COMMON IMPLEMENTATION STRATEGY FOR THE WATER FRAMEWORK DIRECTIVE (2000/60/EC)

POLICY SUMMARY

to
Guidance Document No 3

Analysis of Pressures and Impacts

Produced by Working Group 2.1 - IMPRESS

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1. What is the purpose of this guidance document?

This non-legally binding document aims to guide experts and stakeholders in the **assessment of the risks resulting from human activity to the objectives of the Water Framework Directive**, with specific focus on the assessments required by the end of 2004. You will find this guidance useful if you are developing national strategies for implementing the Water Framework Directive or if you are involved in the preparation of River Basin Management Plans. It will help you in:

- Understanding the pressures and impacts analyses and their expected results;
- Undertaking the pressures and impacts analyses;
- Leading and managing experts who will undertake the analyses;
- Communicating the principles and requirements of the analyses to stakeholders;
- Using the results of the analyses in the River Basin Management Planning process; and
- Reporting the results of the analyses to the European Commission (the "IMPRESS Reports" for each River Basin District) as required by the Directive.

The document has been developed by an informal European working group of experts and stakeholders under the umbrella of the Common Implementation Strategy agreed by Member States and the European Commission for supporting the implementation of the Water Framework Directive. It builds on:

- The expertise and experience of the members of the working group;
- Input and feedback from a wide range of experts and stakeholders from the Member States, Norway and the accession countries; and
- Regular interactions with other relevant working groups of the Common Implementation Strategy.

2. The aim of the pressures and impacts analyses

Pressures and impacts analyses have a central role in the river basin management planning process (see Figure 1). Their principal aim is to identify where and to what extent human activities may be placing the achievement of the Directive's environmental objectives at risk.

Background: Article 5 of the Water Framework Directive requires, among other things, a review of the impact of human activity on the status of surface waters and groundwater. The review must be undertaken in accordance with Annex II 1.4 – 2.5, and will require Member States to assess the likelihood that water bodies in their river basin districts will fail to meet the Directive's environmental objectives. In undertaking this analysis, Member States must use information collected on the type and magnitude of pressures to which water bodies are liable to be subject and on the characteristics of those water bodies, together with any other relevant information, including existing environmental monitoring data.

The results of the analyses will be used in:

- **Targeting the monitoring programmes** required under Article 8, so that they provide suitable information for validating the analyses and assessing the effectiveness of the programmes of measures;
- **Setting objectives.** The analyses will help to make the directives objectives practicable and to identify water bodies for which the application of heavily modified water body designations under Article 4.3, extensions to the timetable under Article 4.4, less stringent objectives under Article 4.5 or exceptions from the obligation to prevent deterioration in status under Articles 4.6 and 4.7 may be appropriate; and,
- **Designing targeted and proportionate measures** to achieve the Directive's objectives, in accordance with Article 11.

The information provided by the analyses will also help in:

- **Selecting potential reference sites** for use in establishing type-specific biological reference conditions under Annex II 1.3(iv) (see in WFD CIS guidance document No. 10 - REFCOND and WFD CIS guidance document No. 5 - COAST);
- **Selecting potential intercalibration network sites** under Annex V 1.4.1(v) (see WFD CIS guidance document No. 6 - Intercalibration);
- **Refining the identification of water bodies** so that, as far as practical, significant areas with different statuses are not present within a water body (see WFD CIS guidance document No. 2 - Water Bodies); and,
- **Carrying out the economic analyses of water use** required under Article 5 (see WFD CIS guidance document No. 1 - WATECO).

3. The objectives to be considered in the pressures and impacts analysis

The assessment of risks to the achievement of the objectives established by the Water Framework Directive will require consideration of a much wider range of pressures on the water environment than previous Community water legislation.

Range of objectives: The Water Framework Directive establishes a number of objectives for surface waters and groundwater. The pressures and impacts analyses must assess the risks of failing to achieve each of these objectives. The relevant objectives are listed in Table 1 below.

Table 1: List of objectives the risk of failing to achieve must be assessed in the pressures and impacts analyses.

