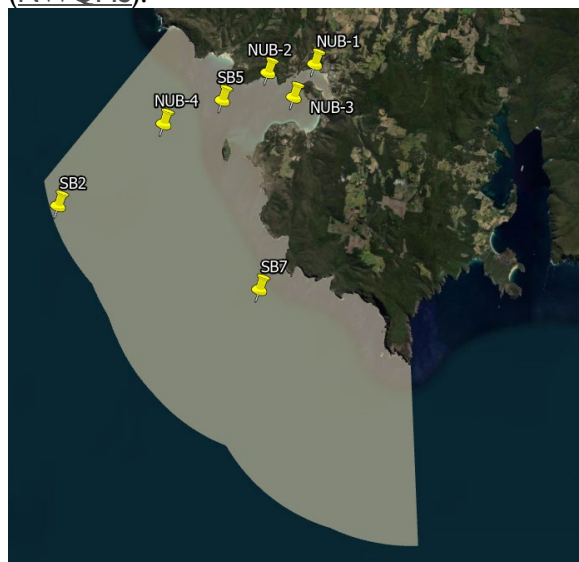


## Oil Spill Response Atlas – Segment 80

The default guideline values (DGVs) for aquatic ecosystems presented herein have been derived from site specific information in accordance with the National Water Quality Management Strategy (NWQMS).



**Water Body Name:** Storm Bay

**OSRA Segment:** 80

**IMCRA Mesoscale Region:** Bruny

**IMCRA Provincial Region:** Tasmanian Shelf

**Ecosystem Classification:** Slightly to Moderately Disturbed Ecosystem

**Data Provider:** Aqueal and Water Section, EPA (Tasmania)

**Sites:** SB5, NUB1, NUB2, NUB3 and NUB4 (Aqueal), SB2, SB5 and SB7 (EPA)

**Period of record:** 06/02/2014 to 08/02/2019 (Aqueal), 10/01/2018 to 01/05/2019 (EPA)

### Default Guideline Values

Data from 7 locations (SB2, SB5, SB7, NUB1, NUB2, NUB3 and NUB4) have been used in the derivation of the DGVs presented here in. For each site field measurements were taken at the surface, 5-10 metres and approximately one metre from the bottom. Nutrient samples for laboratory analysis were taken at the surface, and near the bottom of the water column. Chlorophyll data was collected for laboratory analysis from a 12 metre integrated sample (surface to a depth of 12 metres).

The following tables display the combined data as percentiles for the surface, 5 to 10 metre depth range and near the bottom of the water column. The laboratory data from the surface or bottom can be considered for nutrient DGVs for the 5 to 10 metre depth range. The shaded values represent the default guideline values (DGVs) for aquatic ecosystems for the depth indicated on an annual or seasonal basis. These can be applied as DGVs for aquatic ecosystems of waters encompassed within OSRA segment 80 (as highlighted above). The DGVs are summarised in Appendix A. The following links provide Information on the [IMCRA spatial network](#) and the [Interim Default guideline values for Coastal and Marine waters of Tasmania](#).

## Annual DGVs for Aquatic Ecosystems for Surface waters (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.6	7.7	7.8	8.2	8.9	9.5	9.7	210
Dissolved Oxygen (%)	94.1	96.4	98.6	102.1	105.9	107.9	108.8	289
Salinity (PPT)	33.1	33.6	34.0	34.7	35.1	35.3	35.5	296
pH field - sensor TC	7.9	8.0	8.1	8.1	8.2	8.3	8.3	251
Temperature (Celsius)	10.1	10.4	11.2	14.3	17.5	18.1	18.6	291
Turbidity (NTU)	0.2	0.3	0.6	1.8	5.9	6.4	8.8	76
Chlorophyll a (µg/L)*	0.3	0.5	0.7	1.2	2.2	3.1	3.9	261
TAN as N (mg/L)	0.003	0.003	0.003	0.005	0.009	0.013	0.019	293
Nitrite and Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.015	0.026	0.040	166
Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.010	0.024	0.038	293
Nitrite as N mg/L	0.001	0.001	0.001	0.001	0.001~	0.001	0.001	12
Nitrogen (Total) as N mg/L	0.20	0.22	0.24	0.29	0.33	0.34	0.35	293
Phosphorus (Total) as P mg/L	0.02	0.02	0.02	0.03	0.04	0.04	0.04	293
DRP as P mg/L	0.002	0.003	0.004	0.005	0.008	0.010	0.012	293
Silica as Si mg/L	0.1	0.1	0.1	0.1	0.2	0.4	0.5	293

