SCHEDULE 1

PART 1

Criteria for identifying the types of river, lake or transitional water to which the environmental standards specified in Part 2 of this Schedule apply

1. Subject to paragraph 2, to determine the dissolved oxygen, ammonia and biochemical oxygen demand standards applicable to a river or any part thereof, the Department shall assign to that river or part thereof the Type specified in Table 1 below which corresponds with the applicable site altitude and applicable alkalinity range specified in that Table.

2. Having assigned a Type in accordance with Table 1, the Department shall assign the subsequent Type in accordance with column 1 of Table 2.

3. To determine the reactive phosphorus standards applicable to a river or any part thereof, the Department shall assign to that river or part thereof the Type specified in Table 3 below which corresponds with the applicable site altitude and applicable alkalinity range specified in that Table.

4. To determine the morphological conditions applicable to a river or part thereof, the Department shall assign to that river or part thereof the Type specified in Table 4 below which corresponds with the applicable descriptions in that Table.

5. To determine the river flow standards applicable to a river or any part thereof, the Department shall assign the Type specified in column 1 of Table 5 below which corresponds to the applicable descriptions in specified in columns 2, 3 and 4 of that Table.

6. To determine the dissolved oxygen standards applicable to a lake or any part thereof, the Department shall assign to that lake or part thereof the Type specified in Table 6 below which corresponds with the applicable description specified in that Table.

7. To determine the total phosphorus standards to apply to a lake or any part thereof, the Department shall assign to that lake or part thereof the appropriate geological category, depth category and colour category specified in Tables 7, 8 and 9 respectively.

8. To determine the lake water level standards and morphological conditions applicable to a lake or any part thereof, the Department shall assign—

(a) the physical characteristics of the lake or part thereof specified in column 1 of Table 10 below into the categories specified in column 3 of that Table which correspond to the applicable measurements specified in column 3;

(b) the geological characteristics of the lake or part thereof as being of the category specified in column 1 of Table 11 below which corresponds to the applicable descriptions or measurements specified in columns 2, 3, 4 and 5 of that Table, and

(c) the hydromorphological characteristics of the lake or part thereof as being of the type specified in column 1 of Table 12 below which corresponds to the applicable measurements specified in columns 3 and 4 of that Table.

Table 1

Criteria for identifying the types of river to which the dissolved oxygen, ammonia and biochemical oxygen demand standards for rivers apply

Site Altitude	*Alkalinity (as mg/l $CaCO_3$)*				
	Less than 10	10 to 50	50 to 100	100 to 200	Over 200
Under 80 metres	Type 1	Type 2	Type 3	Type 5	Type 7
Over 80 metres			Type 4	Type 6	

Table 2

Final typology for dissolved oxygen, ammonia and biochemical oxygen demand in rivers	
Column 1	Column 2
Upland and low alkalinity	Types (1+2), 4 and 6
Lowland and high alkalinity	Types 3, 5 and 7

Table 3

Criteria for identifying types of river to which the reactive phosphorus standards for rivers apply

Altitude	*Annual mean alkalinity (as mg/l $CaCO_3$)*	
	< 50	≥ 50
Under 80 metres	Type 1n	Type 3n
Over 80 metres	Type 2n	Type 4n

Table 4

Criteria for identifying types of river to which morphological conditions apply

Type	*Characteristics*			
Bedrock channel	Normally high altitude	Channel cuts down laterally	May have waterfalls and/or cascades	Bedrock substrate
Cascade Step Pool	Normally high altitude	Channel cuts down	Both turbulent and tranquil flows	Cobble and boulder substrate
Pool-riffle-glide	Normally medium altitude	Often not confined within a valley	Slightly meandering	Pebble and cobble substrate

Type	*Characteristics*			
Meandering	Normally low altitude	Flow laminar and would naturally interact with floodplain	Meandering	More fines than other substrates

Table 5

Criteria for identifying types of river to which the river flow standards apply

Col 1	Col 2	Col 3	Col 4	
Type	*Standard Average Annual Rainfall mm (period 1961-1990)*	*Base Flow Index (BFI)*	*Catchment area (km^2)*	
A1	< 810.5	< 0.715	Any	
		≥ 0.715	≥ 251.8	
A2	< 810.5	≥ 0.715	< 251.8	≤ 100 (A2 headwaters) > 100 (A2 downstream)
	≥ 810.5 and < 1413	≥ 0.7495	Any	≤ 100 (A2 headwaters) > 100 (A2 downstream)
B1	≥ 810.5 and < 1155	≥ 0.3615 and < 0.7495	< 267.4	
B2	≥ 810.5 and < 1413	≥ 0.3615 and < 0.7495	< 267.4	
C2	≥ 1155 and < 1413	≥ 0.3615 and < 0.7495	< 267.4	
	≥ 1413	≥ 0.3615	≥ 32.33	
D2	≥ 1413	≥ 0.3615	< 32.33	
	≥ 810.5	< 0.3615	Any	

Table 6

Categories to which dissolved oxygen standards for lakes apply

Type	*Description*
Salmonid	Freshwater lakes which would naturally support populations of salmonid fish

Type	*Description*
Cyprinid	Freshwater lakes in which populations of salmonid fish do not occur naturally

Table 7

Geological categories to which total phosphorus standards for lakes apply

Geological category	*Annual mean alkalinity (micro-equivalents per litre)*
Low alkalinity	< 200
Moderate alkalinity	200 – 1000
High alkalinity	> 1000
Marl	

Table 8

Depth categories to which total phosphorus standards for lakes apply

Depth category	*Mean depth (metres)*
Very shallow	< 3
Shallow	3 – 15
Deep	> 15

Table 9

Colour categories to which total phosphorus standards for lakes apply

Colour category	*Platinum (mg/l)*
Humic	> 30
Non humic	≤ 30

Table 10

Physical characteristics used to identify lake types to which lake water level standards apply

Column 1	Column 2	Column 3		
Characteristics	*Unit*	*Categories*		
Mean depth	Metres	Shallow < 3	Deep ≥ 3	
Altitude	Metres	Low < 200	Mid ≥ 200 < 800	High ≥ 800
Size (lake area)	Hectares	Small < 50	Large ≥ 50	

Column 1	Column 2	Column 3	
Characteristics	*Unit*	*Categories*	
Basin form	$V_d = 3D_{mean} / D_{max}$ where D = depth of lake in metres, D_{mean} = mean depth and D_{max} = maximum depth	V $V_d < 0.67$	L $V_d \geq 0.67$

Table 11

Geological characteristics used to identify lake types to which lake water level standards apply