Prevent deterioration in the status of all bodies of surface water and groundwater	Article 4.1(a)(i); Article 4.1(b)(i)
Protect, enhance and restore all bodies of surface water and groundwater with the aim of achieving good surface water status and good groundwater status by 2015	Article 4.1(a)(ii); Article 4.1(b)(ii)
Protect, enhance and restore all artificial and heavily modified bodies of surface water with the aim of achieving good ecological potential and good surface water chemical status by 2015	Article 4.1(a)(iii)
Aim to progressively reduce pollution by priority substances and cease or phase out emissions, discharges and losses of priority hazardous substances	Article 4.1(a)(iv)
Prevent or limit the inputs of pollutants into groundwater	Article 4.1(b)(i)
Reversal of significant and sustained upward trends in the concentration of any pollutant in groundwater	Article 4.1(b)(iii)
Compliance with the standards and objectives for Protected Areas by 2015 at the latest, including the objectives for areas designated for the abstraction of drinking water under Article 7	Article 4.1(c); Article 7

Ecological objectives: The objectives include new ecological objectives, the achievement of which may be compromised by a very wide range of pressures, including point source discharges, diffuse source discharges, water abstractions, water flow regulation, morphological alterations and artificial recharge of groundwater. These and any other pressures that could affect the status of aquatic ecosystems must be considered in the analyses.

Forecasting changes in pressures: The Directive requires the achievement of its principal objectives; good surface water status and good groundwater status, by the end of 2015 at the latest, unless Articles 4.3 – 4.7 are applicable. Accordingly, in assessing risks to the achievement of these objectives, the analyses of pressures and impacts must identify:

- Existing pressures and impacts (identified in 2004) likely to be causing the status of water bodies to be lower than good; and
- How pressures would be likely to develop prior to 2015 in ways that would cause a failure to achieve good status if appropriate programmes of measures were not designed and implemented.

The prediction of changes in pressures will require consideration of (i) the effects of plans and projects agreed under existing legislation and (ii) forecasts of how the key economic factors that influence water uses will evolve overtime, and how these changes may affect the pressures on the water environment[1]. Such forecasts should be provided by the economic analyses of water use required under Article 5.

The pressures and impacts analyses will also need to identify which of the identified risks to the Directive's objectives are expected to be addressed by the implementation of measures specified under other Community legislation. This information will

[1] *See guidance produced by the European working group on the economic elements of the Water Framework Directive.*

enable the economic analyses to assess, and provide advice on, the most cost-effective combinations of measures that can be used to address the other[2] risks to the achievement of the Directive's objectives.

Prevent or limit inputs objective and trend reversal objective: The Directive's objective of preventing or limiting inputs of pollutants into groundwater [Article 4.1(b)(i)] does not specify which pollutants should be prevented from entry and to what extent others should be limited. It is therefore not clear how to assess the risks of failing to achieve this objective until clarification of its purposes is provided. Such clarification may be provided in a daughter directive to be established under Article 17. This Daughter Directive is also expected to establish criteria for the identification of significant and sustained upward trends [Article 4.1(b)(iii)]. Until these criteria have been established, Member States will need to decide what constitutes a significant and sustained upward trend according to their own criteria.

4. Timetable issues and the first pressures and impacts analysis

Refining and updating the analyses: The deadline for completing the first pressures and impacts analyses is the end of 2004. However, the analyses should not stop in 2004. The assessment of pressures and impacts is one of the key, on-going processes within the river basin management planning cycle (see Figure 1). It should be kept up to date to enable timely, appropriate and effective water management.

Different starting points: The timetable for completing the first pressures and impacts analyses and reporting their results is very short. The first analyses will therefore rely heavily on existing information on pressures and impacts and existing assessment methods. Because previous Community water legislation has been focused on pollution, the information and expertise on other pressures and their impacts is very variable between and even within Member States, depending on national legislation and policies.

