European Commission

Common Implementation Strategy for the Water Framework Directive (2000/60/EC)

Guidance document n.° 14

Guidance on the intercalibration process 2004 - 2006

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

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FOREWORD

The Water Directors of the European Union (EU), Acceding Countries, Candidate Countries and EFTA Countries have jointly developed a common strategy for supporting the implementation of the Directive 2000/60/EC, "establishing a framework for Community action in the field of water policy" (the Water Framework Directive). The main aim of this strategy is to allow a coherent and harmonious implementation of the Directive. Focus is on methodological questions related to a common understanding of the technical and scientific implications of the Water Framework Directive.

In November 2002 the Water Directors endorsed the document 'Towards a guidance on establishment of the Intercalibration network and on the process of the Intercalibration exercise' (CIS Guidance Document nr. 6; "Intercalibration Guidance").

The Intercalibration Guidance contains a detailed description of a two-step procedure for the establishment of a network of intercalibration sites in 2002-4. As a first step, water body types, pressures and quality elements were selected to focus the intercalibration. As a second step, Member States and Accession Countries selected sites representing their interpretation of the high-good and the good-moderate class boundaries. For all intercalibration sites, metadata on typology, reference conditions, and biological and physico-chemical monitoring results was provided, together with information on the criteria used for classification. According to the timetable required by the Water Framework Directive (WFD), a draft register of sites for the intercalibration register was established in December 2003, and the final register will be established by December 2004.

The Intercalibration Guidance contains a preliminary description of the process of the intercalibration exercise in 2005-6. This section was not complete, because at the time the guidance was written, it was uncertain to what degree the sites in the intercalibration network would represent an agreed view of the high-good and the good-moderate class boundaries. It was also unclear what data would be available from the sites. A "metadata analysis" was executed to make this information available, and to enable a realistic planning for the intercalibration exercise.

The purpose of the present document is to provide further guidance for the intercalibration process, which started in 2004 and will continue up to the end of 2006, The document is based on the Intercalibration Guidance, taking into account the results of the metadata analysis, ongoing discussions in Working Group A Ecological Status (WG A), and the recommendations of the expert networks on lakes, rivers, and coastal and transitional waters.

The document was edited by Wouter van de Bund (EC-Joint Research Centre), and has been developed between December 2003 and September 2004 by a drafting group consisting of Peter Pollard (UK), Ulrich Irmer (DE), Pierre-Jean Martinez (FR), Jean-Gabriel Wasson (FR), Gisela Ofenboeck (AT), Andrea Buffagni (STAR project), Kari Nygaard (EEA), Jose Ortiz-Casas (ES), Manuel Toro (ES), Anna-Stiina Heiskanen (JRC), and Wouter van de Bund (JRC).

The Water Directors have examined and endorsed this guidance during our informal meeting under the Dutch Presidency in Amsterdam (2/3 December 2004)[1]."

[1] "The Water Directors endorsed the intercalibration guidance while taking note that the parts of the text and the annexes which refer to the upcoming Commission decision on the register of sites will need to be updated when the formal decision is taken"

CONTENTS

1. Key Principles of the intercalibration process

1.1 The intercalibration process is aimed at consistency and comparability of the classification results of the monitoring systems[2] operated by each Member State for the biological quality elements[3]. The intercalibration exercise must establish values for the boundary between the classes of high and good status, and for the boundary between good and moderate status, which are consistent with the normative definitions of those class boundaries given in Annex V of the WFD[4].

1.2 The essence of intercalibration is to ensure that the high-good and the good-moderate boundaries in all Member State's assessment methods for biological quality elements correspond to comparable levels of ecosystem alteration. Intercalibration is not necessarily about agreeing common ecological quality ratio (EQR) values for the good status class boundaries as measured by different assessment methods. Common EQR values only make sense, and are only possible, where very similar assessment methods are being used or where the results for different assessment methods are normalised using appropriate transformation factors. This is because different assessment methods (e.g. using different parameters indicative of a biological element) may show different response curves to pressures and therefore produce different EQRs when measuring the same degree of impact.

1.3 The first phase of the process is the establishment of an intercalibration network for a limited number of water body types consisting of sites representing boundaries between the quality classes High-Good and Good-Moderate, based on the WFD normative definitions. The WFD requires that selection of these sites is carried out "using expert judgement based on joint inspections and all available information[5]".

1.4 The Intercalibration Guidance states that "some artificial or heavily modified water bodies could be considered to be included in the intercalibration network, if they fit in one of the natural water body types selected for the intercalibration network. Artificial and heavily modified water bodies that are not comparable with any natural water bodies should only be included in the intercalibration network, if they are dominant within a water category in one or more Member States; in that case they should be treated as one or several separate water body types". An artificial or heavily modified water body is considered to fit in a natural water type if the maximum ecological potential of the artificial or heavily modified water body is comparable to the reference conditions of the natural type for those quality elements considered in the intercalibration exercise[6].

[2] The term 'monitoring system' in the way it is commonly used includes the whole process from sampling, measurement and assessment including all quality elements (biological and other). In the context of WFD Annex V, 1.4.1, the term 'monitoring system' only refers to a biological assessment method, applied as a classification tool, the results of which can be expressed as ecological quality ratios. This guidance uses the term 'WFD assessment method' in place of the term 'monitoring system' that may be misleading in this context.
[3] The WFD intercalibration as described in Annex V, 1.4.1 does not concern the monitoring systems themselves, nor the biological methods, but the classification results
[4] WFD Annex V, 1.4.1 (ii), (iii), (iv), (vi)
[5] WFD Annex V, 1.4.1 (v)
[6] This is not the case for those quality elements that are significantly impacted by the hydromorphological alteration that has led to the water body to be designated as heavily modified.

1.5 In the second phase of the process, each Member State's assessment method must be applied to those sites on the register that are both in the ecoregion (or, as pointed out in section 1.8, in the Geographical Intercalibration Group (GIG)) and of a surface water body type to which the system will be applied. The results of the second phase must be used to set the EQR values for the relevant class boundaries for each Member States' biological assessment system. The results of the exercise will be published by the Commission by 22 December 2006 at the latest.

1.6 Intercalibration sites are selected by the Member States, and represent their interpretation of the WFD normative definitions of high, good and moderate status. There is no guarantee that different Member States will have the same views on how the normative definitions should be interpreted. Differences in interpretation are reflected in the intercalibration network[7]. A common interpretation of the normative definitions should be the main outcome of the intercalibration exercise. At the end of the intercalibration exercise the intercalibration network may need to be revised according to this common interpretation.

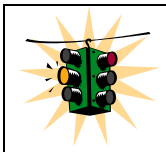
1.7 The Intercalibration Exercise is focused on specific type/biological quality element/pressure combinations[8]. The selection of these combinations is based on the availability of adequate data within the time constraints of the exercise. This means that the exercise will not identify good status boundary EQR values for all the type/biological quality element/pressure combinations relevant for the implementation of the WFD. However, the Intercalibration Exercise will identify, and test the use of, a procedure and criteria for setting boundaries in relation to any such combinations[9].

