

Annex C

Water Quality Objectives

Table C1

Water Quality Objectives for Victoria Harbour WCZ

	Water Quality Objective	Part or parts of Zone
A.	AESTHETIC APPEARANCE	
	(a) There should be no objectionable odours or discolouration of the water.	Whole zone
	(b) Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	Whole zone
	(c) Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	Whole zone
	(d) There should be no recognisable sewage-derived debris.	Whole zone
	(e) Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, should be absent.	Whole zone
	(f) The water should not contain substances which settle to form objectionable deposits.	Whole zone
B.	BACTERIA	
	The level of <i>Escherichia coli</i> should not exceed 1000 per 100 mL, calculated as the geometric mean of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Inland waters
C.	COLOUR	
	Human activity should not cause the colour of water to exceed 50 Hazen units.	Inland waters
D.	DISSOLVED OXYGEN	
	(a) The level of dissolved oxygen should not fall below 4 mg per litre for 90% of the sampling occasions during the whole year, values should be calculated as the annual water column average (see Note). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the whole year.	Marine waters
	(b) The level of dissolved oxygen should not be less than 4 mg per litre.	Inland waters
E.	pH	
	(a) The pH of the water should be within the range of 6.5-8.5 units. In addition, human activity should not cause the natural pH range to be extended by more than 0.2 unit.	Marine waters
	(b) Human activity should not cause the pH of the water to exceed the range of 6.0-9.0 units	Inland waters
F.	TEMPERATURE	
	Human activity should not cause the daily temperature range to change by more than 2.0°C.	Whole zone

Water Quality Objective	Part or parts of Zone
G. SALINITY Human activity should not cause the salinity level to change by more than 10%.	Whole zone
H. SUSPENDED SOLIDS (a) Human activity should neither cause the suspended solids concentration to be raised more than 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities. (b) Human activity should not cause the annual median of suspended solids to exceed 25 mg per litre.	Marine waters Inland waters
I. AMMONIA The un-ionized ammoniacal nitrogen level should not be more than 0.021 mg per litre, calculated as the annual average (arithmetic mean).	Whole zone
J. NUTRIENTS (a) Nutrients should not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants. (b) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.4 mg per litre, expressed as annual water column average (see Note).	Marine waters Marine waters
K. 5-DAY BIOCHEMICAL OXYGEN DEMAND The 5-day biochemical oxygen demand should not exceed 5 mg per litre.	Inland waters
L. CHEMICAL OXYGEN DEMAND The chemical oxygen demand should not exceed 30 mg per litre.	Inland waters
M. TOXIC SUBSTANCES (a) Toxic substances in the water should not attain such levels as to produce significant toxic, carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to interactions of toxic substances with each other. (b) Human activity should not cause a risk to any beneficial use of the aquatic environment.	Whole zone Whole zone
Note:	Expressed normally as the arithmetic mean of at least 3 measurements at 1 m below surface, mid depth and 1 m above the seabed. However in water of a depth of 5 m or less, the mean shall be that of 2 measurements (1 m below surface and 1 m above seabed), and in water of less than 3 m the 1 m below surface sample only shall apply.

Table C2

Water Quality Objectives for Junk Bay WCZ

Water Quality Objective	Part or parts of Zone
A. AESTHETIC APPEARANCE	
(a) There should be no objectionable odours or discolouration of the water.	Whole zone
(b) Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	Whole zone
(c) Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	Whole zone
(d) There should be no recognisable sewage-derived debris.	Whole zone
(e) Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, should be absent.	Whole zone
(f) The water should not contain substances which settle to form objectionable deposits.	Whole zone
B. BACTERIA	
(a) The level of <i>Escherichia coli</i> should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year	Secondary Contact Recreation Subzone and Fish Culture Subzones (L.N. 451 of 1991)
(b) (<i>Repealed L.N. 451 of 1991</i>)	
(c) The level of <i>Escherichia coli</i> should not exceed 1000 per 100 mL, calculated as the geometric mean of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Inland waters
C. COLOUR	
Human activity should not cause the colour of water to exceed 50 Hazen units.	Inland waters
D. DISSOLVED OXYGEN	
(a) Waste discharges shall not cause the level of dissolved oxygen to fall below 4 mg per litre for 90% of the sampling occasions during the whole year, values should be calculated as the annual water column average (see Note). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the whole year.	Marine waters
(b) The dissolved oxygen should not be less than 5 mg per litre for 90% of the sampling occasions during the whole year, values should be calculated as the annual water column average (see Note). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the whole year.	Fish Culture Subzones
(c) Waste discharges shall not cause the level of dissolved oxygen to be less than 4 mg per litre.	Inland waters

Water Quality Objective	Part or parts of Zone
E. pH	
(a) The pH of the water should be within the range of 6.5-8.5 units. In addition, human activity should not cause the natural pH range to be extended by more than 0.2 unit.	Marine waters (L.N.451 of 1991)
(b) <i>(Repealed L.N.451 of 1991)</i>	
(c) Human activity should not cause the pH of the water to exceed the range of 6.0-9.0 units	Inland waters
F. TEMPERATURE	
Waste discharges should not cause the daily temperature range to change by more than 2.0°C.	Whole zone
G. SALINITY	
Waste discharges should not cause the salinity level to change by more than 10%.	Whole zone
H. SUSPENDED SOLIDS	
(a) Waste discharges shall neither cause the suspended solids concentration to be raised more than 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
(b) Waste discharges shall not cause the annual median of suspended solids to exceed 25 mg per litre.	Inland waters
I. AMMONIA	
The ammonia nitrogen level should not be more than 0.021 mg per litre, calculated as the annual average (arithmetic mean), as un-ionised form.	Whole zone
J. NUTRIENTS	
(a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Marine waters
(b) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.3 mg per litre, expressed as annual water column average (see Note).	Marine waters
K. 5-DAY BIOCHEMICAL OXYGEN DEMAND	
Waste discharges shall not cause the 5-day biochemical oxygen demand should not exceed 5 mg per litre.	Inland waters
L. CHEMICAL OXYGEN DEMAND	
Waste discharges shall not cause the chemical oxygen demand should not exceed 30 mg per litre.	Inland waters
M. DANGEROUS SUBSTANCES	