[2] *The measures specified in Community legislation must be included in the programmes of measures.*

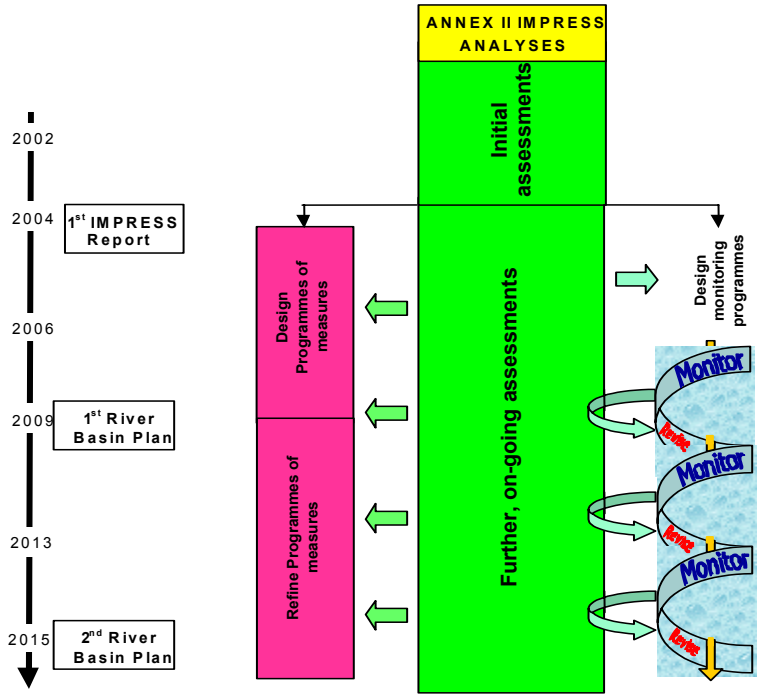

Figure 1: Pressures and impacts analyses are a key and on-going process within the planning cycle. The initial assessments should be refined after 2004 to the extent necessary for effective river basin management planning.

As a consequence of the different levels of existing information, the confidence in the results of the first pressures and impacts analyses will be very variable between Member States. However, it is important that Member States focus on identifying the significant water management issues in their river basin districts so that they have the longest period possible to design and implement appropriate measures.

Heavily modified water bodies and the timetable: For water bodies designated as artificial or heavily modified, the principal objective is good ecological potential rather than good ecological status. Water bodies intended to be designated as heavily modified must be subject to two risk assessments: (1) an assessment of the risk of failing good ecological status because of physical alterations[3], and (2) an assessment of the risk of failing good ecological potential. However, there are serious practical difficulties in completing both these assessments for all potential heavily modified water bodies before the end of 2004.

It is recommended that for the first pressures and impacts report, Member States assess the risks of failing good ecological status for all non-artificial surface water bodies[4]. For those bodies subsequently intended to be designated as heavily modified water bodies, Member States should assess the risk of failing good ecological potential as soon as practical.

[3] *Only water bodies failing good ecological status because of substantial physical alterations can be considered for designation as heavily modified water bodies under Article 4.3. The first pressures and impacts analyses will therefore identify potential heavily modified water bodies.*
[4] *The risk of failing good ecological potential must be assessed for artificial water bodies.*

5. Key elements of a pressures and impacts analysis

The pressures and impact analyses must identify significant pressures and those water bodies that are at risk of failing to achieve the Directive's environmental objectives. They should be proportionate to the difficulty of the assessment, make best use of existing monitoring data and recognise and record their uncertainties.

Identifying significant pressures: The Directive requires that Member States collect and maintain information on the type and magnitude of significant pressures to which surface water bodies are liable to be subject. For bodies of groundwater identified as being at risk of failing to achieve the objectives, Member States must collect and maintain information on the pressures to which such bodies are subjected.

The common understanding of a 'significant pressure' is that it is any pressure that on its own, or in combination with other pressures, may lead to a failure to achieve one of the Directive's objectives. Information on such pressures will therefore need to be collected and maintained for both groundwater and surface water bodies. Annex II of the Directive provides lists of some of the different types of pressures that may be significant. The guidance document provides a more detailed checklist of pressures and the human activities, or drivers[5], with which they are associated. However, these lists of pressures are not exhaustive, and Member States will need to consider whether other pressures may be affecting the water bodies in their river basin districts. One should be aware of the relations between water bodies within a river basin district, e.g. relations concerning pollution of downstream lakes and coastal waters (eutrophication, sediment pollution, bioaccumulation) or upstream river continuity issues. In such cases pressures only causing impacts far outside the water body itself should be included in the analysis as well.

