

SUBSIDIARY LEGISLATION 549.100**WATER POLICY FRAMEWORK REGULATIONS**

23rd October, 2015

LEGAL NOTICE 345 of 2015.

1. The title of these regulations is the Water Policy Framework Regulations. Citation.

2. (1) The purpose of these regulations is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater and to transpose the provisions of Directive 2000/60/EC of the European Parliament and of the Council. Scope.

(2) These regulations transpose Article 32 of Directive 2009/31/EC on the geological storage of carbon dioxide and amending Directives 85/337/EEC, 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006.

(3) These regulations provide for the implementation in Malta and Gozo of Environmental Quality Standards (EQS) for priority substances and certain other pollutants, with the aim of achieving good surface water chemical status, by transposing Directive 2013/39/EU of the European Parliament and of the Council of 12th August, 2013 amending Directives 2000/60/EC and amending 2008/105/EC as regards priority substances in the field of water policy.

(4) These regulations establish minimum performance criteria for methods of analysis to be applied by the competent authority when monitoring water status, sediment and biota, as well as rules for demonstrating the quality of analytical results, by transposing Commission Directive 2009/90/EC of 31 July 2009 laying down, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, technical specifications for chemical analysis and monitoring of water.

(5) These regulations provide for Directive 2014/101/EU amending Directive 2000/60/EC to include amended Annex V.

3. (1) In these regulations unless the context otherwise requires: Interpretation.

"artificial water body" means a body of surface water created by human activity;

"aquifer" means a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater;

"available groundwater resource" means the long-term annual average rate of overall recharge of the body of groundwater less the long-term annual rate of flow required to achieve the ecological quality objectives for associated surface waters specified under

regulation 5, to avoid any significant diminution in the ecological status of such waters and to avoid any significant damage to associated terrestrial ecosystems;

"body of groundwater" means a distinct volume of groundwater within an aquifer or aquifers;

"body of surface water" means a discrete and significant element of surface water such as a pool, a reservoir, a stream, water course or canal, part of a stream, a transitional water or a stretch of coastal water;

"coastal water" means surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters;

"combined approach" means the control of discharges and emissions into surface waters according to the approach set out in regulation 11;

"the competent authority" means the Ministry for Energy and Health in as far as inland water is concerned and the Environment and Resources Authority in as far as coastal water is concerned:

Provided that the Environment and Resources Authority shall also be responsible for surface waters found in areas protected by scheduling declarations under the Environment Protection Act or the Filfla Nature Reserve Act, and for surface waters found in areas hosting protected species under the the Environment Protection Act or other areas of ecological and scientific importance according to provisions of the Environment Protection Act;

Kap. 549.
Kap. 323.

"biota taxon" means a particular aquatic taxon within the taxonomic rank "sub-phylum", "class" or their equivalent;

"direct discharge to groundwater" means discharge of pollutants into groundwater without percolation throughout the soil or subsoil;

"ecological status" is an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters, classified in accordance with Schedule V;

"emission controls" are controls requiring a specific emission limitation, for instance an emission limit value, or otherwise specifying limits or conditions on the effects, nature or other characteristics of an emission or operating conditions which affect emissions. Use of the term emission control in these regulations in respect of the provisions of any other regulations shall not be held as reinterpreting those provisions in any respect;

"emission limit values" means the mass, expressed in terms of certain specific parameters, concentration and, or level of an emission, which may not be exceeded during any one or more periods of time. Emission limit values may also be laid down for certain groups, families or categories of substances, in particular for those identified in Schedule X:

Provided that the emission limit values for substances shall normally apply at the point where the emissions leave the installation, dilution being disregarded when determining them. With regard to indirect releases into water, the effect of a wastewater treatment plant may be taken into account when determining the emission limit values of the installations involved, provided that an equivalent level is guaranteed for protection of the environment as a whole and provided that this does not lead to higher levels of pollution in the environment;

"environmental objectives" means the objectives set out in regulation 5;

"environmental quality standard" means the concentration of a particular pollutant or group of pollutants in water, sediment or biota, which should not be exceeded in order to protect human health and the environment;

"good ecological potential" is the status of a heavily modified or an artificial body of water, so classified in accordance with the relevant provisions of Schedule V;

"good ecological status" is the status of a body of surface water, so classified in accordance with Schedule V;

"good groundwater chemical status" is the chemical status of a body of groundwater, which meets all the conditions set out in table 2.3.2 of Schedule V;

"good groundwater status" means the status achieved by a groundwater body when both its quantitative status and its chemical status are at least "good";

"good quantitative status" is the status defined in table 2.1.2 of Schedule V;

"good surface water chemical status" means the chemical status required to meet the environmental objectives for surface waters established in regulation 5(1)(a), that is the chemical status achieved by a body of surface water in which concentrations of pollutants do not exceed the environmental quality standards established in Schedule IX and under other relevant legislation setting environmental quality standards;

"good surface water status" means the status achieved by a surface water body when both its ecological status and its chemical status are at least "good";

"groundwater" means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil;

"groundwater status" is the general expression of the status of a body of groundwater, determined by the poorer of its quantitative status and its chemical status;

"hazardous substances" means substances or groups of substances that are toxic, persistent and liable to bio-accumulate, and other substances or groups of substances which give rise to an equivalent level of concern;

"heavily modified water body" means a body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the competent authority in accordance with the provisions of Schedule II;

"inland water" means all standing or flowing water on the surface of the land, and all groundwater on the landward side of the baseline from which the breadth of territorial waters is measured;

"limit of detection" means the output signal or concentration value above which it can be affirmed, with a stated level of confidence that a sample is different from a blank sample containing no determinand of interest;

"limit of quantification" means a stated multiple of the limit of detection at a concentration of the determinand that can reasonably be determined with an acceptable level of accuracy and precision. The limit of quantification can be calculated using an appropriate standard or sample, and may be obtained from the lowest calibration point on the calibration curve, excluding the blank;

"matrix" means a compartment of the aquatic environment, namely water, sediment or biota;

"pool" means a body of standing inland surface water;

"pollutant" means any substance liable to cause pollution, in particular those listed in Schedule VIII;

"pollution" means the direct or indirect introduction, as a result of human activity, of substances or heat into the air, water or land which may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems, which result in damage to material property, or which impair or interfere with amenities and other legitimate uses of the environment;

"priority substances" means substances listed in Schedule X. Among these substances there are "priority hazardous substances" which means substances identified as such in Schedule X;

"protected areas" means those areas which are required to be included in the register to set up in terms of regulation 7 as described in Schedule IV;

"quantitative status" is an expression of the degree to which a body of groundwater is affected by direct and indirect abstractions;

"sub-catchment" means the area of land from which all surface run-off flows through a series of streams, watercourses and, possibly, pools to a particular point in a water course;

"surface water" means inland waters, except groundwater; transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters;

"surface water status" is the general expression of the status of a body of surface water, determined by the poorer of its ecological status and its chemical status;

"transitional waters" are bodies of surface water in the vicinity of the mouths of water catchments which are partly saline in character

as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows;

"uncertainty of measurement" means a non-negative parameter characterizing the dispersion of the quantity values being attributed to a measure and based on the information used;

"water catchment" means the area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta;

"water catchment district" means the area of land and sea, made up of one or more neighbouring water catchments together with their associated groundwaters and coastal waters;

"water course" means a body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course;

"water intended for human consumption" means -

- (a) all water either in its original state or after treatment, intended for drinking, cooking, food preparation or other domestic purposes, regardless of its origin and whether it is supplied from a distribution network, from a tanker, or in bottles or containers;
- (b) all water used in any food-production undertaking for the manufacture, processing, preservation or marketing of products or substances intended for human consumption unless the competent national authorities are satisfied that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form;

"water services" means all services which provide, for households, public institutions or any economic activity:

- (a) abstraction, impoundment, storage, treatment and distribution of surface water or groundwater;
- (b) waste-water collection and treatment facilities which subsequently discharge into surface water;

"water use" means water services together with any other activity identified under regulation 6 and Schedule II having a significant impact on the status of water. This concept applies for the purposes of regulation 2 and of the economic analysis carried out according to regulation 6 and Schedule III, point (b).

(2) For the purposes of these regulations, any reference to Directives of the European Parliament and of the Council, shall be read and construed as if reference is made to the provisions of the regulations transposing the provisions of such directive into Maltese law.

4. (1) There shall be one water catchment district in Malta and Gozo.

(2) The competent authority shall take all the necessary measures to ensure the appropriate administrative arrangements for the application of these regulations within the catchment district

Coordination of administrative arrangements within water catchment districts.

lying within Malta.

(3) The competent authority shall take all the necessary measures to ensure that the requirements of these regulations for the achievement of the environmental objectives established under regulation 5, and in particular all programmes of measures are coordinated for the whole of the catchment district.

(4) The endorsement of the Minister responsible for resources and the Minister responsible for the environment shall be sought on the water catchment management plan, the environmental objectives, and the measures established pursuant to these regulations.

Environmental objectives.

5. (1) In making operational the programmes of measures specified in the water catchment management plans -

- (a) for surface waters, without prejudice to any relevant international agreements:
 - (i) the competent authority shall implement the necessary measures to prevent deterioration of the status of all bodies of surface water, subject to the application of sub-regulations (6) and (7) and without prejudice to sub-regulation (8);
 - (ii) the competent authority shall take the necessary measures to protect, enhance and restore all bodies of surface water, subject to the application of sub-sub-paragraph (iii) for artificial and heavily modified bodies of water, with the aim of achieving good surface water status by the end of November of the year 2015, in accordance with the provisions laid down in Schedule V, subject to the application of extensions determined in accordance with sub-regulation (4) and to the application of sub-regulations (5), (6) and (7) without prejudice to sub-regulation (8);
 - (iii) the competent authority shall take the necessary measures to protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status by the end of November of the year 2015 in accordance with the provisions laid down in Schedule V, subject to the application of extensions determined in accordance with sub-regulation (4) and to the application sub-regulations (5), (6) and (7) without prejudice to sub-regulation (8);
 - (iv) the competent authority shall implement the necessary measures with the aim of progressively reducing pollution from priority substances and ceasing or phasing out emissions, discharges and losses of priority hazardous substances;
- (b) for groundwater -

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- (i) the competent authority shall implement the measures necessary to prevent or limit the input of pollutants into groundwater and to prevent the deterioration of the status of all bodies of groundwater, subject to the application of sub-regulations (6) and (7) and without prejudice to sub-regulation (8) and subject to the application of regulation 12 (3)(j);
 - (ii) the competent authority shall take the necessary measures to protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status by the end of November of the year 2015, in accordance with the provisions laid down in Schedule V, subject to the application of extensions determined in accordance with sub-regulation (4) and to the application of sub-regulations (5), (6) and (7) without prejudice to sub-regulation (8) and subject to the application of regulation 12 (3)(j);
 - (iii) the competent authority shall implement the measures necessary to reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order progressively to reduce pollution of groundwater, provided that measures to achieve trend reversal shall be implemented subject to the application of sub-regulations (6) and (7) and without prejudice to sub-regulation (8);
- (c) for protected areas, the competent authority shall achieve compliance with any standards and objectives by the end of November of the year 2015, unless otherwise specified in the legislation under which the individual protected areas have been established.
- (2) Where more than one of the objectives under sub-regulation (1) relates to a given body of water, the most stringent shall apply.
- (3) The competent authority may designate a body of surface water as artificial or heavily modified, when:
- (a) the changes to the hydromorphological characteristics of that body which would be necessary for achieving good ecological status would have significant adverse effects on:
 - (i) the wider environment;
 - (ii) navigation, including port facilities, or recreation;
 - (iii) activities for the purposes of which water is stored, such as drinking-water supply, power generation or irrigation;
 - (iv) water regulation, flood protection, land

drainage;

- (v) other equally important sustainable human development activities; or
- (vi) the beneficial objectives served by the artificial or modified characteristics of the water body cannot, for reasons of technical feasibility or disproportionate costs, reasonably be achieved by other means, which are a significantly better environmental option.

Such designation and the reasons for it shall be specifically mentioned in the water catchment management plans required under regulation 13 and reviewed every six years.

(4) The deadlines established under sub-regulation (1) may be extended for the purposes of phased achievement of the objectives for bodies of water, provided that no further deterioration occurs in the status of the affected body of water when all of the following conditions are met:

- (a) the competent authority determines that all necessary improvements in the status of bodies of water cannot reasonably be achieved within the timescales set out in that paragraph for at least one of the following reasons:
 - (i) the scale of improvements required can only be achieved in phases exceeding the timescale, for reasons of technical feasibility;
 - (ii) completing the improvements within the timescale would be disproportionately expensive;
 - (iii) natural conditions do not allow timely improvement in the status of the body of water;
 - (b) extension of the deadline, and the reasons for it, are specifically set out and explained in the water catchment management plan required under regulation 13;
 - (c) extensions shall be limited to a maximum of two further updates of the water catchment management plan except in cases where the natural conditions are such that the objectives cannot be achieved within this period;
 - (d) a summary of the measures required under regulation 12 which are envisaged as necessary to bring the bodies of water progressively to the required status by the extended deadline, the reasons for any significant delay in making these measures operational, and the expected timetable for their implementation are set out in the water catchment management plan. A review of the implementation of these measures and a summary of any additional measures shall be included in updates of the water catchment management plan.
- (5) The competent authority may aim to achieve less stringent

environmental objectives than those required under sub-regulation (1) for specific bodies of water when they are so affected by human activity, as determined in accordance with regulation 6(1), or their natural condition is such that the achievement of these objectives would not be feasible or would be disproportionately expensive, and all the following conditions are met:

- (a) the environmental and socio-economic needs served by such human activity cannot be achieved by other means, which are a significantly better environmental option not entailing disproportionate costs;
- (b) the competent authority ensures -
 - (i) for surface water, the highest ecological and chemical status possible is achieved, given impacts that could not reasonably have been avoided due to the nature of the human activity or pollution,
 - (ii) for groundwater, the least possible changes to good groundwater status, given impacts that could not reasonably have been avoided due to the nature of the human activity or pollution;
- (c) no further deterioration occurs in the status of the affected body of water; and
- (d) the establishment of less stringent environmental objectives, and the reasons for it, are specifically mentioned in the water catchment management plan required under regulation 13 and these objectives are reviewed every six years.

(6) Temporary deterioration in the status of bodies of water shall not be in breach of the requirements of these regulations if this is the result of circumstances of natural cause or *force majeure* which are exceptional or could not reasonably have been foreseen, in particular extreme floods and prolonged droughts, or the result of circumstances due to accidents which could not reasonably have been foreseen, when all of the following conditions have been met:

- (a) all practicable steps are taken to prevent further deterioration in status and in order not to compromise the achievement of the objectives of these regulations in other bodies of water not affected by those circumstances;
- (b) the conditions under which circumstances that are exceptional or that could not reasonably have been foreseen may be declared, including the adoption of the appropriate indicators, are stated in the water catchment management plan;
- (c) the measures to be taken under such exceptional circumstances are included in the programme of measures and will not compromise the recovery of the quality of the body of water once the circumstances are over;
- (d) the effects of the circumstances that are exceptional or

that could not reasonably have been foreseen are reviewed annually and, subject to the reasons set out in sub-regulation (4)(a), all practicable measures are taken with the aim of restoring the body of water to its status prior to the effects of those circumstances as soon as reasonably practicable; and

- (e) a summary of the effects of the circumstances and of such measures taken or to be taken in accordance with paragraphs (a) and (d) are included in the next update of the water catchment management plan.

(7) The rules laid down in these regulations shall not be deemed to have been breached when:

- (a) failure to achieve good groundwater status, good ecological status or, where relevant, good ecological potential or to prevent deterioration in the status of a body of surface water or groundwater is the result of new modifications to the physical characteristics of a surface water body or alterations to the level of bodies of groundwater; or
- (b) failure to prevent deterioration from high status to good status of a body of surface water is the result of new sustainable human development activities,

and all the following conditions are met:

- (i) all practicable steps are taken to mitigate the adverse impact on the status of the body of water;
- (ii) the reasons for those modifications or alterations are specifically set out and explained in the water catchment plan required under regulation 13 and the objectives are reviewed every six years;
- (iii) the reasons for those modifications or alterations are of overriding public interest and, or the benefits to the environment and to society of achieving the objectives set out in sub-regulation (1) are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development; and
- (iv) the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

(8) When applying sub-regulations (3), (4), (5), (6) and (7), the competent authority shall ensure that the application does not permanently exclude or compromise the achievement of the objectives of these regulations in other bodies of water within the same water catchment district and is consistent with the implementation of other environmental regulations.

(9) Steps must be taken to ensure that the application of the new provisions, including the applications of sub-regulations (3), (4), (5), (6) and (7) guarantees at least the same level of protection as other environmental regulations.