1.8 The intercalibration process described in this guidance is aimed at identifying and resolving:

(a) Any major/significant inconsistencies between the values for the good ecological status class boundaries established by Member States and the values for those boundaries indicated by the normative definitions set out in Section 1.2 of Annex V of the WFD; and,

(b) Any major/significant incomparability between the values established for the good status class boundaries by different Member States.

1.9 The process will identify appropriate values for the boundaries of the good ecological status class applicable to the EQR scales produced by the Member States' assessment methods.



The EQR values appropriate for the good ecological status class boundaries will depend on the particular characteristics of each assessment method. This means that the Intercalibration Exercise may identify unique boundary EQR values for each national assessment method. These different values will nevertheless, after the Intercalibration Exercise, reflect a comparable level of anthropogenic alteration to the biological quality element

[7] Intercalibration Guidance, section 3.5

[8] as described in the document' Overview of common Intercalibration types' (available at the intercalibration site submission web pages, http://wfd-reporting.jrc.cec.eu.int/Docs/typesmanual)

[9] If the results of the method are significantly affected by biogeographical or other ecological differences within the intercalibration type, different boundary EQR values may be appropriate for different parts of the type

1.10 The Intercalibration Exercise will be undertaken within GIGs rather than the ecoregions defined in Annex XI of the WFD. This is to enable intercalibration between a maximum number of Member States.

1.11 The Intercalibration Exercise assumes that all Member States will have developed their national WFD assessment methods to a sufficient extent to enable the consistency with the normative definitions, and the comparability between Member States, of the good status boundary EQR values for those methods to be assessed during 2005. It was recognized however that this assumption might be problematic. An inventory on the state-of-the-art in the developments of WFD compliant methods is carried out during the process of finalisation of the intercalibration network[10].

1.12 The Intercalibration Exercise will set boundary EQR values for the biological quality elements using parameters, or combinations of parameters Member States intend to use in their WFD assessment methods. For better readability, the term 'metric' is used in this guidance as an alternative to the WFD term 'parameter indicative of a biological quality element'.

1.13 The Intercalibration Exercise should be carried out for all agreed common intercalibration types[11]. If this is not possible, the reasons for not including a type should be reported by the GIG to WGA, which will make recommendations to Strategic Co-ordination Group (SCG) and/or WFD Committee, as appropriate.

[10] The metadata questionnaire is available at the intercalibration site submission web pages, http://wfd-reporting.jrc.cec.eu.int/Docs/ metadata

[11] As described in the document' Overview of common Intercalibration types' (available at the intercalibration site submission web pages, http://wfd-reporting.jrc.cec.eu.int/Docs/typesmanual)

2. Process options for intercalibration

2.1 This Section outlines different options for the process of intercalibration. Subject to the conditions for their use as outlined, each option could provide an appropriate means of ensuring the consistency and comparability of the values established for the good status class boundaries.

2.2 Taking account of the requirements of the options, and their strengths and weaknesses, GIGs should identify the most appropriate approaches for the different common intercalibration types. These approaches should then be harmonised and agreed by WG A.

2.3 All three options as well as any hybrid options require agreement on principles to derive type-specific reference conditions, and the establishment of data sets illustrating gradients of biological alteration, if possible along a pressure gradient, and at least including the two relevant class boundaries. These data sets do not necessarily need to be limited to sites from the Intercalibration Network. The normative definitions for the ecological quality classes are then applied to these data. The main difference between the options is whether this is done at Member State level using national metrics (option 3), or at GIG level using common metrics (option 1 and 2).

2.4 An outline of the main components of such a class boundary setting procedure is presented in Annex I. In the course of the intercalibration process, the GIGs should regularly report the progress. To facilitate this, the EC Joint Research Centre (JRC) will establish a simple web-based reporting system, where GIGs can report the progress made in each of the steps of this procedure on a regular basis. This makes it possible to check whether approaches followed in different GIGs are sufficiently comparable. WG A is responsible for the consistency and harmonisation of the process between GIGs and between categories (lakes, rivers, and coastal and transitional waters).

2.5 An overview of Option 1 for the intercalibration process is provided in Figure 2.1 and Table 2.1.

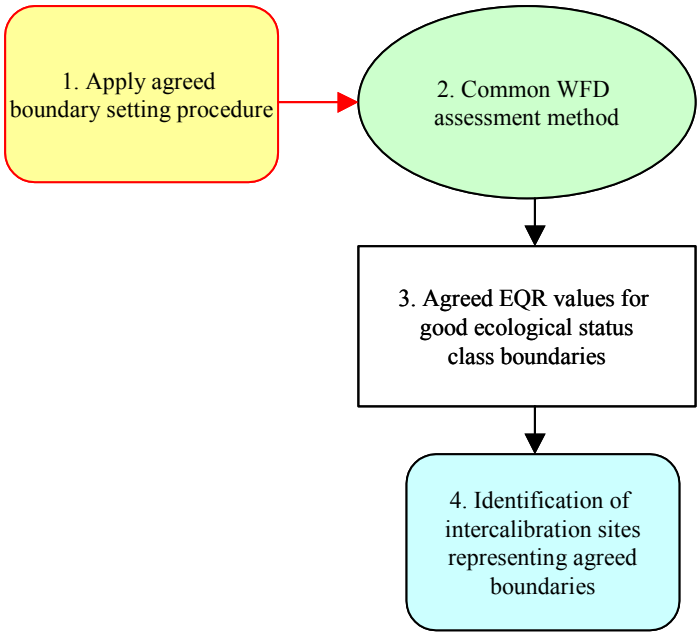


Figure 2.1. Outline of Option 1: Member States in a GIG area are using the same WFD assessment method

Table 2.1. Information on Option 1

Conditions for use	All Member States in a GIG agree to use the same method as their national assessment method for a quality element considered in the intercalibration exercise - based on the same metrics and the same means of identifying reference conditions. The metrics are calculated in the same way from data collected and analysed according to a standard procedure.
Application	Where a common assessment method is the best WFD assessment method available in the GIG area, this should always be the preferred option. For quality elements for which most Member States have not sufficiently established national assessment methods, and where a common assessment method is available[12] Where the Member States in a GIG have not sufficiently established their national WFD assessment methods for the purposes of the intercalibration exercise but can identify an interim common WFD assessment method for the purposes of the intercalibration exercise (i.e. a partial application of option 2)
Features	Does not require intercalibration of the results of different WFD assessment methods. It only requires agreement on high-good and good-moderate class boundaries of the EQR scale for the common method, by applying the class boundary setting procedure[13]