Column 1	Column 2	Column 3	Column 4	Column 5
Categories	*Solid geology of catchment*	*Alkalinity*	*Conductivity*	*Colour*
	% of catchment	Micro-equivalents per litre	Micro Siemens per centimetre	Platinum (mg/l)
Peat	> 75% peat	n/a	n/a	> 30
Low Alkalinity	> 90% siliceous	< 200	≤ 70	≤ 30
Moderate Alkalinity	> 50% siliceous and ≤ 90% siliceous	200 – 1000	> 70 and ≤	
High Alkalinity	> 50% calcareous	> 1000	> 250 and ≤ 1000	
Marl	> 65% limestone			
Brackish	Any	n/a	> 1000	

Table 12

Hydromorphological characteristics used to identify lake types to which morphological conditions apply

Column 1	Column 2	Column 3	Column 4
Type	*Lake-MImAS(1) code*	*Mean Depth*	*Alkalinity*
Low Alkalinity Very Shallow	P/L-vS	<4m	< 20 mgl^{-1} $CaCO_3$

(**1**) **M**orphological **Im**pact **A**ssessment **S**ystem

Column 1	Column 2	Column 3	Column 4
Type	*Lake-MImAS(1) code*	*Mean Depth*	*Alkalinity*
Low Alkalinity Shallow/Deep	P/L-ShD	>4m	< 20 mgl^{-1} $CaCO_3$
Moderate Alkalinity Very Shallow	MA-vS	<4m	20 – 100 mgl^{-1} $CaCO_3$
Moderate Alkalinity Shallow/Deep	MA-ShD	>4m	20 – 100 mgl^{-1} $CaCO_3$
High Alkalinity Very Shallow	HA/M-vS	<4m	> 100 mgl^{-1} $CaCO_3$
High Alkalinity Shallow/Deep	HA/M-ShD	>4m	> 100 mgl^{-1} $CaCO_3$

PART 2

Environmental Standards

Environmental standards for river water quality

1. Once the Department has, in accordance with paragraphs 1 and 2 of Part I of this Schedule, assigned to a river or any part thereof a Type—

(a) specified in column 1 of Table 1 below, it shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" dissolved oxygen standard specified in columns 2, 3, 4, 5 and 6 respectively of that Table to that river or part thereof;

(b) specified in column 1 of Table 2 below, it shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" ammonia standard specified in columns 2, 3, 4, 5 and 6 respectively of that Table to that river or part thereof;

(c) specified in column 1 of Table 3 below, it shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" biochemical oxygen demand standard specified in columns 2, 3, 4, 5 and 6 respectively of that Table to that river or part thereof.

2. The Department shall apply the "high", "good", "moderate", "poor" or "bad" biochemical oxygen demand standard specified in Table 3 below only for the purpose of deciding action to meet the standard for dissolved oxygen.

3. Once the Department has, in accordance with paragraph 3 of Part I of this Schedule, assigned to a river or part thereof a Type specified in column 1 of Table 4 below, it shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" reactive phosphorus standard specified in columns 2, 3, 4, 5 and 6 respectively of that Table to that river or part thereof.

4. The Department shall, as applicable, apply the "high", "good", "moderate", "poor" or "bad" acid condition standards specified in columns 1, 2, 3, 4 and 5 respectively of Table 5 below to any river or part thereof.

Environmental standards for river flows

5.—(1) Once the Department has, in accordance with paragraph 6 of Part I of this Schedule, assigned to a river or part thereof a Type specified in column 1 of Tables 6, 7, 8, 9 or 10 below, it

(**1**) **M**orphological **Im**pact **A**ssessment **S**ystem

shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" river flow standards as specified by the boundary values in those Tables to that river or part thereof.

(2) The result of this classification shall be used only to determine "high" status in accordance with Part 1 of Schedule 2.

Environmental standards for lake water quality

6. Once the Department has, in accordance with paragraph 7 of Part I of this Schedule, assigned to a lake or part thereof the Type "salmonid" or "cyprinid", it shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" dissolved oxygen standard specified in Table 11 below to that lake or part thereof.

7. The Department shall apply the "good" salinity standard specified in Table 12 below to all lakes or parts of such lakes.

8. Once the Department has, in accordance with paragraph 8 of Part I of this Schedule, assigned to a lake or part thereof a geological category, depth category and colour category specified in Tables 7, 8 and 9 in that Part, it shall apply, as applicable, the "high", "good", "moderate", "poor" or "bad" total phosphorus standard to that lake or part thereof, calculated in accordance with the formulae specified in columns 1, 2, 3, 4 and 5 respectively of Table 13 below, where in relation to those formulae—

"R" represents the annual mean total phosphorus concentration expected for the lake in the absence of more than very minor phosphorus inputs to the lake resulting from human activities and, where a reliable estimate of 'C' is available, shall have the value given by the formula: $Antilog_{10}$ [1.36 – (0.09 x A) + (0.24 x B)] for non-humic lakes; and $Antilog_{10}$ [1.62 – (0.09) x A + (0.24 x B)] for humic lakes;

"A" = Log_{10} of the altitude in metres above mean sea level of the lake;

"B" = Log_{10} (C÷D);

"C" = the mean alkalinity of the lake in milli-equivalents per litre estimated for the lake;

"D" = the mean depth of the lake in metres;

"H" = 0.755 + (0.012 x C) – (0.001 x D); or 0.7, whichever is larger value; and

"G" = 0.506 + (0.023 x C) – (0.002 x D); or 0.46, whichever is the larger value.

9. If the Department does not have the necessary data to calculate the total phosphorus standard applicable to a lake or part thereof in accordance with paragraph 8, it shall apply, as applicable to the lake or part thereof, the "high", "good", "moderate", "poor" or "bad" total phosphorus standard specified in column 2, 3, 4, 5 and 6 respectively, of Table 14 below which corresponds with the combination of geological category and depth categories specified in column 1 of that Table that is applicable to the lake or part thereof.

Environmental standards for protection of inland lake water levels

10. Once the Department has assigned the characteristics of a lake or part thereof, in accordance with paragraph 9 of Part I of this Schedule, it shall apply, as applicable, to the lake or part thereof the "good" lake standard specified in columns 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 or 14 of Table 15 below which, in accordance with Table 15, applies to that lake or part thereof with the combination of characteristics applicable to the lake or part thereof.

Environmental standards for transitional and coastal water quality

11. The Department shall apply, as applicable, the dissolved oxygen standards for "high", "good", "moderate", "poor" or "bad" specified in Table 16 and Table 17 below to transitional or coastal waters or parts thereof.

12. The Department shall apply, as applicable, the dissolved inorganic nitrogen standards for "high", "good", "moderate", "poor" or "bad" specified in Table 18 below to transitional or coastal waters or parts thereof.

Environmental standards for specific pollutants

13. The Department shall apply, as applicable, the standards for specific pollutants given in Tables 19 to 37 below to surface waters or parts thereof.