(10) The competent authority shall not be in breach of its obligations under these regulations as a result of the exceedance of an EQS in coastal waters, if it can demonstrate that:

- (a) the exceedance was due to a source of pollution outside its national jurisdiction;
- (b) it was unable as a result of such transboundary pollution to take effective measures to comply with the relevant EQS;
- (c) it had applied the coordination mechanisms set out in relevant international agreements and, as appropriate, taken advantage of the provisions of sub-regulation (4), (5) and (6), for those water bodies affected by transboundary pollution; and
- (d) in the circumstances set out in paragraph (a), the competent authority shall communicate a summary of the measures taken in relation to transboundary pollution in the relevant water catchment management plans as laid down in regulation 13(3).

6. (1) The competent authority shall ensure that for each water catchment district, it undertakes -

- an analysis of its characteristics,
- a review of the impact of human activity on the status of surface waters and on groundwater found within said district, and
- an economic analysis of water use.

Characteristics of the water catchment district, review of the environmental impact of human activity and economic analysis of water use.

The said analyses and reviews must be carried out in accordance to the technical specifications set out in Schedules II and III, and must be completed by the end of November 2004.

(2) The analyses and reviews mentioned under sub-regulation (1) shall be reviewed, and if necessary updated by the end of November 2013 and every six years thereafter.

7. (1) The competent authority shall ensure the establishment of a register or registers of all areas lying within each water catchment district which have been designated as requiring special protection under specific legislation for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water. They shall ensure that the register is completed by the end of November 2004.

Register of protected areas.

(2) The register or registers shall include all bodies of water identified under regulation 8(1) and all protected areas covered by Schedule IV.

(3) For each water catchment district, the register or registers of protected areas shall be kept under review and up to date.

Waters used for the abstraction of drinking water.

- 8.** (1) The competent authority shall identify:
- (a) all bodies of water used for the abstraction of water intended for human consumption providing more than ten metres cubed a day as an average or serving more than fifty persons; and
 - (b) those bodies of water intended for such future use.

The competent authority shall monitor, in accordance with Schedule V, those bodies of water which, according to Schedule V, provide more than one hundred metres cubed a day as an average.

(2) For each body of water identified under sub-regulation (1), in addition to meeting the objectives of regulation 4 in accordance with the requirements of these regulations, for surface water bodies, the competent authority shall ensure that under the water treatment regime applied, the resulting water will meet the requirements of any regulations related to the quality of water intended for human consumption.

(3) The competent authority shall ensure the necessary protection for the bodies of water identified with the aim of avoiding deterioration in their quality in order to reduce the level of purification treatment required in the production of drinking water. The competent authority may establish safeguard zones for those bodies of water and take those measures so necessary to secure the appropriate safeguards as defined in supplementary guidance to these regulations.

Monitoring of surface water status, groundwater status and protected areas.

9. (1) The competent authority shall ensure the establishment of programmes for the monitoring of water status in order to establish a coherent and comprehensive overview of water status within each water catchment district:

- (a) for surface waters such programmes shall cover:
 - (i) the volume and level or rate of flow to the extent relevant for ecological and chemical status and ecological potential, and
 - (ii) the ecological and chemical status and ecological potential;
- (b) for groundwaters such programmes shall cover monitoring of the chemical and quantitative status;
- (c) for protected areas the above programmes shall be supplemented by those specifications contained in the legislation under which the individual protected areas have been established.

(2) These programmes shall be operational by the end of November 2006 unless otherwise specified in the legislation concerned. Such monitoring shall be in accordance with the requirements of Schedule V.

(3) The competent authority shall adhere to technical specifications and standardised methods for analysis and monitoring of water status in accordance with the requirements of Schedules V and XI.

- 10.(1) (a) The competent authority shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis conducted according to Schedule III, and in accordance in particular with the polluter pays principle. Recovery of costs for water services.
- (b) The competent authority shall ensure by 2010:
- (i) that water-pricing policies provide adequate incentives for users to use water resources efficiently, and thereby contribute to the environmental objectives of these regulations,
 - (ii) an adequate contribution of the different water uses, disaggregated into at least industry, households and agriculture, to the recovery of the costs of water services, based on the economic analysis conducted according to Schedule III and taking account of the polluter pays principle.
- (c) The Minister responsible for resources and the Minister responsible for the environment may give specific directions to the respective competent authority on the carrying out of the obligations imposed on it by paragraphs (a) and (b), having regard to social, environmental and economic effects of the recovery as well as the geographic and climatic conditions of the region or regions affected.

(2) The competent authority shall report in the water catchment management plans on the planned steps towards implementing sub-regulation (1). Which steps will contribute to achieving the environmental objectives of these regulations and on the contribution made by the various water uses to the recovery of the costs of water services.

(3) Nothing in this regulation shall prevent the funding of particular preventive or remedial measures in order to achieve the objectives of these regulations.

(4) The competent authority shall not be in breach of these regulations if it decides in accordance with established practices not to apply paragraph (b) of sub-regulation (1), and for that purpose the relevant provisions of sub-regulation (2), for a given water-use activity, where this does not compromise the purposes and the achievement of the objectives of these regulations. The competent authority shall report the reasons for not fully applying said provisions in the water catchment management plans.

11. (1) The competent authority shall ensure that all discharges, referred to in sub-regulation (2), into surface waters are controlled according to the combined approach set out in this regulation. The combined approach for point and diffuse sources.

(2) The competent authority shall ensure the establishment and, or implementation of:

- (a) the emission controls based on best available

- techniques, or
- (b) the relevant emission limit values, or
- (c) in the case of diffuse impacts the controls including, as appropriate, best environmental practices provided that the said controls and limit values are to be construed according to the Industrial Emissions (Integrated Pollution Prevention and Control) Regulations, the Urban Waste Water Treatment Regulations, the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources Regulations, the regulations listed in Schedule IX, any other relevant regulations, by the end of November 2012, unless otherwise specified in the legislation concerned.
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- S.L. 549.22
- S.L. 549.25
- (3) Where a quality objective or quality standard, whether established pursuant to these regulations, in the regulations listed in Schedule IX, or pursuant to any other legislation, requires stricter conditions than those which would result from the application of sub-regulation (2) more stringent emission controls shall be set accordingly.
- Programme of measures.
- 12.** (1) The competent authority shall establish a programme of measures for each water catchment district, taking account of the results of the analyses required under regulation 6, in order to achieve the objectives established under regulation 5.
- (2) Each programme of measures shall include the "basic" measures specified in sub-regulation (3) hereunder and, where necessary, "supplementary" measures.
- (3) "Basic" measures are the minimum requirements to be complied with and shall consist of:
- (a) those measures required to implement legislation aimed at the protection of water, including measures required under the legislation specified in regulation 11 and in part A of Schedule VI;
- (b) measures deemed appropriate for the purposes of regulation 10;
- (c) measures to promote an efficient and sustainable water use in order to avoid compromising the achievement of the objectives specified in regulation 5;
- (d) measures to meet the requirements of regulation 8, including measures to safeguard water quality in order to reduce the level of purification treatment required for the production of drinking water;
- (e) controls over the abstraction of fresh surface water and groundwater, and impoundment of fresh surface water, including a register or registers of water abstractions and a requirement of prior authorisation for abstraction and impoundment. These controls shall be periodically reviewed and, where necessary, updated. The competent authority can exempt from these controls,

abstractions or impoundments which have no significant impact on water status;

- (f) controls, including a requirement for prior authorisation of artificial recharge or augmentation of groundwater bodies. The water used may be derived from any surface water or groundwater, provided that the use of the source does not compromise the achievement of the environmental objectives established for the source or the recharged or augmented body of groundwater. These controls shall be periodically reviewed and, where necessary, updated;
- (g) for point source discharges liable to cause pollution, a requirement for prior regulation, such as a prohibition on the entry of pollutants into water, or for prior authorisation, or registration based on general binding rules, laying down emission controls for the pollutants concerned, including controls in accordance with regulation 11 or additional legislation. These controls shall be periodically reviewed and, where necessary, updated;
- (h) for diffuse sources liable to cause pollution, measures to prevent or control the input of pollutants. Controls may take the form of a requirement for prior regulation, such as a prohibition on the entry of pollutants into water, prior authorisation or registration based on general binding rules where such a requirement is not otherwise provided for under other legislation. These controls shall be periodically reviewed and, where necessary, updated;
- (i) for any other significant adverse impacts on the status of water identified under regulation 6 and Schedule II, in particular measures to ensure that the hydromorphological conditions of the bodies of water are consistent with the achievement of the required ecological status or good ecological potential for bodies of water designated as artificial or heavily modified. Controls for this purpose may take the form of a requirement for prior authorisation or registration based on general binding rules where such a requirement is not otherwise provided for under other legislation. Such controls shall be periodically reviewed and, where necessary, updated;
- (j) a prohibition of direct discharges of pollutants into groundwater, provided that the competent authority may authorise re-injection into the same aquifer of water used for geothermal purposes. It may also authorise, specifying the conditions for:
 - (i) injection of water containing substances resulting from the operations for exploration and extraction of hydrocarbons or mining activities, and injection of water for technical reasons, into

geological formations from which hydrocarbons or other substances have been extracted or into geological formations which for natural reasons are permanently unsuitable for other purposes. Such injections shall not contain substances other than those resulting from the above operations;

- (ii) re-injection of pumped groundwater from mines and quarries or associated with the construction or maintenance of civil engineering works;
 - (iii) injection of natural gas or liquefied petroleum gas (LPG) for storage purposes into geological formations which for natural reasons are permanently unsuitable for other purposes;
 - (iv) injection of natural gas or liquefied petroleum gas (LPG) for storage purposes into other geological formations where there is an overriding need for security of gas supply, and where the injection is such as to prevent any present or future danger of deterioration in the quality of any receiving groundwater;
 - (v) injection of carbon dioxide stream for storage purposes into geological formations which for natural reasons are permanently unsuitable for other purposes, provided that such injection is made in accordance with the Geological Storage of Carbon Dioxide Regulations, or excluded from the applicability of those regulations pursuant to regulation 2(2) of those regulations;
 - (vi) construction, civil engineering and building works and similar activities on, or in the ground which come into contact with groundwater. For these purposes, the competent authority may determine that such activities are to be treated as having been authorised provided that they are conducted in accordance with general binding rules developed by the same in respect of such activities; and
 - (vii) discharges of small quantities of substances for scientific purposes for characterisation, protection or remediation of water bodies limited to the amount strictly necessary for the purposes concerned:
Provided such discharges do not compromise the achievement of the environmental objectives established for that body of groundwater;
- (k) measures to eliminate pollution of surface waters by those substances specified in Schedule X, and to progressively reduce pollution by other substances which would otherwise prevent the achievement of the objectives for the bodies of surface water as set out in regulation 5;

- (l) any measure required to prevent significant losses of pollutants from technical installations, and to prevent and, or to reduce the impact of accidental pollution incidents for example as a result of floods, including through systems to detect or give warning of such events including, in the case of accidents which could not reasonably have been foreseen, all appropriate measures to reduce the risk to aquatic ecosystems.

(4) "Supplementary" measures are those measures designed and implemented in addition to the basic measures, with the aim of achieving the objectives established pursuant to regulation 5. Part B of Schedule VI contains a non-exclusive list of such measures. The competent authority may also adopt further supplementary measures in order to provide for additional protection or improvement of the waters covered by these regulations, including the implementation of the relevant international agreements.

(5) Where monitoring or other data indicates that the objectives set under regulation 5 for the body of water are unlikely to be achieved, the competent authority shall ensure that:

- (a) the causes of the possible failure are investigated,
- (b) relevant permits and authorisations are examined and reviewed as appropriate,
- (c) the monitoring programmes are reviewed and adjusted as appropriate, and
- (d) additional measures as may be necessary in order to achieve those objectives are established, including, as appropriate, the establishment of stricter environmental quality standards following the procedures laid down in Schedule V. Where those causes are the result of circumstances of natural cause or *force majeure* which are exceptional and could not reasonably have been foreseen, in particular extreme floods and prolonged droughts, the competent authority may determine that additional measures are not practicable, subject to regulation 5(6).

(6) In implementing measures pursuant to sub-regulation (3), the competent authority shall take all appropriate steps not to increase pollution of marine waters. Without prejudice to existing legislation, the application of measures taken pursuant to sub-regulation (3) may on no account lead, either directly or indirectly, to increased pollution of surface waters. This requirement shall not apply where it would result in increased pollution of the environment as a whole.

(7) The programmes of measures shall be established by the end of November 2009 and all the measures shall be made operational by the end of November 2012.

(8) The programmes of measures shall be reviewed, and if necessary updated by the end of November 2015 and every six years thereafter. Any new or revised measures established under an updated programme shall be made operational within three years of

their establishment.

Water catchment management plans.

13. (1) The competent authority shall ensure that a water catchment management plan is produced for each water catchment district.

(2) The water catchment management plan shall include the information detailed in Schedule VII.

(3) Water catchment management plans may be supplemented by the production of more detailed programmes and management plans for sub-catchment, sector, issue, or water type, to deal with particular aspects of water management. Implementation of these measures shall not exempt the competent authority from any of its obligations under the rest of these regulations.

(4) Water catchment management plans shall be published by the end of November 2009.

(5) Water catchment management plans shall be reviewed and updated by the end of November 2015 every six years thereafter.

Public information and consultation.

14. (1) The competent authority shall encourage the active involvement of all interested parties in the implementation of these regulations, in particular in the production, review and updating of the water catchment management plan. The competent authority shall ensure that, for each water catchment district, it publishes and makes available for comments to the public, including users:

(a) a timetable and work programme for the production of the plan, including a statement of the consultation measures to be taken, at least three years before the beginning of the period to which the plan refers;

(b) an interim overview of the significant water management issues identified in the water catchment, at least two years before the beginning of the period to which the plan refers;

(c) draft copies of the water catchment management plan, at least one year before the beginning of the period to which the plan refers. On request, access shall be given to background documents and information used for the development of the draft water catchment management plan.

(2) The competent authority shall allow at least six months to comment in writing on those documents in order to allow active involvement and consultation.

(3) Sub-regulations (1) and (2) shall apply equally to updated water catchment management plans.

Technical adaptations to the regulations.

15. (1) Schedules I and III and paragraph 1.3.6 of Schedule V may be adapted to scientific and technical progress, taking into account the periods for review and updating of the water catchment management plans as referred to in regulation 13.

(2) For the purpose of transmission and processing of data, including statistical and cartographic data, technical formats for the

purpose of sub-regulation (1) may be adopted in accordance with the procedures laid down in relevant legislation.

16. (1) Where the competent authority considers that the conditions attached to a permit are no longer adequate, or that the activity authorised by the permit poses a previously unforeseen risk to the environmental objectives listed in regulation 5, it may:

Actions that may be taken by the competent authority.

- (a) alter the terms and conditions attached to the permit;
- (b) serve a remedial notice upon the permit holder setting out the steps which must be taken to comply with the altered conditions and to remove the risk or actual harm as well as the period in which these steps must be completed:

Provided that the competent authority must include in its remedial notice the steps that the permit holder must comply with so as to remedy the situation as well as the time by which such steps must be taken;

- (c) revoke the permit.

(2) Where the previously unforeseen risk arising from an activity authorised by a permit cannot be mitigated by measures under sub-regulation (1), or when the conditions attached to a permit are no longer adequate, the competent authority may suspend the permit in whole or in part as necessary to avert the risk, and in each case without being liable to paying any compensation or refund of anything paid or made in securing the permit.

(3) Where the competent authority believes that a permit holder is, or is likely to be, in breach of the conditions attached to his permit or these regulations in general, the competent authority may issue an enforcement notice specifying the breach of the conditions, the steps which must be taken to prevent it and the time in which these steps must be completed.

(4) If a permit holder fails to comply with a remedial or enforcement notice, the competent authority may, apart from revoking the permit in whole or in part, itself undertake the remedial action required, defraying the expenses incurred out of the permit holder's financial assurance.

(5) The competent authority may additionally bring into effect any punitive measures specified therein, including confiscation of all or part of the financial assurance:

Provided that, if the cost of this remedial action exceeds the financial assurance, the person responsible shall bear the additional costs.

(6) Action by the competent authority under sub-regulations (3) and (4) shall be without prejudice to regulations 17, 18 and 19.

(7) For the purposes of this regulation, "permit" means any permit issued by the competent authority under the Malta Resources Authority Act and, or under the Environment Protection Act or any regulation made thereunder.

Cap. 423.

Cap. 549.

