# Reporting at groundwater body level (schema GWB)

## Overview of the structure of the 2016 reporting contents

Reporting at groundwater body level is done for each RBD. For the purpose of presentation in this guidance, the contents of reporting are structured according to the following sub-chapters:

* Groundwater body characterisation
* Pressures and impacts on groundwater bodies
* Quantitative status of groundwater bodies
* Chemical status of groundwater bodies

The following sections describe the contents of reporting. The UML diagram of the GWB schema is found in Annex 10.3.

## Characterisation of groundwater

### Introduction

Article 5 and Annex II of the WFD requires Member States to identify the location and boundaries of groundwater bodies.

### How will the European Commission and the EEA use the information reported?

The European Commission will use the information provided on the level of subdivision of groundwater to ensure that this is adequate to describe the status of groundwater bodies. The information will also be used to assess whether and how Member States have implemented the key obligations of the WFD. Statistics and information will be provided to the European Parliament at EU level. Information will be provided to the public through WISE.

#### Products from reporting

The following products will be produced by the European Commission or the EEA from the data and information reported by Member States

| **Nb** | **Name of product** | **Type of product** | **Scale of information\*** | **Detailed information displayed** | **Source of detailed information and aggregation rule** | **Used in 2012 reports?\*** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | **Number and average size of groundwater bodies** | Table | EU/MS/ RBD/SU | Number and size (area) of groundwater bodies.Total area of groundwater bodies.Average size of groundwater bodies. | Average: sum of area of all groundwater bodies divided by the number of groundwater bodies.Aggregation on the basis of the information reported at water body level. | SWD pg 71EEA1 pg 19WISE WFD database |
| 2 | **Spatial reference layer of groundwater bodies** | Spatial dataset | WB | Mapping of all groundwater bodies. | Spatial dataset including all groundwater bodies. | Yes |

**Notes:** \* Scale of information: EU = European; MS = National, Member State; RBD = River Basin District; SU = Sub-unit; WB = water body

### Contents of 2016 reporting

#### Schema sketch

See Annex 10.3.

#### Information and data to be reported using the schemas

Information regarding the delineation and characterisation of groundwater bodies should be reported at groundwater body level according to the schema GWB.

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| **Schema: GWB** |
| ***Class: GroundWaterBody******Properties:*** *maxOccur: unbounded minOccur: 1* |
| **Schema element**:euGroundWaterBodyCode**Field type / facets:** FeatureUniqueEUCodeType**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Unique EU code of the groundwater body. Prefix the groundwater body’s national, unique code with the Member State’s 2-alpha character ISO country code[[1]](#footnote-1).**Quality checks**: Element check: First 2 characters must be Member State’s 2-alpha character ISO country code. Within-schema check: euGroundWaterBodyCode must be unique. |
| **Schema element**:groundwaterBodyName**Field type / facets:** String250Type**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Readily understandable name of the groundwater body in English that is meaningful outside of the RBD or Member State.  |
| **Schema element**:layered **Field type / facets:** YesNoNoInformation\_Union\_Enum: Yes, No, No information**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether the groundwater body is layered. |
| **Schema element**:linkSurfaceWaterBody**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties:** maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether the groundwater body is associated with one or more surface water bodies. |
| **Schema element**:linkSurfaceWaterBodyCode**Field type / facets:** FeatureUniqueEUCodeType**Properties**: maxOccurs =unbounded minOccurs = 0**Guidance on completion of schema element**: Conditional. If the groundwater body is associated with one or more surface water bodies, report the surface water body codes of the associated surface water bodies. **Quality checks**: Element check: First 2 characters must be the Member State’s 2-alpha character ISO country code. Conditional check: Report if linkSurfaceWaterBodies is ‘Yes’. Cross-schema check: The reported linkSurfaceWaterBodiesCodes must be consistent with the codes reported in SWB/SurfaceWaterBody/euSurfaceWaterBodyCode. |
| **Schema element**:linkTerrestrialEcosystem**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties:** maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether a terrestrial ecosystem is directly dependent on the groundwater body.In order for terrestrial ecosystems to be considered as part of the classification for groundwater bodies, they need to be ‘directly dependent’ on the groundwater body. This means that the groundwater body should provide quantity (flow, level) or quality of water needed to sustain the ecosystems which are the reasons for the significance of the groundwater dependent terrestrial ecosystem. This critical dependence upon a groundwater body is most likely to occur where groundwater supplies the groundwater dependent terrestrial ecosystem for a significant part of, or a significant time period during, the year. For more information see Technical Report No. 6 Technical Report on Groundwater - Dependent Terrestrial Ecosystems[[2]](#footnote-2). |
| **Schema element**:geologicalFormation**Field type / facets:** GeologicalFormation\_Enum:Porous - highly productivePorous - moderately productiveFissured aquifers including karst - highly productiveFissured aquifers including karst - moderately productiveFractured aquifers - highly productiveFractured aquifers - moderately productiveInsignificant aquifers - local and limited groundwaterNot availableUnknown**Properties:** maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Describe the main geological formation of the aquifer type. |
| **Schema element**:groundwaterBodyTransboundary**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties:** maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required.The Directive requires coordination among Member States for the management of transboundary Water Bodies. Transboundary water bodies are those crossing the border between countries or constituting part of the border between two countries for a certain length. For reporting purposes in the case of water bodies that cross the border between countries, and for the sake of clarity, each Member State should report on its own part of these trans-boundary Water Bodies. Geographic information should therefore be provided for the part of the Water Body within the reporting Member State and likewise for all elements which have a clear geographical reference (e.g. size, monitoring stations). Each Member State should also report on all elements that apply to the whole water body (status, pressures, etc). For the latter the Commission expects that the information provided by each of the Member States concerned will be identical, as a result of the coordinated management required by the Directive. |
| **Schema element**: gwAssociatedProtectedArea**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether the groundwater body is associated to any protected area. |

#### GIS information

GIS information should be reported in GML file format (see Annex 5 for further information) for **all groundwater bodies**, not just those larger than 100 km2 as was the case in 2010.