It is important that all significant pressures are identified if the Directive's environmental objectives are to be achieved. However, this is a substantial task for the first review of the impact of human activities, and Member States should aim to achieve the best estimate of significant pressures in the time available. To improve confidence, the estimates of the type and magnitude of pressures should be crosschecked, where possible, with monitoring data and with information on the key drivers for the pressures. For example, estimates of point source inputs of organic matter from urban wastewater treatment systems made using information on discharges could be crosschecked with information on population sizes and average per capita inputs to assess whether the majority of relevant discharges have been identified.

[5] *Drivers are human activities, such as urban development or agriculture, that generate pressures on the water environment (e.g. abstractions, discharges, physical alterations etc*)

Identifying bodies at risk: The identification of significant pressures requires an appropriate understanding of how pressures may interact with water bodies in ways that could affect the environmental conditions required to achieve the Directive's objectives. This 'conceptual' understanding of the risks to the Directive's objectives will need to take account of: (i) the magnitude, and cumulative effects, of the pressures; and (ii) the characteristics of the water bodies that determine their susceptibility to the pressures. Figure 2 outlines the key steps specified in the Directive for determining if a body is at risk of failing to achieve the Directive's objectives.

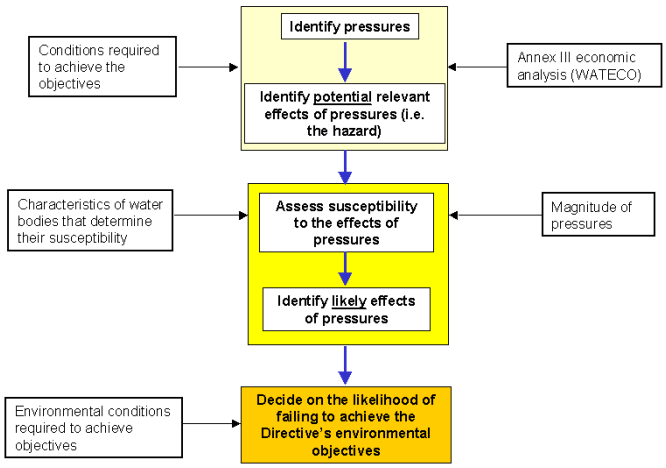

Figure 2: Key steps involved in determining if water bodies are at risk of failing to achieve their objectives.

Using existing monitoring data: To undertake a pressures and impacts analysis you will need to collect information on the pressures to which water bodies are subject and on the characteristics of the bodies that influence their susceptibility to those pressures. However, your analysis should also make best use of other relevant information, including existing monitoring data (see Figure 3). For example, it may be possible to use monitoring information on impacts as the starting point for identifying the risks to the objectives and/or the pressures to which water bodies are subjected.

Monitoring data collected for the purposes of other Community water legislation tends to be focused on the effects of pollution on water quality parameters. The quality and quantity of monitoring data available for use in the first pressures and impacts analyses with respect to other types of pressures and impacts will be very variable, depending on national legislation and policies.