17. Any person shall be guilty of an offence under these

Offences.

regulations if;

- (a) he fails to comply with any provision of these regulations or with any order lawfully given in terms of any provision of these regulations; or
- (b) he contravenes any restriction, prohibition or requirement imposed by or under these regulations; or
- (c) he acts in contravention of any of the provisions of these regulations; or
- (d) he conspires or attempts, or aids, or abets, any other person by whatever means, including advertising, counseling or procurement to contravene the provisions of these regulations or to fail to comply with any such provisions (including any order lawfully given in terms of any of the provision of these regulations) or to contravene any restriction, prohibition or requirement imposed by or under the said regulations.

Penalties.

18. Any person who commits an offence against these regulations shall, on conviction, be liable:

- (a) on a first conviction to a fine (*multa*) of not less than one thousand and one hundred and sixty-four euro and sixty-nine cents (€1,164.69) but not exceeding four thousand and six hundred and fifty-eight euro and seventy-five cents (€4,658.75);
- (b) on a second or subsequent convictions, to a fine (*multa*) of not less than four thousand and six hundred and fifty-eight euro and seventy-five cents (€4,658.75), but not exceeding fifty-eight thousand and two hundred and thirty-four euro and thirty-three cents (€ 58,234.33) or to imprisonment for a term not exceeding six months, or to both such fine and imprisonment:

Provided that the court shall order any person who has been found guilty of committing an offence against these regulations to pay for the expenses incurred by the competent authority as a result of the said offence, the revocation of the permit issued by the competent authority and the confiscation of the *corpus delicti*, including vehicle, where applicable.

Applicability of the Criminal Code.
Cap. 9.

19. (1) The provisions of articles 23 and 30 of the Criminal Code shall, *mutatis mutandis*, apply to proceedings, in respect of offences against these regulations, so however that the disqualification from holding or obtain a licence, permit or authority shall in no case be for less than one year.

Cap. 9.

(2) Notwithstanding the provisions of article 370 of the Criminal Code, proceedings for an offence against these regulations shall be taken before the Court of Magistrates (Malta) or the Court of Magistrates (Gozo), as the case may be, and shall be in accordance with the provisions of the Criminal Code regulating the procedure before the said courts as courts of criminal

judicature.

(3) Notwithstanding the provisions of the Criminal Code, the Attorney General shall always have a right of appeal to the Court of Criminal Appeal from any judgement given by the Court of Magistrates (Malta) or the Court of Magistrates (Gozo) in respect of proceedings for any offence against these regulations. Cap. 9.

SCHEDULE I

INFORMATION REQUIRED FOR THE LIST
OF COMPETENT AUTHORITIES

The following information on the competent authority shall be included in the water catchment management plan:

- (i) Name and address of the competent authority - the official name and address of the authority identified under regulation 4.
- (ii) Geographical coverage of the water catchment district - the names of the main watercourses within the water catchment district together with a precise description of the boundaries of the water catchment district. This information should as far as possible be available for introduction into a geographic information system (GIS).
- (iii) Legal status of the competent authorities - a description of the legal status of the competent authority and, where relevant, a summary or copy of its statute, founding treaty or equivalent legal document or the Act of Parliament establishing the relevant Authority.
- (iv) Responsibilities - a description of the legal and administrative responsibilities of each competent authority and of its role within each water catchment district.
- (v) Membership - where the competent authority acts as a coordinating body for other competent authorities, a list is required of these authorities together with a summary of the institutional relationships established in order to ensure coordination.

SCHEDULE II

SURFACE WATERS

1.1 Characterisation of surface water body types

The competent authority shall identify the location and boundaries of bodies of surface water and shall carry out an initial characterisation of all such bodies in accordance with the following methodology. The competent authority may group surface water bodies together for the purposes of this initial characterisation.

- (i) The surface water bodies within the water catchment district shall be identified as falling within either one of the following surface water categories - watercourses, pools, transitional waters or coastal waters - or as artificial surface water bodies or heavily modified surface water bodies.
- (ii) For each surface water category, the relevant surface water bodies within the water catchment district shall be differentiated according to type. These types are those defined using either 'system A' or 'system B' identified in section 1.2.
- (iii) If system A is used, the surface water bodies within the water catchment district shall be differentiated by surface water body types according to the descriptors set out in the tables for system A.
- (iv) If system B is used, the competent authority must achieve at least the same degree of differentiation as would be achieved using system A.

Accordingly, the surface water bodies within the water catchment district shall be differentiated into types using the values for the obligatory descriptors and such optional descriptors, or combinations of descriptors, as are required to ensure that type specific biological reference conditions can be reliably derived.

- (v) For artificial and heavily modified surface water bodies the differentiation shall be undertaken in accordance with the descriptors for whichever of the surface water categories most closely resembles the heavily modified or artificial water body concerned.
- (vi) The competent authority shall develop a map or maps (in a GIS format) of the geographical location of the types consistent with the degree of differentiation required under system A.

1.2 Ecoregions and surface water body types

Watercourses

System A

Fixed typology	Descriptors
Ecoregion	Italy, Corsica and Malta
Type	Altitude typology mid-altitude: 200 to 800 m lowland: <200 m Size typology based on catchment area small: 10 to 100 km ² Geology calcareous

System B

Alternative characterisation	Physical and chemical factors that determine the characteristics of the watercourse or part of the watercourse and hence the biological population structure and composition
Obligatory factors	altitude latitude longitude geology size
Optional factors	distance from water source energy of flow (function of flow and slope) mean water width mean water depth mean water slope form and shape of main river bed river discharge (flow) category valley shape transport of solids acid neutralising capacity mean substratum composition chloride air temperature range mean air temperature precipitation

Lakes	
<i>System A</i>	
Fixed typology	Descriptors
Ecoregion	Italy, Corsica and Malta
Type	Altitude typology mid-altitude: 200 to 800 m lowland: <200 m Depth typology based on mean depth <3 m 3 to 15 m >15 m Size typology based on surface area 0.5 to 1 km ² 1 to 10 km ² Geology calcareous
<i>System B</i>	
Alternative characterisation	Physical and chemical factors that determine the characteristics of the lake and hence the biological population structure and composition
Optional factors	mean water depth lake shape residence time mean air temperature air temperature range mixing characteristics (e.g. monomictic, dimictic, polymictic) acid neutralising capacity background nutrient status mean substratum composition water level fluctuation
Transitional waters	
<i>System A</i>	
Fixed typology	Descriptors
Type	Based on mean annual salinity <0.5: freshwater 0.5 to <5: oligohaline 5 to <18: mesohaline 18 to <30: polyhaline 30 to <40: euhaline Based on mean tidal range <2 m: microtidal
<i>System B</i>	
Alternative characterisation	Physical and chemical factors that determine the characteristics of the transitional water and hence the biological population structure and composition

Obligatory factors	latitude longitude tidal range salinity
Optional factors	depth current velocity wave exposure residence time mean water temperature mixing characteristics turbidity mean substratum composition shape water temperature range

Coastal waters

System A

Fixed typology	Descriptors
Ecoregion	Mediterranean Sea
Type	Based on mean annual salinity <0.5: freshwater 0.5 to <5: oligohaline 5 to <18: mesohaline 18 to <30: polyhaline 30 to <40: euhaline Based on mean depth shallow waters: <30 m intermediate: (30 to 200 m) deep: >200 m

System B

Alternative characterisation	Physical and chemical factors that determine the characteristics of the coastal water and hence the biological population structure and composition
Obligatory factors	latitude longitude tidal range salinity
Optional factors	current velocity wave exposure residence time mean water temperature mixing characteristics turbidity retention time (of enclosed bays) mean substratum composition water temperature range

1.3 Establishment of type-specific reference conditions for surface water body types

(i) For each surface water body type characterised in accordance with section 1.1, type-specific hydromorphological and physicochemical conditions shall be

established representing the values of the hydromorphological and physicochemical quality elements specified in point 1.1 in Schedule V for that surface water body type at high ecological status as defined in the relevant table in point 1.2 in Schedule V. Type-specific biological reference conditions shall be established, representing the values of the biological quality elements specified in point 1.1 in Schedule V for that surface water body type at high ecological status as defined in the relevant table in section 1.2 in Schedule V.

(ii) In applying the procedures set out in this section to heavily modified or artificial surface water bodies references to high ecological status shall be construed as references to maximum ecological potential as defined in table 1.2.5 of Schedule V. The values for maximum ecological potential for a water body shall be reviewed every six years.

(iii) Type-specific conditions for the purposes of points (i) and (ii) and type-specific biological reference conditions may be either spatially based or based on modelling, or may be derived using a combination of these methods. Where it is not possible to use these methods, the competent authority may use expert judgement to establish such conditions. In defining high ecological status in respect of concentrations of specific synthetic pollutants, the detection limits are those which can be achieved in accordance with the available techniques at the time when the type-specific conditions are to be established.

(iv) For spatially based type-specific biological reference conditions, the competent authority shall develop a reference network for each surface water body type. The network shall contain a sufficient number of sites of high status to provide a sufficient level of confidence about the values for the reference conditions, given the variability in the values of the quality elements corresponding to high ecological status for that surface water body type and the modelling techniques which are to be applied under paragraph (v).

(v) Type-specific biological reference conditions based on modelling may be derived using either predictive models or hindcasting methods. The methods shall use historical, palaeological and other available data and shall provide a sufficient level of confidence about the values for the reference conditions to ensure that the conditions so derived are consistent and valid for each surface water body type.

(vi) Where it is not possible to establish reliable type-specific reference conditions for a quality element in a surface water body type due to high degrees of natural variability in that element, not just as a result of seasonal variations, then that element may be excluded from the assessment of ecological status for that surface water type. In such circumstances the competent authority shall state the reasons for this exclusion in the water catchment management plan.

1.4 Identification of Pressures

The competent authority shall collect and maintain information on the type and magnitude of the significant anthropogenic pressures to which the surface water bodies in each water catchment district are liable to be subject, in particular the following.

Estimation and identification of significant point source pollution, in particular by substances listed in Schedule VIII, Schedule IX and X from urban, industrial, agricultural and other installations and activities, based, inter alia, on information gathered under:

- (i) regulation 14 of the Urban Waste Water Treatment Regulations (S.L. 549.22) and programmes published subsequent to these regulations;
- (ii) regulations 7, 8 and 18 of the Industrial Emissions (Integrated Pollution

Prevention and Control) Regulations (S.L. 549.77);

and for the purposes of the initial water catchment management plan:

(iii) Schedule IX and Schedule X;

(iv) the Water Intended for Human Consumption Regulations (S.L. 449.57), the Management of Bathing Water Quality Regulations (S.L. 465.09);

Estimation and identification of significant diffuse source pollution, in particular by substances listed in Schedule VIII, from urban, industrial, agricultural and other installations and activities; based, *inter alia*, on information gathered under:

(i) regulations 4, 6 and 7 of the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources Regulations (S.L. 549.25);

(ii) articles 7 and 17 of Directive 91/414/EEC (concerning placing of plant protection products on the market);

(iii) Directive 98/8/EC (concerning the placing of biocidal products on the market); and for the purposes of the first water catchment management plan;

(iv) the Quality required of Surface Water intended for the Abstraction of Drinking Water Regulations (S.L. 549.21), the Management of Bathing Water Quality Regulations (S.L. 465.09).

Estimation and identification of significant water abstraction for urban, industrial, agricultural and other uses, including seasonal variations and total annual demand, and of loss of water in distribution systems.

Estimation and identification of the impact of significant water flow regulation, including water transfer and diversion, on overall flow characteristics and water balances.

Identification of significant morphological alterations to water bodies.

Estimation and identification of other significant anthropogenic impacts on the status of surface waters.

Estimation of land use patterns, including identification of the main urban, industrial and agricultural areas and, where relevant, fisheries and forests.

Inventory of Emissions, Discharges and Losses

(a) For the purposes of the first and subsequent reviews of the analysis required under regulation 5, the competent authority shall establish an inventory, including maps, if available, of emissions, discharges and losses of all priority substances and pollutants listed in Part A, Table 1 of Schedule IX on the basis of the information collected in accordance with regulations 5 and 8, the European Pollutant Release and Transfer Register Reporting Obligations Regulations (S.L. 549.47), environmental permits and, or operational permits as issued by the relevant competent authority and other available data, for the water catchment district lying within the Maltese territory, including their concentrations in sediment and biota, as appropriate.

(b) The reference period for the estimation of pollutant values to be entered in the inventories referred to in point (a) above shall be one year between 2008 and 2010. However, for priority substances or pollutants covered by the Plant Protection Products Regulations, 2004 (L.N. 115 of 2004), the entries may be calculated as the average of the years 2008, 2009 and 2010.

(c) The inventories shall be updated as part of the reviews of the analyses specified in regulation 6(2). The reference period for the establishment of values in the updated inventories shall be the year before that analysis is to be completed. For

priority substances or pollutants covered by Plant Protection Products Regulations, 2004, the entries may be calculated as the average of the three years before the completion of that analysis. The updated inventories shall be published in the updated water catchment management plans as laid down in regulation 13(5).

1.5 Assessment of Impact

The competent authority shall carry out an assessment of the susceptibility of the surface water status of bodies to the pressures identified above.

The competent authority shall use the information collected above, and any other relevant information including existing environmental monitoring data, to carry out an assessment of the likelihood that surface waters bodies within the water catchment district will fail to meet the environmental quality objectives set for the bodies under regulation 5. The competent authority may utilise modelling techniques to assist in such an assessment.

For those bodies identified as being at risk of failing the environmental quality objectives, further characterisation shall, where relevant, be carried out to optimise the design of both the monitoring programmes required under regulation 8, and the programmes of measures required under regulation 12.

(ii) GROUNDWATERS

2.1 Initial characterisation

The competent authority shall carry out an initial characterisation of all groundwater bodies to assess their uses and the degree to which they are at risk of failing to meet the objectives for each groundwater body under regulation 5. The competent authority may group groundwater bodies together for the purposes of this initial characterisation. This analysis may employ existing hydrological, geological, pedological, land use, discharge, abstraction and other data but shall identify:

- the location and boundaries of the groundwater body or bodies,
- the pressures to which the groundwater body or bodies are liable to be subject including:
 - (i) diffuse sources of pollution
 - (ii) point sources of pollution
 - (iii) abstraction
 - (iv) artificial recharge
- the general character of the overlying strata in the catchment area from which the groundwater body receives its recharge,
- those groundwater bodies for which there are directly dependent surface water ecosystems or terrestrial ecosystems.

2.2 Further characterisation

Following this initial characterisation, the competent authority shall carry out further characterisation of those groundwater bodies or groups of bodies which have been identified as being at risk in order to establish a more precise assessment of the significance of such risk and identification of any measures to be required under regulation 12. Accordingly, this characterisation shall include relevant information on the impact of human activity and, where relevant, information on:

- geological characteristics of the groundwater body including the extent and type of geological units,
- hydrogeological characteristics of the groundwater body including hydraulic conductivity, porosity and confinement,

- characteristics of the superficial deposits and soils in the catchment from which the groundwater body receives its recharge, including the thickness, porosity, hydraulic conductivity, and absorptive properties of the deposits and soils,
- stratification characteristics of the groundwater within the groundwater body,
- an inventory of associated surface systems, including terrestrial ecosystems and bodies of surface water, with which the groundwater body is dynamically linked,
- estimates of the directions and rates of exchange of water between the groundwater body and associated surface systems,
- sufficient data to calculate the long term annual average rate of overall recharge,
- characterisation of the chemical composition of the groundwater, including specification of the contributions from human activity. The competent authority may use typologies for groundwater characterisation when establishing natural background levels for these bodies of groundwater.

2.3 Review of the impact of human activity on groundwaters

For those bodies of groundwater which are identified following the initial characterisation undertaken in accordance with paragraph 2.1 as being at risk of failing to meet the objectives set for each body under regulation 5, the following information shall, where relevant, be collected and maintained for each groundwater body:

- (i) the location of points in the groundwater body used for the abstraction of water with the exception of:
 - points for the abstraction of water providing less than an average of 10 m³ per day, or,
 - points for the abstraction of water intended for human consumption providing less than an average of 10 m³ per day or serving less than 50 persons,
- (ii) the annual average rates of abstraction from such points,
- (iii) the chemical composition of water abstracted from the groundwater body,
- (iv) the location of points in the groundwater body into which water is directly discharged,
- (v) the rates of discharge at such points,
- (vi) the chemical composition of discharges to the groundwater body, and
- (vii) land use in the catchment or catchments from which the groundwater body receives its recharge, including pollutant inputs and anthropogenic alterations to the recharge characteristics such as rainwater and run-off diversion through land sealing, artificial recharge, damming or drainage.

2.4 Review of the impact of changes in groundwater levels

The competent authority shall also identify those bodies of groundwater for which lower objectives are to be specified under regulation 5 including as a result of consideration of the effects of the status of the body on:

- (i) surface water and associated terrestrial ecosystems
- (ii) water regulation, flood protection and land drainage
- (iii) human development.