For further information and specifications on the reporting of GIS data please refer to Annex 5 (GIS guidance).

## Pressures and impacts on groundwater

### Introduction

Article 5 of the WFD requires Member States to identify the significant pressures present in the RBD likely to cause groundwater bodies to be of less than good status. It also requires Member States to assess the impacts on groundwater bodies to support the determination of status.

See section on pressures and impacts for surface water bodies for further background information.

### How will the European Commission and the EEA use the information reported?

The purpose of the collection of the information is to identify the main pressures within the RBD. The summary information will be used to compile maps at a European level of relevant pressures and to ensure that relevant pressures have been identified at RBD level. Statistics and information will be provided to the European Parliament at EU wide level. Information will be provided to the public through WISE.

#### Products from reporting

| **Nb** | **Name of product** | **Type of product** | **Scale of information\*** | **Detailed information displayed** | **Source of detailed information and aggregation rule** | **Used in 2012 reports?\*** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Significant pressures affecting groundwater bodies of poor status | Chart | EU/MS/ RBD/SU | Pressures affecting groundwater bodies of poor quantitative status. | Aggregation on the basis of the information reported at water body level. | Yes |
| 2 | Pollutants causing risk / TV exceedance / poor status | Table | EU/MS/ RBD/SU | Pollutants causing risk in groundwater bodies. | Aggregation on the basis of the information reported at water body level. | No |

### Contents of 2016 reporting

#### Schema sketch

See Annex 10.3.

#### Information and data to be reported using the schemas

Information regarding the pressures and impacts on groundwater bodies should be reported at groundwater body level according to the schema GWB.

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| **Schema: GWB (continued)** |
| ***Class: GroundWaterBody (Continued)******Properties:*** *maxOccur: unbounded minOccur: 1* |
| **Schema element**:gwSignificantPressureType**Field type / facets:** SignificantPressureType\_Enum (see Annex 1a)**Properties:** maxOccurs =unbounded minOccurs = 1**Guidance on completion of schema element**: Required. Indicate the significant pressure type(s) from the enumeration list.If a combination of pressure-driver is not significant on its own but it is in combination with others, select all the relevant pressures of that type that are present which make the overall pressure significant (e.g. if abstraction from industry or agriculture is not relevant on their own but they are relevant in combination, select both).If the quantitative status of the groundwater body is poor, at least one significant pressure type must be reported. The option ‘No significant pressure’ is not valid.If the chemical status of the groundwater body is poor, at least one significant pressure type must be reported. The option ‘No significant pressure’ is not valid.**Quality checks**: Within-schema check: the option ‘No significant pressure’ is not compatible with any other.Within-schema check: If GroundWaterBody/gwQuantitativeStatusValue is ‘3’, at least one significant pressure type must be selected from the enumeration list (can include ‘8 Unknown pressures’). The option ‘No significant pressure’ is not a valid selection. The option ‘Not applicable’ is not valid. |
| **Schema element**:gwSignificantPressureOther**Field type / facets:** String1000Type**Properties**: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If ‘7 – Anthropogenic pressure - Other’ is selected from the enumeration list and reported under gwSignificantPressureType, provide details of any other anthropogenic pressures which are relevant in this element. This element should only be reported if the pressure type is not included in the enumeration list under gwSignificantPressureType. **Quality checks**: Conditional check: Report if ‘7 – Anthropogenic pressure - Other’ is selected from the enumeration list under gwSignificantPressureType. |
| **Schema element**:gwSignificantImpactType**Field type / facets:** SignificantImpactType\_Enum (see Annex 1b) **Properties:** maxOccurs =unbounded minOccurs = 1**Guidance on completion of schema element**: Required. Indicate the impact type(s) from the enumeration list.If the quantitative status of the groundwater body is poor, at least one significant impact type or the option ‘UNKN - Unknown impact type’ must be reported. The option ‘NOSI - No significant impact’ is not valid.If the chemical status of the groundwater body is poor, at least one significant impact type or the option ‘UNKN - Unknown impact type’ must be reported. The option ‘NOSI - No significant impact’ is not valid.**Quality checks**: Within-schema check: the option ‘NOSI - No significant impact’ is not compatible with any other.Within-schema check: If GroundWaterBody/gwQuantitativeStatusValue is ‘3’, at least one significant impact type or the option ‘UNKN - Unknown impact type’ must be selected from the enumeration list. The option ‘NOSI - No significant impact’ is not a valid selection. Within-schema check: If GroundWaterBody/gwChemicalStatusValue is ‘3’, at least one significant impact type or the option ‘UNKN - Unknown impact type’ must be selected from the enumeration list. The option ‘NOSI - No significant impact’ is not a valid selection.The option ’ NOTA - Not applicable’ is not valid. |
| **Schema element**:gwSignificantImpactOther**Field type / facets:** String1000Type**Properties**: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If ’ OTHE - Other significant impact type’ is selected from the enumeration list under gwSignificantImpactType, provide details of any other impact types which are relevant in this element. This element should only be reported if the impact type is not included in the enumeration list under gwSignificantImpactType. **Quality checks**: Conditional check: Report if ’ OTHE - Other significant impact type’ is selected from the enumeration list under gwSignificantImpactType. |

#### Glossary: clarification of terms and reporting requirements

Some Member States which have a large number of groundwater bodies with low pressures **group groundwater bodies** for the assessment of pressures and status. The information reported for the groundwater bodies belonging to a group will therefore be identical.

## Quantitative status of groundwater and exemptions

### Introduction

Annex V and Article 4 of the WFD specify how Member States are to monitor groundwater, and present and report the results of the quantitative status assessment and the methodology used to classify groundwater bodies.

Article 4(4-9) of the WFD allows Member States to extend the deadlines for the achievement of good status or to set other, less stringent objectives under certain specified circumstances. Additional information can be found in the CIS Guidance Document No. 20: Guidance Document on Exemptions to the Environmental Objectives[[3]](#footnote-3) . Article 4(4-9) goes on to require Member States to provide information regarding such extensions or other objectives, and reasons, in the River Basin Management Plans.