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected.

## Summer DGVs for Aquatic Ecosystems for Surface waters (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.6	7.6	7.7	7.9	8.2	8.4	8.4	60
Dissolved Oxygen (%)	97.5	99.4	100.5	103.0	105.6	106.5	107.3	76
Salinity (PPT)	34.0	34.2	34.6	34.9	35.1	35.3	35.8	80
pH field - sensor TC	8.0	8.1	8.1	8.2	8.3	8.3	8.3	65
Temperature (Celsius)	14.8	15.5	16.1	17.4	18.6	19.1	19.9	80
Turbidity (NTU)	0.6	0.8	0.9	5.6	5.8	7.1	9.0	15
Chlorophyll a (µg/L)*	0.3	0.3	0.6	1.0	1.9	2.0	2.4	70
TAN as N (mg/L)	0.003	0.003	0.003	0.004	0.006	0.009	0.010	80
Nitrite and Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.001	0.003	0.003	54
Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.001	0.002	0.003	80
Nitrite as N mg/L					ID			5
Nitrogen (Total) as N mg/L	0.18	0.20	0.23	0.27	0.32	0.34	0.35	80
Phosphorus (Total) as P mg/L	0.02	0.02	0.02	0.03	0.03	0.04	0.04	80
DRP as P mg/L	0.002	0.002	0.004	0.005	0.006	0.006	0.007	80
Silica as Si mg/L	0.1	0.1	0.1	0.1	0.2	0.2	0.2	80

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Autumn DGVs for Aquatic Ecosystems for Surface waters (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.4	7.5	7.7	7.8	8.0	8.0	8.1	45
Dissolved Oxygen (%)	92.5	94.1	97.8	101.1	104.0	107.5	108.5	71
Salinity (PPT)	34.3	34.3	34.7	35.0	35.3	35.5	35.7	74
pH field - sensor TC	8.0	8.1	8.1	8.1	8.2	8.3	8.3	59
Temperature (Celsius)	12.7	13.2	14.1	16.4	17.6	18.0	18.3	69
Turbidity (NTU)	0.5	0.6	0.6	1.8	6.0	6.4	8.8	18
Chlorophyll a (µg/L)*	0.3	0.5	0.7	1.1	1.7	2.1	2.5	67
TAN as N (mg/L)	0.003	0.003	0.003	0.006	0.010	0.013	0.016	71
Nitrite and Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.006	0.014	0.019	32
Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.005	0.006	0.010	71
Nitrite as N mg/L					ID			3
Nitrogen (Total) as N mg/L	0.20	0.21	0.26	0.30	0.33	0.34	0.36	71
Phosphorus (Total) as P mg/L	0.02	0.02	0.02	0.03	0.04	0.04	0.05	71
DRP as P mg/L	0.002	0.003	0.004	0.006	0.008	0.009	0.010	71
Silica as Si mg/L	0.1	0.1	0.1	0.2	0.3	0.3	0.4	71

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Winter DGVs for Aquatic Ecosystems for Surface waters (Shaded)