2.5 Review of the impact of pollution on groundwater quality

The competent authority shall identify those bodies of groundwater for which lower objectives are to be specified under regulation 5 where, as a result of the impact of human activity, as determined in accordance with regulation 6, the body of groundwater is so polluted that achieving good groundwater chemical status is infeasible or disproportionately expensive.

SCHEDULE III

ECONOMIC ANALYSIS

The economic analysis shall contain enough information in sufficient detail (taking account of the costs associated with collection of the relevant data) in order to:

(a) make the relevant calculations necessary for taking into account under regulation 9 the principle of recovery of the costs of water services, taking account of long term forecasts of supply and demand for water in the water catchment district and, where necessary:

- (i) estimates of the volume, prices and costs associated with water services, and
- (ii) estimates of relevant investment including forecasts of such investments;

(b) make judgements about the most cost-effective combination of measures in respect of water uses to be included in the programme of measures under regulation 12 based on estimates of the potential costs of such measures.

SCHEDULE IV

PROTECTED AREAS

1. The register of protected areas required under regulation 6 shall include the following types of protected areas:

- (i) areas designated for the abstraction of water intended for human consumption under regulation 8;
- (ii) areas designated for the protection of economically significant aquatic species;
- (iii) bodies of water designated as recreational waters, including areas designated as bathing waters under any regulations concerning the quality of bathing water;
- (iv) nutrient-sensitive areas, including areas designated as vulnerable zones under the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources Regulations (S.L. 549.25) and areas

designated as sensitive areas under the Urban Waste Water Treatment Regulations (S.L. 549.22); and

- (v) areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant areas protected through the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44) and the Protection of Birds and Wild Rabbit Regulations, 1993 (L.N. 146 of 1993).

2. The summary of the register required as part of the water catchment management plan shall include maps indicating the location of each protected area and a description of the legislation under which they have been designated.

SCHEDULE V

1. SURFACE WATER STATUS
 - 1.1. Quality elements for the classification of ecological status
 - 1.1.1. Rivers
 - 1.1.2. Lakes
 - 1.1.3. Transitional waters
 - 1.1.4. Coastal waters
 - 1.1.5. Artificial and heavily modified surface water bodies
 - 1.2. Normative definitions of ecological status classifications
 - 1.2.1. Definitions for high, good and moderate ecological status in rivers
 - 1.2.2. Definitions for high, good and moderate ecological status in lakes
 - 1.2.3. Definitions for high, good and moderate ecological status in transitional waters
 - 1.2.4. Definitions for high, good and moderate ecological status in coastal waters
 - 1.2.5. Definitions for maximum, good and moderate ecological potential for heavily modified or artificial water bodies
 - 1.2.6. Procedure for the setting of chemical quality standards by the competent authority
 - 1.3. Monitoring of ecological status and chemical status for surface waters
 - 1.3.1. Design of surveillance monitoring
 - 1.3.2. Design of operational monitoring
 - 1.3.3. Design of investigative monitoring
 - 1.3.4. Frequency of monitoring
 - 1.3.5. Additional monitoring requirements for protected areas
 - 1.3.6. Standards for monitoring of quality elements
 - 1.4. Classification and presentation of ecological status
 - 1.4.1. Comparability of biological monitoring results

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- 1.4.2. Presentation of monitoring results and classification of ecological status and ecological potential
 - 1.4.3. Presentation of monitoring results and classification of chemical status
 - 2. GROUNDWATER
 - 2.1. Ground water quantitative status
 - 2.1.1. Parameter for the classification of quantitative status
 - 2.1.2. Definition of quantitative status
 - 2.2. Monitoring of groundwater quantitative status
 - 2.2.1. Groundwater level monitoring network
 - 2.2.2. Density of monitoring sites
 - 2.2.3. Monitoring frequency
 - 2.2.4. Interpretation and presentation of groundwater quantitative status
 - 2.3. Groundwater chemical status
 - 2.3.1. Parameters for the determination of groundwater chemical status
 - 2.3.2. Definition of good ground water chemical status
 - 2.4. Monitoring of groundwater chemical status
 - 2.4.1. Groundwater monitoring network
 - 2.4.2. Surveillance monitoring
 - 2.4.3. Operational monitoring
 - 2.4.4. Identification of trends in pollutants
 - 2.4.5. Interpretation and presentation of groundwater chemical status
 - 2.5. Presentation of groundwater status
 - 1. SURFACE WATER STATUS
 - 1.1. Quality elements for the classification of ecological status
 - 1.1.1. Watercourses
 - Biological elements*
 - Composition and abundance of aquatic flora
 - Composition and abundance of benthic invertebrate fauna
 - Hydromorphological elements supporting the biological elements*
 - Hydrological regime
 - quantity and dynamics of water flow
 - connection to groundwater bodies
 - Watercourse continuity
 - Morphological conditions
 - waterchannel depth and width variation
 - structure and substrate of the water channel
 - structure of the riparian zone

*Chemical and physico-chemical elements supporting the biological elements**General*

- Thermal conditions
- Oxygenation conditions
- Salinity
- Acidification status
- Nutrient conditions

Specific pollutants

- Pollution by all priority substances identified as being discharged into the body of water
- Pollution by other substances identified as being discharged in significant quantities into the body of water

1.1.2. Pools

Biological elements

- Composition, abundance and biomass of phytoplankton
- Composition and abundance of other aquatic flora
- Composition and abundance of benthic invertebrate fauna

Hydromorphological elements supporting the biological elements

Hydrological regime

- quantity of water
- residence time
- connection to the groundwater body

Morphological conditions

- pool depth variation
- quantity, structure and substrate of the pool bed
- structure of the pool shore

Chemical and physico-chemical elements supporting the biological elements

General

- Transparency
- Thermal conditions
- Oxygenation conditions
- Salinity
- Acidification status
- Nutrient conditions

Specific pollutants

- Pollution by all priority substances identified as being discharged into the body of water
- Pollution by other substances identified as being discharged in significant quantities into the body of water

1.1.3. Transitional waters

Biological elements

- Composition, abundance and biomass of phytoplankton
- Composition and abundance of other aquatic flora
- Composition and abundance of benthic invertebrate fauna
- Composition and abundance of fish fauna

*Hydro-morphological elements supporting the biological elements**Morphological conditions*

- depth variation
- quantity, structure and substrate of the bed
- structure of the mediolittoral zone

Tidal regime

- freshwater flow
- wave exposure

Chemical and physico-chemical elements supporting the biological elements

General

- Transparency
- Thermal conditions
- Oxygenation conditions
- Salinity
- Nutrient conditions

Specific pollutants

- Pollution by all priority substances identified as being discharged into the body of water
- Pollution by other substances identified as being discharged in significant quantities into the body of water

1.1.4. Coastal waters

Biological elements

- Composition, abundance and biomass of phytoplankton
- Composition and abundance of other aquatic flora
- Composition and abundance of benthic invertebrate fauna

*Hydromorphological elements supporting the biological elements**Morphological conditions*

- depth variation
- structure and substrate of the coastal bed
- structure of the intertidal zone

Tidal regime

- direction of dominant currents

wave exposure

Chemical and physico-chemical elements supporting the biological elements

General

- Transparency
- Thermal conditions
- Oxygenation conditions
- Salinity
- Nutrient conditions

Specific pollutants

Pollution by all priority substances identified as being discharged into the body of water

Pollution by other substances identified as being discharged in significant quantities into the body of water

1.1.5. Artificial and heavily modified surface water bodies

The quality elements applicable to artificial and heavily modified surface water bodies shall be those applicable to whichever of the four natural surface water categories above most closely resembles the heavily modified or artificial water body concerned.

1.2 Normative definitions of ecological status classifications

Table 1.2. General definition for watercourses, pools, transitional waters and coastal waters

The following text provides a general definition of ecological quality. For the purposes of classification the values for the quality elements of ecological status for each surface water category are those given in tables 1.2.1 to 1.2.4 below.

Element	High Status	Good Status	Moderate Status
General	There are no, or only very minor, anthropogenic alterations to the values of the physico-chemical and Hydromorphological quality elements for the surface water body type from those normally associated with that type under undisturbed conditions.	The values of the biological quality elements for the surface water body type show low levels of distortion resulting from human activity, but deviate only slightly from those normally associated with the surface water body type under undisturbed conditions.	The values of the biological quality elements for the surface water body type deviate moderately from those normally associated with the surface water body type under undisturbed conditions. The values show moderate signs of distortion resulting from human activity and are significantly more disturbed than under conditions of good status.

	<p>The values of the biological quality elements for the surface water body reflect those normally associated with that type under undisturbed conditions, and show no, or only very minor, evidence of distortion.</p> <p>These are the type-specific conditions and communities.</p>		
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Waters achieving a status below moderate shall be classified as poor or bad.

Waters showing evidence of major alterations to the values of the biological quality elements for the surface water body type and in which the relevant biological communities deviate substantially from those normally associated with the surface water body type under undisturbed conditions, shall be classified as poor.

Waters showing evidence of severe alterations to the values of the biological quality elements for the surface water body type and in which large portions of the relevant biological communities normally associated with the surface water body type under undisturbed conditions are absent, shall be classified as bad.

1.2.1. Definitions for high, good and moderate ecological status in watercourses

Biological quality elements

Element	High Status	Good Status	Moderate Status
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</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.</p> <p>Moderate changes in the average macrophytic and the average phytobenthic abundance are evident.</p>

		<p>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 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>

Hydromorphological quality elements

Element	High Status	Good Status	Moderate Status
Hydrological regime	The quantity and dynamics of flow, and the resultant connection to groundwater 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.

Watercourse continuity	The continuity of the watercourse 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 ⁽¹⁾

Element	High Status	Good Status	Moderate Status
General conditions	<p>The values of the physico-chemical elements correspond totally or nearly totally to undisturbed conditions. Nutrient concentrations remain within the range normally associated with undisturbed conditions.</p> <p>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.</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>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>	<p>Conditions consistent with the achievement of the values specified above for the biological quality elements.</p>

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 the procedure detailed in section 1.2.6 without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	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 the procedure detailed in section 1.2.6 ⁽²⁾ without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	Conditions consistent with the achievement of the values specified above for the biological quality elements.
⁽¹⁾ The following abbreviations are used: bgl = background level, EQS = environment quality standard			
⁽²⁾ Application of the standards derived under this protocol shall not require reduction of pollutant concentrations below background levels (EQS>bgl)			

1.2.2. Definitions for high, good and moderate ecological status in Pools

Biological quality elements

Element	High Status	Good Status	Moderate Status
Phytoplankton	The taxonomic composition and abundance of phytoplankton corresponds totally or nearly totally to undisturbed conditions. The average phytoplankton biomass is consistent with the type-specific physico-chemical conditions and is not such as to significantly alter the type-specific transparency conditions.	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 waterbody or to the physico-chemical quality of the water or sediment. A slight increase in the frequency and intensity of the type specific planktonic blooms may occur.	The composition and abundance of planktonic taxa differ moderately from the type-specific communities. Biomass is moderately disturbed and may be such as to produce a significant undesirable disturbance in the condition of other biological quality

	Planktonic blooms occur at a frequency and intensity which is consistent with the type specific physico-chemical conditions.		elements and the physico-chemical quality of the water or sediment. A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur during summer months.
Macrophytes and phytobenthos	The taxonomic composition corresponds totally or nearly totally to undisturbed conditions. There are no detectable changes in the average macrophytic and the average phytobenthic abundance.	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. The phytobenthic community is not adversely affected by bacterial tufts and coats present due to anthropogenic activity.	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>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>
<p>Benthic invertebrate fauna</p>	<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 types pecific 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>

Hydromorphological quality elements

Element	High Status	Good Status	Moderate Status
Hydrological regime	The quantity and dynamics of flow, and the resultant connection to groundwater 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	Pool depth variation, quantity and structure of the substrate, and both the structure and condition of the pool 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 ⁽¹⁾

Element	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>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.</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 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 the procedure detailed in section 1.2.6 without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	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 the procedure detailed in section 1.2.6 ⁽²⁾ without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	Conditions consistent with the achievement of the values specified above for the biological quality elements.
⁽¹⁾ The following abbreviations are used: bgl = background level, EQS = environment quality standard			
⁽²⁾ Application of the standards derived under this protocol shall not require reduction of pollutant concentrations below background levels (EQS>bgl)			

1.2.3. Definitions for high, good and moderate ecological status in transitional waters

Biological quality elements

Element	High Status	Good Status	Moderate Status
Phytoplankton	<p>The taxonomic composition and abundance of phytoplankton are consistent with undisturbed conditions.</p> <p>The average phytoplankton biomass is consistent with the type-specific physico-chemical conditions and is not such as to significantly alter the type-specific transparency conditions.</p>	<p>There are slight changes in the composition and abundance of planktonic 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 physico-chemical quality of the water or sediment.</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.</p> <p>A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur during summer months.</p>

	Planktonic blooms occur at a frequency and intensity which is consistent with the type specific physico-chemical conditions.	A slight increase in the frequency and intensity of the type specific planktonic blooms may occur.	
Macroalgae	The composition of macroalgal taxa is consistent with undisturbed conditions. There are no detectable changes in macroalgal cover due to anthropogenic activities.	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 phytoplankton 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.	The composition of macroalgal taxa differs moderately from the type-specific conditions and is significantly more distorted than at good quality. 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.
Angiosperms	The taxonomic composition corresponds totally or nearly totally to undisturbed conditions. There are no detectable changes in macroalgal cover due to anthropogenic activities.	There are slight changes in the composition of angiosperm taxa compared to the type-specific communities. Angiosperm abundance shows slight signs of disturbance.	The composition of the angiosperm taxa differs moderately from the type-specific communities and is significantly more distorted than at good quality. There are moderate distortions in the abundance of angiosperm taxa.
Benthic Invertebrate fauna	The level of diversity and abundance of invertebrate taxa is within the range normally associated with undisturbed conditions. All the disturbance-sensitive taxa associated with undisturbed conditions are present.	The level of diversity and abundance of invertebrate taxa is slightly outside the range associated with the type-specific conditions. Most of the sensitive taxa of the type-specific communities are present.	The level of diversity and abundance of invertebrate taxa is moderately outside the range associated with the type-specific conditions. Taxa indicative of pollution are present. Many of the sensitive taxa of the type-specific communities are absent.

Fish fauna	Species composition and abundance is consistent with undisturbed conditions.	The abundance of the disturbance-sensitive species shows slight signs of distortion from type-specific conditions attributable to anthropogenic impacts on physico-chemical or hydromorphological quality elements.	A moderate proportion of the type-specific disturbance-sensitive species are absent as a result of anthropogenic impacts on physico-chemical or hydromorphological quality elements.
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Hydromorphological quality elements

Element	High Status	Good Status	Moderate Status
Flow regime	The 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 mediolittoral 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 ⁽¹⁾

Element	High Status	Good Status	Moderate Status
General conditions	The values of the physico-chemical elements correspond totally or nearly totally to undisturbed conditions. Nutrient concentrations remain within the range normally associated with undisturbed conditions.	Temperature, oxygen conditions and transparency 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.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

	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 the procedure detailed in section 1.2.6 without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	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 the procedure detailed in section 1.2.6 ⁽²⁾ without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	Conditions consistent with the achievement of the values specified above for the biological quality elements.
⁽¹⁾ The following abbreviations are used: bgl = background level, EQS = environment quality standard			
⁽²⁾ Application of the standards derived under this protocol shall not require reduction of pollutant concentrations below background levels (EQS>bgl)			

1.2.4. Definitions for high, good and moderate ecological status in coastal waters Biological quality elements

Element	High Status	Good Status	Moderate Status
Phytoplankton	The composition and abundance of phytoplanktonic taxa are consistent with undisturbed conditions.	The composition and abundance of phytoplanktonic taxa show slight signs of disturbance.	The composition and abundance of planktonic taxa show signs of moderate disturbance.

	<p>The average phytoplankton biomass is consistent with the type-specific physico-chemical 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 physico-chemical conditions.</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 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>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 macro-algal 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 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>The level of diversity and abundance of invertebrate taxa is slightly outside the range associated with the type-specific conditions.</p>	<p>The level of diversity and abundance of invertebrate taxa is moderately outside the range associated with the type-specific conditions.</p>
	<p>All the disturbance-sensitive taxa associated with undisturbed conditions are present.</p>	<p>Most of the sensitive taxa of the type-specific communities are present.</p>	<p>Taxa indicative of pollution are present.</p> <p>Many of the sensitive taxa of the type-specific communities are absent.</p>

Hydromorphological quality elements

Element	High Status	Good Status	Moderate Status
Flow regime	The 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 intertidal 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 ⁽¹⁾

Element	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 and transparency do not show signs of anthropogenic disturbance and remain within the range normally associated with undisturbed conditions.</p>	<p>Temperature, oxygen conditions and transparency 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.