### How will the European Commission and the EEA use the information reported?

Key indicators of the level of compliance with the WFD will be the proportion of groundwater bodies in good quantitative status in the RBD or Sub-unit, together with the number of groundwater bodies at risk of failing good quantitative status.

The majority of the data and information reported by Member States will be used for visualisation in maps, graphs and charts, and for providing information to the public through WISE. Furthermore, the data and maps will provide a comparison of current status with the baseline status reported in the first RBMPs (e.g. answering the question: has quantitative status improved since the Programme of Measures required by the WFD was implemented?) This means that the requested data and maps will be essential for trend analyses, for policy development and for the assessment of policy effectiveness.

#### Statistics and information will be provided to the European Parliament at EU level. Information will be provided to the public through WISE.

#### Products from reporting

Note: for all relevant products, information on groundwater bodies will be presented by number of groundwater bodies and by size (area) as well as percentage.

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| --- | --- | --- | --- | --- | --- | --- |
| **Nb** | **Name of product** | **Type of product** | **Scale of information\*** | **Detailed information displayed** | **Source of detailed information and aggregation rule** | **Used in 2012 reports?\*** |
| 1 | **Number, area and percentage of groundwater bodies of good quantitative status and expected improvement** | Table | WB | Number, area and percentage of groundwater bodies of good quantitative status and expected improvement since the first RBMPs. | Aggregation on the basis of the information provided at water body level. | Yes |
| 2 | **Drivers responsible for failure of good quantitative status** | Table | RBD | Number and area of groundwater bodies failing good quantitative status due to each driver.Percentage of groundwater bodies failing good status due to each driver in relation to total number of groundwater bodies failing good status. | Aggregation on the basis of the information on pressures provided at water body level  | It was not possible to produce (drivers were not reported unless linked to pressures reported at detailed level, which was optional) |
| 3 | **Quantitative status of groundwater bodies** | Chart | National | Percentage of groundwater bodies of poor and good quantitative status by area.  | Aggregation on the basis of the information reported at water body level. | No |
| 4 | **Quantitative status of groundwater bodies** | Map | RBD | Percentage of groundwater bodies not achieving good quantitative status by area. | Aggregation on the basis of the information reported at water body level – water bodies with unknown status not included. | Yes |
| 5 | **Aggregation tables: Quantitative and chemical status of groundwater bodies**  | Table | MS/RBD | Number and size (area) of groundwater bodies by quantitative status class. | Aggregation on the basis of the information reported at water body level. | Yes |
| 6 | **Progress in achieving good quantitative status since the first RBMP** | Map/ Chart | MS/RBD | Number, area and percentage of groundwater bodies which have achieved good quantitative status since the first RBMPs. | Aggregation on the basis of the information reported at groundwater body level. | Not relevant in 2010 reporting |
| 7 | **Improvement in quantitative status since the first RBMP**  | Map/ Chart | National/ RBD | Percentage of water bodies which have improved quantitative status since the first RBMP  | Aggregation on the basis of the information reported at water body level. | Not relevant in 2010 reporting |
| 8 | **Reasons behind Article 4(4) exemptions** | Chart | MS | Exemptions reported by Member States to extend the deadline of the achievement of good quantitative status beyond 2015 and reasons given (natural condition, technical feasibility, disproportionate costs or combinations). | Aggregation on the basis of the information reported at water body level. | Yes |
| 9 | **Percentage of groundwater bodies expected to be of good quantitative status in 2015** | Map/ Chart/ Table | EU/MS/ RBD | Number, area and percentage of groundwater bodies expected to be of good quantitative status in 2015. | Aggregation on the basis of the information reported at water body level. | No |

**Notes:** \* Scale of information: EU = European; MS = National, Member State; RBD = River Basin District; SU = Sub-unit; WB = water body

### Contents of the 2016 reporting

#### Schema sketch

See Annex 10.3.

#### Information and data to be reported using the schemas

Information regarding the quantitative status of groundwater bodies should be reported at groundwater body level according to the schema GWB.