Parameter	5 <sup>th</sup> %ile	10 <sup>th</sup> %ile	20 <sup>th</sup> %ile	Median	80 <sup>th</sup> %ile	90 <sup>th</sup> %ile	95 <sup>th</sup> %ile	Sample Number
Dissolved Oxygen (mg/L)	8.0	8.1	8.3	8.7	9.6	9.9	10.0	53
Dissolved Oxygen (%)	90.9	93.2	96.1	99.9	103.4	106.7	108.4	70
Salinity (PPT)	31.4	32.8	33.4	33.9	34.4	34.9	35.2	70
pH field - sensor TC	7.5	7.8	7.9	8.1	8.1	8.2	8.5	60
Temperature (Celsius)	9.3	9.7	10.2	10.6	11.7	12.1	13.9	70
Turbidity (NTU)	0.2	0.3	1.1	1.8	2.0	2.5	4.0	20
Chlorophyll a (µg/L)*	0.3	0.6	0.8	2.1	3.9	4.9	5.6	61
TAN as N (mg/L)	0.003	0.003	0.003	0.008	0.015	0.019	0.025	70
Nitrite and Nitrate as N mg/L	0.004	0.006	0.014	0.025	0.041	0.061	0.063	35
Nitrate as N mg/L	0.001	0.001	0.004	0.019	0.039	0.049	0.059	70
Nitrite as N mg/L					ID			1
Nitrogen (Total) as N mg/L	0.26	0.27	0.29	0.31	0.34	0.35	0.36	70
Phosphorus (Total) as P mg/L	0.02	0.03	0.03	0.03	0.04	0.04	0.05	70
DRP as P mg/L	0.004	0.004	0.005	0.010	0.012	0.012	0.014	70
Silica as Si mg/L	0.1	0.1	0.1	0.2	0.5	0.6	0.7	70

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Spring DGVs for Aquatic Ecosystems for Surface waters (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	8.3	8.3	8.4	8.7	9.4	9.5	9.7	52
Dissolved Oxygen (%)	98.2	99.4	101.6	104.6	107.9	108.8	110.8	72
Salinity (PPT)	33.1	33.4	33.8	34.2	35.0	35.2	35.3	72
pH field - sensor TC	8.0	8.0	8.0	8.1	8.2	8.3	8.3	67
Temperature (Celsius)	10.5	11.2	11.5	13.1	14.2	14.9	17.2	72
Turbidity (NTU)	0.1	0.2	0.3	1.7	6.2	7.4	12.2	23
Chlorophyll a (µg/L)*	0.6	0.8	0.9	1.3	2.4	3.0	3.1	63
TAN as N (mg/L)	0.003	0.003	0.003	0.005	0.008	0.009	0.011	72
Nitrite and Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.004	0.005	0.019	45
Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.004	0.009	0.018	72
Nitrite as N mg/L					ID			3
Nitrogen (Total) as N mg/L	0.20	0.22	0.23	0.28	0.31	0.32	0.32	72
Phosphorus (Total) as P mg/L	0.02	0.02	0.02	0.03	0.03	0.04	0.05	72
DRP as P mg/L	0.002	0.003	0.003	0.005	0.007	0.008	0.008	72
Silica as Si mg/L	0.1	0.1	0.1	0.1	0.1	0.2	0.3	72

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Annual DGVs for Aquatic Ecosystems for mid water 5-10 m (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.5	7.7	7.8	8.3	8.9	9.4	9.6	209
Dissolved Oxygen (%)	93.6	95.4	97.8	101.7	105.4	106.9	108.3	358
Salinity (PPT)	33.7	33.9	34.2	34.8	35.2	35.3	35.5	365
pH field - sensor TC	8.0	8.0	8.1	8.2	8.2	8.3	8.3	318
Temperature (Celsius)	10.0	10.4	11.2	13.9	17.0	17.8	18.4	360
Turbidity (NTU)	0.1	0.1	0.4	1.9	5.8	5.9	6.0	100
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)	0.003	0.003	0.003	0.003	0.006~	0.008	0.013	12
Nitrite and Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.002~	0.002	0.012	12
Nitrate as N mg/L	0.001	0.001	0.001	0.001	0.002~	0.002	0.011	12
Nitrite as N mg/L	0.001	0.001	0.001	0.001	0.001~	0.001	0.001	12
Nitrogen (Total) as N mg/L	0.19	0.19	0.22	0.31	0.33~	0.33	0.33	12
Phosphorus (Total) as P mg/L	0.02	0.02	0.02	0.03	0.04~	0.04	0.04	12
DRP as P mg/L	0.004	0.004	0.004	0.006	0.006~	0.007	0.009	12
Silica as Si mg/L	0.1	0.1	0.1	0.1	0.1~	0.2	0.2	12

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected.