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 the procedure detailed in section 1.2.6 without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	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 the procedure detailed in section 1.2.6 ⁽²⁾ without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	Conditions consistent with the achievement of the values specified above for the biological quality elements.
⁽¹⁾ The following abbreviations are used: bgl = background level, EQS = environment quality standard			
⁽²⁾ Application of the standards derived under this protocol shall not require reduction of pollutant concentrations below background levels (EQS>bgl)			

1.2.5. Definitions for maximum, good and moderate ecological potential for heavily modified or artificial water bodies

Biological and Hydromorphological quality elements

Element	Maximum Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
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 hydromorphological 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
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Physico-chemical quality elements

Element	Maximum Ecological Potential	Good Ecological Potential	Moderate Ecological Potential
General conditions	<p>Physico-chemical elements correspond totally or nearly totally to undisturbed conditions associated with the surface water body most closely comparable to the artificial or heavily modified body concerned.</p> <p>Nutrient concentrations remain within the range normally associated with undisturbed conditions.</p> <p>Levels of temperature, oxygen balance and pH do not show signs of anthropogenic disturbance and remain within the range normally associated with undisturbed conditions.</p>	<p>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.</p> <p>Temperature and pH 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>	Conditions consistent with 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.	
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 the procedure detailed in section 1.2.6 without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	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 the procedure detailed in section 1.2.6 ⁽¹⁾ without prejudice to Directive 91/414/EC and Directive 98/8/EC. (< EQS)	Conditions consistent with the achievement of the values specified above for the biological quality elements.
⁽¹⁾ Application of the standards derived under this protocol shall not require reduction of pollutant concentrations below background levels			

1.2.6. Procedure for the setting of chemical quality standards by the competent authority

In deriving environmental quality standards for pollutants listed in points 1 to 9 of Schedule VIII for the protection of aquatic biota, the competent authority shall act in accordance with the following provisions. Standards may be set for water, sediment or biota.

Where possible, both acute and chronic data shall be obtained for the taxa set out below which are relevant for the water body type concerned as well as any other aquatic taxa for which data are available. The 'base set' of taxa are:

- algae and, or macrophytes
- daphnia or representative organisms for saline waters
- fish.

Setting the environmental quality standard

The following procedure applies to the setting of a maximum annual average concentration:

- (i) The competent authority shall set appropriate safety factors in each case

consistent with the nature and quality of the available data and the guidance given in section 3.3.1 of Part II of 'Technical guidance document in support of Commission Directive 93/67/EEC (transposed through the Dangerous Substances (Risk Assessment) Regulations, 2002 (L.N 40 of 2002)) on risk assessment for new notified substances' and Commission Regulation (EC) No 1488/94 on risk assessment for existing substances' and the safety factors set out in the table below:

	Safety factor
At least one acute L(E)C ₅₀ from each of three trophic levels of the base set	1 000
One chronic NOEC (either fish or daphnia or a representative organism for saline waters)	100
Two chronic NOECs from species representing two trophic levels (fish and, or daphnia or a representative organism for saline waters and, or algae)	50
Chronic NOECs from at least three species (normally fish, daphnia or a representative organism for saline waters and algae) representing three trophic levels	10
Other cases, including field data or model ecosystems, which allow more precise safety factors to be calculated and applied	Case-by-case assessment

(ii) where data on persistence and bioaccumulation are available, these shall be taken into account in deriving the final value of the environmental quality standard;

(iii) the standard thus derived should be compared with any evidence from field studies. Where anomalies appear, the derivation shall be reviewed to allow a more precise safety factor to be calculated;

(iv) the standard derived shall be subject to peer review and public consultation including to allow a more precise safety factor to be calculated.

1.3. Monitoring of ecological status and chemical status for surface waters

The surface water monitoring network shall be established in accordance with the requirements of regulation 9. The monitoring network shall be designed so as to provide a coherent and comprehensive overview of ecological and chemical status within each water catchment and shall permit classification of water bodies into five classes consistent with the normative definitions in section 1.2. The competent authority shall provide a map or maps showing the surface water monitoring network in the water catchment management plan.

On the basis of the characterisation and impact assessment carried out in accordance with regulation 6 and Schedule II, the competent authority shall for each period to which a water catchment management plan applies, establish a surveillance monitoring programme and an operational monitoring programme. The competent authority may also need in some cases to establish programmes of investigative monitoring.

The competent authority shall monitor parameters which are indicative of the status of each relevant quality element. In selecting parameters for biological quality elements, the competent authority shall identify the appropriate taxonomic level required to achieve adequate confidence and precision in the classification of the quality elements. Estimates of the level of confidence and precision of the results provided by the monitoring programmes shall be given in the plan.

1.3.1. Design of surveillance monitoring

Objective

The competent authority shall establish surveillance monitoring programmes to provide information for:

- supplementing and validating the impact assessment procedure detailed in Schedule II,
- the efficient and effective design of future monitoring programmes,
- the assessment of long-term changes in natural conditions, and
- the assessment of long-term changes resulting from widespread anthropogenic activity.

The results of such monitoring shall be reviewed and used, in combination with the impact assessment procedure described in Schedule II, to determine requirements for monitoring programmes in the current and subsequent water catchment management plans.

Selection of monitoring points

Surveillance monitoring shall be carried out of sufficient surface water bodies to provide an assessment of the overall surface water status within each catchment or subcatchments within the water catchment district. In selecting these bodies the competent authority shall ensure that, where appropriate, monitoring is carried out at points where:

- the rate of water flow is significant within the district as a whole;
- the volume of water present is significant within the district; and

such sites as are required to estimate the pollutant load which is transferred into the marine environment.

Selection of quality elements

Surveillance monitoring shall be carried out for each monitoring site for a period of one year during the period covered by a water catchment management plan for:

- parameters indicative of all biological quality elements,
- parameters indicative of all hydromorphological quality elements,
- parameters indicative of all general physico-chemical quality elements,
- priority list pollutants which are discharged into the water catchment or sub-catchment, and
- other pollutants discharged in significant quantities in the water catchment or sub-catchment,

unless the previous surveillance monitoring exercise showed that the body concerned reached good status and there is no evidence from the review of impact of human activity as described in Schedule II that the impacts on the body have changed. In these cases, surveillance monitoring shall be carried out once every three water catchment management plans.

1.3.2. Design of operational monitoring

Operational monitoring shall be undertaken in order to:

- establish the status of those bodies identified as being at risk of failing to meet their environmental objectives, and
- assess any changes in the status of such bodies resulting from the programmes of measures.

The programme may be amended during the period of the water catchment management plan in the light of information obtained as part of the requirements of

Schedule II or as part of this Schedule, in particular to allow a reduction in frequency where an impact is found not to be significant or the relevant pressure is removed.

Selection of monitoring sites

Operational monitoring shall be carried out for all those bodies of water which on the basis of either the impact assessment carried out in accordance with Schedule II or surveillance monitoring are identified as being at risk of failing to meet their environmental objectives under Regulation 5 and for those bodies of water into which priority list substances are discharged. Monitoring points shall be selected for priority list substances as specified in the legislation laying down the relevant environmental quality standard. In all other cases, including for priority list substances where no specific guidance is given in such legislation, monitoring points shall be selected as follows:

- for bodies at risk from significant point source pressures, sufficient monitoring points within each body in order to assess the magnitude and impact of the point source. Where a body is subject to a number of point source pressures monitoring points may be selected to assess the magnitude and impact of these pressures as a whole,
- for bodies at risk from significant diffuse source pressures, sufficient monitoring points within a selection of the bodies in order to assess the magnitude and impact of the diffuse source pressures. The selection of bodies shall be made such that they are representative of the relative risks of the occurrence of the diffuse source pressures, and of the relative risks of the failure to achieve good surface water status,
- for bodies at risk from significant hydromorphological pressure, sufficient monitoring points within a selection of the bodies in order to assess the magnitude and impact of the hydromorphological pressures. The selection of bodies shall be indicative of the overall impact of the hydromorphological pressure to which all the bodies are subject.

Selection of quality elements

In order to assess the magnitude of the pressure to which bodies of surface water are subject the competent authority shall monitor for those quality elements which are indicative of the pressures to which the body or bodies are subject. In order to assess the impact of these pressures, the competent authority shall monitor as relevant:

- parameters indicative of the biological quality element, or elements, most sensitive to the pressures to which the water bodies are subject,
- all priority substances discharged, and other pollutants discharged in significant quantities,
parameters indicative of the hydromorphological quality element most sensitive to the pressure identified.

1.3.3. Design of investigative monitoring

Objective

Investigative monitoring shall be carried out:

- where the reason for any exceedances is unknown,
- where surveillance monitoring indicates that the objectives set out in regulation 4 for a body of water are not likely to be achieved and operational monitoring has not already been established, in order to

ascertain the causes of a water body or water bodies failing to achieve the environmental objectives, or

- to ascertain the magnitude and impacts of accidental pollution, and shall inform the establishment of a programme of measures for the achievement of the environmental objectives and specific measures necessary to remedy the effects of accidental pollution.

1.3.4. Frequency of monitoring

For the surveillance monitoring period, the frequencies for monitoring parameters indicative of physico-chemical quality elements given below should be applied unless greater intervals would be justified on the basis of technical knowledge and expert judgement. For biological or hydromorphological quality elements monitoring shall be carried out at least once during the surveillance monitoring period.

For operational monitoring, the frequency of monitoring required for any parameter shall be determined by the competent authority so as to provide sufficient data for a reliable assessment of the status of the relevant quality element. As a guideline, monitoring should take place at intervals not exceeding those shown in the table below unless greater intervals would be justified on the basis of technical knowledge and expert judgement.

Frequencies shall be chosen so as to achieve an acceptable level of confidence and precision. Estimates of the confidence and precision attained by the monitoring system used shall be stated in the water catchment management plan.

Monitoring frequencies shall be selected which take account of the variability in parameters resulting from both natural and anthropogenic conditions. The times at which monitoring is undertaken shall be selected so as to minimise the impact of seasonal variation on the results, and thus ensure that the results reflect changes in the water body as a result of changes due to anthropogenic pressure. Additional monitoring during different seasons of the same year shall be carried out, where necessary, to achieve this objective.

Quality element	Rivers	Lakes	Transitional	Coastal
Biological				
Phytoplankton	6 months	6 months	6 months	6 months
Other aquatic flora	3 years	3 years	3 years	3 years
Macro invertebrates	3 years	3 years	3 years	3 years
Fish	3 years	3 years	3 years	
Hydromorphological				
Continuity	6 years			
Hydrology	continuous	1 month		
Morphology	6 years	6 years	6 years	6 years
Physico-chemical				
Thermal conditions	3 months	3 months	3 months	3 months
Oxygenation	3 months	3 months	3 months	3 months
Salinity	3 months	3 months	3 months	
Nutrient status	3 months	3 months	3 months	3 months
Acidification status	3 months	3 months		
Other pollutants	3 months	3 months	3 months	3 months

Priority substances	1 month	1 month	1 month	1 month
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1.3.5. Additional monitoring requirements for protected areas

The monitoring programmes required above shall be supplemented in order to fulfill the following requirements:

Drinking water abstraction points

Bodies of surface water designated in Regulation 8 which provide more than 100 m³ a day as an average shall be designated as monitoring sites and shall be subject to such additional monitoring as may be necessary to meet the requirements of that Regulation. Such bodies shall be monitored for all priority substances discharged and all other substances discharged in significant quantities which could affect the status of the body of water and which are controlled under the provisions of any regulations on the quality of water intended for human consumption. Monitoring shall be carried out in accordance with the frequencies set out below:

Community served	Frequency
<10 000	4 per year
10 000 to 30 000	8 per year
>30 000	12 per year

Habitat and species protection areas

Bodies of water forming these areas shall be included within the operational monitoring programme referred to above where, on the basis of the impact assessment and the surveillance monitoring, they are identified as being at risk of failing to meet their environmental objectives under regulation 4. Monitoring shall be carried out to assess the magnitude and impact of all relevant significant pressures on these bodies and, where necessary, to assess changes in the status of such bodies resulting from the programmes of measures. Monitoring shall continue until the areas satisfy the water-related requirements of the legislation under which they are designated and meet their objectives under regulation 5.

1.3.6. Standards for monitoring of quality elements

Methods used for the monitoring of type parameters shall conform to the international standards listed below in so far as they cover monitoring, or to such other national or international standards which will ensure the provision of data of an equivalent scientific quality and comparability.

Standards for sampling of biological quality elements

Generic methods for use with the specific methods given in the standards relating to the following biological quality elements:

SM EN ISO 5667-3:2012	Water quality - Sampling - Part 3: Preservation and handling of samples
Standards for phytoplankton	
MSA EN 15204:2006	Water quality - Guidance standard on the enumeration of phytoplankton using inverted microscopy (Utermöhl technique)
MSA EN 15972:2011	Water quality - Guidance on quantitative and qualitative investigations of marine phytoplankton
ISO 10260:1992	Water quality - Measurement of biochemical parameters - Spectrometric determination of the chlorophyll-a concentration
Standards for macrophyte and phytobenthos	

MSA EN 15460:2007	Water quality - Guidance standard for the surveying of macrophytes in lakes
SM EN 14184:2014	Water quality - Guidance for the surveying of aquatic macrophytes in running waters
MSA EN 15708:2009	Water quality - Guidance standard for the surveying, sampling and laboratory analysis of phytobenthos in shallow running water
SM EN 13946:2014	Water quality - Guidance for the routine sampling and preparation of benthic diatoms from rivers and lakes
SM EN 14407:2014	Water quality - Guidance for the identification and enumeration of benthic diatom samples from rivers and lakes
Standards for benthic invertebrates	
SM EN ISO 10870:2012	Water quality - Guidelines for the selection of sampling methods and devices for benthic macroinvertebrates in fresh waters
MSA EN 15196:2006	Water quality - Guidance on sampling and processing of the pupal exuviae of <i>Chironomidae</i> (order <i>Diptera</i>) for ecological assessment
SM EN 16150:2012	Water quality - Guidance on pro rata multi-habitat sampling of benthic macro-invertebrates from wadeable rivers
MSA EN ISO 19493:2007	Water quality - Guidance on marine biological surveys of hard-substrate communities
SM EN ISO 16665:2013	Water quality - Guidelines for quantitative sampling and sample processing of marine soft-bottom macro-fauna
Standards for fish	
MSA EN 14962:2006	Water quality - Guidance on the scope and selection of fish sampling methods
MSA EN 14011:2003	Water quality - Sampling of fish with electricity
SM EN 15910:2014	Water quality - Guidance on the estimation of fish abundance with mobile hydroacoustic methods
MSA EN 14757:2005	Water quality - Sampling of fish with multi-mesh gillnets
Standards for hydromorphological parameters	
MSA EN 14614:2004	Water quality - Guidance standard for assessing the hydromorphological features of rivers
MSA EN 16039:2011	Water quality - Guidance standard on assessing the hydromorphological features of lakes

Standards for physico-chemical parameters

Any relevant CEN/ISO (MSA/SM) standards.

1.4. Classification and presentation of ecological status

1.4.1. Comparability of monitoring results

The competent authority shall establish monitoring systems for the purpose of estimating the values of the biological quality elements specified for each surface water category or for heavily modified and artificial bodies of surface water. In applying the procedure set out below to heavily modified or artificial water bodies, references to ecological status should be construed as references to ecological

potential. Such systems may utilise particular species or groups of species which are representative of the quality element as a whole.

In order to ensure comparability of such monitoring systems, the results shall be expressed as ecological quality ratios for the purposes of classification of ecological status. These ratios shall represent the relationship between the values of the biological parameters observed for a given body of surface water and the values for these parameters in the reference conditions applicable to that body. The ratio shall be expressed as a numerical value between zero and one, with high ecological status represented by values close to one and bad ecological status by values close to zero.

The competent authority shall divide the ecological quality ratio scale for their monitoring system for each surface water category into five classes ranging from high to bad ecological status, as defined in Section 1.2, by assigning a numerical value to each of the boundaries between the classes. The value for the boundary between the classes of high and good status, and the value for the boundary between good and moderate status shall be established through the intercalibration exercise.