[13] e.g. (a) Reference conditions; (b) Type characteristics; (c) data on the biological quality element and the condition of

Role of the intercalibration network	Intercalibration sites are not directly used in the process of setting the boundaries. After setting the class boundaries, sites in the Intercalibration Network representing the boundary conditions will be identified.
Data requirements	Data requirements are limited to those required to apply the boundary setting procedure (i.e. the minimum requirement for setting boundaries consistent with the normative definitions). To ensure sufficient statistical confidence of the results it is recommended that the data should include a range of quality from high to at least moderate but preferably also including classes of worse status[14].
Advantages	The most straightforward option since the difficulties and uncertainties involved in comparing the results of different assessment methods are avoided. Comparability between Member States is assured. WG A can readily monitor the application of the agreed boundary setting procedure. WG A can easily make refinements to the boundary setting procedure.
Disadvantages	The opportunity to use this approach is likely to be very limited as few Member States are planning to use common WFD assessment methods.

the supporting elements across the range of status classes; (d) a means of taking into account the effects of any differences in the way biological information in the data set has been collected and analysed (the effect of bias)

[14] This condition is unlikely to be satisfied using only data from Intercalibration Sites.

2.6 An overview of Option 2 for the intercalibration process is provided in Figure 2.2 and Table 2.2.

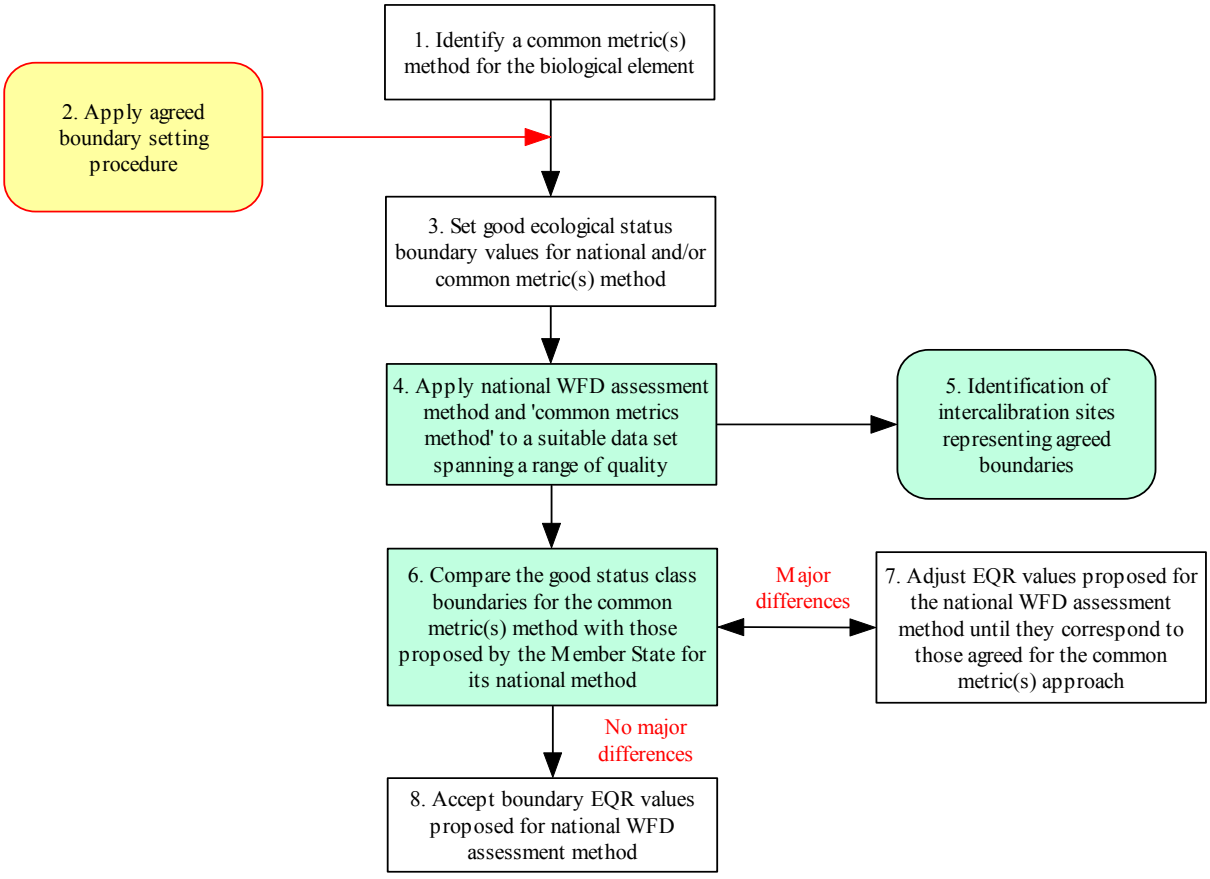


Figure 2.2. Outline of Option 2: Use of a common metric(s) method identified specifically for the purposes of the intercalibration exercise

Table 2.2. Information on Option 2.

Conditions for use	Suitable common metrics should be identified. These metrics should be indicative of the relevant biological quality element and sensitive to the pressure that is assessed. Common metrics may be selected from one of the Member State's existing assessment methods, if acceptable for the other Member States in the GIG. Availability of a suitable data set from which these common metric(s) can be calculated to enable reliable application of the agreed boundary setting procedure[15] (or the possibility to establish such a data set in the given timetable). Availability of data sets relating Member State's assessment methods to the common metric (or the possibility to establish such data sets in the given timetable). Availability of a means of estimating and taking into account differences in the bias of the methods when applied to the data set referred to above[16].

[15] e.g. (a) Reference conditions; (b) Type characteristics; (c) data on the biological quality element and the condition of the supporting elements across the range of status classes; (d) a means of taking into account the effects of any differences in the way biological information in the data set has been collected and analysed (the effect of bias)
[16] e.g. if the data set has been collected using different sampling and analysis procedures to the standard procedures

Application	Where option 1 is not possible Where suitable common metrics can be agreed upon within GIGs
Features	Involves the agreement on a common WFD method by the Member States in a GIG for the purposes of the intercalibration exercise. Such methods can be specifically developed in the GIGs, but also existing methods can be used[17]. For the common method, type-specific good status boundary values are established in the GIGs following the application of the agreed boundary setting procedure using a data set assembled for the purposes of the intercalibration exercise. The results of the common assessment method are used as the basis for adjusting the boundary EQR values of the national assessment methods. This is done by establishing quantitative relationships between common and national metrics, enabling to directly translate agreed boundary values for the common metrics into EQR values of the national assessment methods.
Role of the intercalibration network	Intercalibration sites are not necessarily used in the process of setting the boundaries. After setting the class boundaries, sites in the intercalibration network representing the boundary conditions will be identified.
Data requirements	Common metric data set for application of the boundary setting procedure for each common intercalibration type[18]. Data establishing quantitative relationships between common metrics and each national WFD assessment method[19]. To ensure sufficient statistical confidence of the results it is recommended that the data should include a range of quality from high to at least moderate but preferably also including classes of worse status[20].
Advantages	WG A can readily monitor the application of the boundary setting procedure because it is applied to one common dataset rather than to many national data sets. The expert judgements needed in the application of the boundary setting procedure are made by experts from across a GIG area. Refinements to the boundary setting procedure can be readily made by WG A. The process of agreeing on class boundaries (using common metrics) is clearly separated from the checking/adjusting of the EQR values of national assessment methods within a GIG. The approach has been at least preliminarily tested for rivers by the STAR/AQEM project The effects of random errors on the identification and adjustment of boundary values can be adequately controlled, for example, by using sufficiently large data sets

intended for the common assessment method, any significant effects of this on the results for the common method must be resolved