### Summer DGVs for Aquatic Ecosystems for mid water 5-10 m (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.6	7.6	7.8	8.0	8.3	8.5	8.5	58
Dissolved Oxygen (%)	98.4	99.3	100.2	103.3	106.2	107.7	108.2	90
Salinity (PPT)	34.0	34.1	34.7	34.9	35.1	35.3	35.6	94
pH field - sensor TC	8.1	8.1	8.1	8.2	8.3	8.3	8.3	79
Temperature (Celsius)	14.4	14.9	15.7	17.1	18.3	18.6	19.2	94
Turbidity (NTU)	0.6	0.6	0.7	5.6	5.7	5.8	5.8	21
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)					ID			5
Nitrite and Nitrate as N mg/L					ID			5
Nitrate as N mg/L					ID			5
Nitrite as N mg/L					ID			5
Nitrogen (Total) as N mg/L					ID			5
Phosphorus (Total) as P mg/L					ID			5
DRP as P mg/L					ID			5
Silica as Si mg/L					ID			5

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Autumn DGVs for Aquatic Ecosystems for mid water 5-10 m (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.5	7.5	7.7	7.8	8.0	8.1	8.2	45
Dissolved Oxygen (%)	93.1	94.3	95.7	100.2	103.2	106.2	107.1	94
Salinity (PPT)	34.3	34.5	34.7	35.1	35.3	35.5	35.9	97
pH field - sensor TC	8.1	8.1	8.1	8.2	8.3	8.3	8.3	80
Temperature (Celsius)	12.7	13.1	13.7	16.4	17.4	17.9	18.1	92
Turbidity (NTU)	0.2	0.4	0.5	5.6	5.9	6.0	6.1	29
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)					ID			3
Nitrite and Nitrate as N mg/L					ID			3
Nitrate as N mg/L					ID			3
Nitrite as N mg/L					ID			3
Nitrogen (Total) as N mg/L					ID			3
Phosphorus (Total) as P mg/L					ID			3
DRP as P mg/L					ID			3
Silica as Si mg/L					ID			3

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Winter DGVs for Aquatic Ecosystems for mid water 5-10 m (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.7	7.9	8.2	8.6	9.3	9.7	9.7	54
Dissolved Oxygen (%)	89.3	91.1	95.6	99.0	101.9	104.3	105.4	86
Salinity (PPT)	33.3	33.6	33.8	34.2	34.7	35.0	35.3	86
pH field - sensor TC	7.5	7.8	8.0	8.1	8.1	8.2	8.5	76
Temperature (Celsius)	9.6	9.8	10.2	10.9	11.9	12.3	13.5	86
Turbidity (NTU)	0.2	0.3	0.5	1.2	1.8	1.9	2.0	17
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)					ID			1
Nitrite and Nitrate as N mg/L					ID			1
Nitrate as N mg/L					ID			1
Nitrite as N mg/L					ID			1
Nitrogen (Total) as N mg/L					ID			1
Phosphorus (Total) as P mg/L					ID			1
DRP as P mg/L					ID			1
Silica as Si mg/L					ID			1

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data, ID = insufficient data.