1.4.2. Presentation of monitoring results and classification of ecological status and ecological potential

(i) For surface water categories, the ecological status classification for the body of water shall be represented by the lower of the values for the biological and physicochemical monitoring results for the relevant quality elements classified in accordance with the first column of the table set out below. The competent authority shall provide a map for each water catchment district illustrating the classification of the ecological status for each body of water, colour-coded in accordance with the second column of the table set out below to reflect the ecological status classification of the body of water:

Ecological Status classification	Colour code
High	Blue
Good	Green
Moderate	Yellow
Poor	Orange
Bad	Red

(ii) For heavily modified and artificial water bodies, the ecological potential classification for the body of water shall be represented by the lower of the values for the biological and physico-chemical monitoring results for the relevant quality elements classified in accordance with the first column of the table set out below. The competent authority shall provide a map for each water catchment district illustrating the classification of the ecological potential for each body of water, colour-coded, in respect of artificial water bodies in accordance with the second column of the table set out below, and in respect of heavily modified water bodies in accordance with the third column of that table:

Ecological Status classification	Colour code	
	Artificial Water Bodies	Heavily Modified
High and Good	Equal green and light grey stripes	Equal green and dark grey stripes
Moderate	Equal yellow and light grey stripes	Equal yellow and dark grey stripes
Poor	Equal orange and light grey stripes	Equal orange and dark grey stripes
Bad	Equal red and light grey stripes	Equal red and dark grey stripes

(iii) The competent authority shall also indicate, by a black dot on the map, those bodies of water where failure to achieve good status or good ecological potential is due to non compliance with one or more environmental quality standards which have been established for that body of water in respect of specific synthetic and non-synthetic pollutants (in accordance with the compliance regime established by the competent authority).

1.4.3. Presentation of monitoring results and classification of chemical status

In the Water Catchment Management plans produced in accordance with regulation 13, the competent authority may provide additional maps that present the chemical status information for one or more of the following substances separately from the information for the rest of the substances identified in Part A of Table 1(Schedule IX):

- (a) substances numbered 5, 21, 28, 30, 35, 37, 43 and 44 (substances behaving like ubiquitous PBTs)
- (b) substances numbered 34 to 45 (newly identified substances)
- (c) substances numbered 2, 5, 15, 20, 22, 23 and 28 (substances for which revised, stricter EQS are established).

The competent authority may also present the extent of any deviation from the EQS value for the substances referred to in points (a) to (c) of the first subparagraph in the water catchment management plan.

Where a body of water achieves compliance with all the environmental quality standards established in Schedule IX and under other relevant legislation setting environmental quality standards, that body of water shall be recorded as achieving good chemical status. If not, the body shall be recorded as failing to achieve good chemical status. The competent authority shall provide a map for each water catchment district illustrating chemical status for each body of water, colour-coded in accordance with the second column of the table set out below to reflect the chemical status classification of the body of water:

Chemical Status classification	Colour code
Good	Blue
Failing to achieve good	Red

2. GROUNDWATER

2.1. Groundwater quantitative status

2.1.1. Parameter for the classification of quantitative status

Groundwater level regime

2.1.2. Definition of quantitative status

Elements	Good Status
	<p>The level of groundwater in the groundwater body is such that the available groundwater resource is not exceeded by the long-term annual average rate of abstraction.</p> <p>Accordingly, the level of groundwater is not subject to anthropogenic alterations such as would result in:</p> <ul style="list-style-type: none"> - failure to achieve the environmental objectives specified under regulation 5 for associated surface waters,

Groundwater level	<ul style="list-style-type: none"> - any significant diminution in the status of such waters, - any significant damage to terrestrial ecosystems which depend directly on the groundwater body, and alterations to flow direction resulting from level changes may occur temporarily, or continuously in a spatially limited area, but such reversals do not cause saltwater or other intrusion, and do not indicate a sustained and clearly identified anthropogenically induced trend in flow direction likely to result in such intrusions.
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2.2. Monitoring of groundwater quantitative status

2.2.1. Groundwater level monitoring network

The groundwater monitoring network shall be established in accordance with the requirements of regulations 8 and 9. The monitoring network shall be designed so as to provide a reliable assessment of the quantitative status of all groundwater bodies or groups of bodies including assessment of the available groundwater resource. The competent authority shall provide a map or maps showing the groundwater monitoring network in the water catchment management plan.

2.2.2. Density of monitoring sites

The network shall include sufficient representative monitoring points to estimate the groundwater level in each groundwater body or group of bodies taking into account short and long-term variations in recharge and in particular:

for groundwater bodies identified as being at risk of failing to achieve environmental objectives under regulation 5, the competent authority shall ensure sufficient density of monitoring points to assess the impact of abstractions and discharges on the groundwater level.

2.2.3. Monitoring frequency

The frequency of observations shall be sufficient to allow assessment of the quantitative status of each groundwater body or group of bodies taking into account short and long-term variations in recharge. In particular, for groundwater bodies identified as being at risk of failing to achieve environmental objectives under regulation 5, the competent authority shall ensure sufficient frequency of measurement to assess the impact of abstractions and discharges on the groundwater level.

2.2.4. Interpretation and presentation of groundwater quantitative status

The results obtained from the monitoring network for a groundwater body or group of bodies shall be used to assess the quantitative status of that body or those bodies. Subject to point 2.5. The competent authority shall provide a map of the resulting assessment of groundwater quantitative status, colour-coded in accordance with the following regime:

Good: green

Poor: red

2.3. Groundwater chemical status

2.3.1. Parameters for the determination of groundwater chemical status

Conductivity

Concentrations of pollutants

2.3.2. Definition of good groundwater chemical status

Elements	Good Status
General	The chemical composition of the groundwater body is such that the concentrations of pollutants: as specified below, do not exhibit the effects of saline or other intrusions do not exceed the quality standards applicable under other relevant legislation are not such as would result in failure to achieve the environmental objectives specified under regulation 5 for associated surface waters nor any significant diminution of the ecological or chemical quality of such bodies nor in any significant damage to terrestrial ecosystems which depend directly on the groundwater body.
Conductivity	Changes in conductivity are not indicative of saline or other intrusion into the groundwater body

2.4. Monitoring of groundwater chemical status

2.4.1. Groundwater monitoring network

The groundwater monitoring network shall be established in accordance with the requirements of regulations 7 and 8. The monitoring network shall be designed so as to provide a coherent and comprehensive overview of groundwater chemical status within each water catchment and to detect the presence of long-term anthropogenically induced upward trends in pollutants.

On the basis of the characterisation and impact assessment carried out in accordance with regulation 6 and Schedule II, the competent authority shall for each period to which a water catchment management plan applies, establish a surveillance monitoring programme. The results of this programme shall be used to establish an operational monitoring programme to be applied for the remaining period of the plan.

Estimates of the level of confidence and precision of the results provided by the monitoring programmes shall be given in the plan.

2.4.2. Surveillance monitoring

Objective

Surveillance monitoring shall be carried out in order to:

- supplement and validate the impact assessment procedure,
- provide information for use in the assessment of long term trends both as a result of changes in natural conditions and through anthropogenic activity.

Selection of monitoring sites

Sufficient monitoring sites shall be selected for bodies identified as being at risk following the characterisation exercise undertaken in accordance with Schedule II.

Selection of parameters

The following set of core parameters shall be monitored in all the selected groundwater bodies:

- oxygen content

- pH value
- conductivity
- nitrate
- ammonium

Bodies which are identified in accordance with Schedule II as being at significant risk of failing to achieve good status shall also be monitored for those parameters which are indicative of the impact of these pressures.

2.4.3. Operational monitoring

Objective

Operational monitoring shall be undertaken in the periods between surveillance monitoring programmes in order to:

- establish the chemical status of all groundwater bodies or groups of bodies determined as being at risk,
- establish the presence of any long term anthropogenically induced upward trend in the concentration of any pollutant.

Selection of monitoring sites

Operational monitoring shall be carried out for all those groundwater bodies or groups of bodies which on the basis of both the impact assessment carried out in accordance with Schedule II and surveillance monitoring are identified as being at risk of failing to meet objectives under regulation 5. The selection of monitoring sites shall also reflect an assessment of how representative monitoring data from that site is of the quality of the relevant groundwater body or bodies.

Frequency of monitoring

Operational monitoring shall be carried out for the periods between surveillance monitoring programmes at a frequency sufficient to detect the impacts of relevant pressures but at a minimum of once per annum.

2.4.4. Identification of trends in pollutants

The competent authority shall use data from both surveillance and operational monitoring in the identification of long-term anthropogenically induced upward trends in pollutant concentrations and the reversal of such trends. The base year or period from which trend identification is to be calculated shall be identified. The calculation of trends shall be undertaken for a body or, where appropriate, group of bodies of groundwater. Reversal of a trend shall be demonstrated statistically and the level of confidence associated with the identification stated.

2.4.5. Interpretation and presentation of groundwater chemical status

In assessing status, the results of individual monitoring points within a groundwater body shall be aggregated for the body as a whole. Without prejudice to any legislation concerned, for good status to be achieved for a groundwater body, for those chemical parameters for which environmental quality standards have been set in legislation:

- the mean value of the results of monitoring at each point in the groundwater body or group of bodies shall be calculated, and
- these mean values shall be used to demonstrate compliance with good groundwater chemical status.

Subject to point 2.5, the competent authority shall provide a map of groundwater chemical status, colour-coded as indicated below:

Good: green

Poor: red

The competent authority shall also indicate by a black dot on the map, those groundwater bodies which are subject to a significant and sustained upward trend in the concentrations of any pollutant resulting from the impact of human activity. Reversal of a trend shall be indicated by a blue dot on the map.

These maps shall be included in the water catchment management plan.

2.5. Presentation of Groundwater Status

The competent authority shall provide in the water catchment management plan a map showing for each groundwater body or groups of groundwater bodies both the quantitative status and the chemical status of that body or group of bodies, colour-coded in accordance with the requirements of points 2.2.4 and 2.4.5. The competent authority may choose not to provide separate maps under points 2.2.4 and 2.4.5 but shall in that case also provide an indication in accordance with the requirements of point 2.4.5 on the map required under this point, of those bodies which are subject to a significant and sustained upward trend in the concentration of any pollutant or any reversal in such a trend.

SCHEDULE VI

LISTS OF MEASURES TO BE INCLUDED WITHIN THE PROGRAMMES OF MEASURES

PART A

Measures required under the following regulations:

- the Management of Bathing Water Quality Regulations (S.L. 465.09);
- the Protection of Birds and Wild Rabbit Regulations, 1993 (L.N. 146 of 1993);
- the Water Intended for Human Consumption Regulations (S.L. 449.57);
- the Control of Major Accident Hazard Regulations (S.L. 424.19);
- the Environmental Impact Assessment Regulations (S.L. 549.46);
- the Sludge (Use in Agriculture) Regulations (S.L. 549.09);
- Urban Waste Water Treatment Regulations (S.L. 549.22);
- the Plant Protection Products Directive (91/414/EEC);
- the Protection of Waters Against Pollution caused by Nitrates from Agricultural Sources Regulations (S.L. 549.25);
- the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44);
- the Industrial Emissions (Framework) Regulations (S.L. 549.76);
- the Industrial Emissions (Integrated Pollution Prevention and Control Recast) Directive (96/61/EC)).

PART B

The following is a non-exclusive list of supplementary measures which the competent authority within each water catchment district may choose to adopt as part of the programme of measures required under regulation 11(4):

- (i) provisions established through the Malta Resources Authority Act and the Environment Protection Act
- (ii) administrative instruments
- (iii) economic or fiscal instruments
- (iv) negotiated environmental agreements
- (v) emission controls
- (vi) codes of good practice
- (vii) recreation and restoration of wetlands areas
- (viii) abstraction controls
- (ix) demand management measures, *inter alia*, promotion of adapted agricultural production such as low water requiring crops in areas affected by drought
- (x) efficiency and reuse measures, *inter alia*, promotion of water-efficient technologies in industry and water-saving irrigation techniques
- (xi) construction projects
- (xii) desalination plants
- (xiii) rehabilitation projects
- (xiv) artificial recharge of aquifers
- (xv) educational projects
- (xvi) research, development and demonstration projects
- (xvii) other relevant measures

SCHEDULE VII

WATER CATCHMENT MANAGEMENT PLANS

- A. Water catchment management plans shall cover the following elements:
1. a general description of the characteristics of the water catchment district required under regulation 6 and Schedule II. This shall include:
 - 1.1. for surface waters:
 - mapping of the location and boundaries of water bodies,
 - mapping of the ecoregions and surface water body types within the water catchment,
 - identification of reference conditions for the surface water body types;
 - 1.2. for groundwaters:
 - mapping of the location and boundaries of groundwater bodies;
 2. a summary of significant pressures and impact of human activity on the status of surface water and groundwater, including:
 - estimation of point source pollution,
 - estimation of diffuse source pollution, including a summary of land use,
 - estimation of pressures on the quantitative status of water including

- abstractions,
- analysis of other impacts of human activity on the status of water;
3. identification and mapping of protected areas as required by regulation 7 and Schedule IV;
 4. a map of the monitoring networks established for the purposes of regulation 9 and Schedule V, and a presentation in map form of the results of the monitoring programmes carried out under those provisions for the status of:
 - 4.1. surface water (ecological and chemical);
 - 4.2. groundwater (chemical and quantitative);
 - 4.3. protected areas;
 5. a list of the environmental objectives established under regulation 5 for surface waters, groundwaters and protected areas, including in particular identification of instances where use has been made of regulation 5(4), (5),(6) and (7), and the associated information required under that regulation;
 6. a summary of the economic analysis of water use as required by regulation 6 and Schedule III;
 7. a summary of the programme or programmes of measures adopted under regulation 12, including the ways in which the objectives established under regulation 5 are thereby to be achieved;
 - 7.1. a summary of the measures required to implement legislation for the protection of water;
 - 7.2. a report on the practical steps and measures taken to apply the principle of recovery of the costs of water use in accordance with regulation 10;
 - 7.3. a summary of the measures taken to meet the requirements of regulation 8;
 - 7.4. a summary of the controls on abstraction and impoundment of water, including reference to the registers and identifications of the cases where exemptions have been made under regulation 12(3)(e);
 - 7.5. a summary of the controls adopted for point source discharges and other activities with an impact on the status of water in accordance with the provisions of regulation 12(3)(g) and 12(3)(i);
 - 7.6. an identification of the cases where direct discharges to groundwater have been authorised in accordance with the provisions of regulation 12(3)(j);
 - 7.7. a summary of the measures taken on priority substances;
 - 7.8. a summary of the measures taken to prevent or reduce the impact of accidental pollution incidents;
 - 7.9. a summary of the measures taken under regulation 12(5) for bodies of water which are unlikely to achieve the objectives set out under regulation 5;
 - 7.10. details of the supplementary measures identified as necessary in order to meet the environmental objectives established;
 - 7.11. details of the measures taken to avoid increase in pollution of marine waters in accordance with regulation 12(6);
 8. a register of any more detailed programmes and management plans for the water catchment district dealing with particular sub-catchments, sectors, issues or

water types, together with a summary of their contents;

9. a summary of the public information and consultation measures taken, their results and the changes to the plan made as a consequence;

10. a list of competent authorities in accordance with Schedule I;

11. the contact points and procedures for obtaining the background documentation and information referred to in regulation 14(1), and in particular details of the control measures adopted in accordance with regulation 12(3)(g) and 12(3)(i) and of the actual monitoring data gathered in accordance with regulation 9 and Schedule V.

B. The first update of the water catchment management plan and all subsequent updates shall also include:

1. a summary of any changes or updates since the publication of the previous version of the water catchment management plan, including a summary of the reviews to be carried out under regulation 5(4), (5), (6) and (7);

2. an assessment of the progress made towards the achievement of the environmental objectives, including presentation of the monitoring results for the period of the previous plan in map form, and an explanation for any environmental objectives which have not been reached;

3. a summary of, and an explanation for, any measures foreseen in the earlier version of the water catchment management plan which have not been undertaken;

4. a summary of any additional interim measures adopted under regulation 12(5) since the publication of the previous version of the water catchment management plan;

5. a description of the designation of any mixing zones, a communication of the measures in relation to transboundary pollution and the updated inventory of emissions, discharges and losses.

SCHEDULE VIII

INDICATIVE LIST OF THE MAIN POLLUTANTS

1. Organohalogen compounds and substances which may form such compounds in the aquatic environment.

2. Organophosphorous compounds.

3. Organotin compounds.

4. Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment.

5. Persistent hydrocarbons and persistent and bioaccumulable organic toxic substances.

6. Cyanides.

7. Metals and their compounds.

8. Arsenic and its compounds.

9. Biocides and plant protection products.
10. Materials in suspension.
11. Substances which contribute to eutrophication (in particular, nitrates and phosphates).
12. Substances which have an unfavourable influence on the oxygen balance (and can be measured using parameters such as BOD, COD, etc).