[17] for some water categories such common methods have already been developed (e.g. metrics developed in research projects as AQEM and STAR)

[18] The data set should be adjusted for any bias that may result from methodological differences in sampling and analysis between countries in a GIG

[19] In some cases, such relationships may already be available. E.g., the STAR project has already established relationships between many national assessment methods and a proposed common metric for rivers.

[20] This condition is unlikely to be satisfied using only data from Intercalibration Sites.

Disadvantages	Relies on the ability of each GIG to collate suitably quality assured and large data sets for the purposes of applying the agreed boundary setting procedure and setting class boundary values for the common assessment method. The quality of the data used for the boundary setting procedure to the common method may be lower than that which Member States could assemble nationally for applying the procedure directly to their national assessment methods (see Option 3).

2.7 An overview of Option 3 for the intercalibration process is provided in Figure 2.3 and Table 2.3.

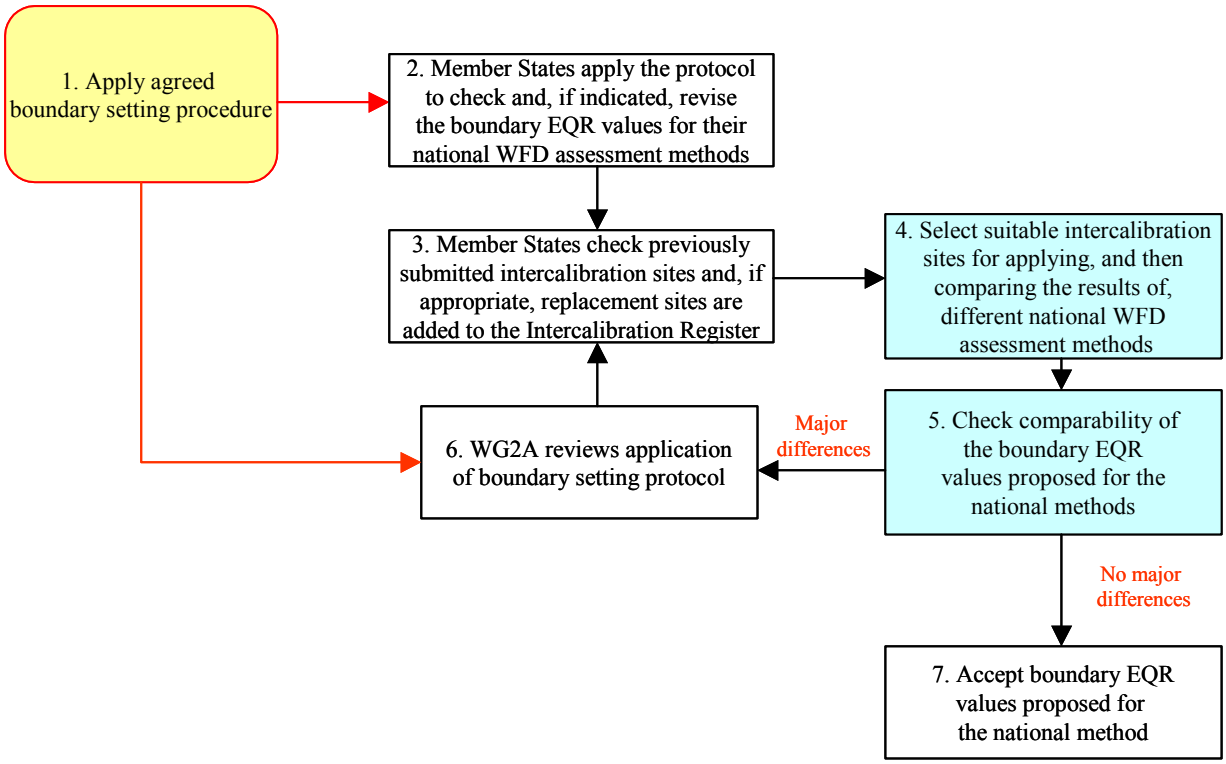


Figure 2.3. Outline of Option 3: Use of a common metric(s) method identified specifically for the purposes of the intercalibration exercise

Table 2.3. Information on Option 3.

Conditions for use	All Member States in a GIG have sufficiently developed their national WFD assessment methods for application in 2005. Availability of suitable data sets for each Member State's assessment method to enable reliable application of the agreed boundary setting procedure[21] (or the possibility to establish such data sets in the given timetable). Availability of data from intercalibration sites relating different Member State's assessment methods to each other (or the possibility to establish such data sets in the given timetable). Availability of a means of estimating and taking into account differences in the bias of the methods when applied to the data set referred to above[22].
Application	Except where Option 1 is available

[21] e.g. (a) Reference conditions; (b) Type characteristics; (c) data on the biological quality element and the condition of the supporting elements across the range of status classes; (d) a means of taking into account the effects of any differences in the way biological information in the data set has been collected and analysed (the effect of bias)]
[22] e.g. if the data sets have been collected using different sampling and analysis procedures, any significant effects of this on comparability of the results must be resolved

Features	Member States apply the boundary setting procedure using their own data sets and identify intercalibration sites representing the high-good and good-moderate class boundaries. It is assumed that all Member States within a GIG possess sufficiently developed assessment methods for the biological quality elements. The proper application of the procedure is tested by checking whether there are major differences in the results given by different Member States' assessment methods when applied to the same intercalibration sites WG A has a major role in ensuring comparability. Where there are major differences, WG A would check the application of the procedure in relation to the Member States' data sets and propose adjustments to those boundary EQR values not in line with the boundary setting procedure.
Role of the intercalibration network	Unlike Options 1 and 2, selected intercalibration sites play a central role in checking consistency and comparability of Member State's WFD assessment methods.
Data requirements	For each national assessment method included in the intercalibration exercise, Member States need to compile data sets for application of the boundary setting procedure for each common intercalibration type. To ensure sufficient statistical confidence of the results it is recommended that the data should include a range of quality from high to at least moderate but preferably also including classes of worse status[23]. For the intercalibration sites representing the high-good and good-moderate boundaries, data is needed allowing to compare the results of different Member State's assessment methods within a GIG. Collection of additional data may be needed where existing data from the selected intercalibration sites are insufficient for the purposes of applying one or more of the relevant Member States' national WFD assessment methods Information to enable expert judgements to be made about whether apparent differences between the results of Member States' methods are caused by real differences in the level of anthropogenic alteration represented by the boundary EQR values they have proposed for their national assessment methods[24]
Advantages	Simpler in principle than Option 2 in that it does not require the development of, and calibration of the results of, a common metric(s) assessment method Most clearly follows the procedure specified by the WFD. Adjustments to the good status boundary EQR values of Member States' WFD assessment methods are dictated directly by the application and refinement of the agreed boundary setting procedure rather than indirectly via a common metric(s) method (see Option 2).