### Spring DGVs for Aquatic Ecosystems for mid water 5-10 m (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	8.1	8.4	8.6	8.9	9.4	9.6	9.7	52
Dissolved Oxygen (%)	97.6	99.1	100.9	103.5	106.2	108.6	109.6	88
Salinity (PPT)	33.3	33.7	34.0	34.4	35.2	35.3	35.4	88
pH field - sensor TC	8.0	8.0	8.1	8.2	8.2	8.3	8.3	83
Temperature (Celsius)	9.7	10.6	11.2	12.6	13.6	14.1	15.6	88
Turbidity (NTU)	0.1	0.1	0.1	1.8	5.8	6.0	6.1	33
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)					ID			3
Nitrite and Nitrate as N mg/L					ID			3
Nitrate as N mg/L					ID			3
Nitrite as N mg/L					ID			3
Nitrogen (Total) as N mg/L					ID			3
Phosphorus (Total) as P mg/L					ID			3
DRP as P mg/L					ID			3
Silica as Si mg/L					ID			3

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Annual DGVs for Aquatic Ecosystems for bottom waters (Shaded)

Parameter	5 <sup>th</sup> %ile	10 <sup>th</sup> %ile	20 <sup>th</sup> %ile	Median	80 <sup>th</sup> %ile	90 <sup>th</sup> %ile	95 <sup>th</sup> %ile	Sample Number
Dissolved Oxygen (mg/L)	6.9	7.2	7.5	7.9	8.5	8.7	8.9	209
Dissolved Oxygen (%)	86.0	88.1	91.3	95.6	100.1	101.6	103.0	269
Salinity (PPT)	34.2	34.3	34.6	34.9	35.3	35.6	35.8	275
pH field - sensor TC	7.9	8.0	8.0	8.1	8.2	8.3	8.3	228
Temperature (Celsius)	10.7	11.0	11.9	13.5	16.5	17.2	17.9	270
Turbidity (NTU)	0.1	0.2	0.4	1.3	5.9	6.1	7.2	67
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)	0.003	0.003	0.003	0.009	0.017	0.021	0.027	293
Nitrite and Nitrate as N mg/L	0.001	0.001	0.002	0.011	0.035	0.044	0.048	166
Nitrate as N mg/L	0.001	0.001	0.001	0.010	0.036	0.043	0.045	293
Nitrite as N mg/L	0.001	0.001	0.001	0.001	0.003~	0.012	0.014	12
Nitrogen (Total) as N mg/L	0.22	0.23	0.25	0.31	0.34	0.35	0.37	293
Phosphorus (Total) as P mg/L	0.02	0.02	0.03	0.03	0.04	0.05	0.05	293
DRP as P mg/L	0.004	0.005	0.006	0.008	0.012	0.014	0.016	293
Silica as Si mg/L	0.1	0.1	0.1	0.2	0.2	0.3	0.4	293

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected.

### Summer DGVs for Aquatic Ecosystems for bottom waters (Shaded)

Parameter	5 <sup>th</sup> %ile	10 <sup>th</sup> %ile	20 <sup>th</sup> %ile	Median	80 <sup>th</sup> %ile	90 <sup>th</sup> %ile	95 <sup>th</sup> %ile	Sample Number
Dissolved Oxygen (mg/L)	6.8	7.0	7.4	7.8	8.1	8.4	8.9	60
Dissolved Oxygen (%)	88.2	89.9	94.1	97.9	101.7	103.5	106.2	72
Salinity (PPT)	34.2	34.7	34.7	34.9	35.2	35.4	35.9	75
pH field - sensor TC	8.1	8.1	8.1	8.2	8.3	8.3	8.3	60
Temperature (Celsius)	13.6	13.8	14.3	16.3	17.6	18.2	18.4	75
Turbidity (NTU)	0.2	0.3	0.4	0.9	6.1	6.4	6.9	14
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)	0.003	0.003	0.003	0.008	0.014	0.019	0.026	80
Nitrite and Nitrate as N mg/L	0.001	0.001	0.001	0.003	0.011	0.016	0.020	54
Nitrate as N mg/L	0.001	0.001	0.001	0.002	0.011	0.015	0.020	80
Nitrite as N mg/L					ID			5
Nitrogen (Total) as N mg/L	0.22	0.23	0.24	0.27	0.33	0.35	0.36	80
Phosphorus (Total) as P mg/L	0.02	0.02	0.02	0.03	0.04	0.04	0.05	80
DRP as P mg/L	0.003	0.004	0.005	0.006	0.009	0.011	0.013	80
Silica as Si mg/L	0.1	0.1	0.1	0.1	0.2	0.2	0.2	80

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.