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| **Schema: GWB (continued)** |
| ***Class: GroundWaterBody (continued)*** ***Properties:*** *maxOccurs = unbounded minOccurs = 1* |
| **Schema element:** gwAtRiskQuantitative**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Report whether the groundwater body is at risk of failing to be of good quantitative status.Please follow the approach given in the ‘CIS Guidance Document No. 26: Risk assessment and the use of conceptual models’[[4]](#footnote-4). |
| **Schema element**:gwReasonsForRiskQuantitative**Field type / facets:** QuantitativeFailure\_Enum:Water balanceSurface waterGroundwater dependent terrestrial ecosystemsSaline or other intrusion**Properties**: maxOccurs =unbounded minOccurs = 0**Guidance on completion of schema element**: Conditional. If the groundwater body is at risk of failing to be of good quantitative status, select reasons from the enumeration list.‘Water balance’ = Exceedance of available groundwater resource by long-term annual average rate of abstraction that may result in a decrease of groundwater levels.‘Surface water’ = Failure to achieve Environmental Objectives (Article 4 WFD) for associated surface water bodies resulting from anthropogenic water level alteration or change in flow conditions; significant diminution of the status of surface waters resulting from anthropogenic water level alteration or change in flow conditions.‘Groundwater dependent terrestrial ecosystems’ = Significant damage to groundwater dependent terrestrial ecosystems resulting from an anthropogenic water level alteration.‘Saline or other intrusion’ = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.Further guidance can be found in CIS Guidance Document 18: Groundwater Status and Trends Assessment[[5]](#footnote-5).**Quality checks**: Conditional check: Report if gwAtRiskQuantitative is ‘Yes’. |
| **Schema element**:gwEORiskQuantitative**Field type / facets:** GWEORiskQuantitative\_Enum:Uses or functionsSurface waters / terrestrial ecosystemsBoth**Properties**: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If the groundwater body is at risk of failing to be of good quantitative status, select the Environmental Objective related to the risk from the enumeration list.‘Uses or functions’ = The actual or potential legitimate uses or functions of the groundwater body.‘Surface waters / terrestrial ecosystems’ = The relationship between groundwater bodies and the associated surface waters and directly dependent terrestrial ecosystems.**Quality checks**: Conditional check: Report if gwAtRiskQuantitative is ‘Yes’. |
| **Schema element**:gwQuantitativeStatusValue**Field type / facets:** StatusCode\_Enum: 2, 3, U**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate the quantitative status of the groundwater body, based on the most recently assessed status of the groundwater body.‘2’ = Good status.‘3’ = Poor status.‘U’ = Unknown status. |
| **Schema element**:gwQuantitativeReasonsForFailure**Field type / facets:** QuantitativeFailure\_Enum:Water balanceSurface waterGroundwater dependent terrestrial ecosystemsSaline or other intrusion**Properties:** maxOccurs =unbounded minOccurs = 0**Guidance on completion of schema element**: Conditional. If the groundwater body is of poor quantitative status, select reasons from the enumeration list:‘Water balance’ = Exceedance of available groundwater resource by long-term annual average rate of abstraction that may result in a decrease of groundwater levels.‘Surface water’ = Failure to achieve Environmental Objectives (Article 4 WFD) for associated surface water bodies resulting from anthropogenic water level alteration or change in flow conditions; significant diminution of the status of surface waters resulting from anthropogenic water level alteration or change in flow conditions.‘Groundwater dependent terrestrial ecosystems’ = Significant damage to groundwater dependent terrestrial ecosystems resulting from an anthropogenic water level alteration.‘Saline or other intrusion’ = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.Further guidance can be found in CIS Guidance Document 18 on the Groundwater Status and Trends Assessment[[6]](#footnote-6).**Quality checks**: Conditional check: Report if gwQuantitativeStatusValue is ‘3’. |
| **Schema element**:gwQuantitativeAssessmentYear**Field type / facets:** YearRangeType**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Provide the year on which the assessment of status is based. This may be the year that the groundwater body was monitored. In case of grouping this may be the year in which monitoring took place in the groundwater bodies within a group that are used to extrapolate results to non-monitored groundwater bodies within the same group. A period is possible (e.g. 2011--2013). |
| **Schema element**: gwQuantitativeAssessmentConfidence**Field type / facets:** Confidence\_Enum: 0, 1, 2, 3**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate the confidence on the quantitative status assigned.‘0’ = No information.‘1’ = Low confidence (e.g. no monitoring data, or no conceptual model or understanding of the system).‘2’ = Medium confidence (e.g. limited or insufficiently robust monitoring data and expert judgment plays a significant role in assessment of status).‘3’ = High confidence (e.g. good monitoring data, and a good conceptual model or understanding of the system based on information on its natural characteristics and its pressures).The criteria used by Member States to assess confidence vary considerably, but the above examples provide some general guidance.For further information, please see ‘CIS Guidance Document No. 7: Monitoring under the Water Framework Directive’[[7]](#footnote-7) and ‘CIS Guidance Document No. 15: Groundwater monitoring’[[8]](#footnote-8). |
| **Schema element**:gwQuantitativeStatusExpectedGoodIn2015**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties:** maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether it is expected that this groundwater body will achieve good quantitative status by the end of 2015.This may differ from the data reported under gwQuantitativeStatusValue because the assessment of status included in the second RBMP will most likely be based on monitoring data from the period 2010-2014, given that the second RBMP will be prepared in 2014 for public consultation. Therefore, the status communicated in the second RBMP may not necessarily reflect the expected status in 2015. The methodology of this assessment should be clearly explained in the RBMP or background documents (reference reported under classification methodologies). If an Article 4(5) exemption for quantitative status is applied then 'No' should be selected.**Quality checks**: Within-schema check: If gwQuantitativeExemptionType is ‘Article 4(4)...' or Article 4(5)…’, the option ‘No’ must be selected from the enumeration list. |
| **Schema element**:gwQuantitativeStatusExpectedAchievementDate**Field type / facets:** GoodStatus\_Enum:2016--20212022--2027Beyond 2027UnknownLess stringent objectives already achieved**Properties**: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If good quantitative status will not be achieved by 2015 (gwQuantitativeStatusExpectedGoodIn2015 is No), report the date by which it is expected that it will be achieved in full. The methodology of this assessment should be clearly explained in the RBMP or background documents (reference reported under classification methodologies). If good quantitative status will not be achieved by 2015, exemptions should be applied. Please report the date by which it is expected that good quantitative status will be achieved in full, not the date relating to individual exemptions. However, please note the following:Article 4(4) exemptions relate to the extension of deadlines. According to Article 4(4)c of the WFD, postponing the achievement of objectives beyond 2027 is only possible due to natural conditions. If Article 4(5) exemptions apply, report the date by when the less stringent objective is to be achieved. If the less stringent objective has already been achieved then select 'Less stringent objectives already achieved'.If good quantitative status will be achived by 2015 (gwQuantitativeStatusExpectedGoodIn2015is Yes) this element should not be reported.**Quality checks**: Conditional check: Report if gwQuantitativeStatusExpectedGoodIn2015 is ‘No’. Within-schema check: 'Less stringent objectives already achieved' is only a valid entry if 'Article 4(5)…' is reported under gwQuantitativeExemptionType. |
| **Schema element**:gwQuantitativeExemptionType**Field type / facets:** ExemptionType\_Enum (see Annex 8g) **Properties:** maxOccurs =unbounded minOccurs = 1**Guidance on completion of schema element**: Required. Report which type(s) of exemption(s) apply if good quantitative status is not expected to be achieved by 2015. More than one exemption may apply to a groundwater body. **Quality checks**: Within-schema check: 'No exemption' is not compatible with any other option.Within-schema check: if gwQuantitativeStatusExpectedGoodIn2015is ‘No’ then the option 'No exemption' is not possible. One or more of the other options must be selected. |
| **Schema element**:gwQuantitativeExemptionPressure**Field type / facets:**  SignificantPressureType\_Enum (see Annex 1a)**Properties**: maxOccurs =unbounded minOccurs = 0**Guidance on completion of schema element**: Conditional. If any Article 4(4), Article 4(5), Article 4(6) and/or Article 4(7) exemptions apply to this groundwater body for quantitative status, report the significant pressure(s) that are causing failure in order to justify the exemption(s).**Quality checks**: Conditional check: If gwQuantitativeExemptionType is not ‘No exemption’, at least one significant pressure type must be selected from the enumeration list.The options ‘No significant pressure’ and ‘Not applicable’ are not valid. |

## Chemical status of groundwater and exemptions

### Introduction

Annex V of the WFD specifies how Member States are to monitor groundwater and present chemical status classification results. The detailed provisions and criteria for status assessments are laid down in the Groundwater Directive (GWD) (2006/118/EC)[[9]](#footnote-9).