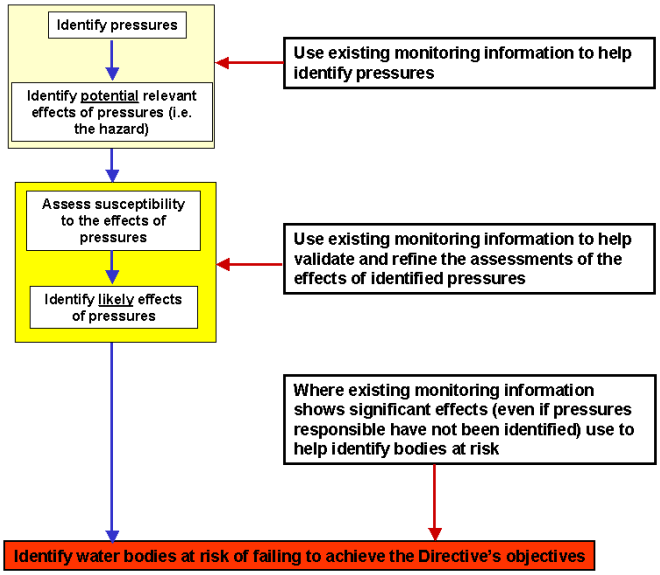

Figure 3: Potential uses of monitoring data in the pressures and impacts analysis.

Ensuring the analyses are proportionate: A comprehensive pressures and impacts analysis is a substantial undertaking. It is therefore important that resources are targeted in the most effective way. The primary purposes of the first pressures and impacts analyses are to identify (a) water bodies at risk of failing to achieve the Directive's objectives, and (b) where possible, the pressures causing these bodies to be at risk. The complexity of, and therefore effort expended on, assessing the effects of pressures on any particular water body, or group of water bodies, should be proportional to the difficulty in deciding if that body, or group of bodies, is at risk (see Figure 4).

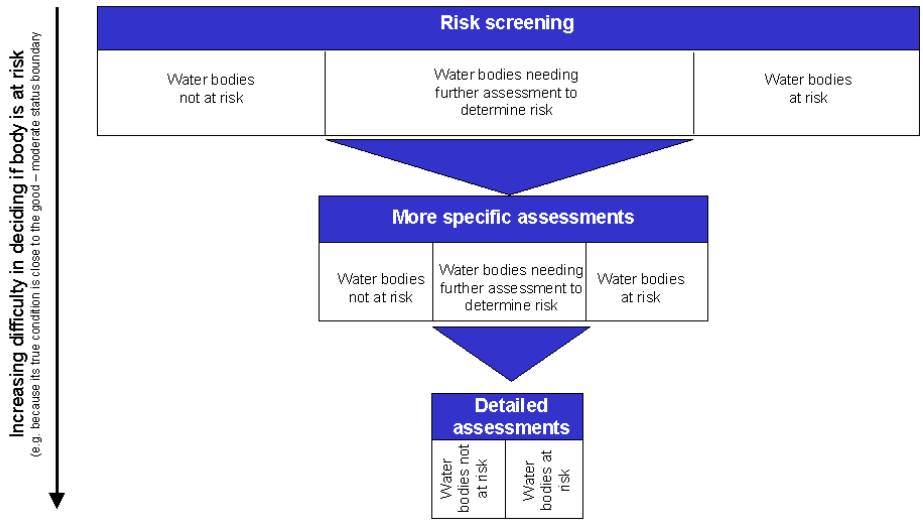

Figure 4: The pressures and impacts analyses should be focused in such a way that the effort involved in assessing whether any body, or group of bodies, is at risk of failing to achieve its environmental objectives is proportionate to the difficulties involved in making that judgement.

The pressures and impacts analyses also need to provide information for designing and targeting the monitoring programmes and the programmes of measures. As the pressures and impacts analyses evolve to provide this information, the assessment effort should be proportional to the difficulty in designing effective monitoring programmes and programmes of measures.

Developing and using screening criteria: The first step in a proportionate pressures and impacts analysis is to screen out: (a) pressures that are not significant; and (b) water bodies that are clearly at risk or clearly not at risk of failing to achieve their objectives. The screening process should start by excluding from further consideration those pressures to which the water body, or group of bodies, are unlikely to be subject. Where pressures are present, generic-screening criteria can be identified and used to screen out pressures of magnitudes expected to have obviously significant or obviously insignificant effects on groups of water bodies with particular characteristics (see Figure 5). The appropriate values for the screening criteria will depend on the characteristics and hence susceptibility of the water bodies to the pressures. In applying screening criteria, you will need to take into account all sources of the pressure, and the potential risks from combinations of different pressures.