[23] This condition is unlikely to be satisfied using only data from Intercalibration Sites.
[24] e.g. estimates of the errors produced by the assessment methods; information on biogeographical differences between the intercalibration sites and the sites to which the national methods are normally applicable or other ecological differences such as those that may be associated with differences in site characteristics; information on the condition of the supporting elements

Disadvantages	Relies on each Member State within a GIG being able to find at least some intercalibration sites that are considered, with adequate confidence, to be on, or close to, the good status class boundaries – or which will at least allow interpolation of the boundaries. Consistent application of the class boundary setting procedure between Member States may be difficult because this is done separately by each Member State using different data sets (using a common procedure) rather than jointly in the GIG. Iterative refinement of the boundary setting procedure may be less easy to achieve in a coordinated way than under Option 2 where a common data set is available. Organisation of the data flow may be complicated. Although WGA would not be required to hold the national data sets used for the application of the boundary setting procedure, it would need access to these data sets to check the application of the procedure, should major differences in the boundaries set by Member States be identified.

2.8 A number of hybrid options may be possible; for example:

- It may be possible to identify a simple common metric(s) method (see option 2) to underpin the development of the boundary setting procedure, but to follow Option 3 for the application of the procedure to each Member State's data, establishing boundary EQR values. This would have the advantage compared to option 3 of allowing WG A to more readily monitor the application of, and iteratively refine, the setting of the class boundaries;
- Boundary values are first established with national classification assessment methods (as in Option 3). The subsequent comparison of the boundary values could then be done with the help of a common metrics method (as in Option 2). An example of this approach, that is presently being tested in the Alpine, Central/Baltic and Mediterranean river GIGs, is presented in Annex III.

3. Contents of the final intercalibration report

3.1. According to the timetable set out in the WFD[25], the final report of the Intercalibration Exercise should be published before 22 December 2006 by the Commission. This chapter gives an outline of the expected key elements of this report.

Section 1 Overview of GIGs and Common Intercalibration Types considered in the intercalibration exercise[1]

Section 2 Results of the intercalibration for each common intercalibration type

1. Description of the Common Intercalibration Type
2. List of Member States in which the type is present
3. Biological element(s) considered in Intercalibration Exercise for the type
   e.g. Benthic invertebrates
4. Pressure(s) considered in the Intercalibration Exercise for the type
   e.g. Nutrient enrichment
5. Summary description of the 'procedure and criteria that were agreed to derive reference conditions and good ecological status class boundary values from the normative definitions for the type ('class boundary setting procedure'), with a reference to the data used in the application of the procedure for the common intercalibration type[1].
6. Intercalibration register sites representing (a) the high-good boundary; and (b) the good-moderate boundary [+ reference to where data from site can be found]
7. Overview of quantitative relationships established between common and national metrics (option 2) or between different national metrics (option 3), including an estimate of statistical uncertainty
8. Boundary EQR values established for the type/quality element/pressure combination for the common metric (where applicable) and each national WFD assessment method

For example:

Member State	Classification Method	EQR High-Good boundary	EQR Good-Moderate boundary
	Common metric	0.85	0.65
MS1	Method 1	0.85	0.60
MS2	Method 2	0.85	0.75
MS3	Method 3	0.70	0.60
MS4	Method 4	0.90	0.75
MS5	Method 5	0.85	0.60

Section 3 Conclusions stating what is achieved and what is not achieved in the intercalibration exercise

[25] WFD Annex V, 1.4.1, ix

4. Organisation of the work and timetables

4.1 The intercalibration process will be carried out under the umbrella of WG A. The Lakes, Rivers, and Coastal/Transitional Waters expert groups are subdivided in GIGs that will carry out the practical work. An Intercalibration Steering Group consisting of the JRC and representatives of the water category expert groups will summarise the results of the different GIGs and water categories and present those to WG A. An overview of the organisational structure is given in Figure 4.1.

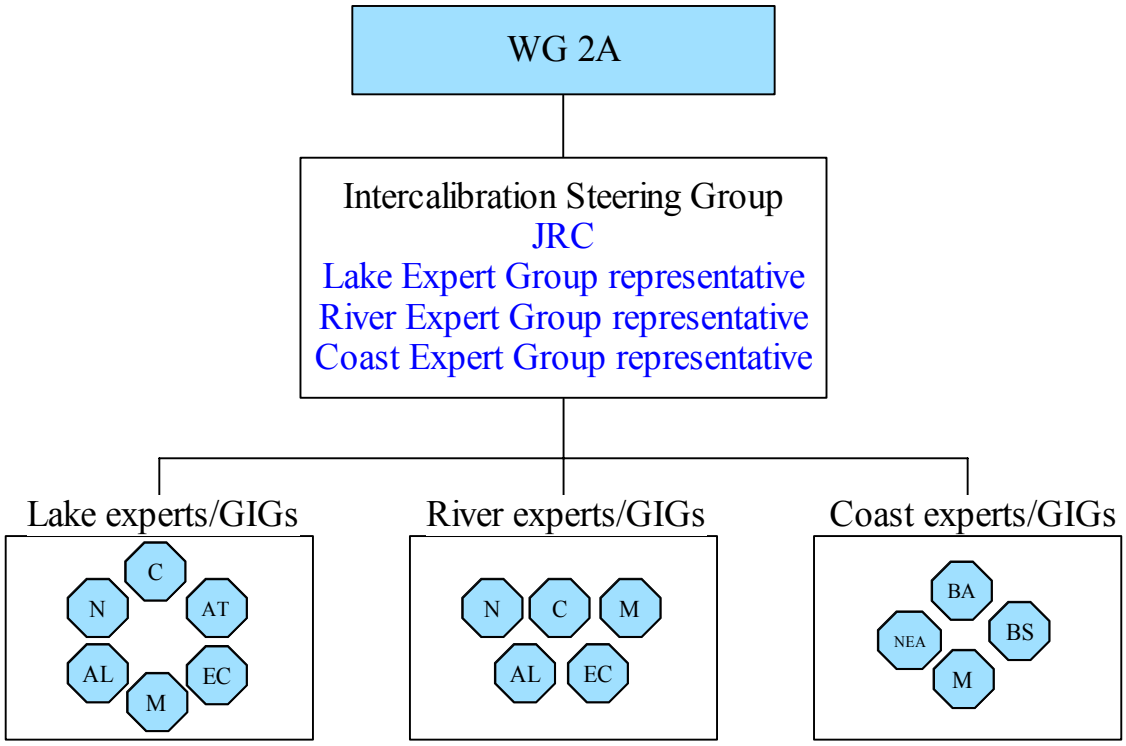


Figure 4.1: Overview of the organisational structure for the intercalibration process.

