

Annex 1

Quality elements for ecological status classification

RIVERS

RIVERS	High status	Good status	Moderate status
Biological quality elements			
Phytoplankton	<p>The taxonomic composition of phytoplankton corresponds totally or nearly totally to undisturbed conditions.</p> <p>The average phytoplankton abundance is wholly consistent with the type-specific physicochemical conditions and is not such as to significantly alter the type specific transparency conditions.</p> <p>Planktonic blooms occur at a frequency and intensity which is consistent with the type specific physicochemical conditions.</p>	<p>There are slight changes in the composition and abundance of planktonic taxa compared to the type-specific communities. Such changes do not indicate any accelerated growth of algae resulting in undesirable disturbances to the balance of organisms present in the water body or to the physicochemical quality of the water or sediment.</p> <p>A slight increase in the frequency and intensity of the type specific planktonic blooms may occur.</p>	<p>The composition of planktonic taxa differs moderately from the type specific communities.</p> <p>Abundance is moderately disturbed and may be such as to produce a significant undesirable disturbance in the values of other biological and physico-chemical quality elements.</p> <p>A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur during summer months.</p>
Macrophytes and phytobenthos	<p>The taxonomic composition corresponds totally or nearly totally to undisturbed conditions.</p> <p>There are no detectable changes in the average macrophytic and the average phytobenthic abundance</p>	<p>There are slight changes in the composition and abundance of macrophytic and phytobenthic taxa compared to the type-specific communities. Such changes do not indicate any accelerated growth of phytobenthos or higher forms of plant life resulting in undesirable disturbances to the balance of organisms present in the water body or to the physico-chemical quality of the water or sediment.</p> <p>The phytobenthic community is not adversely affected by bacterial tufts and coats present due to anthropogenic activity.</p>	<p>The composition of macrophytic and phytobenthic taxa differs moderately from the type-specific community and is significantly more distorted than at good status. Moderate changes in the average macrophytic and the average phytobenthic abundance are evident.</p> <p>The phytobenthic community may be interfered with and, in some areas, displaced by bacterial tufts and coats present as a result of anthropogenic activities.</p>
Benthic invertebrate fauna	<p>The taxonomic composition and abundance correspond totally or nearly totally to undisturbed conditions.</p> <p>The ratio of disturbance sensitive taxa to insensitive taxa shows no signs of alteration from undisturbed levels</p> <p>The level of diversity of invertebrate taxa shows no sign of alteration from undisturbed levels.</p>	<p>There are slight changes in the composition and abundance of invertebrate taxa from the type-specific communities</p> <p>The ratio of disturbance sensitive taxa to insensitive taxa shows slight alteration from type specific levels.</p> <p>The level of diversity of invertebrate taxa shows slight signs of alteration from type specific levels.</p>	<p>The composition and abundance of invertebrate taxa differ moderately from the type-specific communities.</p> <p>Major taxonomic groups of the type-specific community are absent.</p> <p>The ratio of disturbance sensitive taxa to insensitive taxa, and the level of diversity, are substantially lower than the type specific level and significantly lower than for good status.</p>

RIVERS	High status	Good status	Moderate status
Fish fauna	<p>Species composition and abundance correspond totally or nearly totally to undisturbed conditions.</p> <p>All the type specific disturbance sensitive species are present.</p> <p>The age structures of the fish communities show little sign of anthropogenic disturbance and are not indicative of a failure in the reproduction or development of any particular species.</p>	<p>There are slight changes in species composition and abundance from the type specific communities attributable to anthropogenic impacts on physicochemical and hydro-morphological quality elements.</p> <p>The age structures of the fish communities show signs of disturbance attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements, and, in a few instances, are indicative of a failure in the reproduction or development of a particular species, to the extent that some age classes may be missing.</p>	<p>The composition and abundance of fish species differ moderately from the type specific communities attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements.</p> <p>The age structure of the fish communities shows major signs of anthropogenic disturbance, to the extent that a moderate proportion of the type specific species are absent or of very low abundance.</p>
Hydro-morphological quality elements	High status	Good status	Moderate status
Hydrological regime	The quantity and dynamics of flow, and the resultant connection to groundwaters, reflect totally, or nearly totally, undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
River continuity	The continuity of the river is not disturbed by anthropogenic activities and allows undisturbed migration of aquatic organisms and sediment transport.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Morphological conditions	Channel patterns, width and depth variations, flow velocities, substrate conditions and both the structure and condition of the riparian zones correspond totally or nearly totally to undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Physico-chemical quality elements	High status	Good status	Moderate status
General conditions	<p>The values of the physico-chemical elements correspond totally or nearly totally to undisturbed conditions.</p> <p>Nutrient concentrations remain within the range normally associated with undisturbed conditions.</p>	<p>Temperature, oxygen balance, pH, acid neutralising capacity and salinity do not reach levels outside the range established so as to ensure the functioning of the type specific ecosystem and the achievement of the values specified above for the biological quality elements.</p>	<p>Conditions consistent with the achievement of the values specified above for the biological quality elements.</p>

