

Support for reporting of Floods Directive

Guidance on reporting of spatial
data

Tools and services for reporting under WISE

Guidance on reporting of spatial data for the Floods Directive

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Document History

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Appendix A.1: Description and specification of metadata elements for the reporting of the geographic information

Glossary of Terms

| Term | Meaning / Definition |
|-------|-------------------------------------|
| EC | European Commission |
| EEA | European Environmental Agency |
| ETC-W | European Topic Centre Water |
| FD | Floods Directive |
| GIS | Geographic Information System |
| GML | Geographic Markup Language |
| GWB | Groundwater body |
| GWD | Groundwater Directive |
| ID | Identifier |
| MS | Member State |
| NMA | National Mapping Agency |
| POM | Programme Of Measures |
| RBD | River Basin District |
| RBMP | River Basin Management Plan |
| SWB | Surface Water Body |
| UOM | Unit Of Management |
| WB | Water Body |
| WFD | Water Framework Directive |
| WISE | Water Information System for Europe |
| XML | Extensible Markup Language |

Quick Start

1. For the Floods Directive reporting the following spatial information updates are expected (see section 8):
 - Units of Management (2010)
 - Preliminary Flood Risk Assessment (2011)
2. Prior to submission it is important that datasets have been evaluated and a quality assessment study carried out. Attention should be paid to alignment across national and international borders for the purpose of producing a harmonised European level dataset (Section 7).
3. Submissions for 2010 reporting are expected as shape files with the file naming convention provided (see section 9).
4. Metadata should be provided with each file (section 10).
5. Submissions as complete datasets should be delivered at national level to ReportNet (see section 9.3). Timetable for submissions can be found in section 1.

1. Introduction

1.1 Units of Management

The Floods Directive (Article 3.2) allows Member States to identify units of management different from the river basin districts used for the Water Framework Directive. Units of management may be individual river basins and/or certain coastal areas, and may be entirely within national borders or may be part of an international unit of management or international river basin district. The Floods Directive requires Member States to communicate to the Commission information on the identification of units of management by 26 May 2010.

Background to the context of GIS in WISE is given in the GIS Guidance document (Section 2).

Reporting sheets was developed to report the geographic information and the thematic information related to Units of Management:

http://circa.europa.eu/Members/irc/env/wfd/library?l=/floods_programme_1/drafting_groups/reporting_grafting/reporting_sheets&vm=detailed&sb=Title

1.2 Preliminary Flood Risk Assessment

Article 4 of the Floods Directive requires Member States to undertake a Preliminary Flood Risk Assessment (PFRA) for each river basin district, unit of management or the portion of an international river basin district or unit of management lying within their territory. The identification of areas with a potential significant flood risk (art. 5) will be based on available or readily derivable information including the requirements specified in the directive (art. 4).

Available or readily derivable information should, where possible, include details of:

- Significant floods that have occurred in the past and their location, extent, conveyance routes and adverse consequences, and other floods that occurred in the past which would have significant adverse consequences if they occurred again;
- Potential adverse consequences of future floods;
- Impacts of climate change and long-term developments on the occurrence of floods; and,
- Other available or readily derivable information, as relevant to the Member State, on issues such as topography, the position of water courses and their general hydrological and geomorphological characteristics, including flood plains as natural retention areas, the effectiveness of existing flood defence infrastructure, and the position of populated areas and areas of economic activity.

Article 5 requires that the PFRA shall be used as the basis for the identification of areas for which Member States conclude that potential significant flood risk (APSF) exist or might be considered likely to occur in the future for each river basin district, unit of management or the portion of an international river basin district or unit of management lying within a Member State's territory.

Member States shall complete the preliminary flood risk assessment by 22 December 2011.

2. Scope

The scope of this paper is to provide a short guidance for the Member States in the preparation and reporting of geographic data under the Floods Directive (FD). This guidance is based on recommendations from the Guidance Document No 22 “Updated Guidance on Implementing the Geographical Information System (GIS) Elements of the EU Water policy”¹.

2.1 FD reporting schemas

Fundamental to the reporting process are the schemas which have been developed from the reporting sheets. All the schemas are available online from EEA’s ReportNet. The reporting schemas are not dealt with in this document. This document deals with the spatial information required for the information reported in some of those schemas. The schemas are available from this web page <http://icm.eionet.europa.eu/schemas/dir200760ec/resources/> along with supporting documentation.