4.2 WG A is responsible for evaluating the results of the intercalibration exercise and making recommendations to the SCG or WFD Committee, as and when appropriate.

4.3 The practical work will be carried out in the GIGs, following the timetables set out in this guidance document. One of the Member States in each GIG will act as an informal GIG co-ordinator[26]. An overview of the GIGs including the participating Member States and the informal co-ordinators is given in Annex 2.

4.4 The process needs to be transparent and the results need to be coherent and consistent between GIGs and between water categories.

[26] Co-ordination of larger GIGs (e.g. Central rivers and Central lakes) may be too large a task for a single Member State. In those cases, a GIG steering group of several Member State experts could be formed.

4.5 An intercalibration steering group consisting the JRC and representatives of the water category expert groups will be established that will summarise the progress of the different GIGs and evaluate inconsistencies within and between GIGs, and report those to WG A. It is the task of WG A to resolve such inconsistencies.

4.6 The intercalibration process is facilitated by the JRC. JRC will establish a simple reporting structure where GIGs can report and update the results of the different steps of the boundary setting procedure for the different intercalibration types, and will compile the draft final report of the intercalibration exercise.

4.7 In principle, only the final results of the intercalibration procedure (as specified in Section 4 of this guidance document) are centrally reported to JRC using uniform templates. These results will be discussed in WG A, presented to the SCG and WFD Committee, and included in the final intercalibration report.

4.8 The Member States in the GIGs have the collective responsibility to bring together the data to set and/or illustrate the class boundaries, and the data enabling comparison of the classification results of different countries within the GIG. Additional sampling during the Intercalibration Exercise may be considered in the GIGs. The GIGs are free to specify the aggregation level and format for this data. To ensure transparency of the intercalibration process the original data source(s) should be specified, and the data should be made publicly available in such a form that the correct application of the boundary setting procedure can be verified.

4.9 JRC is responsible to regularly report the progress of the intercalibration process to the SCG, the Water Directors, and the WFD Committee.

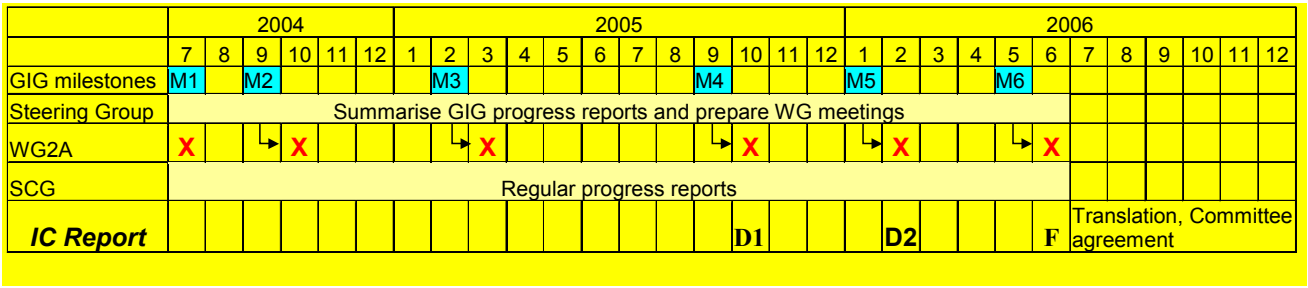


Figure 4.2: General timetable including GIG milestones (M1-M5), WGA, and draft (D1-D2) and final (F) reports of the intercalibration exercise

4.10 The general timetable of the Intercalibration Exercise (Figure 4.2) is constrained by the legal deadline to finalise the intercalibration report by December 2006. This requires that WG A agrees on the report in June 2006. A first and second draft of the intercalibration report will be prepared in October 2005 and February 2006, respectively. WG A will meet twice every year and regularly provide progress reports and recommendations to the SCG and the WFD Committee.

4.11 Table 4.1 presents the different steps of the timetable for the Intercalibration Exercise in more detail, with the tasks of the GIGs, the complete. If needed, GIGs can propose modifications to this timetable depending on their specific needs (e.g. the options chosen, data availability, possibility to collect additional data, etc.), provided that this does not affect the overall process. Such modifications require agreement of WGA.

4.12 The principle milestones of the work of the GIGs are further specified in Table 4.2. The milestones are linked to the meetings of WGA. GIGs are expected to report two weeks before each WG A meeting. The Intercalibration Steering Group will then summarise the reports and present the results to WG A.

Table 4.1: Proposed overall timetable for the Intercalibration exercise

	GIGs	JRC / Steering Group	WG A
June-July 04	Agree on first suggestions on intercalibration options and carry out pilot work where possible		
July 04	**M1** Report of progress to WG A: - Composition and co-ordination - First suggestions re. options - First results if pilot work	Establishment of steering group	Meeting 7-8 July 04: - Discussion on guidance - Discussion on GIG organisation - Discussion on GIG options and pilot work
July-Sept	Meet and agree on: - Options & common metrics - Boundary setting procedure - Comment on draft guidance - New data collection needs and possibilities - Timetable of the work	Prepare template for GIG work plan	- Comments on guidance (deadline 7 September) - Drafting group on intercalibration process finalises guidance
Sept - Oct 04	**M2** Preparation GIG work plan: - Proposed option(s) - Proposed common metrics (if applicable), identify needs for new data collection - First proposal boundary setting procedure - Outline of timetable	Summarises GIG work plans and presents this to WG A	Meeting 7-8 October 04: - Agreement on guidance - Agreement on options for the GIGs and common metrics (where applicable) - Agreement on GIG timetables
Oct 04-Jan 05	- Development of boundary setting procedure[27] - Agreement on data needs for intercalibration types (depending on option chosen[28]) - Agree on principles of reference condition setting, e.g. by collating and comparing methods and values for national type-specific reference conditions for selected quality elements	- Establishment of a simple internet-based reporting structure where GIGs can report and update different steps of BSP for the different intercalibration types - Develop specific proposals for comparability checking depending on options and metrics chosen	
Feb-Mar 05	**M3** Report GIG progress (using internet reporting structure) - First report of boundary setting procedure (including principles to set reference conditions)[29] - Overview of data requirements	Summarise GIG progress reports and prepare WG A meeting	Meeting March 05: - Agreement on boundary setting procedures and data requirements
Feb-Aug 05	- Collate data sets to apply boundary setting procedure at GIG level (option 1/2) or at Member State level (option 3) for all types - Apply boundary setting procedure for all types (including setting values for reference conditions and good ecological status boundary values for common metrics (Option 1/2) or national metrics (Option 3) - Identify intercalibration sites		

