene.

Calculated mean = 0.0064 ug/l

There is low confidence as the EQS is an annual average and the mean is calculated with only 3 months of monitoring data (Oct 10, Apr 11 and Jun 11).
There is no marine maximum allowable concentration (MAC) for comparison.

Link to Data, Assessment and EQSs

G:\MARINE\Water Framework Directive\WFD ANNUAL CLASSIFCATION UPDATE 2013\Chemistry

Data Assessed for 2014 Update:

Suite	Parameter	Data Availability
Trace Metals	Nickel	SWMP 2013
Trace Metals	Cadmium	SWMP 2013
Trace Metals	Lead	SWMP 2013
Trace Metals	Mercury	SWMP 2013

No EQS failures

Link to Data, Assessment and EQSs

..\..\Data

Data Assessed for 2015 Update:

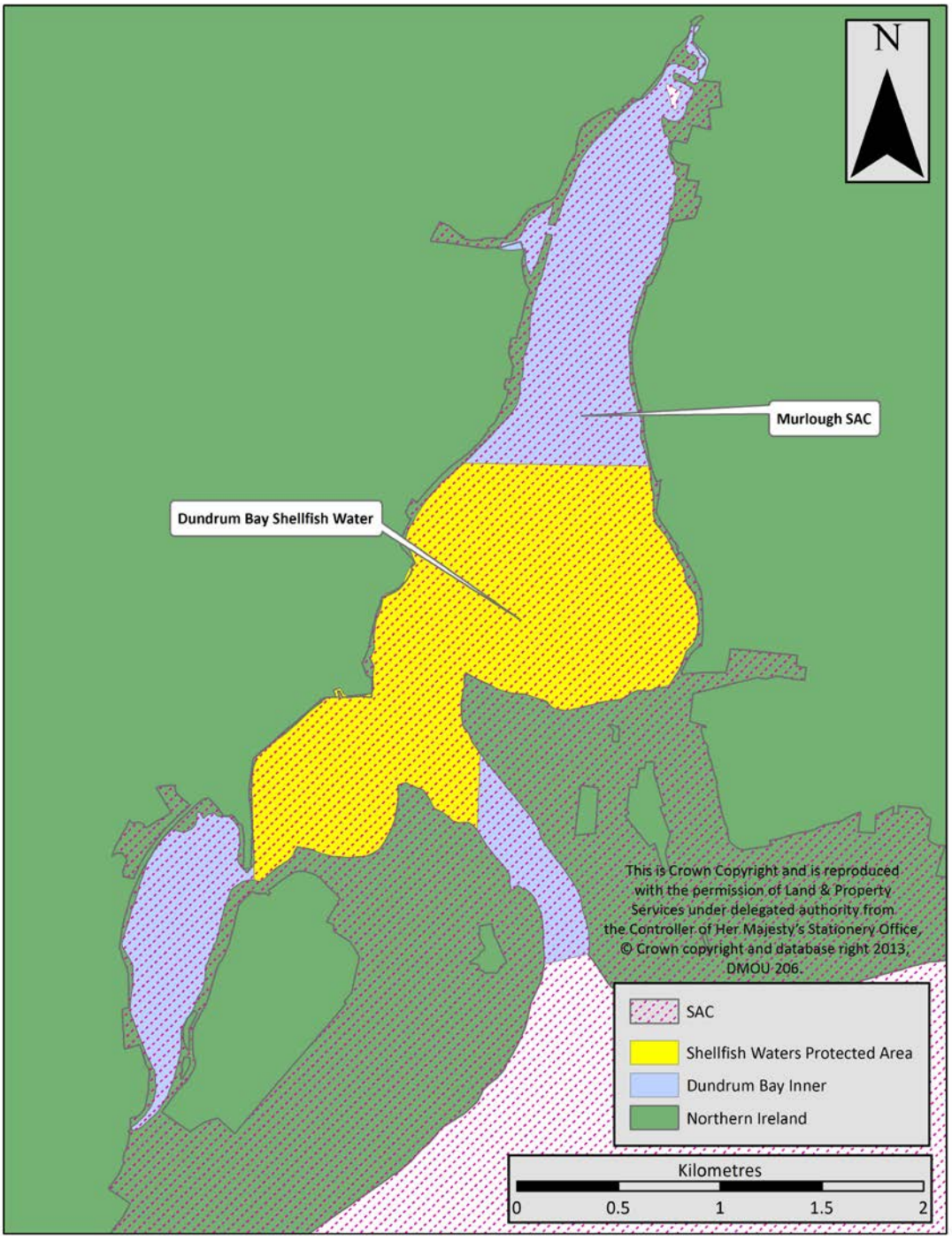
Suite	Parameter	Data Availability
Trace Metals	Nickel	Sep 2014 – Dec 2014
Trace Metals	Cadmium	Sep 2014 – Dec 2014
Trace Metals	Lead	Sep 2014 – Dec 2014
Trace Organics	Benzene	Nov 2013 – Sept 2014
Trace Organics	Nonylphenol	April 2014 – Dec 2014
Trace Organics	Octylphenol	April 2014 – Dec 2014