RIVERS	High status	Good status	Moderate status
	Levels of salinity, pH, oxygen balance, acid neutralising capacity and temperature do not show signs of anthropogenic disturbance and remain within the range normally associated with undisturbed conditions.	Nutrient concentrations do not exceed the levels established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.	
Specific synthetic pollutants	Concentrations close to zero and at least below the limits of detection of the most advanced analytical techniques in general use	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific non synthetic pollutants	Concentrations remain within the range normally associated with undisturbed conditions (background levels = bgl).	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

LAKES

LAKES	High status	Good status	Moderate status
Biological quality elements			
Phytoplankton	<p>The taxonomic composition and abundance of phytoplankton correspond totally or nearly totally to undisturbed conditions.</p> <p>The average phytoplankton biomass is consistent with the type-specific physicochemical conditions and is not such as to significantly alter the type specific transparency conditions.</p> <p>Planktonic blooms occur at a frequency and intensity which is consistent with the type specific physicochemical conditions.</p>	<p>There are slight changes in the composition and abundance of planktonic taxa compared to the type-specific communities. Such changes do not indicate any accelerated growth of algae resulting in undesirable disturbance to the balance of organisms present in the water body or to the physico-chemical quality of the water or sediment.</p> <p>A slight increase in the frequency and intensity of the type specific planktonic blooms may occur.</p>	<p>The composition and abundance of planktonic taxa differ moderately from the type specific communities.</p> <p>Biomass is moderately disturbed and may be such as to produce a significant undesirable disturbance in the condition of other biological quality elements and the physico-chemical quality of the water or sediment.</p> <p>A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur during summer months.</p>
Macrophytes and phytobenthos	<p>The taxonomic composition corresponds totally or nearly totally to undisturbed conditions.</p> <p>There are no detectable changes in the average macrophytic and the average phytobenthic abundance.</p>	<p>There are slight changes in the composition and abundance of macrophytic and phytobenthic taxa compared to the type-specific communities. Such changes do not indicate any accelerated growth of phytobenthos or higher forms of plant life resulting in undesirable disturbance to the balance of organisms present in the water body or to the physicochemical quality of the water.</p> <p>The phytobenthic community is not adversely affected by bacterial tufts and coats present due to anthropogenic activity.</p>	<p>The composition of macrophytic and phytobenthic taxa differ moderately from the type-specific communities and are significantly more distorted than those observed at good quality.</p> <p>Moderate changes in the average macrophytic and the average phytobenthic abundance are evident.</p> <p>The phytobenthic community may be interfered with, and, in some areas, displaced by bacterial tufts and coats present as a result of anthropogenic activities.</p>
Benthic invertebrate fauna	<p>The taxonomic composition and abundance correspond totally or nearly totally to the undisturbed conditions.</p> <p>The ratio of disturbance sensitive taxa to insensitive taxa shows no signs of alteration from undisturbed levels</p> <p>The level of diversity of invertebrate taxa shows no sign of alteration from undisturbed levels</p>	<p>There are slight changes in the composition and abundance of invertebrate taxa compared to the type-specific communities.</p> <p>The ratio of disturbance sensitive taxa to insensitive taxa shows slight signs of alteration from type specific levels.</p> <p>The level of diversity of invertebrate taxa shows slight signs of alteration from type specific levels.</p>	<p>The composition and abundance of invertebrate taxa differ moderately from the type-specific conditions</p> <p>Major taxonomic groups of the type-specific community are absent.</p> <p>The ratio of disturbance sensitive to insensitive taxa, and the level of diversity, are substantially lower than the type specific level and significantly lower than for good status</p>