### Autumn DGVs for Aquatic Ecosystems for bottom waters (Shaded)

Parameter	5 <sup>th</sup> %ile	10 <sup>th</sup> %ile	20 <sup>th</sup> %ile	Median	80 <sup>th</sup> %ile	90 <sup>th</sup> %ile	95 <sup>th</sup> %ile	Sample Number
Dissolved Oxygen (mg/L)	6.7	7.1	7.2	7.5	7.8	7.8	7.9	45
Dissolved Oxygen (%)	84.8	89.1	91.4	93.3	97.1	97.9	99.6	65
Salinity (PPT)	34.6	34.6	34.8	35.1	35.4	35.4	35.7	68
pH field - sensor TC	8.1	8.1	8.1	8.1	8.2	8.2	8.2	51
Temperature (Celsius)	13.2	13.4	14.2	16.2	16.8	17.2	17.5	63
Turbidity (NTU)	0.2	0.2	0.4	1.0	6.0	10.7	14.6	15
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)	0.003	0.003	0.006	0.009	0.014	0.020	0.022	71
Nitrite and Nitrate as N mg/L	0.001	0.001	0.003	0.007	0.025	0.031	0.034	32
Nitrate as N mg/L	0.001	0.001	0.002	0.006	0.015	0.019	0.028	71
Nitrite as N mg/L					ID			3
Nitrogen (Total) as N mg/L	0.21	0.22	0.26	0.31	0.33	0.34	0.35	71
Phosphorus (Total) as P mg/L	0.02	0.02	0.03	0.03	0.04	0.04	0.04	71
DRP as P mg/L	0.004	0.005	0.006	0.008	0.010	0.011	0.012	71
Silica as Si mg/L	0.1	0.1	0.1	0.2	0.3	0.3	0.4	71

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

### Winter DGVs for Aquatic Ecosystems for bottom waters (Shaded)

Parameter	5 <sup>th</sup> %ile	10 <sup>th</sup> %ile	20 <sup>th</sup> %ile	Median	80 <sup>th</sup> %ile	90 <sup>th</sup> %ile	95 <sup>th</sup> %ile	Sample Number
Dissolved Oxygen (mg/L)	7.1	7.6	7.7	8.0	8.5	8.8	9.1	52
Dissolved Oxygen (%)	86.4	87.4	89.8	93.3	97.2	99.0	100.1	65
Salinity (PPT)	34.0	34.3	34.4	34.7	35.2	35.5	35.9	65
pH field - sensor TC	7.7	7.8	7.9	8.0	8.1	8.2	8.5	55
Temperature (Celsius)	9.7	10.2	10.8	11.9	12.8	13.5	13.7	65
Turbidity (NTU)	0.3	0.4	1.0	1.6	2.2	2.4	3.0	20
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)	0.003	0.003	0.003	0.010	0.019	0.025	0.034	70
Nitrite and Nitrate as N mg/L	0.009	0.010	0.019	0.040	0.046	0.048	0.051	35
Nitrate as N mg/L	0.004	0.009	0.016	0.037	0.043	0.046	0.053	70
Nitrite as N mg/L					ID			1
Nitrogen (Total) as N mg/L	0.26	0.27	0.30	0.32	0.34	0.36	0.38	70
Phosphorus (Total) as P mg/L	0.02	0.03	0.03	0.03	0.04	0.05	0.06	70
DRP as P mg/L	0.005	0.006	0.009	0.010	0.013	0.015	0.020	70
Silica as Si mg/L	0.1	0.1	0.1	0.2	0.3	0.4	0.4	70

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.