Water Quality Objective	Part or parts of Zone
(a) Waste discharges shall not cause the concentrations of dangerous substances in the water to attain such levels as to produce significant toxic, carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to interactions of toxic substances with each other.	Whole zone
(b) Waste discharges of dangerous substances shall not cause a risk to any beneficial use of the aquatic environment.	Whole zone
<p>Note: Expressed normally as the arithmetic mean of at least 3 measurements at 1 m below surface, mid depth and 1 m above the seabed. However in water of a depth of 5 m or less, the mean shall be that of 2 measurements (1 m below surface and 1 m above seabed), and in water of less than 3 m the 1 m below surface sample only shall apply.</p>	

Table C3

Water Quality Objectives for Eastern Buffer WCZ

	Water Quality Objective	Part or parts of Zone
A.	AESTHETIC APPEARANCE	
	(a) There should be no objectionable odours or discolouration of the water.	Whole zone
	(b) Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	Whole zone
	(c) Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	Whole zone
	(d) There should be no recognisable sewage-derived debris.	Whole zone
	(e) Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, should be absent.	Whole zone
	(f) The water should not contain substances which settle to form objectionable deposits.	Whole zone
B.	BACTERIA	
	(a) The level of <i>Escherichia coli</i> should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year	Fish Culture Subzones
	(b) The level of <i>Escherichia coli</i> should not exceed 1 per 100 mL, calculated as the geometric mean of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Water Gathering Ground Subzones
	(c) The level of <i>Escherichia coli</i> should not exceed 1000 per 100 mL, calculated as the geometric mean of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Other Inland waters
C.	COLOUR	
	(a) Human activity should not cause the colour of water to exceed 30 Hazen units.	Water Gathering Ground Subzones
	(b) Human activity should not cause the colour of water to exceed 50 Hazen units.	Other Inland waters
D.	DISSOLVED OXYGEN	
	(a) Waste discharges shall not cause the level of dissolved oxygen to fall below 4 mg per litre for 90% of the sampling occasions during the whole year, values should be calculated as the annual water column average (see Note). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the whole year.	Marine waters except Fish Culture Subzones

Water Quality Objective	Part or parts of Zone
(b) The dissolved oxygen should not be less than 5 mg per litre for 90% of the sampling occasions during the whole year, values should be calculated as the annual water column average (see Note). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the whole year.	Fish Culture Subzones
(c) Waste discharges shall not cause the level of dissolved oxygen to be less than 4 mg per litre.	Inland waters
E. pH	
(a) The pH of the water should be within the range of 6.5-8.5 units. In addition, human activity should not cause the natural pH range to be extended by more than 0.2 unit.	Marine waters
(b) Human activity should not cause the pH of the water to exceed the range of 6.5-8.5 units	Water Gathering Ground Subzones
(c) Human activity should not cause the pH of the water to exceed the range of 6.0-9.0 units	Other Inland waters
F. TEMPERATURE	
Human activity should not cause the daily temperature range to change by more than 2.0°C.	Whole zone
G. SALINITY	
Human activity should not cause the salinity level to change by more than 10%.	Whole zone
H. SUSPENDED SOLIDS	
(a) Human activity should neither cause the suspended solids concentration to be raised more than 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
(b) Human activity should not cause the annual median of suspended solids to exceed 20 mg per litre.	Water Gathering Ground Subzones
(c) Human activity should not cause the annual median of suspended solids to exceed 25 mg per litre.	Other Inland waters
I. AMMONIA	
The un-ionized ammoniacal nitrogen level should not be more than 0.021 mg per litre, calculated as the annual average (arithmetic mean).	Whole zone
J. NUTRIENTS	
(a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Marine waters
(b) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.4 mg per litre, expressed as annual water column average (see Note).	Marine waters

Water Quality Objective	Part or parts of Zone
K. 5-DAY BIOCHEMICAL OXYGEN DEMAND	
(a) The 5-day biochemical oxygen demand should not exceed 3 mg per litre.	Water Gathering Ground Subzones
(b) The 5-day biochemical oxygen demand should not exceed 5 mg per litre.	Other Inland waters
L. CHEMICAL OXYGEN DEMAND	
(a) The chemical oxygen demand should not exceed 15 mg per litre.	Water Gathering Ground Subzones
(b) The chemical oxygen demand should not exceed 30 mg per litre.	Other Inland waters
M. TOXIC SUBSTANCES	
(a) Toxic substances in the water should not attain such levels as to produce significant toxic, carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to interactions of toxic substances with each other.	Whole zone
(b) Human activity should not cause a risk to any beneficial use of the aquatic environment.	Whole zone
Note:	Expressed normally as the arithmetic mean of at least 3 measurements at 1 m below surface, mid depth and 1 m above the seabed. However in water of a depth of 5 m or less, the mean shall be that of 2 measurements (1 m below surface and 1 m above seabed), and in water of less than 3 m the 1 m below surface sample only shall apply.