In addition to the reporting requirements of the WFD, the GWD introduces several additional reporting requirements to ensure that groundwater body status has been defined according to its provisions, and in a consistent and comparable way across the EU.

Both the WFD and GWD require that the results of the chemical status assessment and the methodology used to classify groundwater bodies are reported. The requirements are laid down in WFD Annex V, GWD Article 4, and Annex III (reporting requirements in GWD Article 4.4 and Annex III point 5).

Articles 4(4) to 4(9) of the WFD allow Member States to extend the deadlines for the achievement of good status or to set other objectives under certain specified circumstances. Additional information can be found in the CIS Guidance Document No. 20: Exemptions to the Environmental Objectives[[10]](#footnote-10) agreed in 2005.

Articles 4(4) to 4(9) go on to require Member States to provide information in the RBMP regarding such extensions or other objectives and their reasons.

### How will the European Commission and the EEA use the information reported?

The information reported by Member States will be used to establish the key indicator on the proportion of groundwater bodies of good chemical status in the River Basin District or Sub-unit, together with the number of groundwater bodies at risk of not achieving good chemical status. The majority of the reported information will be used for visualisation purposes and for providing information to the public through WISE. Furthermore, the data and maps will provide a comparison of current status with the baseline status reported in the first RBMP enabling the question ‘how has the water quality improved since the Programme of Measures required by the WFD was implemented?’ to be answered. This means that the requested data and maps will be essential for trend analysis, for policy development and for the assessment of policy effectiveness.

#### Statistics and information will be provided to the European Parliament at EU level. Information will be provided to the public through WISE.

#### Products from reporting

Note: for all relevant products, information on groundwater bodies will be presented by number of groundwater bodies and by size (area) as well as percentage.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Nb** | **Name of product** | **Type of product** | **Scale of information\*** | **Detailed information displayed** | **Source of detailed information and aggregation rule** | **Used in 2012 reports?\*** |
| 1 | **Number, area and percentage of groundwater bodies of good chemical status and expected improvement** | Table | WB | Number, area and percentage of groundwater bodies of good chemical status and expected improvement since the first RBMPs. | Aggregation on the basis of the information provided at water body level. | Yes |
| 2 | **Drivers responsible for failure of good chemical status** | Table | RBD/SU | Number and area of groundwater bodies failing good chemical status due to each driver.Percentage of groundwater bodies failing good chemical status due to each driver in relation to total number of groundwater bodies failing good status. | Aggregation on the basis of the information on pressures provided at water body level. | It was not possible to produce (drivers were not reported unless linked to pressures reported at detailed level, which was optional) |
| 3 | **Chemical status of groundwater bodies** | Chart | MS | Percentage of groundwater bodies of poor and good chemical status by area.  | Aggregation on the basis of the information reported at water body level – water bodies with unknown status not included | Yes |
| 4 | **Chemical status of groundwater bodies** | Map | RBD | Percentage of groundwater area not achieving good chemical status. | Aggregation on the basis of the information reported at water body level – water bodies with unknown status not included. | Yes |
| 5 | **Percentage of groundwater bodies not achieving good chemical status due to nitrate** | Map | RBD | Percentage of groundwater body area not achieving good chemical status due to nitrate | Aggregation on the basis of the information reported at water body level – water bodies with unknown status not included. | Yes |
| 6 | **Aggregation tables: Quantitative and chemical status of groundwater bodies**  | Table | MS/ RBD/SU | Number and size (area) of groundwater bodies by chemical status class. | Aggregation on the basis of the information reported at water body level. | Yes |
| 7 | **Progress in achieving good chemical status since the first RBMP** | Map/ Chart | MS/ RBD/SU | Number, area and percentage of water bodies which have achieved good chemical status since the first RBMPs. | Aggregation on the basis of the information reported at water body level. | Not relevant in 2010 reporting |
| 8 | **Improvement in chemical status since the first RBMP**  | Map/ Chart | MS/ RBD/SU | Percentage of water bodies which have improved status since the first RBMP  | Aggregation on the basis of the information reported at water body level. | Not relevant in 2010 reporting |
| 9 | **Reasons behind Article 4(4) exemptions** | Chart | MS | Exemptions reported by Member States to extend the deadline of the achievement of good status beyond 2015 and reasons given (natural condition, technical feasibility, disproportionate costs or combinations). | Aggregation on the basis of the information reported at water body level. | No |
| 10 | **Instances where Article 4(2)c of the Groundwater Directive has been applied** | Chart | MS/ RBD/SU | Number of groundwater bodies in which exceedances of quality standards and/or threshold values do not result in a failure of good chemical status | Aggregation on the basis of the information reported at water body level. | No |
| 11 | **Percentage of groundwater bodies expected to be of good chemical status in 2015** | Map/ Chart/ Table | EU/MS/RBD/SU | Number, area and percentage of groundwater bodies expected to be of good chemical status in 2015. | Aggregation on the basis of the information reported at water body level. | No |
| 12 | **Percentage of groundwater bodies at risk** | Map/ Chart/ Table | EU/MS/RBD/ SU | Percentage of groundwater bodies at risk. | Aggregation on the basis of the information reported at water body level. | No |
| 13 | **Percentage of groundwater bodies subject to an environmentally significant and sustained anthropogenically induced upward trend** | Map/ Chart/ Table | EU/MS/RBD/ SU | Percentage of groundwater bodies showing a significant and sustained anthropogenically induced upward trend | Aggregation on the basis of the information reported at water body level. | No |

**Notes:** \* Scale of information: EU = European; MS = National, Member State; RBD = River Basin District; SU = Sub-unit; WB = water body; Site = monitoring site

### Proposed contents of the 2016 reporting

#### Schema sketch

See Annex 10.3.