## Spring DGVs for Aquatic Ecosystems for bottom waters (Shaded)

Parameter	5th %ile	10th %ile	20th %ile	Median	80th %ile	90th %ile	95th %ile	Sample Number
Dissolved Oxygen (mg/L)	7.3	7.8	8.0	8.5	8.7	8.8	8.9	52
Dissolved Oxygen (%)	85.6	87.7	93.1	98.2	101.4	102.0	103.4	67
Salinity (PPT)	34.2	34.3	34.5	34.9	35.2	35.6	35.7	67
pH field - sensor TC	8.0	8.0	8.0	8.1	8.2	8.3	8.3	62
Temperature (Celsius)	10.8	11.6	11.7	12.2	12.8	13.0	13.2	67
Turbidity (NTU)	0.1	0.2	0.2	1.4	5.7	6.1	6.6	18
Chlorophyll a (µg/L)*					ND			
TAN as N (mg/L)	0.003	0.003	0.006	0.010	0.019	0.022	0.027	72
Nitrite and Nitrate as N mg/L	0.003	0.003	0.006	0.015	0.041	0.047	0.049	45
Nitrate as N mg/L	0.001	0.002	0.004	0.016	0.039	0.043	0.045	72
Nitrite as N mg/L					ID			3
Nitrogen (Total) as N mg/L	0.21	0.22	0.24	0.30	0.34	0.36	0.37	72
Phosphorus (Total) as P mg/L	0.02	0.02	0.03	0.03	0.04	0.05	0.06	72
DRP as P mg/L	0.004	0.005	0.006	0.009	0.013	0.016	0.017	72
Silica as Si mg/L	0.1	0.1	0.1	0.1	0.2	0.2	0.3	72

\*Integrated sample 0 to 12 metres, TAN=Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>), DRP= Dissolved Reactive Phosphorous. ND = No data collected, ID = insufficient data.

## Appendix A

Surface	Physico-chemical indicators and default guideline values for aquatic ecosystems																		
	DO (mg/L)		DO (% sat)		Salinity	pH		Temp (°C)		Turb	Chl a	TAN as N	NO <sub>x</sub> as N	NO <sub>3</sub> as N	NO <sub>2</sub> as N	Total N as N	Total P as P	DRP as P	SiO <sub>2</sub> as Si
	lower	upper	lower	upper	(PPT)	lower	upper	lower	upper	NTU	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)
Annual	7.8	8.9	98.6	105.9	35.1	8.1	8.2	11.2	17.5	5.9	2.2	9.0	15.0	10.0	1.0~	0.33	0.04	8.0	0.2
Summer	7.7	8.2	100.5	105.6	35.1	8.1	8.3	16.1	18.6	5.8	1.9	6.0	1.0	1.0	ID	0.32	0.03	6.0	0.2
Autumn	7.7	8.0	97.8	104.0	35.3	8.1	8.2	14.1	17.6	6.0	1.7	10.0	6.0	5.0	ID	0.33	0.04	8.0	0.3
Winter	8.3	9.6	96.1	103.4	34.4	7.9	8.1	10.2	11.7	2.0	3.9	15.0	41.0	39.0	ID	0.34	0.04	12.0	0.5
Spring	8.4	9.4	101.6	107.9	35.0	8.0	8.2	11.5	14.2	6.2	2.4	8.0	4.0	4.0	ID	0.31	0.03	7.0	0.1

NB: DO (dissolved oxygen), Turb (turbidity), Chl a (Chlorophyll a – Lab analysis), TAN (Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>)), NO<sub>x</sub> (Nitrite and Nitrate), NO<sub>3</sub> (Nitrate), NO<sub>2</sub> (Nitrite), DRP (Dissolved reactive phosphorous), SiO<sub>2</sub> (Silica), ND = No Data, ID= Insufficient Data. Figures shown above are based on data collected from 06/02/2014 to 01/05/2019.