Environmental Standards for River Water Quality

Table 1

Standards for dissolved oxygen in rivers

Dissolved oxygen (percent saturation) (10-percentile)					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Type[(1)]	High	Good	Moderate	Poor	Bad
Upland and low alkalinity	80	75	64	50	< 50
Lowland and high alkalinity	70	60	54	45	< 45

(1) Where a lowland, high alkalinity river is a salmonid river (as designated by Directive 2006/44/EC 'on the quality of freshwaters needing protection or improvement in order to support fish life') the standards for the upland, low alkalinity type will apply.

Table 2

Standards for ammonia in rivers

Total ammonia (mg/l) (90-percentile)					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Type	High	Good	Moderate	Poor	Bad
Upland and low alkalinity	0.2	0.3	0.75	1.1	> 1.1
Lowland and high alkalinity	0.3	0.6	1.1	2.5	> 2.5

Table 3

Standards for Biochemical Oxygen Demand in rivers

Biochemical oxygen demand (mg/l)[(i)]					
(90-percentile)					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Type[(ii)]	High	Good	Moderate	Poor	Bad
Upland and low alkalinity	3	4	6	7.5	> 7.5
Lowland and high alkalinity	4	5	6.5	9	> 9

(i) The standard for Biochemical Oxygen Demand shall be used when deciding action to meet the standard for dissolved oxygen.

(ii) Where a lowland, high alkalinity river is a salmonid river (as designated by Directive 2006/44/EC 'on the quality of freshwaters needing protection or improvement in order to support fish life') the standards for the upland, low alkalinity type will apply.

Table 4

Standards for reactive phosphorus in rivers

Reactive phosphorus (ug/l)					
(annual mean)					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Type	High	Good	Moderate	Poor	Bad
1n	30	50	150	500	> 500
2n	20	40	150	500	> 500
3n+4n	50	120	250	1000	> 1000

Table 5

Standards for acid conditions in rivers

pH				
Column 1	Column 2	Column 3	Column 4	Column 5
High	Good	Moderate	Poor	Bad
(5 and 95 percentile)		(10 percentile)	(10 percentile)	(10 percentile)
≥ 6 to ≤ 9		4.7	4.2	< 4.2

Table 6

High environmental standards for river flows

Permitted abstraction per day as a percentage of the natural mean daily flow(Qn)[1] High		
Column 1	Column 2	Column 3
	Maximum permitted % abstraction at Qn exceeding Qn95[2]	Maximum permitted % abstraction at Qn **not** exceeding Qn95
A1, A2 (downstream), A2 (headwaters), B1, B2, C2, D2	10	5

(1) 'Qn' is the naturalized mean daily flow for a specified period of record

(2) 'Qnx' is the Qn that is expected to be exceeded by 'x' percent of the naturalized mean daily flows within a specified period of record

Table 7

Good environmental standards for river flows

abstraction per day as a percentage of the natural mean daily flow(Qn) Good					
Column 1		Column 2	Column 3	Column 4	Column 5
River type		Maximum % abstraction at Qn exceeding Qn60	Maximum % abstraction at Qn exceeding Qn70	Maximum % abstraction at Qn exceeding Qn95	Maximum % abstraction at Qn **not** exceeding Qn95
A1	April-Oct	30	25	20	15
	Nov-Mar	35	30	25	20
A2 (downstream), B1, B2	April-Oct	25	20	15	10
	Nov-Mar	30	25	20	15
A2 (headwaters), C2, D2	April-Oct	20	15	10	7.5
	Nov-Mar	25	20	15	10

Table 8

Moderate environmental standards for river flows

abstraction per day as a percentage of the natural mean daily flow(Qn) Moderate					
Column 1		Column 2	Column 3	Column 4	Column 5

abstraction per day as a percentage of the natural mean daily flow(Qn)					
River type		Maximum % abstraction at Qn exceeding Qn60	Maximum % abstraction at Qn exceeding Qn70	Maximum % abstraction at Qn exceeding Qn95	Maximum % abstraction at Qn **not** exceeding Qn95
A1	April-Oct	55	50	45	40
	Nov-Mar	60	55	50	45
A2 (downstream), B1, B2,	April-Oct	50	45	40	35
	Nov-Mar	55	50	45	40
A2 (headwaters), C2, D2	April-Oct	45	40	35	32.5
	Nov-Mar	50	45	40	35

Table 9

Poor environmental standards for river flows

abstraction per day as a percentage of the natural mean daily flow(Qn) Poor					
Column 1		Column 2	Column 3	Column 4	Column 5
River type		Maximum % abstraction at Qn exceeding Qn60	Maximum % abstraction at Qn exceeding Qn70	Maximum % abstraction at Qn exceeding Qn95	Maximum % abstraction at Qn **not** exceeding Qn95
A1	April-Oct	80	75	70	65
	Nov-Mar	85	80	75	70
A2 (downstream), B1, B2,	April-Oct	75	70	65	60
	Nov-Mar	80	75	70	65
A2 (headwaters), C2, D2	April-Oct	70	65	60	57.5
	Nov-Mar	75	70	65	60

Table 10

Bad environmental standards for river flows

abstraction per day as a percentage of the natural mean daily flow(Qn) Bad					
Column 1		Column 2	Column 3	Column 4	Column 5
River type		Maximum % abstraction at	Maximum % abstraction at	Maximum % abstraction at	Maximum % abstraction at

abstraction per day as a percentage of the natural mean daily flow(Qn)					
		Qn exceeding Qn60	Qn exceeding Qn70	Qn exceeding Qn95	Qn **not** exceeding Qn95
A1	April-Oct	>80	>75	>70	>65
	Nov-Mar	>85	>80	>75	>70
A2 (downstream), B1, B2,	April-Oct	>75	>70	>65	>60
	Nov-Mar	>80	>75	>70	>65
A2 (headwaters), C2, D2	April-Oct	>70	>65	>60	>57.5
	Nov-Mar	>75	>70	>65	>60

Environmental Standards for Lake Water Quality

Table 11

Standards for dissolved oxygen in lakes

Status	*Mean in July – August (mg/l)*	
	Salmonid	Cyprinid
High	9	8
Good	7	6
Moderate	4	4
Poor	1	1
Bad	< 1	< 1

Table 12

Salinity Standards for lakes with no natural saline influence

Status	*Proposed Boundary*
	Annual Mean (micro Siemens per centimetre)
Good	1000

Table 13

Total phosphorus standards for lakes

Annual mean concentration of total phosphorous (µg/l)				
Column 1	Column 2	Column 3	Column 4	Column 5
High	Good	Moderate	Poor	Bad
R ÷ H; or 5, whichever value is the larger value	R ÷ G; or 8, whichever is the larger value	(R ÷ G) ÷ 0.5	(R ÷ G) ÷ 0.25	> (R ÷ G) ÷ 0.25