#### Information and data to be reported using the schemas

Information regarding the chemical status of groundwater bodies should be reported at groundwater body level according to the schema GWB.

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| **Schema: GWB (continued)** |
| ***Class: GroundWaterBody (continued)******Properties:*** *maxOccurs = unbounded minOccurs = 1* |
| **Schema element**: gwAtRiskChemical**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Report whether the groundwater body is at risk of failing to be of good chemical status.Please follow the approach given in the ‘CIS Guidance Document No. 26: Risk assessment and the use of conceptual models’[[11]](#footnote-11). |
| **Schema element**:gwEORiskChemical**Field type / facets:** EQORiskChemical\_Enum: Uses or functionsSurface waters / terrestrial ecosystemsBoth**Properties**: maxOccurs =1 minOccurs = 0 **Guidance on completion of schema element**: Conditional. If the groundwater body is at risk of failing to be of good chemical status, select the Environmental Objective to which the risk is related from the enumeration list:‘Uses or functions’ = The actual or potential legitimate uses or functions of the groundwater body.‘Surface waters / terrestrial ecosystems’ = The relationship between groundwater bodies and the associated surface waters and directly dependent terrestrial ecosystems.‘Both’ = Both.Further guidance can be found in CIS Guidance Document 18: Groundwater Status and Trends Assessment[[12]](#footnote-12).**Quality checks:** Conditional check: Report if gwAtRiskChemical is ‘Yes’. |
| **Schema element**:gwChemicalStatusValue**Field type / facets:** StatusCode\_Enum: 2, 3, U**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate the chemical status of the groundwater body, based on the most recently assessed status of the groundwater body.‘2’ = Good status.‘3’ = Poor status.‘U’ = Unknown status.  |
| **Schema element**:gwChemicalReasonsForFailure**Field type / facets:** ReasonsForFailure\_Enum:Surface waterGroundwater dependent terrestrial ecosystemsSaline or other intrusionDrinking Water Protected AreaGeneral water quality assessment**Properties**: maxOccurs =unbounded minOccurs = 0**Guidance on completion of schema element**: Conditional. If the groundwater body is of poor chemical status, select reasons from the enumeration list:‘Surface water’ = Failure to achieve Environmental Objectives (Article 4 WFD) in associated surface water bodies or significant diminution of the ecological or chemical status of such surface water bodies.‘Groundwater dependent terrestrial ecosystems’ = Significant damage to terrestrial ecosystems which depend directly on the groundwater body.‘Saline or other intrusion’ = Regional saline or other intrusions resulting from anthropogenically induced sustained changes in flow direction.‘Drinking Water Protected Area’ = Deterioration in quality of waters for human consumption.‘General water quality assessment’ = Significant impairment of human uses; significant environmental risk from pollutants across the groundwater body.Further guidance can be found in CIS Guidance Document 18 on the Groundwater Status and Trends Assessment[[13]](#footnote-13).**Quality checks**: Conditional check: Report if gwChemicalStatusValue is ‘3’. |
| **Schema element**:gwChemicalAssessmentYear**Field type / facets:** YearRangeType**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Provide the year on which the assessment of status is based. This may be the year that the groundwater body was monitored. In case of grouping this may be the year in which monitoring took place in the surface water bodies within a group that are used to extrapolate results to non-monitored groundwater bodies within the same group. A period is possible (e.g. 2011--2013).  |
| **Schema element**: gwChemicalAssessmentConfidence**Field type / facets:** Confidence\_Enum: 0, 1, 2, 3**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate the confidence on the chemical status assigned.‘0’ = No information.‘1’ = Low confidence (e.g. no monitoring data, or no conceptual model or understanding of the system).‘2’ = Medium confidence (e.g. limited or insufficiently robust monitoring data and expert judgment plays a significant role in assessment of status).‘3’ = High confidence (e.g. good monitoring data, and a good conceptual model or understanding of the system based on information on its natural characteristics and its pressures).The criteria used by Member States to assess confidence vary considerably, but the above examples provide some general guidance.For further information, please see ‘CIS Guidance Document No. 7: Monitoring under the Water Framework Directive’[[14]](#footnote-14) and ‘CIS Guidance Document No. 15: Groundwater monitoring’[[15]](#footnote-15).  |
| **Schema element**:gwChemicalStatusExpectedGoodIn2015**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether it is expected that this groundwater body will achieve good chemical status by the end of 2015.This may differ from the data reported under GWChemicalStatusValue because the assessment of status contained in the RBMP will most likely be based on monitoring data from the period 2010-2014, given that the RBMP will be prepared in 2014 for public consultation. Therefore, the status communicated in the second RBMP may not necessarily reflect the expected status in 2015. Methodology of this assessment should be clearly explained in background documents (reference reported under classification methodologies).If an Article 4(4) or Article 4(5) exemption for chemical status is applied then 'No' should be selected.**Quality checks**: Within-schema check: If gwChemicalExemptionType is ‘Article 4(4)...' or 'Article 4(5)…’ , the option ‘No’ must be selected from the enumeration list. |
| **Schema element**:gwChemicalStatusExpectedAchievementDate**Field type / facets:** GoodStatus\_Enum:2016--20212022--2027Beyond 2027UnknownLess stringent objectives already achieved**Properties**: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If good chemical status will NOT be achieved by 2015 (gwChemicalStatusExpectedGoodIn2015 is No), report the date by which it is expected that it will be achieved in full. The methodology of this assessment should be clearly explained in the RBMP or background documents (reference reported under classification methodologies). If good chemical status will not be achieved by 2015, exemptions should be applied. Please report the date by which it is expected that good chemical status will be achieved in full, not the date relating to individual exemptions. However, please note the following:Article 4(4) exemptions relate to the extension of deadlines. According to Article 4(4)c of the WFD, postponing the achievement of objectives beyond 2027 is only possible due to natural conditions.If Article 4(5) exemptions apply, report the date by when the less stringent objective is to be achieved. If the less stringent objective has already been achieved then select 'Less stringent objectives already achieved'.**Quality checks**: Conditional check: report if gwChemicalStatusExpectedGoodIn2015 is ‘No’. Within-schema check: 'Less stringent objectives already achieved' is only a valid entry if 'Article 4(5)…' is reported under gwChemicalExemptionType. |