LAKES	High status	Good status	Moderate status
Fish fauna	<p>Species composition and abundance correspond totally or nearly totally to undisturbed conditions.</p> <p>All the type specific sensitive species are present.</p> <p>The age structures of the fish communities show little sign of anthropogenic disturbance and are not indicative of a failure in the reproduction or development of a particular species.</p>	<p>There are slight changes in species composition and abundance from the type specific communities attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements.</p> <p>The age structures of the fish communities show signs of disturbance attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements, and, in a few instances, are indicative of a failure in the reproduction or development of a particular species, to the extent that some age classes may be missing.</p>	<p>The composition and abundance of fish species differ moderately from the type specific communities attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements.</p> <p>The age structure of the fish communities shows major signs of disturbance, attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements, to the extent that a moderate proportion of the type specific species are absent or of very low abundance.</p>
Hydro-morphological quality elements	High status	Good status	Moderate status
Hydrological regime	The quantity and dynamics of flow, level, residence time, and the resultant connection to groundwaters, reflect totally or nearly totally undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Morphological conditions	Lake depth variation, quantity and structure of the substrate, and both the structure and condition of the lake shore zone correspond totally or nearly totally to undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Physico-chemical quality elements	High status	Good status	Moderate status
General conditions	<p>The values of physico-chemical elements correspond totally or nearly totally to undisturbed conditions.</p> <p>Nutrient concentrations remain within the range normally associated with undisturbed conditions.</p> <p>Levels of salinity, pH, oxygen balance, acid neutralising capacity, transparency and temperature do not show signs of anthropogenic disturbance and remain within the range</p>	<p>Temperature, oxygen balance, pH, acid neutralising capacity, transparency and salinity do not reach levels outside the range established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.</p> <p>Nutrient concentrations do not exceed the levels established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.</p>	Conditions consistent with the achievement of the values specified above for the biological quality elements.

LAKES	High status	Good status	Moderate status
	normally associated with undisturbed conditions.		
Specific synthetic pollutants	Concentrations close to zero and at least below the limits of detection of the most advanced analytical techniques in general use.	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific non synthetic pollutants	Concentrations remain within the range normally associated with undisturbed conditions (background levels = bgl).	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

TRANSITIONAL WATERS

TRANSIT.	High status	Good status	Moderate status
Biological quality elements			
Phytoplankton	<p>The composition and abundance of the phytoplanktonic taxa are consistent with undisturbed conditions.</p> <p>The average phytoplankton biomass is consistent with the type-specific physicochemical conditions and is not such as to significantly alter the type specific transparency conditions.</p> <p>Planktonic blooms occur at a frequency and intensity which is consistent with the type specific physicochemical conditions.</p>	<p>There are slight changes in the composition and abundance of phytoplanktonic taxa.</p> <p>There are slight changes in biomass compared to the type-specific conditions. Such changes do not indicate any accelerated growth of algae resulting in undesirable disturbance to the balance of organisms present in the water body or to the physicochemical quality of the water.</p> <p>A slight increase in the frequency and intensity of the type specific planktonic blooms may occur.</p>	<p>The composition and abundance of phytoplanktonic taxa differ moderately from type specific conditions.</p> <p>Biomass is moderately disturbed and may be such as to produce a significant undesirable disturbance in the condition of other biological quality elements.</p> <p>A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur during summer months.</p>
Macroalgae	<p>The composition of macroalgal taxa is consistent with undisturbed conditions.</p> <p>There are no detectable changes in macroalgal cover due to anthropogenic activities.</p>	<p>There are slight changes in the composition and abundance of macroalgal taxa compared to the type-specific communities. Such changes do not indicate any accelerated growth of phytobenthos or higher forms of plant life resulting in undesirable disturbance to the balance of organisms present in the water body or to the physicochemical quality of the water.</p>	<p>The composition of macroalgal taxa differs moderately from type-specific conditions and is significantly more distorted than at good quality.</p> <p>Moderate changes in the average macroalgal abundance are evident and may be such as to result in an undesirable disturbance to the balance of organisms present in the water body.</p>
Benthic invertebrate fauna	<p>The level of diversity and abundance of invertebrate taxa is within the range normally associated with undisturbed conditions.</p> <p>All the disturbance sensitive taxa associated with undisturbed conditions are present.</p>	<p>The level of diversity and abundance of invertebrate taxa is slightly outside the range associated with the type specific conditions</p> <p>Most of the sensitive taxa of the type specific communities are present.</p>	<p>The level of diversity and abundance of invertebrate taxa is moderately outside the range associated with the type specific conditions.</p> <p>Taxa indicative of pollution are present</p> <p>Many of the sensitive taxa of the type specific communities are absent</p>
Fish fauna	<p>Species composition and abundance is consistent with undisturbed conditions.</p>	<p>The abundance of the disturbance sensitive species shows slight signs of distortion from type specific conditions attributable to anthropogenic impacts on physicochemical or hydro-morphological quality elements</p>	<p>A moderate proportion of the type specific disturbance sensitive species are absent as a result of anthropogenic impacts on physicochemical or hydro-morphological quality elements</p>