Table 14

Type-specific total phosphorus standards for lakes where the standards specified in Table 13 above do not apply

Annual mean concentration of total phosphorus (µg/l)					
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Geological and depth category	High	Good	Moderate	Poor	Bad
High alkalinity; shallow	16	23	46	92	> 92
High alkalinity; very shallow	23	31	62	124	> 124
Moderate alkalinity; deep	8	12	24	48	> 48
Moderate alkalinity; shallow	11	16	32	64	> 64
Moderate alkalinity; very shallow	15	22	44	88	> 88
Low alkalinity; deep	5	8	16	32	> 32
Low alkalinity; shallow	7	10	20	40	> 40
Low alkalinity; very shallow	9	14	28	56	> 56
Marl; shallow	9	20	40	80	> 80
Marl; very shallow	10	24	48	96	> 96

Table 15

Good environmental standards for lake water levels

Good Lake Standards *percentage reduction in mean daily inflow*															
Column 1		Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11	Col 12	Col 13	Col 14
Geology		Altitude	Low				Mid				High			
		Size	Small		Large		Small		Large		Small		Large	
		Basin form	L	V	L	V	L	V	L	V	L	V	L	V
		Depth												

Good Lake Standards														
Peat	Summer	Deep	15	15	15	10	15	15	15	10	15	15	15	10
		Shallow	15	10	10	10	15	10	10	10	15	10	10	10
	Winter	Deep	15	15	15	10	15	10	10	10	12	10	10	10
		Shallow	15	10	10	10	10	10	10	10	10	10	10	5
Low Alkalinity	Summer	Deep	30	25	25	25	30	25	25	25	30	25	25	25
		Shallow	25	25	25	25	25	25	25	25	25	25	25	25
	Winter	Deep	20	20	20	20	20	20	20	15	20	15	15	15
		Shallow	20	20	20	15	20	15	15	15	15	15	15	15
Medium Alkalinity	Summer	Deep	20	20	20	20	20	20	20	20	20	20	20	20
		Shallow	20	20	20	15	20	15	15	15	15	15	15	15
	Winter	Deep	20	20	20	20	20	20	20	15	20	15	15	15
		Shallow	20	20	20	15	20	15	15	15	15	15	15	15
High Alkalinity, Marl	Summer	Deep	30	25	25	25	30	25	25	25	30	25	25	25
		Shallow	25	25	25	25	25	25	25	25	25	25	25	25
	Winter	Deep	30	25	25	25	25	25	25	25	25	25	25	25
		Shallow	25	25	25	25	25	25	25	25	25	25	25	20
Brackish	Summer	Deep	20	20	20	20	20	20	20	20	20	20	20	20
		Shallow	20	20	20	15	20	20	20	15	20	20	20	15
	Winter	Deep	30	25	25	25	30	25	25	25	25	25	25	25
		Shallow	25	25	25	25	25	25	25	25	25	25	25	25

Environmental Standards for Transitional and Coastal Water Quality

Table 16

Dissolved oxygen standards for transitional and coastal waters with salinities normalised to 35

	Dissolved oxygen concentrations (mg/l) as 5-percentile values
High	5.7
Good	4.0
Moderate	2.4
Poor	1.6
Bad	<1.6

Table 17

Dissolved oxygen standards for transitional and coastal waters with salinities <35

	Dissolved oxygen concentrations (mg/l) as 5-percentile values
High	≥5.7
Good	≥4.0 and <5.7
Moderate	≥2.4 and <4.0
Poor	≥1.6 and <2.4
Bad	<1.6

Table 18

Dissolved inorganic nitrogen standards for coastal waters with salinities from 30-34.5 normalised to salinity of 32, and transitional waters with salinities < 30 normalised to a salinity of 25.

	Mean dissolved inorganic nitrogen concentration (micromoles per litre) during the period 1st December to 28th February
High	12
Good	18
Moderate	30
Poor	40.5
Bad	>40.5

Environmental Standards for Specific Pollutants

Table 19

Environmental standards for 2,4-Dichlorophenoxyacetic acid (2,4-D)

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)
0.3	1.3	0.3	1.3

(1) The standards for 2,4 D specified in Column 2 and Column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 20

Environmental standards for 2,4-Dichlorophenol

Good standard for rivers and freshwater lakes	*Good standard for transitional and coastal waters*
Column 1	Column 2
Annual mean (µg/l)	Annual mean (µg/l)
20	20

Table 21

Environmental standards for arsenic (dissolved)

Good standard for rivers and freshwater lakes	*Good standard for transitional and coastal waters*
Column 1[(1)]	Column 2[(1)]
Annual mean (µg/l)	Annual mean (µg/l)
50	25

(1) The standard for arsenic refers to the dissolved fraction of a water sample obtained by filtration through a 0.45µm filter or any equivalent pre-treatment

Table 22

Environmental standards for chlorine

Good standards for rivers and freshwater lakes		*Good standard for transitional and coastal waters*
Column 1	Column 2[(1)]	Column 3[(1)]
Annual mean concentration (µg/l) of total available chlorine	95-percentile concentration (µg/l) of total available chlorine	95-percentile concentration (µg/l) of total residual oxidant[(2)]
2	5	10

(1) The standards for chlorine specified in Column 2 and 3 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

(2) The term "total residual oxidants" refers to the sum of all oxidising agents existing in water, expressed as available chlorine.

Table 23

Environmental standards for chromium VI

Good standard for rivers and freshwater lakes	*Good standards for transitional and coastal waters*	
Column 1	Column 2	Column 3[(1)]

(1) The standard for chromium VI specified in column 3 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Good standard for rivers and freshwater lakes	*Good standards for transitional and coastal waters*	
Annual mean concentration (µg/l) of dissolved chromium VI	Annual mean concentration (µg/l) of dissolved chromium VI	95-percentile concentration (µg/l) of dissolved chromium VI
3.4	0.6	32

(1) The standard for chromium VI specified in column 3 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 24

Environmental standards for chromium III

Good standards for rivers and freshwater lakes	
Column 1	Column 2[(1)]
Annual mean concentration (µg/l) of dissolved chromium III	95-percentile concentration (µg/l) of dissolved chromium III
4.7	32

(1) The standard for chromium III specified in column 2 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water

Table 25

Environmental standards for copper

Water hardness bands to which the corresponding river and freshwater lake standards in column 2 apply	*Good standards for rivers and freshwater lakes*	*Good standards for transitional and coastal waters*
Column 1	Column 2	Column 3
Annual mean concentration of $CaCO_3$ (mg/l)	Annual mean concentration (µg/l) of dissolved copper	Annual mean concentration (µg/l) of dissolved copper
0 – 50	1	5
50 – 100	6	
100 – 250	10	
> 250	28	