[27] At this stage, GIGs may decide to focus on specific common intercalibration types/pressures/quality elements
[28] Option 1/2 – data quantifying the relations between common and national metrics. Option 3 – data directly comparing assessment methods between Member States using intercalibration sites
[29] For this first report GIGs may choose to focus on specific common intercalibration types, pressures and/or quality elements

	representing agreed class boundaries (all options) and start compiling data for assessing comparability between Member States using those sites (Option 3) - Collate data sets relating common metrics with Member State's national metrics and propose EQR values for national metrics using these data (Option 2)		
Sep-Oct 05	**M4** Report GIG progress - Report on ongoing application of boundary setting procedure - Identification of intercalibration sites representing agreed class boundaries	Summarise GIG progress reports and prepare WG A meeting	Meeting October 05: - Identify inconsistencies between MS classification results
Oct 05 – Jan 06	- Finalise data compilation for intercalibration sites, assess comparability between Member State's assessment methods and identify consistencies (Option 3) - Finalise collating data sets relating common metrics with Member State's national metrics and set EQR values for national metrics (Option 2) - Continue developing and reviewing the boundary setting procedure (Option 1)		
Jan-Feb 06	**M5** Report GIG progress - Report on ongoing application of boundary setting procedure - Identification of inconsistencies within the GIG	Summarise GIG progress reports and prepare WG A meeting; proposals to resolve inconsistencies between MS classification results	Meeting February 06: - Resolve inconsistencies between Member State classification results where possible
Feb-May 06	GIGs implement proposals to resolve inconsistencies between Member States classification results, and propose revisions of the intercalibration register according to those revisions		
May-June 06	**M6** GIGs produce type-specific reports including EQR boundary values and identification of sites representing good status boundaries	Final draft from steering group integrating reports from GIGs	Meeting June 06: - Intercalibration report including EQR boundary values agreed by WG A to be submitted to SCG and WFD Committee.
June-Dec 06	Agreement by SCG, WFD Committee Translation Formal agreement by WFD Committee		
Dec 06	Final Intercalibration Report published		

Table 4.2 - Summary of milestones for the work in the GIGs d the intercalibration process

		Reporting date	WG A meeting date
M1	Report of progress to WG A: - Composition and co-ordination - First suggestions re. Options - First results if pilot work	7-8 July 2004	7-8 July 2004
M2	Preparation GIG work plan: - Proposed option(s) - Proposed common metrics (if applicable), identify needs for new data collection - First proposal boundary setting procedure - Outline of timetable	17 Sept 2004	7-8 Oct 2004
M3	Report GIG progress - First report of boundary setting procedure (using internet reporting structure) (including principles to set reference conditions)[30] - Overview of data requirements	2 weeks before WG A meeting	March 2005
M4	Progress report: - Report on ongoing application of boundary setting procedure (using internet reporting structure) - Identification of intercalibration sites representing agreed class boundaries	2 weeks before WG A meeting	October 2005
M5	Report GIG progress - Report on ongoing application of boundary setting procedure (using internet reporting structure) - Identification of inconsistencies within the GIG	2 weeks before WG A meeting	February 2006
M6	Type-specific reports including EQR boundary values and identification of sites representing good status boundaries	2 weeks before WG A meeting	June 2006

[30] For this first report GIGs may choose to focus on specific common intercalibration types, pressures and/or quality elements

Annex I. Framework for deriving class boundary values consistent with the WFD normative definitions

[To be implemented iteratively with the expert groups at water category or GIG level]

The table below sets out a procedure designed to ensure that, if applied correctly, the good status boundary EQR values established for an assessment method will be consistent with the WFD Annex V normative definitions. The procedure relies on the establishment of data illustrating the degradation of biological quality element for a common intercalibration type.

GIGs are expected to apply this boundary setting procedure for each of the common intercalibration types, and to report how they have applied the different steps to WG A on a regular basis. The steps do not necessarily need to be completed in the order indicated. It should be rather thought of as an iterative process. However, GIGs should complete all steps before the end of the intercalibration exercise (2006),

Outline components of a boundary setting procedure	
1. Describe type-specific reference conditions for biological quality elements	*Reference conditions are the starting point of WFD classification. Agreement on reference conditions for the common intercalibration type is a requirement for intercalibration of the classification outcome. GIGs should describe a procedure and criteria for deriving reference conditions, and apply this to their common intercalibration types.* *A comparison of Member States views on what very minor disturbance means in practice is likely to highlight any potentially significant differences between Member States view of the class boundaries*
2. Agree rules for deriving high-good boundary for biological quality element consistent with the normative definitions	*An explicit description of what constitutes a 'slight deviation from reference conditions' should be given.* *Intercalibration requires agreement on the way the high-good biological boundary value is derived[31]. This may include a relation to the physico-chemical and hydromorphological conditions.* *A comparison of Member States' approaches should highlight any potentially significant differences*
3. Establish a data set illustrating reference conditions and the degradation of the biological quality element along a pressure gradient[32]	*The ecological status classes represent different degrees of degradation from reference conditions in the condition of biological quality elements. Data about on the degradation path is needed to interpret and illustrate the normative definitions.* *The description of the degradation path should be relatable to the criteria specified in the normative definitions. The descriptions should be in terms of metrics derived from the*

[31] If a spatial network of reference sites is used to quantify reference conditions and/or class boundaries using statistical criteria, the criteria used to select sites for this reference network should be specified (e.g. pressure criteria, 'best available, etc.)
[32] Using common metrics (Option 1-2) or Member State's assessment methods (Option 3)
[33] The pressure gradient does not need to be quantified – although it would be useful for the purposes of checking comparability if it was

	basic biological data. The pressure gradient itself should preferably be quantified in relation to the biological changes, since this is necessary to arrive at certain pressure reductions required to reach good status for the biological element[33]
4. Describe criteria for good status and moderate status classes derived from the normative definitions and related to the way in which the quality element degrades from reference conditions with increasing pressure	*Boundary setting has to be based on a common understanding of what the normative definitions of high, good and moderate class mean in the context of each intercalibration type/quality element/pressure combination.*
5. Method/criteria used to derive good-moderate status boundary values	*The criteria developed in point 4 may be translated into a framework of rules for setting boundaries – the final component of the boundary setting procedure*
6. Apply the criteria to the data set(s) established in step 3 and establish EQR values for the high-good and the good-moderate ecological status boundaries	*The outcome of the boundary setting procedure is reference values and good status boundary EQR values established consistent with the WFD normative definitions.*