The following class (child of GroundWaterBody) is used to report information about relevant pollutants at water body level. Report all pollutants and indicators for which one or more of the following circumstances occur in the relevant water body:

* The pollutant or indicator is causing risk of failure of chemical status (element gwPollutantCausingRisk)
* The pollutant or indicator is causing failure of chemical status due to exceedance of the relevant EQS or threshold value (element gwPollutantCausingFailure)
* The pollutant or indicator is showing an upward trend (element gwPollutantUpwardTrend )
* The pollutant or indicator is showing a trend reversal (element gwPollutantTrendReversal )
* The pollutant or indicator is showing exceedance(s) of the EQS or threshold value but after an appropriate investigation according to Article 4(2)(c) and Annex III of the Groundwater Directive the Member States considers that this does not result in a failure of chemical status (element gwPollutantExcedancesNotCounted)
* Background levels have been set for the pollutant or indicator (elements gwPollutantBackgroundLevelSet, gwPollutantBackgroundLevelValue and gwPollutantBackgroundLevelUnit)

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| **Schema: GWB** |
| ***Class: GWPollutant******Properties****: maxOccurs =unbounded minOccurs = 0* |
| **Schema element:** gwPollutantCode**Field type / facets**: ChemicalSubstances\_Union\_Enum (see Annex 8e)**Properties**: maxOccurs = 1 minOccurs = 1**Guidance on completion of schema element**: Required[[16]](#footnote-16). Select each pollutant and indicator for which one or more of the following circumstances occur in the relevant water body:* The pollutant or indicator is causing risk of failure of chemical status (element gwPollutantCausingRisk)
* The pollutant or indicator is causing failure of chemical status due to exceedance of the relevant EQS or threshold value (element gwPollutantCausingFailure)
* The pollutant or indicator is showing an upward trend (element gwPollutantUpwardTrend)
* The pollutant or indicator is showing a trend reversal (element gwPollutantTrendReversal)
* The pollutant or indicator is showing exceedance(s) of the EQS or threshold value but after an appropriate investigation according to Article 4(2)(c) and Annex III of the Groundwater Directive the Member States considers that this does not result in a failure of chemical status (element gwPollutantExcedancesNotCounted)
* Background levels have been set for the pollutant or indicator (elements gwPollutantBackgroundLevelSet, gwPollutantBackgroundLevelValue and gwPollutantBackgroundLevelUnit)
 |
| **Schema element:** gwPollutantOther**Field type / facets**: string250Type**Properties**: maxOccurs = 1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If ‘gwPollutantCode’ is ‘EEA\_00-00-0 Other chemical parameter’ please indicate in this field the CAS number (if relevant) and the name of the pollutant or indicator.**Quality check**: Conditional check: report if ‘gwPollutantCode’ is ‘EEA\_00-00-0 Other chemical parameter’.  |
| **Schema element**: gwPollutantCausingRisk**Field type / facets:** YesNoUnknownUnclear\_Union\_Enum: Yes, No, Unknown/unclear **Properties:** maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate if the pollutant or indicator is casing risk of failing to be of good chemical status in the relevant water body.**Quality checks**: If gwAtRiskChemical is ‘Yes’ then at least one pollutant or indicator should be reported as ‘Yes’ in gwPollutantCausingRisk. |
| **Schema element**:gwPollutantCausingFailure**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate if the pollutant or indicator is causing failure to achieve good chemical status. **Quality checks**: If ‘gwChemicalStatusValue’ is ‘3’ at least 1 pollutant or indicator should be reported as ‘Yes’ in ‘gwPollutantCausingFailure’. |
| **Schema element**: gwPollutantUpwardTrend**Field type / facets:** YesNoUnknownUnclear\_Union\_Enum: Yes, No, Unknown/unclear**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element:** Required. Indicate whether there is a significant and sustained upward trend in the concentration of pollutant(s) or indicator(s) of pollution. |
| **Schema element**: gwPollutantTrendReversal**Field type / facets:** YesNoUnknownNotApplicableCode\_Enum: Yes, No, Unknown, Not applicable **Properties**: maxOccurs =1 minOccurs = 1 **Guidance on completion of schema element**: Required. Indicate whether there is a trend reversal in the concentration of the pollutant(s) or indicator(s) of pollution. **Quality checks:** Within-schema check: the option 'Not applicable' is only valid if the element 'upwardTrend' is 'No'. |
| **Schema element**:gwPollutantsExceedancesNotCounted**Field type / facets:** YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate if there are exceedances of the pollutant or indicator which are not considered as failures to achieving good chemical status (cases in which Article 4(2)c of the GWD applies). |
| **Schema element:** gwPollutantBackgroundLevelSet**Field type / facets**: YesNoCode\_Enum: Yes, No**Properties**: maxOccurs =1 minOccurs = 1**Guidance on completion of schema element**: Required. Indicate whether a background level of natural substances has been set. |
| **Schema element**:gwPollutantBackgroundLevelValue**Field type / facets:** String100TypeProperties: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If a background level is set, report the numeric value or range of the natural background level. **Quality checks**: Conditional check: report if ‘gwPollutantBackgroundLevelSet’ is ‘Yes’. |
| **Schema element**:gwPollutantBackgroundLevelUnit**Field type / facets:** UnitOfMeasure\_Enum (see Annex 8f)**Properties**: maxOccurs =1 minOccurs = 0**Guidance on completion of schema element**: Conditional. If a background level is set, select the relevant units for the natural background concentrations or levels (the reporting unit of Conductivity is milli Siemens per metre). **Quality checks**: Conditional check: report if ‘gwPollutantBackgroundLevelSet’ is ‘Yes’. |

The following class (child of GWPollutant) is used to report exemptions at pollutant level.