TRANSIT.	High status	Good status	Moderate status
Hydro-morphological quality elements			
Tidal regime	The freshwater flow regime corresponds totally or nearly totally to undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Morphological conditions	Depth variations, substrate conditions, and both the structure and condition of the inter-tidal zones correspond totally or nearly totally to undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Physico-chemical elements	High status	Good status	Moderate status
General conditions	<p>Physicochemical elements correspond totally or nearly totally to undisturbed conditions.</p> <p>Nutrient concentrations remain within the range normally associated with undisturbed conditions.</p> <p>Temperature, oxygen balance and transparency do not show signs of anthropogenic disturbance and remain within the range normally associated with undisturbed conditions.</p>	<p>Temperature, oxygenation conditions and transparency do not reach levels outside the ranges established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.</p> <p>Nutrient concentrations do not exceed the levels established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.</p>	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific synthetic pollutants	Concentrations close to zero and at least below the limits of detection of the most advanced analytical techniques in general use.	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific non synthetic pollutants	Concentrations remain within the range normally associated with undisturbed conditions (background levels = bgl).	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

COASTAL WATERS

COASTAL	High status	Good status	Moderate status
Biological quality elements			
Phytoplankton	<p>The composition and abundance of phytoplanktonic taxa are consistent with undisturbed conditions.</p> <p>The average phytoplankton biomass is consistent with the type-specific physicochemical conditions and is not such as to significantly alter the type specific transparency conditions.</p> <p>Planktonic blooms occur at a frequency and intensity which is consistent with the type specific physicochemical conditions.</p>	<p>The composition and abundance of phytoplanktonic taxa show slight signs of disturbance.</p> <p>There are slight changes in biomass compared to type-specific conditions. Such changes do not indicate any accelerated growth of algae resulting in undesirable disturbance to the balance of organisms present in the water body or to the quality of the water.</p> <p>A slight increase in the frequency and intensity of the type specific planktonic blooms may occur.</p>	<p>The composition and abundance of planktonic taxa show signs of moderate disturbance.</p> <p>Algal biomass is substantially outside the range associated with type specific conditions, and is such as to impact upon other biological quality elements.</p> <p>A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur during summer months.</p>
Macroalgae and angiosperms	<p>All disturbance sensitive macroalgal and angiosperm taxa associated with undisturbed conditions are present.</p> <p>The levels of macroalgal cover and angiosperm abundance are consistent with undisturbed conditions.</p>	<p>Most disturbance sensitive macroalgal and angiosperm taxa associated with undisturbed conditions are present.</p> <p>The level of macroalgal cover and angiosperm abundance show slight signs of disturbance.</p>	<p>A moderate number of the disturbance sensitive macroalgal and angiosperm taxa associated with undisturbed conditions are absent.</p> <p>Macroalgal cover and angiosperm abundance is moderately disturbed and may be such as to result in an undesirable disturbance to the balance of organisms present in the water body.</p>
Benthic invertebrate fauna	<p>The level of diversity and abundance of invertebrate taxa is within the range normally associated with undisturbed conditions.</p> <p>All the disturbance sensitive taxa associated with undisturbed conditions are present.</p>	<p>The level of diversity and abundance of invertebrate taxa is slightly outside the range associated with the type specific conditions</p> <p>Most of the sensitive taxa of the type specific communities are present.</p>	<p>The level of diversity and abundance of invertebrate taxa is moderately outside the range associated with the type specific conditions.</p> <p>Taxa indicative of pollution are present</p> <p>Many of the sensitive taxa of the type specific communities are absent</p>