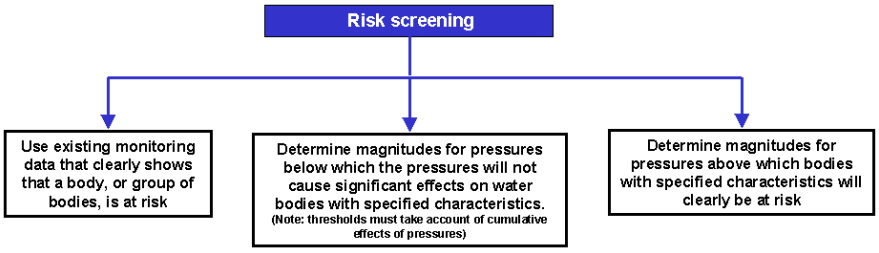

Figure 5: Examples of screening criteria that can be developed to ensure that the pressure and impacts analyses are able to quickly focus in on water bodies for which the assessment of risks to the objectives is most difficult.

Grouping water bodies: Grouping water bodies, provided this is done on a sound scientific basis, will also be important in ensuring the most cost effective approach to the pressures and impacts analyses (see Figure 6). The ability to group bodies will depend on the characteristics of the river basin district and the type and extent of pressures on it.

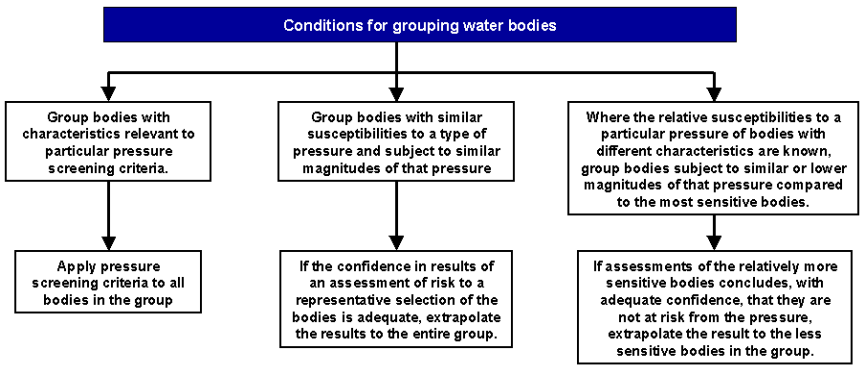

Figure 6: Examples of the conditions under which it may be appropriate to group water bodies for the purposes of the pressures and impacts analysis.

Taking account of uncertainty: The first pressures and impacts analyses must be complete by the end of 2004. However, the environmental conditions required to meet most of the Directive's objectives will not have been firmly defined by this date. For example, the values for the boundaries between the ecological status classes for surface waters are not expected to be finally determined until after the end of the intercalibration exercise[6] and the start of the monitoring programmes in 2006[7]. The environmental quality standards for the priority substances, which form part of the definition of good surface water chemical status, will not be finalised until the agreement of Article 16 daughter directives. Elements of the groundwater objectives also await clarification in the Article 17 daughter directive. The confidence and precision in the estimated environmental effects of different pressure types will also be very variable, depending to a great extent on the quality of national and local information and assessment expertise. This is because consideration of many of the pressures and impacts relevant under the Water Framework Directive has not previously been required by other Community water legislation.

You will need to complete the first analyses using appropriate estimates for pressures and impacts but you should be aware, and take account, of the uncertainties in the environmental conditions required to meet the Directive's objectives and the uncertainties in the estimated impacts.

The consequence of these uncertainties is that Member States' judgements on which bodies are at risk, and which are not, are likely to contain more errors in the first pressures and impacts report (the 'IMPRESS' report) than will be the case in subsequent planning cycles. It will be important for Member States to be aware of the uncertainties so that their monitoring programmes can be designed and targeted to provide the information needed to improve the confidence in the assessments (see Figure 7). Where the assessment contains significant uncertainty, those water bodies should be categorised as at risk of failing to meet their objectives.