SCHEDULE IX

EMISSION LIMIT VALUES AND ENVIRONMENTAL QUALITY STANDARDS

The 'limit values' established under the regulations following the Pollution caused by Certain Dangerous Substances discharged into the Aquatic Environment Regulations (S.L. 549.10) shall be considered emission limit values for the purposes of these regulations. They are established in the following regulations:

- (i) the Limit Values and Quality Objectives for Mercury Discharges by Sectors Other than the Chlor-Alkali Electrolysis Industry Regulations (S.L. 549.13);
- (ii) the Limit Values and Quality Objectives for Cadmium Discharges Regulations, 2001 (L.N. 221 of 2001);
- (iii) the Limit Values and Quality Objectives for Mercury Discharges by the Chlor-alkali Electrolysis Industry Regulations (S.L. 549.14);
- (iv) the Limit Values and Quality Objectives for Hexachlorocyclohexane Regulations, 2001 (L.N. 218 of 2001); and
- (v) the Limit Values and Quality Objectives for Discharges of Certain Dangerous Substances Discharged into the Aquatic Environment Regulations, 2001 (L.N. 227 of 2001).

1. Environmental Quality Standards:

1. The competent authority shall apply the EQS laid down in Part A of Table 1 below to bodies of surface water, and shall apply those EQS in accordance with the requirements laid down in Part B of Table 1 below.

1a. The competent authority shall implement the EQS laid down in Part A of Table 1 as regards:

- (i) the substances numbered 2, 5, 15, 20, 22, 23, 28, in Part A of Table 1, for which the revised EQS are set, with effect from 22 December 2015, with the aim of achieving good surface water chemical status in relation to those substances by 22 December 2021 by means of programmes of measures included in the 2015 water catchment management plans produced in accordance with regulation 12(5); and
- (ii) the newly identified substances numbered 34 to 45 in Part A of Table 1, with effect from 22 December 2018, with the aim of achieving good surface water chemical status in relation to those substances by 22 December 2027 and preventing deterioration in the chemical status of surface water bodies in relation to those substances. For this purpose the Competent Authority shall, by 22 December 2018, establish and submit to the Commission a supplementary programme of measures covering those substances. A final programme of measures in accordance with

regulation 12 shall be established by 22 December 2021 and shall be implemented and made fully operational as soon as possible after that date and not later than 22 December 2024.

Regulation 5(4) to (9) shall apply *mutatis mutandis* to the substances listed in points (i) and (ii) of the first subparagraph.

2. For the substances numbered 5, 15, 16, 17, 21, 28, 34, 35, 37, 43 and 44 in Part A of Table 1, the competent authority shall apply the biota EQS laid down in Part A of Table 1 of these regulations.

For substances other than those referred to in the first subparagraph, the Competent Authority shall apply the water EQS laid down in Part A of Table 1 of this Schedule.

3. The competent authority may opt, in relation to one or more categories of surface water, to apply an EQS for a matrix other than that specified in paragraph 2 above, or, where relevant for a biota taxon other than those specified in Part A of Table 1 of this Schedule.

Should the competent authority make use of the option referred to in the first subparagraph, it shall apply the relevant EQS laid down in Part A of Table 1 or, if none is included for the matrix or biota taxon, establish an EQS that offers at least the same level of protection as the EQS laid down in Part A of Table 1 of this Schedule.

The competent authority may use the option referred to in the first sub-paragraph only where the method of analysis used for the chosen matrix or biota taxon fulfils the minimum performance criteria laid down in Section B of Schedule XI of these regulations. Where those criteria are not met for any matrix, the Competent Authority shall ensure that monitoring is carried out using best available techniques not entailing excessive costs and that the method of analysis performs at least as well as that available for the matrix specified in paragraph 2 of this Schedule for the relevant substance.

3a. Where a potential risk to, or via, the aquatic environment from acute exposure has been identified as a result of measured or estimated environmental concentrations or emissions and where a biota or sediment EQS is being applied, the competent authority shall ensure that monitoring in surface water is also carried out and shall apply the MAC-EQS laid down in Part A of Table 1 to this Schedule where such EQS have been established.

3b. Where, pursuant to Section C of Schedule XI, the calculated mean value of a measurement, when carried out using the best available technique not entailing excessive costs, is referred to as “less than limit of quantification”, and the limit of quantification of that technique is above the EQS, the result for the substance being measured shall not be considered for the purposes of assessing the overall chemical status of that water body.

4. For substances for which an EQS for sediment and, or biota is applied, the competent authority shall monitor the substance in the relevant matrix at least once every year, unless technical knowledge and expert judgement justify another interval.

5. The competent authority shall include the following information in the updated water catchment management plans produced in accordance with regulation 13(5):

- (a) a table presenting the limits of quantification of the methods of analysis applied, and information on the performance of those methods in

relation to the minimum performance criteria laid down in Section B of Schedule XI;

- (b) for the substances for which the option in paragraph 3 of this Schedule is used:
 - (i) the reasons and basis for using that option;
 - (ii) where relevant, the alternative EQS established, evidenced that those EQS would offer at least the same level of protection as the EQS laid down in Part A of Table 1, including the data and methodology used to derive the EQS, and the categories of surface water to which they would apply;
 - (iii) for comparison with the information referred to in point (a) of this paragraph, the limits of quantification of the methods of analysis for the matrices specified in Part A of Table 1, including information on the performance of those methods in relation to the minimum performance criteria laid down in Section B of Schedule XI;
- (c) justification for the frequency of monitoring applied in accordance with paragraph 4, if monitoring intervals are longer than one year.

5a. The competent authority shall take the necessary measures to ensure that the updated water catchment management plans, produced in accordance with regulation 13(5), containing the results and impact of the measures taken to prevent chemical pollution of surface water, and the interim report describing progress in the implementation of the planned programme of measures are provided through a central portal which is accessible to the public electronically in accordance with regulation 10(1) of the Freedom of Access to Information on the Environment Regulations (S.L. 549.39).

2. Long-term Analysis for Priority Substances

1. The competent authority shall arrange for the long-term trend analysis of concentrations of those priority substances listed in Part A of Table 1 that tend to accumulate in sediment and, or biota, giving particular consideration to the substances numbered 2, 5, 6, 7, 12, 15, 16, 17, 18, 20, 21, 26, 28, 30, 34, 35, 36, 37, 43 and 44 listed in Part A of Table 1, on the basis of the monitoring of surface water status carried out in accordance with regulation 8. The competent authority shall take measures aimed at ensuring, subject to regulation 5 that such concentrations do not significantly increase in sediment and, or relevant biota.

2. The competent authority shall determine the frequency of monitoring in sediment and, or biota so as to provide sufficient data for reliable long-term trend analysis. As a guideline, monitoring should take place every three years, unless technical knowledge and expert judgement justify another interval.

3. The competent authority may monitor the substances numbered 5, 21, 28, 30, 35, 37, 43 and 44 in Part A of Table 1 less intensively than is required for priority substances in accordance with paragraph 1(4) of this Schedule and Schedule V, provided that the monitoring is representative and a statistically robust baseline is available regarding the presence of those substances in the aquatic environment. As a guideline, in accordance with subparagraph 2(2) above, monitoring should take place every three years, unless technical knowledge and expert judgement justify another interval.

4. In order to facilitate the implementation of this Schedule, technical guidelines on monitoring strategies and analytical methods for substances, including sampling of biota, shall be developed, to the extent possible, by 22 December 2014,

as part of the existing implementation process of these regulations.

In particular, the guidelines shall cover:

- (i) the monitoring of substances in biota as provided for in paragraphs 2 and 3; in the case of newly identified substances (numbered 34 to 45 in Part A of Table 1) and substances for which stricter EQS are established (numbered 2, 5, 15, 20, 22, 23 and 28 on part A of Table 1), analytical methods compliant with the minimum performance criteria laid down in Section C of Schedule XI of the Water Policy Framework Regulations, 2011 (L.N. 194 of 2011);
- (ii) in the case of substances for which technical guidelines have not been adopted by 22 December 2014, the deadline of 22 December 2015 referred to in point (i) of paragraph (1a) shall be extended to 22 December 2018, and the deadline of 22 December 2021 referred to in that point shall be extended to 22 December 2027.

3. Mixing Zones:

1. Adjacent to the points of discharge, the competent authority may designate mixing zones where the concentrations of one or more substances listed in Part A of Table 1 may exceed the relevant EQS within such mixing zones and provided they do not affect the compliance of the rest of the body of surface water with those standards.

2. If mixing zones are designated, the water catchment management plans as required by regulation 13, shall include a description of:

- (a) the approaches and methodologies applied to define such zones; and
- (b) measures taken with a view to reducing the extent of the mixing zones in the future, such as those pursuant to sub-regulation (3k) of regulation 12 of these regulations or by reviewing permits referred to in the Industrial Emissions (Framework) Regulations (S.L. 549.76) or prior regulations referred to in regulation 12(3)(g) of these regulations.

3. The competent authority shall ensure that the extent of any designated mixing zone is:

- (a) restricted to the proximity of the point of discharge;
- (b) proportionate, having regard to the concentrations of pollutants at the point of discharge and to the conditions on emissions of pollutants contained in the prior regulations, such as authorizations and/or permits, referred to in regulation 12(3)(g) and any other relevant national law, in accordance with the application of best available techniques and regulation 11, in particular after those prior regulations are reviewed.

4. Watch List Mechanism

1. The competent authority shall monitor each substance that is included in the 'Watch List' that is established by the Commission as a means to assist in the gathering of targeted high-quality monitoring information on the concentration of substances in the aquatic environment, with a focus on emerging pollutants and substances for which available monitoring data are of insufficient quality.

2. The competent authority shall monitor each substance in the watch list at selected representative monitoring stations over at least a 12-month period. For the first watch list, the monitoring period shall commence by 14 September 2015 or within six months of the establishment of the watch list, whichever is the later. For each substance included in subsequent lists, the competent authority shall commence

monitoring within six months of its inclusion in the list.

3. The competent authority shall select at least one monitoring station, plus one station if it has more than one million inhabitants, plus the number of stations equal to its geographical area in km² divided by 60 000 (rounded to the nearest integer), plus the number of stations equal to its population divided by five million (rounded to the nearest integer).

4. In selecting the representative monitoring stations, the monitoring frequency and timing for each substance, the competent authority shall take into account the use patterns and the possible occurrence of the substance. The frequency of monitoring shall be no less than once per year.

5. Where the competent authority provides sufficient, comparable, representative and recent monitoring data for a particular substance from existing monitoring programmes or studies, it may decide not to undertake additional monitoring under the watch list mechanism for that substance, provided also that the substance was monitored using a methodology that satisfies the requirements of the technical guidance that is to be developed from time to time.

Table 1

Environmental Quality Standards for Priority Substances and Certain Other Pollutants

PART A: ENVIRONMENTAL QUALITY STANDARDS (EQS)

AA: annual average.

MAC: maximum allowable concentration.

Unit: [$\mu\text{g/l}$] for columns (4) to (7)

[$\mu\text{g/kg wet weight}$] for column (8)

(1) No.	(2) Name of substance	(3) CAS number ⁽¹⁾	(4) AA-EQS ⁽²⁾ Inland surface waters ⁽³⁾	(5) AA-EQS ⁽²⁾ Other surface waters	(6) MAC-EQS ⁽⁴⁾ Inland surface waters ⁽³⁾	(7) MAC-EQS ⁽⁴⁾ Other surface waters	(8) EQS Biota ⁽¹²⁾
(1)	Alachlor	15972-60-8	0,3	0,3	0,7	0,7	
(2)	Anthracene	120-12-7	0,1	0,1	0,1	0,1	
(3)	Atrazine	1912-24-9	0,6	0,6	2,0	2,0	
(4)	Benzene	71-43-2	10	8	50	50	
(5)	Brominated diphenylether ⁽⁵⁾	32534-81-9			0,14	0,014	0,0085
(6)	Cadmium and its compounds (depending on water hardness classes) ⁽⁶⁾	7440-43-9	$\leq 0,08$ (Class 1), 0,08 (Class 2), 0,09 (Class 3), 0,15 (Class 4), 0,25 (Class 5)	0,2	$\leq 0,45$ (Class 1), 0,45 (Class 2), 0,6 (Class 3), 0,9 (Class 4), 1,5 (Class 5)	$\leq 0,45$ (Class 1), 0,45 (Class 2), 0,6 (Class 3), 0,9 (Class 4), 1,5 (Class 5)	
(6a)	Carbon-tetrachloride ⁽⁷⁾	56-23-5	12	12	not applicable	not applicable	
(7)	C10-13 Chloroalkanes ⁽⁸⁾	85535-84-8	0,4	0,4	1,4	1,4	
(8)	Chlorfenvinphos	470-90-6	0,1	0,1	0,3	0,3	

(9)	Chlorpyrifos (Chlorpyrifos-ethyl)	2921-88-2	0,03	0,03	0,1	0,1	
(9a)	Cyclodiene pesticides: Aldrin ⁽⁷⁾ Dieldrin ⁽⁷⁾ Endrin ⁽⁷⁾ Isodrin ⁽⁷⁾	309-00-2 60-57-1 72-20-8 465-73-6	$\Sigma = 0,01$	$\Sigma = 0,005$	not applicable	not applicable	
(9b)	DDT total ^{(7) (9)}	not applicable	0,025	0,025	not applicable	not applicable	
	para-para-DDT ⁽⁷⁾	50-29-3	0,01	0,01	not applicable	not applicable	
(10)	1,2-Dichloroethane	107-06-2	10	10	not applicable	not applicable	
(11)	Dichloromethane	75-09-2	20	20	not applicable	not applicable	
(12)	Di(2-ethylhexyl)-phthalate (DEHP)	117-81-7	1,3	1,3	not applicable	not applicable	
(13)	Diuron	330-54-1	0,2	0,2	1,8	1,8	
(14)	Endosulfan	115-29-7	0,005	0,005	0,01	0,004	
(15)	Fluoranthene	206-44-0	0,0063	0,0063	0,12	0,12	30
(16)	Hexachlorobenzene	118-74-1			0,05	0,05	10
(17)	Hexachlorobutadiene	87-68-3			0,6	0,6	55
(18)	Hexachlorocyclohexane	608-73-1	0,02	0,002	0,04	0,02	
(19)	Isoproturon	34123-59-6	0,3	0,3	1,0	1,0	
(20)	Lead and its compounds	7439-92-1	1,2 ⁽¹³⁾	1,3	14	14	
(21)	Mercury and its compounds	7439-97-6			0,07	0,07	20
(22)	Naphthalene	91-20-3	2	2	130	130	
(23)	Nickel and its compounds	7440-02-0	4 ⁽¹³⁾	8,6	34	34	
(24)	Nonylphenol (4-Nonylphenol)	84852-15-3	0,3	0,3	2,0	2,0	
(25)	Octylphenol ((4-(1,1',3,3'-tetramethylbutyl)-phenol))	140-66-9	0,1	0,01	not applicable	not applicable	
(26)	Pentachlorobenzene	608-93-5	0,007	0,0007	not applicable	not applicable	
(27)	Pentachloro-phenol	87-86-5	0,4	0,4	1	1	
(28)	Polyaromatic hydrocarbons (PAH) ⁽¹¹⁾	not applicable	not applicable	not applicable	not applicable	not applicable	
	Benzo(a)pyrene	50-32-8	$1,7 \times 10^{-4}$	$1,7 \times 10^{-4}$	0,27	0,027	5
	Benzo(b)fluoranthene	205-99-2	See footnote 11	See footnote 11	0,017	0,017	See footnote 11
	Benzo(k)fluoranthene	207-08-9	See footnote 11	See footnote 11	0,017	0,017	See footnote 11
	Benzo(g,h,i)-perylene	191-24-2	See footnote 11	See footnote 11	$8,2 \times 10^{-3}$	$8,2 \times 10^{-4}$	See footnote 11
	Indeno(1,2,3-cd)-pyrene	193-39-5	See footnote 11	See footnote 11	not applicable	not applicable	See footnote 11