COASTAL	High status	Good status	Moderate status
Hydro-morphological quality elements			
Tidal regime	The freshwater flow regime and the direction and speed of dominant currents correspond totally or nearly totally to undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Morphological conditions	The depth variation, structure and substrate of the coastal bed, and both the structure and condition of the inter-tidal zones correspond totally or nearly totally to the undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Physico-chemical quality elements	High status	Good status	Moderate status
General conditions	<p>The physicochemical elements correspond totally or nearly totally to undisturbed conditions.</p> <p>Nutrient concentrations remain within the range normally associated with undisturbed conditions</p> <p>Temperature, oxygen balance and transparency do not show signs of anthropogenic disturbance and remain within the ranges normally associated with undisturbed conditions.</p>	<p>Temperature, oxygenation conditions and transparency do not reach levels outside the ranges established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.</p> <p>Nutrient concentrations do not exceed the levels established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.</p>	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific synthetic pollutants	Concentrations close to zero and at least below the limits of detection of the most advanced analytical techniques in general use.	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific non synthetic pollutants	Concentrations remain within the range normally associated with undisturbed conditions (background levels = bgl)	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

ARTIFICIAL AND HEAVILY MODIFIED BODIES OF WATER

ARTIF. AND MODIFIED	Maximum ecological potential	Good ecological potential	Moderate ecological potential
Biological quality elements			
Biological quality elements	The values of the relevant biological quality elements reflect, as far as possible, those associated with the closest comparable surface water body type, given the physical conditions which result from the artificial or heavily modified characteristics of the water body.	There are slight changes in the values of the relevant biological quality elements as compared to the values found at maximum ecological potential.	There are moderate changes in the values of the relevant biological quality elements as compared to the values found at maximum ecological potential. These values are significantly more distorted than those found under good quality.
Hydro-morphological elements	The hydro-morphological conditions are consistent with the only impacts on the surface water body being those resulting from the artificial or heavily modified characteristics of the water body once all mitigation measures have been taken to ensure the best approximation to ecological continuum, in particular with respect to migration of fauna and appropriate spawning and breeding grounds.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Physico-chemical quality elements	Maximum ecological potential	Good ecological potential	Moderate ecological potential
General conditions	Physicochemical elements correspond totally or nearly totally to the undisturbed conditions associated with the surface water body type most closely comparable to the artificial or heavily modified body concerned. Nutrient concentrations remain within the range normally associated with such undisturbed conditions. The levels of temperature, oxygen balance and pH are consistent with the those found in the most closely comparable surface water body types under undisturbed conditions.	The values for physico-chemical elements are within the ranges established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements. Temperature and pH do not reach levels outside the ranges established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements. Nutrient concentrations do not exceed the levels established so as to ensure the functioning of the ecosystem and the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

ARTIF. AND MODIFIED	Maximum ecological potential	Good ecological potential	Moderate ecological potential
Specific synthetic pollutants	Concentrations close to zero and at least below the limits of detection of the most advanced analytical techniques in general use	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Specific non-synthetic pollutants	Concentrations remain within the range normally associated with the undisturbed conditions found in the surface water body type most closely comparable to the artificial or heavily modified body concerned. (background levels = bgl)	Concentrations not in excess of the standards set in accordance with procedure for the setting of chemical quality standards.	Conditions consistent with the achievement of the values specified above for the biological quality elements.