5 to 10 metres	Physico-chemical indicators and default guideline values for aquatic ecosystems																		
	DO (mg/L)		DO (% sat)		Salinity	pH		Temp (°C)		Turb	Chl a	TAN as N	NO <sub>x</sub> as N	NO <sub>3</sub> as N	NO <sub>2</sub> as N	Total N as N	Total P as P	DRP as P	SiO <sub>2</sub> as Si
	lower	upper	lower	upper	(PPT)	lower	upper	lower	upper	NTU	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)
Annual	7.8	8.9	97.8	105.4	35.2	8.1	8.2	11.2	17.0	5.8	ND	6.0~	2.0~	2.0~	1.0~	0.33~	0.04~	6.0~	0.1~
Summer	7.8	8.3	100.2	106.2	35.1	8.1	8.3	15.7	18.3	5.7	ND	ID	ID	ID	ID	ID	ID	ID	ID
Autumn	7.7	8.0	95.7	103.2	35.3	8.1	8.3	13.7	17.4	5.9	ND	ID	ID	ID	ID	ID	ID	ID	ID
Winter	8.2	9.3	95.6	101.9	34.7	8.0	8.1	10.2	11.9	1.8	ND	ID	ID	ID	ID	ID	ID	ID	ID
Spring	8.6	9.4	100.9	106.2	35.2	8.1	8.2	11.2	13.6	5.8	ND	ID	ID	ID	ID	ID	ID	ID	ID

NB: DO (dissolved oxygen), Turb (turbidity), Chl a (Chlorophyll a – Lab analysis), TAN (Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>)), NO<sub>x</sub> (Nitrite and Nitrate), NO<sub>3</sub> (Nitrate), NO<sub>2</sub> (Nitrite), DRP (Dissolved reactive phosphorous), SiO<sub>2</sub> (Silica), ND = No Data, ID= Insufficient Data. Figures shown above are based on data collected from 06/02/2014 to 01/05/2019.

Bottom	Physico-chemical indicators and default guideline values for aquatic ecosystems																		
	DO (mg/L)		DO (% sat)		Salinity	pH		Temp (°C)		Turb	Chl a	TAN as N	NO <sub>x</sub> as N	NO <sub>3</sub> as N	NO <sub>2</sub> as N	Total N as N	Total P as P	DRP as P	SiO <sub>2</sub> as Si
	lower	upper	lower	upper	(PPT)	lower	upper	lower	upper	NTU	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)	(µg/L)	(mg/L)
Annual	7.5	8.5	91.3	100.1	35.3	8.0	8.2	11.9	16.5	5.9	ND	17.0	35.0	36.0	3.0~	0.34	0.04	12.0	0.2
Summer	7.4	8.1	94.1	101.7	35.2	8.1	8.3	14.3	17.6	6.1	ND	14.0	11.0	11.0	ID	0.33	0.04	9.0	0.2
Autumn	7.2	7.8	91.4	97.1	35.4	8.1	8.2	14.2	16.8	6.0	ND	14.0	25.0	15.0	ID	0.33	0.04	10.0	0.3
Winter	7.7	8.5	89.8	97.2	35.2	7.9	8.1	10.8	12.8	2.2	ND	19.0	46.0	43.0	ID	0.34	0.04	13.0	0.3
Spring	8.0	8.7	93.1	101.4	35.2	8.0	8.2	11.7	12.8	5.7	ND	19.0	41.0	39.0	ID	0.34	0.04	13.0	0.2

NB: DO (dissolved oxygen), Turb (turbidity), Chl a (Chlorophyll a – Lab analysis), TAN (Total Ammonia Nitrogen (NH<sub>3</sub> and NH<sub>4</sub><sup>+</sup>)), NO<sub>x</sub> (Nitrite and Nitrate), NO<sub>3</sub> (Nitrate), NO<sub>2</sub> (Nitrite), DRP (Dissolved reactive phosphorous), SiO<sub>2</sub> (Silica), ND = No Data, ID= Insufficient Data. Figures shown above are based on data collected from 06/02/2014 to 01/05/2019.

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