Table 26

Environmental standards for cyanide

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean concentration (µg/l) of hydrogen cyanide	95-percentile concentration (µg/l) of hydrogen cyanide	Annual mean concentration (µg/l) of hydrogen cyanide	95-percentile concentration (µg/l) of hydrogen cyanide
1	5	1	5

(1) The standards for cyanide specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 27

Environmental standards for cypermethrin

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2	Column 3	Column 4
Annual mean (ng/l)	0.1	Annual mean (ng/l)	0.1
95-percentile (ng/l)[(1)]	0.4	95-percentile (ng/l)[(1)]	0.41

(1) The 95-percentile standards for cypermethrin must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 28

Environmental standards for diazinon

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)
0.01	0.02	0.01	0.1

(1) The standards for diazinon specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 29

Environmental standards for dimethoate

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)
0.48	4.0	0.48	4.0

(1) The standards for dimethoate specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 30

Environmental standards for iron

Good standard for rivers and freshwater lakes	*Good standard for transitional and coastal waters*
Column 1	Column 2
Annual mean concentration (mg/l) of dissolved iron	Annual mean concentration (mg/l) of dissolved iron
1	1

Table 31

Environmental standards for linuron

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)
0.5	0.9	0.5	0.9

(1) The standards for linuron specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 32

Environmental standards for mecoprop

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)

(1) The standards for mecoprop specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
18	187	18	187

(1) The standards for mecoprop specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 33

Environmental standards for permethrin

Good standard for rivers and freshwater lakes	*Good standard for transitional and coastal waters*
Column 1	Column 2
95-percentile (µg/l)	95-percentile (µg/l)
0.01	0.01

Table 34

Environmental standards for phenol

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)
7.7	46	7.7	46

(1) The standards for phenol specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 35

Environmental standards for toluene

Good standards for rivers and freshwater lakes		*Good standards for transitional and coastal waters*	
Column 1	Column 2[(1)]	Column 3	Column 4[(1)]
Annual mean (µg/l)	95-percentile (µg/l)	Annual mean (µg/l)	95-percentile (µg/l)
50	380	40	370

(1) The standards for toluene specified in column 2 and column 4 must not be used for the purpose of classifying the ecological status or potential of bodies of surface water.

Table 36

Environmental standards for zinc

Water hardness to which the corresponding river and freshwater lake standards in column 2 apply[(1)]	*Good standards for rivers and freshwater lakes*	*Good standards for transitional and coastal waters*
Column 1	Column 2	Column 3
Annual mean concentration of $CaCO_3$ (mg/l)	Annual mean concentration (µg/l) of total zinc	Annual mean concentration (µg/l) of dissolved zinc
0 – 50	8	40
50 – 100	50	
100 – 250	75	
> 250	125	

(1) The standards applicable to intermediate water hardness must be calculated by simple linear interpolation.

Table 37

Environmental standards for un-ionised ammonia as nitrogen

Good standard for rivers and freshwater lakes	*Good standard for transitional and coastal waters*
Annual mean (µg/l)	Annual mean (µg/l)
Not applicable	21

Environmental Standards for Priority Substances and other Substances

Table 38

Environmental quality standards for priority substances and other substances for which standards have been set at EU-level

Name of substance	*Chemical Abstracts Service number*	*All rivers and lakes*		*All transitional and coastal waters*	
		Good		*Good*	
		Annual mean[(i)] *(AA-EQS) (µg/l)*	*Maximum allowable concentration*[(ii)] *(MAC-EQS) (µg/l)*	*Annual mean*[(i)] *(AA-EQS) (µg/l)*	*Maximum allowable concentration*[(ii)] *(MAC-EQS) (µg/l)*
Alachlor	15972-60-8	0.3	0.7	0.3	0.7
Anthracene	120-12-7	0.1	0.4	0.1	0.4
Atrazine	1912-24-9	0.6	2.0	0.6	2.0
Benzene	71-43-2	10	50	8	50

Name of substance	*Chemical Abstracts Service number*	*All rivers and lakes*		*All transitional and coastal waters*	
		Good		*Good*	
		Annual mean[(i)] (AA-EQS) (µg/l)	*Maximum allowable concentration[(ii)] (MAC-EQS) (µg/l)*	*Annual mean[(i)] (AA-EQS) (µg/l)*	*Maximum allowable concentration[(ii)] (MAC-EQS) (µg/l)*
Brominated diphenylether[(iii)]	32534-81-9	0.0005	not applicable	0.0002	not applicable
Cadmium and its compounds (depending on water hardness classes)[(iv)]	7440-43-9	≤ 0.08 (class 1) 0.08 (class 2) 0.09 (class 3) 0.15 (class 4) 0.25 (class 5)	≤ 0.45 (class 1) 0.45 (class 2) 0.6 (class 3) 0.9 (class 4) 1.5 (class 5)	0.2	≤ 0.45 (class 1) 0.45 (class 2) 0.6 (class 3) 0.9 (class 4) 1.5 (class 5)
Carbon-tetrachloride	56-23-5	12	not applicable	12	not applicable
C10-13 Chloroalkanes	85535-84-8	0.4	1.4	0.4	1.4
Chlorfenvinphos	470-90-6	0.1	0.3	0.1	0.3
Chlorpyrifos (Chlorpyrifos-ethyl)	2921-88-2	0.03	0.1	0.03	0.1
Cyclodiene pesticides: Aldrin Dieldrin Endrin Isodrin	 309-00-2 60-57-1 72-20-8 465-73-6	Σ=0.01	not applicable	Σ=0.005	not applicable
DDT total[(v)]	not applicable	0.025	not applicable	0.025	not applicable