(29)	Simazine	122-34-9	1	1	4	4	
(29a)	Tetrachloro-ethylene ⁽⁷⁾	127-18-4	10	10	not applicable	not applicable	
(29b)	Trichloro-ethylene ⁽⁷⁾	79-01-6	10	10	not applicable	not applicable	
(30)	Tributyltin compounds (Tributyltin-cation)	36643-28-4	0,0002	0,0002	0,0015	0,0015	
(31)	Trichloro-benzenes	12002-48-1	0,4	0,4	not applicable	not applicable	
(32)	Trichloro-methane	67-66-3	2,5	2,5	not applicable	not applicable	
(33)	Trifluralin	1582-09-8	0,03	0,03	not applicable	not applicable	
(34)	Dicofol	115-32-2	$1,3 \times 10^{-3}$	$3,2 \times 10^{-5}$	not applicable ⁽¹⁰⁾	not applicable ⁽¹⁰⁾	33
(35)	Perfluorooctane sulfonic acid and its derivatives (PFOS)	1763-23-1	$6,5 \times 10^{-4}$	$1,3 \times 10^{-4}$	36	7,2	9,1
(36)	Quinoxifen	124495-18-7	0,15	0,015	2,7	0,54	
(37)	Dioxins and dioxin-like compounds	See footnote 10 in Schedule X			not applicable	not applicable	Sum of PCDD+PCDF+PCB-DL 0,0065 $\mu\text{g,kg}^{-1}$ TEQ ⁽¹⁴⁾
(38)	Aclonifen	74070-46-5	0,12	0,012	0,12	0,012	
(39)	Bifenox	42576-02-3	0,012	0,0012	0,04	0,004	
(40)	Cybutryne	28159-98-0	0,0025	0,0025	0,016	0,016	
(41)	Cypermethrin	52315-07-8	8×10^{-5}	8×10^{-6}	6×10^{-4}	6×10^{-5}	
(42)	Dichlorvos	62-73-7	6×10^{-4}	6×10^{-5}	7×10^{-4}	7×10^{-5}	
(43)	Hexabromocyclododecane (HBCDD)	See footnote 12 in Schedule X	0,0016	0,0008	0,5	0,005	167
(44)	Heptachlor and heptachlor epoxide	76-44-8/ 1024-57-3	2×10^{-7}	1×10^{-8}	1×10^{-8}	3×10^{-4}	$6,7 \times 10^{-3}$
(45)	Terbutryn	886-50-0	0,065	0,0065	0,34	0,034	

- (1) CAS: Chemical Abstracts Service.
- (2) This parameter is the EQS expressed as an annual average value (AA-EQS). Unless otherwise specified, it applies to the total concentration of all isomers.
- (3) Inland surface waters encompass all standing or flowing waters on the surface of the land and related artificial or heavily modified water bodies.
- (4) This parameter is the EQS 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.
- (5) For the group of priority substances covered by brominated diphenylethers (No 5), the EQS refers to the sum of the concentrations of congener numbers 28, 47, 99, 100, 153 and 154.
- (6) For Cadmium and its compounds (No 6) the EQS values vary depending on the hardness of the water as specified in five class categories (Class 1: < 40 mg CaCO₃/l, Class 2: 40 to < 50 mg CaCO₃/l, Class 3: 50 to < 100 mg CaCO₃/l, Class 4: 100 to < 200 mg CaCO₃/l and Class 5: ≥ 200 mg CaCO₃/l).
- (7) This substance is not a priority substance but one of the other pollutants for which the EQS are identical to those laid down in the legislation that applied prior to 13 January 2009.
- (8) No indicative parameter is provided for this group of substances. The indicative parameter(s) must be defined through the analytical method.
- (9) 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).

- (10) There is insufficient information available to set a MAC-EQS for these substances.
- (11) For the group of priority substances of polyaromatic hydrocarbons (PAH) (No 28), the biota EQS and corresponding AA-EQS in water refer to the concentration of Benzo(a)pyrene, on the toxicity of which they are based. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only Benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water.
- (12) Unless otherwise indicated, the biota EQS relate to fish. An alternative biota taxon, or another matrix, can be monitored instead, as long as the EQS applied provides an equivalent level of protection. For substances, numbered 15 (Fluoranthene) and 28 (PAHs), the biota EQS refers to crustaceans and molluscs. For the purpose of assessing chemical status, monitoring of Fluoranthene and PAHs in fish is not appropriate. For substance number 37 (Dioxins and dioxin-like compounds), the biota EQS relates to fish, crustaceans and molluscs, in line with section 5.3 of the Annex to Commission Regulation (EU) No 1259/2011 of 2 December 2011 amending Regulation (EC) No 1881/2006 as regards maximum levels for dioxins, dioxin – like PCBs in foodstuffs (OJ L320, 3.12.2011, p. 18).
- (13) These EQS refer to bioavailable concentrations of the substances.
- (14) PCDD: polychlorinated dibenzo-p-dioxins; PCDF: polychlorinated dibenzofurans; PCB-DL: dioxin-like polychlorinated biphenyls; TEQ: toxic equivalents according to the World Health Organisation 2005 Toxic Equivalence Factors.

PART B: APPLICATION OF THE EQS SET OUT IN PART A

1. Columns 4 and 5 of the table: 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 an EQS must be in accordance with implementing acts adopting technical specifications for chemical monitoring and quality of analytical results, in accordance with these regulations.

2. Columns 6 and 7 of the table: 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 Schedule V to the Water Policy Framework Regulations, 2004 (L.N. 194 of 2004), the competent authority 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. Where the competent authority does so, such statistical methods shall comply with detailed rules laid down in accordance with the examination procedure referred to in Article 9(2) of Directive 2013/39/EU.

3. The water EQS laid down in the Schedule are expressed as total concentrations in the whole water sample. By way of derogation from the first subparagraph, in the case of cadmium, lead, mercury and nickel (hereinafter “metals”), the water EQS refer to the dissolved concentration, i.e. the dissolved phase of a water sample obtained by filtration through a 0,45µm filter or any equivalent pre-treatment, or, where specifically indicated, to the bioavailable concentration.

The competent authority may, when assessing the monitoring results against the relevant EQS, take into account:

- (a) natural background concentrations for metals and their compounds where such concentrations prevent compliance with the relevant EQS;
- (b) hardness, pH, dissolved organic carbon or other water quality

parameters that affect the bioavailability of metals, the bioavailable concentrations being determined using appropriate bioavailability modelling.

SCHEDULE X

LIST OF PRIORITY SUBSTANCES IN THE FIELD OF WATER POLICY

Number	CAS number ⁽¹⁾	EU number ⁽²⁾	Name of priority substance ⁽³⁾	Identified as priority hazardous substance
(1)	15972-60-8	240-110-8	Alachlor	
(2)	120-12-7	204-371-1	Anthracene	X
(3)	1912-24-9	217-617-8	Atrazine	
(4)	71-43-2	200-753-7	Benzene	
(5)	32534-81-9	not applicable	Brominated diphenylether	X ⁽⁴⁾
(6)	7440-43-9	231-152-8	Cadmium and its compounds	X
(7)	85535-84-8	287-476-5	Chloralkanes, C ₁₀₋₁₃	X
(8)	470-90-6	207-432-0	Chlorfenvinphos	
(9)	2921-88-2	220-864-4	Chlorpyrifos (Chlorpyrifos-ethyl)	
(10)	107-06-2	203-458-1	1,2-dichloroethane	
(11)	75-09-2	200-838-9	Dichloromethane	
(12)	117-81-7	204-211-0	Di(2-ethylhexyl)phthalate (DEHP)	X
(13)	330-54-1	206-354-4	Diuron	
(14)	115-29-7	204-079-4	Endosulfan	X
(15)	206-44-0	205-912-4	Fluoranthene	
(16)	118-74-1	204-273-9	Hexachlorobenzene	X
(17)	87-68-3	201-765-5	Hexachlorobutadiene	X
(18)	608-73-1	210-158-9	Hexachlorocyclohexane	X
(19)	34123-59-6	251-835-4	Isoproturon	
(20)	7439-92-1	231-100-4	Lead and its compounds	
(21)	7439-97-6	231-106-7	Mercury and its compounds	X
(22)	91-20-3	202-049-5	Naphthalene	
(23)	7440-02-0	231-111-14	Nickel and its compounds	
(24)	25154-52-3	246-672-0	Nonylphenols	X ⁽⁵⁾
(25)	1806-26-4	217-302-5	Octylphenols ⁽⁸⁾	
(26)	608-93-5	210-172-5	Pentachlorobenzene	X
(27)	87-86-5	231-152-8	Pentachlorophenol	
(28)	not applicable	not applicable	Polyaromatic hydrocarbons (PAH) ⁽⁷⁾	X
(29)	122-34-9	204-535-2	Simazine	
(30)	not applicable	not applicable	Tributyltin compounds	X
(31)	12002-48-1	234-413-4	Trichlorobenzenes	
(32)	67-66-3	200-663-8	Trichloromethane (chloroform)	
(33)	1582-09-8	216-428-8	Trifluralin	X
(34)	115-32-2	204-082-0	Dicofol	X
(35)	1763-23-1	217-179-8	Perfluorooctane sulfonic acid and its derivatives (PFOS)	X
(36)	124495-18-7	not applicable	Quinoxifen	X
(37)	not applicable	not applicable	Dioxins and dioxin-like compounds	X ⁽⁹⁾

(38)	74070-46-5	277-704-1	Aclonifen	
(39)	42576-02-3	255-894-7	Bifenox	
(40)	28159-98-0	248-872-3	Cybutryne	
(41)	52315-07-8	257-842-9	Cypermethrin ⁽¹⁰⁾	
(42)	62-73-7	200-547-7	Dichlorvos	
(43)	not applicable	not applicable	Hexabromo-cyclododecane (HBCDD)	X ⁽¹¹⁾
(44)	76-44-8/ 1024-57-3	200-962-3/ 213-831-0	Heptachlor and heptachlor epoxide	X
(45)	886-50-0	212-950-5	Terbutryn	

- (1) CAS: Chemical Abstracts Service.
- (2) EU number: European Inventory of Existing Commercial Substances (EINECS) or European List of Notified Chemical Substances (ELINCS).
- (3) Where groups of substances have been selected, unless explicitly noted, typical individual representatives are defined in the context of the setting of environmental quality standards.
- (4) Only Tetra, Penta, Hexa and Heptabromodipylether (CAS – numbers 40088-47-9, 32534-81-9, 36483-60-0, 68928-80-3, respectively).
- (5) Nonylphenol (CAS 25154-52-3, EU 246-672-0) including isomers 4-nonylphenol (CAS 104-40-5, EU 203-199-4) and 4- nonylphenol (branched) (CAS 84852-15-3, EU 284-325-5).
- (6) Octylphenol (CAS 1806-26-4, EU 217-302-5) including isomer 4-(1,1',3,3'-tetramethylbutyl)-phenol (CAS 140-66-9, EU 205-426-2).
- (7) Including benzo(a)pyrene (CAS 50-32-8, EU 200-028-5), benzo(b)fluoranthene (CAS 205-99-2, EU 205-911-9), benzo(g,h,i)perylene (CAS 191-24-2, EU 205-883-8), benzo(k)fluoranthene (CAS 207-08-9, EU 205-916-6), indeno(1,2,3-cd)pyrene (CAS 193-39-5, EU 205-893-2) and excluding anthracene, fluoranthene and naphthalene, which are listed separately.
- (8) Including tributyltin-cation (CAS 36643-28-4).
- (9) This refers to the following compounds:
 7 polychlorinated dibenzo-p-dioxins (PCDDs): 2,3,7,8-T4CDD (CAS 1746-01-6), 1,2,3,7,8-P5CDD (CAS 40321-76-4), 1,2,3,4,7,8- H6CDD (CAS 39227-28-6), 1,2,3,6,7,8-H6CDD (CAS 57653-85-7), 1,2,3,7,8,9-H6CDD (CAS 19408-74-3), 1,2,3,4,6,7,8-H7CDD (CAS 35822-46-9), 1,2,3,4,6,7,8,9-O8CDD (CAS 3268-87-9)
 10 polychlorinated dibenzofurans (PCDFs): 2,3,7,8-T4CDF (CAS 51207-31-9), 1,2,3,7,8-P5CDF (CAS 57117-41-6), 2,3,4,7,8-P5CDF (CAS 57117-31-4), 1,2,3,4,7,8-H6CDF (CAS 70648-26-9), 1,2,3,6,7,8-H6CDF (CAS 57117-44-9), 1,2,3,7,8,9-H6CDF (CAS 72918- 21-9), 2,3,4,6,7,8-H6CDF (CAS 60851-34-5), 1,2,3,4,6,7,8-H7CDF (CAS 67562-39-4), 1,2,3,4,7,8,9-H7CDF (CAS 55673-89-7), 1,2,3,4,6,7,8,9-O8CDF (CAS 39001-02-0)
 12 dioxin-like polychlorinated biphenyls (PCB-DL): 3,3',4,4'-T4CB (PCB 77, CAS 32598-13-3), 3,3',4',5'-T4CB (PCB 81, CAS 70362-50-4), 2,3,3',4,4'-P5CB (PCB 105, CAS 32598-14-4), 2,3,4,4',5'-P5CB (PCB 114, CAS 74472-37-0), 2,3',4,4',5'-P5CB (PCB 118, CAS 31508-00-6), 2,3',4,4',5'-P5CB (PCB 123, CAS 65510-44-3), 3,3',4,4',5'-P5CB (PCB 126, CAS 57465-28-8), 2,3,3',4,4',5'-H6CB (PCB 156, CAS 38380-08-4), 2,3,3',4,4',5'-H6CB (PCB 157, CAS 69782-90-7), 2,3',4,4',5,5'-H6CB (PCB 167, CAS 52663-72-6), 3,3',4,4',5,5'-H6CB (PCB 169, CAS 32774-16-6), 2,3,3',4,4',5,5'-H7CB (PCB 189, CAS 39635-31-9).
- (10) CAS 52315-07-8 refers to an isomer mixture of cypermethrin, alpha-cypermethrin (CAS 67375-30-8), beta-cypermethrin (CAS 65731-84-2), theta-cypermethrin (CAS 71697-59-1) and zeta-cypermethrin (52315-07-8).
- (11) This refers to 1,3,5,7,9,11-Hexabromocyclododecane (CAS 25637-99-4), 1,2,5,6,9,10-Hexabromocyclododecane (CAS 3194-55-6), α -Hexabromocyclododecane (CAS 134237-50-6), β -Hexabromocyclododecane (CAS 134237-51-7) and γ - Hexabromocyclododecane (CAS 134237-52-8).*

SCHEDULE XI

TECHNICAL SPECIFICATIONS FOR CHEMICAL ANALYSIS AND MONITORING OF WATER STATUS

A: Methods of analysis

The competent authority shall ensure that all methods of analysis, including

laboratory, field and on-line methods, used for the purposes of chemical monitoring programmes carried out under these regulations are validated and documented in accordance with MSA EN ISO/IEC-17025: 2005 standard or other equivalent standards accepted at international level.

B: Minimum performance criteria for methods of analysis

1. The competent authority shall ensure that the minimum performance criteria for all methods of analysis applied are based on an uncertainty of measurement of 50% or below ($k = 2$) estimated at the level of relevant environmental quality standards and a limit of quantification equal or below a value of 30% of the relevant environmental quality standards.

2. In the absence of relevant environmental quality standard for a given parameter, or in the absence of method of analysis meeting the minimum performance criteria set out in point C(1) above, the competent authority shall ensure that monitoring is carried out using best available techniques not entailing excessive costs.

C: Calculation of mean values

1. Where the amounts of physico-chemical or chemical measurands in a given sample are below the limit of quantification, the measurement results shall be set to half of the value of the limit of quantification concerned for the calculation of mean values.

2. Where a calculated mean value of the measurement results referred to in D(1) above, is below the limits of quantification, the value shall be referred to as "less than limit of quantification".

3. Point C(1) shall not apply to measurands that are total sums of a given group of physico-chemical parameters or chemical measurands, including their relevant metabolites, degradation and reaction products. In those cases, results below the limit of quantification of the individual substances shall be set to zero.

D: Quality assurance and control

1. The competent authority shall ensure that laboratories or parties contracted by laboratories apply quality management system practices in accordance with MSA EN ISO/IEC-17025:2005 or other equivalent standards accepted at international level.

2. The competent authority shall ensure that laboratories or parties contracted by laboratories demonstrate their competences in analysing relevant physico-chemical or chemical measurands by:

(a) participation in proficiency testing programmes covering the methods of analysis referred to in 'A: Methods of analysis' of this Schedule of measurands at levels of concentrations that are representative of chemical monitoring programmes carried out under these regulations; and

(b) analysis of available reference materials that are representative of collected samples which contain appropriate levels of concentrations in relation to relevant environmental quality standards referred to in point B(1) of 'B: Minimum performance criteria for methods of analysis' as included in this Schedule.

3. The proficiency testing programmes referred to in point D(2a) above shall be organised by accredited organisations or internationally or nationally recognised organisations which meet the requirements of ISO/IEC guide 43-1 or of other

equivalent standards accepted at international level.

The results of participation in those programmes shall be evaluated on the basis of the scoring systems set out in ISO/IEC guide 43-1 or in the ISO-13528 standard or in other equivalent standards accepted at international level.

E: Coming into effect of this schedule

The competent authority shall adhere to the technical specifications and standardised methods for analysis and monitoring of water status, as per requirements in this Schedule XI, at most within 7 years from the publication of these regulations.