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| **Schema: GWB (continued)** |
| ***Class: GWChemicalExemptionType******Properties****; max Occur: unbounded minOccur: 0**Conditional: report if ‘gwPollutantCausingFailure’ is ‘Yes’.* |
| **Schema element**: gwChemicalExemptionType **Field type / facets:** GWChemicalExemptionType\_Union\_Enum (see Annex 8g) **Properties:** maxOccurs = 1 minOccurs = 1**Guidance on completion of schema element**: Required. Report which type(s) of exemption(s) apply if good chemical status is not expected to be achieved by 2015 for that pollutant or indicator. **Quality checks**:Within-schema check: The option 'No exemption' is not compatible with any other. Therefore, if reported, no more instances of ‘gwChemicalExemptionType’ should be reported. The options ‘Article4(7) - New modification’ and ‘Article4(7) - Sustainable human development’ are not valid for groundwater chemical status and therefore cannot be reported. |
| **Schema element**:gwChemicalExemptionPressure**Field type / facets**: SignificantPressureType\_Enum (see Annex 1a) **Properties:** maxOccurs = unbounded minOccurs = 0**Guidance on completion of schema element**: Conditional. If any GWD Article 6(3) or WFD Article 4(4) or 4(5) exemptions apply to this groundwater body for chemical status, report the significant pressure(s) that are causing failure in order to justify the exemption(s). **Quality checks**:Conditional check: If gwChemicalExemptionType is not ‘No exemption’, at least one significant pressure type must be selected from the enumeration list. The options ‘No significant pressure’ and ‘Not applicable’ are not valid. |

1. Member State’s 2-alpha character ISO country code: <http://publications.europa.eu/code/en/en-370100.htm> (Note: for Greece use ‘EL’ and United Kingdom use ‘UK’) [↑](#footnote-ref-1)
2. <http://bookshop.europa.eu/en/technical-report-on-groundwater-dependent-terrestrial-ecosystems-pbKHAV12006/> [↑](#footnote-ref-2)
3. <https://circabc.europa.eu/sd/a/2a3ec00a-d0e6-405f-bf66-60e212555db1/Guidance_documentN%C2%B020_Mars09.pdf> [↑](#footnote-ref-3)
4. CIS Guidance Document No. 26: Risk assessment and the use of conceptual models: <https://circabc.europa.eu/sd/a/8564a357-0e17-4619-bd76-a54a23fa7885/Guidance%20No%2026%20-%20GW%20risk%20assessment%20and%20conceptual%20models.pdf> [↑](#footnote-ref-4)
5. <https://circabc.europa.eu/sd/a/8564a357-0e17-4619-bd76-a54a23fa7885/Guidance%20No%2026%20-%20GW%20risk%20assessment%20and%20conceptual%20models.pdf> [↑](#footnote-ref-5)
6. <https://circabc.europa.eu/sd/a/8564a357-0e17-4619-bd76-a54a23fa7885/Guidance%20No%2026%20-%20GW%20risk%20assessment%20and%20conceptual%20models.pdf> [↑](#footnote-ref-6)
7. [https://circabc.europa.eu/sd/a/63f7715f-0f45-4955-b7cb-58ca305e42a8/Guidance%20No%207%20-%20Monitoring%20(WG%202.7).pdf](https://circabc.europa.eu/sd/a/63f7715f-0f45-4955-b7cb-58ca305e42a8/Guidance%20No%207%20-%20Monitoring%20%28WG%202.7%29.pdf) [↑](#footnote-ref-7)
8. <https://circabc.europa.eu/sd/a/e409710d-f1c1-4672-9480-e2b9e93f30ad/Groundwater%20Monitoring%20Guidance%20Nov-2006_FINAL-2.pdf> [↑](#footnote-ref-8)
9. **Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration:** <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1410784650720&uri=CELEX:32006L0118> [↑](#footnote-ref-9)
10. CIS Guidance Document No. 20: Exemptions to the Environmental Objectives: <https://circabc.europa.eu/sd/a/2a3ec00a-d0e6-405f-bf66-60e212555db1/Guidance_documentN%C2%B020_Mars09.pdf> [↑](#footnote-ref-10)
11. CIS Guidance Document No. 26: Risk assessment and the use of conceptual models: <https://circabc.europa.eu/sd/a/8564a357-0e17-4619-bd76-a54a23fa7885/Guidance%20No%2026%20-%20GW%20risk%20assessment%20and%20conceptual%20models.pdf> [↑](#footnote-ref-11)
12. <https://circabc.europa.eu/sd/a/8564a357-0e17-4619-bd76-a54a23fa7885/Guidance%20No%2026%20-%20GW%20risk%20assessment%20and%20conceptual%20models.pdf> [↑](#footnote-ref-12)
13. <https://circabc.europa.eu/sd/a/8564a357-0e17-4619-bd76-a54a23fa7885/Guidance%20No%2026%20-%20GW%20risk%20assessment%20and%20conceptual%20models.pdf> [↑](#footnote-ref-13)
14. [https://circabc.europa.eu/sd/a/63f7715f-0f45-4955-b7cb-58ca305e42a8/Guidance%20No%207%20-%20Monitoring%20(WG%202.7).pdf](https://circabc.europa.eu/sd/a/63f7715f-0f45-4955-b7cb-58ca305e42a8/Guidance%20No%207%20-%20Monitoring%20%28WG%202.7%29.pdf) [↑](#footnote-ref-14)
15. <https://circabc.europa.eu/sd/a/e409710d-f1c1-4672-9480-e2b9e93f30ad/Groundwater%20Monitoring%20Guidance%20Nov-2006_FINAL-2.pdf> [↑](#footnote-ref-15)
16. Please note that the multiplicity of the Class GWPollutant is 0 to many. Therefore, if there are no pollutants or indicators to report for the relevant water body, this whole class does not need to be reported. [↑](#footnote-ref-16)