Name of substance	*Chemical Abstracts Service number*	*All rivers and lakes*		*All transitional and coastal waters*	
		Good		*Good*	
		Annual mean[(i)] (AA-EQS) (µg/l)	*Maximum allowable concentration[(ii)] (MAC-EQS) (µg/l)*	*Annual mean[(i)] (AA-EQS) (µg/l)*	*Maximum allowable concentration[(ii)] (MAC-EQS) (µg/l)*
Para-para-DDT	50-29-3	0.01	not applicable	0.01	not applicable
1,2-Dichloroethane	107-06-2	10	not applicable	10	not applicable
Dichloromethane	75-09-2	20	not applicable	20	not applicable
Di(2-ethylhexyl)-phthalate (DEHP)	117-81-7	1.3	not applicable	1.3	not applicable
Diuron	330-54-1	0.2	1.8	0.2	1.8
Endosulfan	115-29-7	0.005	0.01	0.0005	0.004
Fluoranthene	206-44-0	0.1	1	0.1	1
Hexachloro-benzene	118-74-1	0.01[(vi)]	0.05	0.01[(vi)]	0.05
Hexachloro-butadiene	87-68-3	0.1[(vi)]	0.6	0.1[(vi)]	0.6
Hexachloro-cyclohexane	608-73-1	0.02	0.04	0.002	0.02
Isoproturon	34123-59-6	0.3	1.0	0.3	1.0
Lead and its compounds	7439-92-1	7.2	not applicable	7.2	not applicable
Mercury and its compounds	7439-97-6	0.05[(vi)]	0.07	0.05[(vi)]	0.07
Naphthalene	91-20-3	2.4	not applicable	1.2	not applicable
Nickel and its compounds	7440-02-0	20	not applicable	20	not applicable
Nonylphenol (4-Nonylphenol)	104-40-5	0.3	2.0	0.3	2.0
Octylphenol ((4-(1,1',3,3'-tetramethylbutyl)-phenol))	140-66-9	0.1	not applicable	0.01	not applicable

Name of substance	*Chemical Abstracts Service number*	*All rivers and lakes*		*All transitional and coastal waters*	
		Good		*Good*	
		Annual mean[(i)] (AA-EQS) (µg/l)	*Maximum allowable concentration[(ii)] (MAC-EQS) (µg/l)*	*Annual mean[(i)] (AA-EQS) (µg/l)*	*Maximum allowable concentration[(ii)] (MAC-EQS) (µg/l)*
Pentachloro-benzene	608-93-5	0.007	not applicable	0.0007	not applicable
Pentachloro-phenol	87-86-5	0.4	1	0.4	1
Benzo(a)pyrene	50-32-8	0.05	0.1	0.05	0.1
Benzo(b)fluor-anthene	205-99-2	Σ=0.03	not applicable	Σ=0.03	not applicable
Benzo(k)fluor-anthene	207-08-9				
Benzo(g,h,i)-perylene	191-24-2	Σ=0.002	not applicable	Σ=0.002	not applicable
Indeno(1,2,3-cd)-pyrene	193-39-5				
Simazine	122-34-9	1	4	1	4
Tetrachloro-ethylene	127-18-4	10	not applicable	10	not applicable
Trichloro-ethylene	79-01-6	10	not applicable	10	not applicable
Tributyltin compounds (Tributhyltin-cation)	36643-28-4	0.0002	0.0015	0.0002	0.0015
Trichloro-benzenes	12002-48-1	0.4	not applicable	0.4	not applicable
Trichloro-methane	67-66-3	2.5	not applicable	2.5	not applicable
Trifluralin	1582-09-8	0.03	not applicable	0.03	not applicable

(i) This parameter is the Environmental Quality Standard expressed as an annual average value (AA-EQS). Unless otherwise specified, it applies to the total concentrations of all isomers of the pollutant concerned.

(ii) This parameter is the Environmental Quality Standard expressed as a maximum allowable concentration (MAC-EQS). Where the MAC-EQS are marked as “not applicable”, the AA-EQS values are considered protective against short-term pollution peaks in continuous discharges since they are significantly lower than the values derived on the basis of acute toxicity.

(iii) For the group of priority substances covered by brominated diphenylethers listed in Decision 2455/2001/EC, an EQS is established only for congener numbers 28, 47, 99, 100, 153 and 154.

(iv) For cadmium and its compounds the EQS values vary dependent upon the hardness of the water as specified in five class categories (class 1: <40mg $CaCO_3$/l, class 2: 40 to <50mg $CaCO_3$/l, class 3: 50 to <100mg $CaCO_3$/l, class 4: 100 to <200mg $CaCO_3$/l and class 5: ≥200mg $CaCO_3$/l).

(v) DDT total comprises the sum of the isomers 1,1,1-trichloro-2,2 bis (*p*-chlorophenyl) ethane (CAS number 50-29-3; EU number 200-024-3); 1,1,1-trichloro-2 (*o*-chlorophenyl)-2-(*p*-chlorophenyl) ethane (CAS number 789-02-6; EU number 212-332-5); 1,1-dichloro-2,2 bis (*p*-chlorophenyl) ethylene (CAS number 72-55-9; EU number 200-784-6); and 1,1-dichloro-2,2 bis (*p*-chlorophenyl) ethane (CAS number 72-54-8; EU number 200-783-0).

(vi) If the Department does not apply standards for biota it shall introduce stricter standards for water in order to achieve the same level of protection as the standards for biota set out in regulation 4. The Department shall notify the European Commission of the reasons and basis for using this approach, the alternative standards used, the data and the methodology by which the alternative standards were derived and the categories of surface water to which they would apply.

Application of the standards set out in Table 37
For any given surface water body, applying the AA-EQS means that, for each representative monitoring point within the water body, the arithmetic mean of the concentrations measured at different times during the year does not exceed the standard.
The calculation of the arithmetic mean, the analytical method used and, where there is no appropriate analytical method meeting the minimum performance criteria, the method of applying a standard must be in accordance with implementing acts adopting technical specifications for chemical monitoring and quality of analytical results, in accordance with the Water Framework Directive.
For any given surface water body, applying the MAC-EQS means that the measured concentration at any representative monitoring point within the water body does not exceed the standard.
However, in accordance with section 1.3.4. of Annex V to the Water Framework Directive, the Department may introduce statistical methods, such as a percentile calculation, to ensure an acceptable level of confidence and precision for determining compliance with the MAC-EQS.
With the exception of cadmium, lead, mercury and nickel (hereinafter "metals") the standards set out in Table 37 are expressed as total concentrations in the whole water sample. In the case of metals the standards refer to the dissolved concentration i.e. the dissolved phase of a water sample obtained by filtration through a 0.45 µm filter or any equivalent pre-treatment.
The Department may, when assessing the monitoring results against the standards, take into account:

natural background concentrations for metals and their compounds, if they prevent compliance with the standard; and
hardness, pH or other water quality parameters that affect the bioavailability of metals.