No EQS failures

Link to Data, Assessment and EQSs

G:\MARINE\Water Framework Directive\WFD ANNUAL CLASSIFICATION UPDATE 2015\2015 QE sheets

ANNEX F: Protected Areas



Protected areas within Dundrum Bay Inner (Coastal Water).

The following Protected Areas are situated either wholly or partly within the Dundrum Bay Inner water body:

Natura 2000 sites (Habitats Directive and Birds Directive):

Site Name	2014 Condition Status	Designated Water Dependant habitat/species	Feature(s) not meeting objective	Reason for not meeting objective
Murlough SAC	Unfavourable	Atlantic Decalcified fixed dunes (*Calluno-Ulicetea*); Fixed dunes with herbaceous vegetation ('grey dunes'); Atlantic salt meadows (*Glauco-Puccinellitalia maritimae*); Mudflats and sandflats not covered by seawater at low tide; *Phoca vitulina*; Sandbanks which are slightly covered by seawater all the time Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')	Atlantic decalcified fixed dunes (Calluno-Ulicetea) Mudflats and sandflats not covered by seawater at low tide Fixed dunes with herbaceous vegetation ('grey dunes') Atlantic salt meadows (*Glauco-Puccinellitalia maritimae*) Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)	Mudflats and sandflats: Loss of *Zostera*, smothering from opportunistic green algae and invasive species. All other features non marine water quality related.

Shellfish Water Protected Areas:

Shellfish Water Protected Area	Met Guideline Microbiological Standard* in 2014
Inner Dundrum Bay	No (n=50)

*75% of samples contain ≤230 *E. coli* /100ml of shellfish flesh and intervalvular liquid

ANNEX G: High Impact Invasive Species

QE High Impact Invasive Species assessment		GOOD

Ecoregion 17 Marine High Impact Invasive Species List

Phylum	Species	P	E	I	Record
Chordata	*Didemnum* spp.				
Chordata	*Styela clava*				
Crustacea	*Eriocheir sinensis*				
Mollusca	*Crassostrea gigas*				
Mollusca	*Crepidula fornicata*				
Phaeophyceae	*Sargassum muticum*		Y		W
Angiosperms	*Spartina anglica*		Y		W

P= Present; E= Established; I= Impacting

NB Established populations of high impact species automatically downgrade overall surface water classification from 'high' to 'good'.

Record should be inputted as follows. PO= personal observation outside of surveys; W= WFD survey; M= museum / institute records.

GLOSSARY

AFBI	Agri-Food and Biosciences Institute (under contract to NIEA)
AMBI	AZTI Marine Biotic Index
Annex X	Annex 10 Priority Hazardous Substances
Annex VIII	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
$_{G}$H	Good/High status
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
WWTW	Waste water treatment works