[6] *Annex V 1.4*
[7] *Article 8*

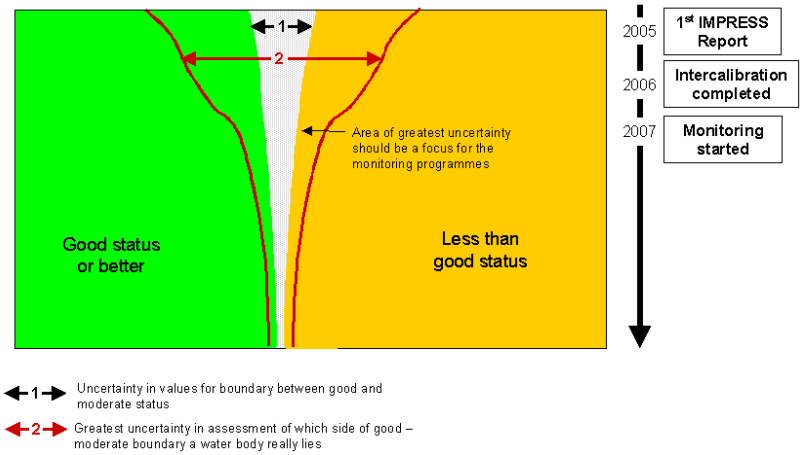

Figure 7: Uncertainties over the precise environmental conditions required to meet the Directive's objectives (e.g. the values for the good – moderate ecological status boundary) and the estimation of the effects of pressures on these conditions will need to be addressed using information from the monitoring programmes.

Appropriate use of existing classification schemes: The guidance recommends that until the classification schemes required by the Directive have been developed, Member States adapt and utilise their existing classification schemes, where possible, to help judge whether water bodies are at risk. In doing so, Member States will need to take into account the limitations of these schemes in relation to the scope of the Directive's objectives, since many existing schemes are focused principally on water quality parameters.

6. Reporting on a pressures and impacts analysis

Member States must provide summary reports of the first pressures and impacts analyses to the European Commission by the end of March 2005. However, information on pressures and impacts will also be included in number publications for public information and comment required under Article 14 as well as the river basin management plans (see Figure 8).

The Directive does not specify the required format or detailed content of the summary reports and publications on the pressures and impacts analyses. However, the aim should be to promote consistency and transparency of implementation across Europe, encourage the active involvement of all interested parties and provide useful information for water managers and water users. To this end, there should be a common reporting format for pressures and impacts information, which:

- Clearly and simply sets out each Member States' view of the risks to the achievement of the Directive's objectives and their causes; and
- Systematically reports on the assumptions and uncertainties involved in the analyses.

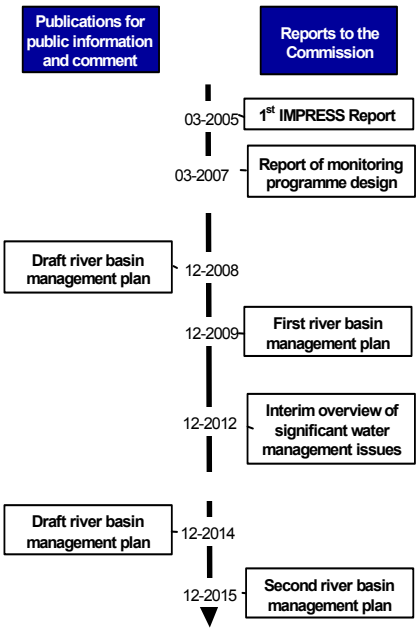

Figure 8: Use of pressures and impacts analyses in publications and reporting.

For example, the reports could start with short descriptions of the relevant characteristics of the river basin districts and summaries of the basis of the pressures and impacts analyses, including the main assumptions made. They could be organised in sections dealing with each of the major types of pressure listed in the Directive (e.g. point source pollution; diffuse source pollution; abstraction; water flow regulation; morphological alterations, etc). Each section could include a map of those water bodies for which the type of pressure is identified as one of the main causes of the risk of failing to achieve the objectives (i.e. for which the pressure is a significant pressure). The sections could also include an indication of the variation in the level of certainty achieved in the assessments. The Expert Advisory Forum on Reporting will provide further advice on reporting requirements.