Table 39

Environmental Quality Standards for other dangerous substances

Name of Substance	*Chemical Abstracts Service Number*	*All Rivers and Lakes* *Annual Mean Concentration* (µg/l)	*All transitional, coastal and relevant territorial waters*[1] *Annual Mean Concentration* (µg/l)
		Good	
Perchloroethylene[2]	127-18-4	10	10
Azinphos-methyl[3]	86-50-0	0.01	0.01
Demeton[3]	8065-48-3	0.5	0.5
Omethoate[3]	1113-02-6	0.01	Not determined
Triazophos[3]	24017-47-8	0.005	0.005
4-chloro-3-methyl-phenol[3]	59-50-7	40	40
Bentazone[3]	25057-89-0	500	500
Fenitrothion[3]	122-14-5	0.01	0.01
2-chlorophenol[3]	95-57-8	50	50

Name of Substance	*Chemical Abstracts Service Number*	*All Rivers and Lakes* *Annual Mean Concentration* (µg/l)	*All transitional, coastal and relevant territorial waters*[(1)] *Annual Mean Concentration* (µg/l)
		Good	
Biphenyl[(3)]	92-52-4	25	25
Malathion[(3)]	121-75-5	0.01	0.02
1,1,1-trichloroethane[(3)]	71-55-6	100	100
Chloronitrotoluenes[(3)]	89-60-1	10	10
Triphenyltin and its derivatives[(3)]	379-52-2	0.02[(4)]	0.008[(4)]
1,1,2-trichloroethane[(3)]	79-00-5	400	300
Dichlorvos[(3)]	95828-55-0	0.001	0.04 0.6[(4)]
Xylene[(3)]	1330-20-7	30	30

(1) "relevant territorial waters" means the waters which extend seaward for 3 miles from the baselines from which the breadth of the territorial sea adjacent to Northern Ireland is measured.

(2) The reference method of measurement shall be gas chromatography with electron capture detection after extraction by means of an appropriate solvent, or an alternative method that is at least as reliable. The limit of detection is 0.1 µg/litre. The accuracy and precision of the method shall be plus or minus 50% at a concentration which represents twice the value of the limit of determination.

(3) Where samples are taken from more than one sampling point in relation to the waters in question, the standard shall be satisfied in relation to the samples from each sampling point.

(4) Maximum Allowable Concentration

Sampling and analysis of the substances set out in Table 38
Samples shall be taken at a frequency sufficient to show any changes in the aquatic environment, having regard in particular to natural variations in hydrological conditions.
Where a discharge containing any substance listed is made to any river, lake or transitional, coastal or territorial water, samples shall be taken at a point sufficiently close to the discharge point to be representative of the quality of the aquatic environment in the area affected by the discharge.

PART 3

Boundary values for biological quality elements

Boundary values for aquatic plants and animals in rivers

1. The Department shall apply, as applicable, to any river or part thereof, the "high", "good", "moderate", "poor" or "bad" benthic invertebrate fauna boundary value for rivers specified in Table 1 and 2 below.

2. The Department shall apply, as applicable, to any river or part thereof, the "high", "good", "moderate", "poor" or "bad" phytobenthos boundary value for rivers specified in Table 3 below.

3. The Department shall apply, as applicable, to any river or part thereof, the "high", "good", "moderate", "poor" or "bad" aquatic macrophyte boundary value for rivers specified in Table 4 below.

Boundary values for aquatic plants and animals in lakes

4. The Department shall apply, as applicable, to any lake or part thereof, the "high", "good", "moderate", "poor" or "bad" phytoplankton boundary values for lakes specified in columns 2, 3, 4, 5, 6, 7 and 8 of Table 5 and columns 2, 3 and 4 of Table 6 respectively.

5. The Department shall apply, as applicable, to any lake or part thereof, the "high", "good", "moderate", "poor" or "bad" phytobenthos boundary value for lakes specified in Table 7 below.

6. The Department shall apply, as applicable, to any lake or part thereof, the "high", "good", "moderate", "poor" or "bad" aquatic macrophyte boundary value for lakes specified in Table 8 below.

Boundary values for aquatic plants and animals in transitional and coastal waters

7. The Department shall apply, as applicable, to any transitional water, coastal water or part thereof, the "high", "good", "moderate", "poor" or "bad" benthic invertebrate fauna boundary values for transitional and coastal waters specified in Tables 9 and 10 below.

8. The Department shall apply, as applicable, to any transitional water, coastal water or part thereof, the "high", "good", "moderate", "poor" or "bad" aquatic angiosperm boundary value for transitional and coastal waters specified in Table 11 below.

9. The Department shall apply, as applicable, to any transitional water, coastal water or part thereof, the "high", "good", "moderate", "poor" or "bad" phytoplankton boundary value for transitional and coastal waters specified in Table 12 below.

10. The Department shall apply, as applicable, to any transitional water, coastal water or part thereof, the "high", "good", "moderate", "poor" or "bad" aquatic macroalgae boundary values for transitional and coastal waters specified in Tables 13 and 14 below.

11. The Department shall apply, as applicable, to any transitional water or part thereof, the "high", "good", "moderate", "poor" or "bad" fish boundary value for transitional waters specified in Table 15 below.

Table 1

Benthic invertebrate fauna boundary values (Average Score per Taxon) for rivers

Boundary values for the degree to which the annual mean sensitivity to disturbance of the observed taxa differs from the annual mean sensitivity of the taxa expected under reference conditions	
	Ecological quality ratio
High	0.97
Good	0.86
Moderate	0.75
Poor	0.63
Bad	< 0.63

Table 2

Benthic invertebrate fauna boundary values (Number of TAXA) for rivers

Boundary values for the degree to which the annual mean number of disturbance-sensitive taxa differs from the annual mean number of taxa expected under reference conditions	
	Ecological quality ratio
High	0.85
Good	0.71
Moderate	0.57
Poor	0.47
Bad	< 0.47

Table 3

Phytobenthos (Diatom) boundary values for rivers

Boundary values for the degree to which the relative annual mean abundances of nutrient-sensitive and nutrient-tolerant groups of diatom taxa differ from the relative annual mean abundances of these groups of taxa expected under reference conditions	
	Ecological quality ratio
High	0.93
Good	0.78
Moderate	0.52
Poor	0.26
Bad	< 0.26

Table 4

Macrophyte boundary values for rivers

Boundary values for the degree to which the annual mean abundances of disturbance-sensitive and disturbance-tolerant macrophyte taxa differ from the annual mean abundances of those taxa under reference conditions	
	Ecological quality ratio
High	0.80
Good	0.60
Moderate	0.40
Poor	0.20
Bad	< 0.20

Table 5

Phytoplankton boundary values for lakes – chlorophyll a

Boundary values for the degree to which the biomass of phytoplankton[1] taxa (as represented by the annual mean chlorophyll a concentration) differ from the biomass of those phytoplankton taxa (annual mean chlorophyll a concentration) expected under reference conditions							
	Ecological quality ratio						
Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
Lake characteristics (ii)	Marl, shallow; and high alkalinity, shallow.	High alkalinity, very shallow.	Medium alkalinity, deep; medium alkalinity, shallow; low alkalinity, deep; and low alkalinity, shallow at mid-altitude.[2]	Medium alkalinity, very shallow.	Low alkalinity, shallow at low altitude[3] & with < 75 % by area of the soils in the catchment being peat.	Low alkalinity, shallow at low altitude[3] & with ≥ 75 % by area of the soils in the catchment being peat.	Low alkalinity, very shallow.
High	0.55	0.63	0.50	0.63	0.50	0.50	0.63
Good	0.32	0.30	0.33	0.34	0.29	0.30	0.33
Moderate	0.16	0.15	0.165	0.17	0.145	0.15	0.165
Poor	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Bad	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	< 0.05

(1) The term phytoplankton refers to solitary and colonial unicellular algae and cyanobacteria that live in the water column, at least for part of their lifecycle.