Annex II: List of Geographical Intercalibration Groups (GIGs)

Informal GIG co-ordinator(s) (Steering Group members for Central Lakes and River GIGs) indicated in **bold**

Geographical Intercalibration Groups

1) Rivers

Name of the GIG	Countries comprising rivers GIGs
Northern	Finland Ireland Norway **Sweden** United Kingdom
Central/Baltic	Austria Belgium Czech Republic Denmark Estonia **France** **Germany** Ireland Italy Latvia Lithuania Luxemburg Netherlands Poland Spain Sweden **United Kingdom**
Alpine	**Austria** France Germany Italy Slovenia Spain
Eastern Continental **(ICPDR)**	Austria Bulgaria Czech Republic Greece Hungary Romania Slovakia

Mediterranean	Cyprus France Greece Italy Malta **Portugal** Spain

2) Lakes

Name of the GIG	Member States comprising lakes GIGs
Northern	Finland Ireland Norway **Sweden** United Kingdom
Central/Baltic	Belgium **Denmark** Estonia France Germany Hungary Latvia Lithuania **Netherlands** **Poland** **United Kingdom**
Atlantic	**Ireland** Portugal Spain United Kingdom
Alpine	**Austria** France Germany Italy Slovenia
Mediterranean	Cyprus France Greece Italy Malta Portugal Romania **Spain**

3) Transitional and coastal waters

Name of the GIG	Member States comprising coastal GIGs

Baltic	Denmark Estonia Finland Germany Latvia Lithuania Poland Sweden
North-East Atlantic	Belgium Denmark France Germany Ireland Netherlands Norway Portugal Spain Sweden **United Kingdom**
Mediterranean	Cyprus France Greece Italy Malta Slovenia Spain
Black Sea	Bulgaria **Romania**

Annex III: Example of a hybrid intercalibration option

An example of a hybrid intercalibration approach is given in Figure III.1. In this approach boundaries are initially set by the Member State (as in Option 3), then compared to a common metric (as in Option 2), and harmonised where necessary). Common metrics enable a GIG-wide comparison of classification results. Several river GIGs identified this as the most promising option, and tested it in the autumn of 2004. For this approach to be successful it is essential that there is agreement within the GIG on criteria to derive reference conditions.

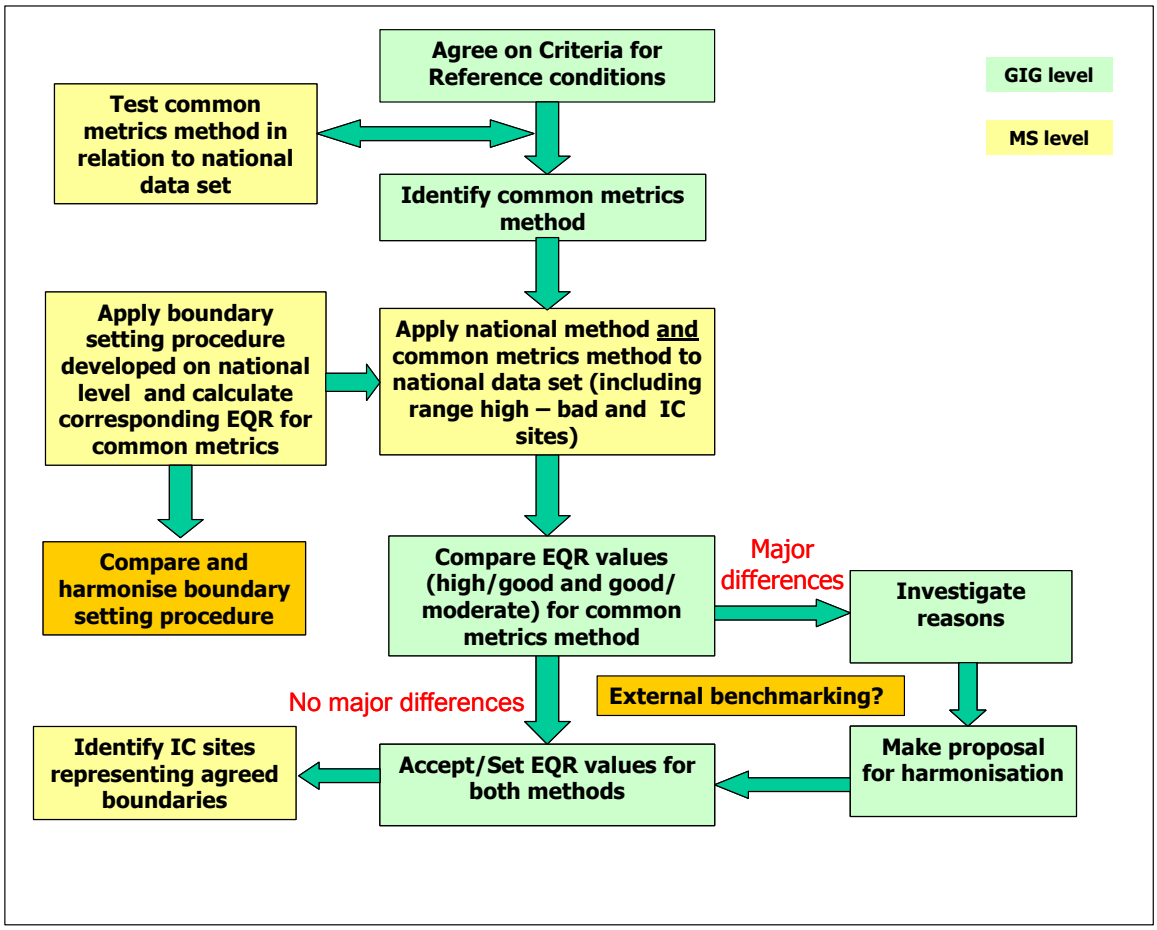


Figure III.1: Example of a hybrid intercalibration approach, combining elements of Options 2 and 3.

In this approach it is not necessary to compile a single data set at the GIG level, avoiding the problem of collating data from different countries applying different methods. Instead, Member States apply a common metric to their own data sets, and compare this to their national assessment results. This approach is especially suitable in cases where Member States have relatively well-developed assessment methods in place at the start of the intercalibration exercise (e.g. macroinvertebrate assessment methods for rivers), and where a robust common metric is available. This procedure is undergoing testing in the Alpine, Mediterranean, and Central/Baltic river GIGs, with very promising results.

Because initially the class boundary setting procedure is only applied by Member States using their own data and methods, it will be necessary to compare and harmonise the different steps of the class boundary setting procedure within the GIG. If the comparison of Member State's classification

results using the common metric show that there are no major differences between countries this should be a relatively trivial task; if there are major differences that cannot be resolved within the GIG it may be necessary to directly apply the class boundary setting procedure to a benchmarking data set (best available classification)

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