(2) "mid altitude" means ≥ 200 – 800 metres above sea level.

(3) "low altitude" means < 200 metres above mean sea level.

Table 6

Phytoplankton boundary values for lakes – percentage cyanobacteria

Boundary values for the degree to which the annual mean percentage of cyanobacteria differ from the annual mean percentage of cyanobacteria expected under reference conditions			
Ecological quality ratio			
Column 1	Column 2	Column 3	Column 4

Boundary values for the degree to which the annual mean percentage of cyanobacteria differ from the annual mean percentage of cyanobacteria expected under reference conditions			
Geological characteristics	High alkalinity	Moderate alkalinity	Low alkalinity
High	0.97	0.95	0.97
Good	0.82	0.77	0.82
Moderate	0.61	0.61	0.61
Poor	0.15	0.15	0.15
Bad	< 0.15	< 0.15	< 0.15

Table 7

Phytobenthos boundary values for lakes

Boundary values for the degree to which the relative annual mean abundances of nutrient-sensitive and nutrient-tolerant groups of diatom taxa differ from the relative annual mean abundances of these groups of taxa expected under reference conditions		
	Ecological quality ratio	
Column 1	Column 2	Column 3
	Low alkalinity lakes	Moderate alkalinity lakes; high alkalinity lakes; and marl lakes
High	0.90	0.90
Good	0.63	0.66
Moderate	0.44	0.44
Poor	0.22	0.22
Bad	< 0.22	< 0.22

Table 8

Aquatic macrophyte boundary values for lakes

Boundary values for the degree to which the annual mean abundance of disturbance-sensitive macrophyte[(1)] taxa differ from the annual mean abundance of those taxa expected under reference conditions	
	Ecological quality ratio
Column 1	Column 2
High	0.90
Good	0.68
Moderate	0.42
Poor	0.33

(1) The term “macrophyte” refers to larger plants, typically including flowering plants, mosses and larger algae, but not including single-celled phytoplankton or diatoms.

Boundary values for the degree to which the annual mean abundance of disturbance-sensitive macrophyte[1] taxa differ from the annual mean abundance of those taxa expected under reference conditions	
Bad	< 0.33

(1) The term "macrophyte" refers to larger plants, typically including flowering plants, mosses and larger algae, but not including single-celled phytoplankton or diatoms.

Table 9

Benthic invertebrate fauna boundary values for IMPOSEX in coastal waters

Boundary values for the degree to which the annual mean occurrence and degree of tributyl tin (TBT) -induced imposex in the common dog whelk, Nucella lapillus, differs from the annual mean occurrence and degree of imposex expected under reference conditions using the Vas Deferens Stage Index (VDSI) (UKTAG Method ISBN 978-1-906934-16-3)		
	Ecological quality ratio	Vas Deferens Stage Index (VDSI)
High	0.95	0.3
Good	0.33	4
Moderate	0.17	5

Table 10

Benthic invertebrate fauna boundary values for the INFAUNAL Quality Index (IQI) for transitional and coastal waters

Boundary values relating to the degree to which the annual mean number of benthic invertebrate taxa in soft sediments, the diversity of taxa, and the ratio of disturbance-sensitive and disturbance-tolerant taxa differ from that expected under reference conditions (UKTAG Method ISBN 978-1-906934-13-2)	
	Ecological quality ratio
High	0.75
Good	0.64
Moderate	0.44
Poor	0.24
Bad	< 0.24

Table 11

Aquatic angiosperm boundary values in transitional and coastal waters

Aquatic Angiosperm[1] Boundary values relating to the degree to which the annual mean shoot density, and spatial extent of sea grass beds, differ that expected under reference conditions (UKTAG Method ISBN 978-1-906934-14-9)	
	Ecological quality ratio

(1) The term "angiosperm" refers to flowering plants. In transitional waters and coastal waters, angiosperms include sea grasses and the flowering plants found in salt marshes, salt marsh tools have not yet been developed.

Aquatic Angiosperm[1] Boundary values relating to the degree to which the annual mean shoot density, and spatial extent of sea grass beds, differ that expected under reference conditions (UKTAG Method ISBN 978-1-906934-14-9)	
High	0.8
Good	0.6
Moderate	0.4
Poor	0.2
Bad	< 0.2

(1) The term "angiosperm" refers to flowering plants. In transitional waters and coastal waters, angiosperms include sea grasses and the flowering plants found in salt marshes, salt marsh tools have not yet been developed.

Table 12

Phytoplankton boundary values for transitional and coastal waters

Boundary values relating to the degree to which biomass, taxonomic composition, bloom frequency and bloom intensity for phytoplankton[1] differ from that expected under reference conditions (UKTAG Method ISBN 978-1-906934-12-5)	
	Ecological quality ratio
High	0.8
Good	0.6
Moderate	0.4
Poor	0.2
Bad	< 0.2

(1) The term "phytoplankton" refers to solitary and colonial unicellular algae and cyanobacteria that live in the water column, at least for part of their lifecycle.

Table 13

Aquatic macroalgae boundary values in transitional and coastal waters

Boundary values relating to the degree to which mean species richness, proportion of red, green and opportunist seaweeds and ecological status group ratio on rocky intertidal areas differ from that expected under reference conditions (UKTAG Method ISBN 978-1-906934-17-0)	
	Ecological quality ratio
High	0.8
Good	0.6
Moderate	0.4
Poor	0.2
Bad	< 0.2

Table 14

Aquatic macroalgae boundary values in transitional and coastal waters

Boundary values relating to the degree to which opportunistic macroalgal[(1)] extent, biomass and entrainment differ from that expected under reference conditions (UKTAG Method ISBN978-1-906934-15-6)	
	Ecological quality ratio
High	0.8
Good	0.6
Moderate	0.4
Poor	0.2
Bad	< 0.2

(1) The term “macroalgae” refers to multicellular algae such as seaweeds and filamentous algae.

Table 15

Fish boundary values for transitional waters

Boundary values relating to the degree to which the annual mean composition and abundance of disturbance-sensitive fish taxa differ from the annual mean composition and abundance of disturbance-sensitive fish taxa expected under reference conditions	
	Ecological quality ratio
High	0.8
Good	0.6
Moderate	0.4
Poor	0.2
Bad	< 0.2