2.2 Related documents

This is ‘Document No.3’ providing support for the FD submission workflow. There are three other documents which provide additional support to the reporting process:

- **Document No.1: Floods Directive reporting - A user manual**
<http://icm.eionet.europa.eu/schemas/dir200760ec/resources/>
- **Document No.2: Schema user guidance**
<http://icm.eionet.europa.eu/schemas/dir200760ec/resources/>

2.3 Getting help

All schemas, tools and supporting documents are available from this web page:

<http://icm.eionet.europa.eu/schemas/dir200760ec/resources/>

If you need assistance on issues not addressed in this User Guidance please contact:

helpdeskFloods@atkinsglobal.com.

3. User requirements

Section 2.1.2 of the GIS Guidance document provides a detailed overview of the role of GIS in reporting in WISE.

¹ Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Guidance Document No 9 “ Updated Guidance on Implementing the Geographical Information System (GIS) Elements of the EU Water policy. 17. November 2008. http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidance-no22-nov08pdf_1/_EN_1.0_&a=d

4. Products

4.1 Maps produced for the WISE viewer

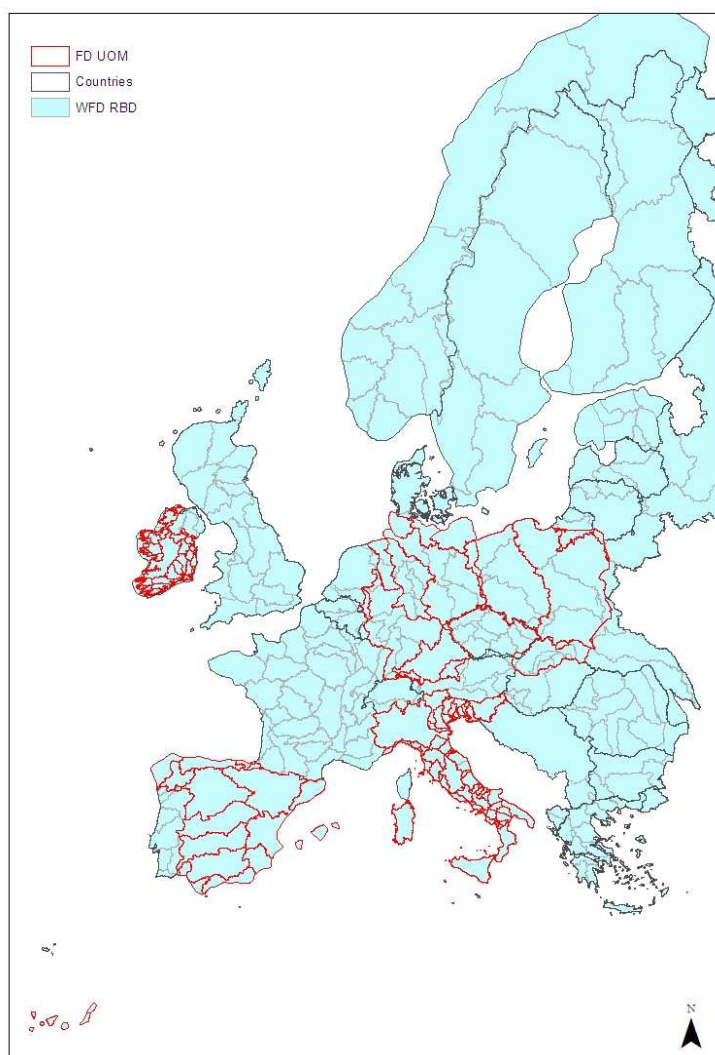
The intention is to disseminate certain aspects of the reported FD data and information via WISE, and where necessary, appropriate and possible, provide links to data and information from other sources such as national flood maps which can provide a higher resolution than WISE which will be more appropriate for flood mapping purposes (larger scale than 1:250.000).

4.1.1 Map of RBDs and UoMs

A European overview map showing the boundaries of RBD and Units of Management (UoM) including the borders of the river basins, sub-basins and, where existing coastal areas, showing topography and land use. At present there is an overview map of WFD RBDs with international RBDs coloured pink and national RBDs green.

The aim would be to present a similar UoMs map relevant to the Floods Directive: colour coded according to whether it is a national or international UoM. Users are able to select individual RBDs (or UoMs where relevant) and zoom into the selected RBD showing main geographic and water related features. For each RBD, there is a tabular presentation of the RBDs statistics such surface area, type of RBD and with links to the designated competent authority.

4.1.1.1 Example 1: WFD River Basin Districts and FD Units of Management in WISE



4.1.1.2 Example 2: FD Units of Management, where smaller UoM are used, visible when zooming in to Italy with WFD RBD



4.1.2 Preliminary Flood Risk Assessment

The Preliminary Flood Risk assessment (as set out in Chapter II of the Directive) shall be made available to the public. A summary of the process will be presented to the public through WISE, including:

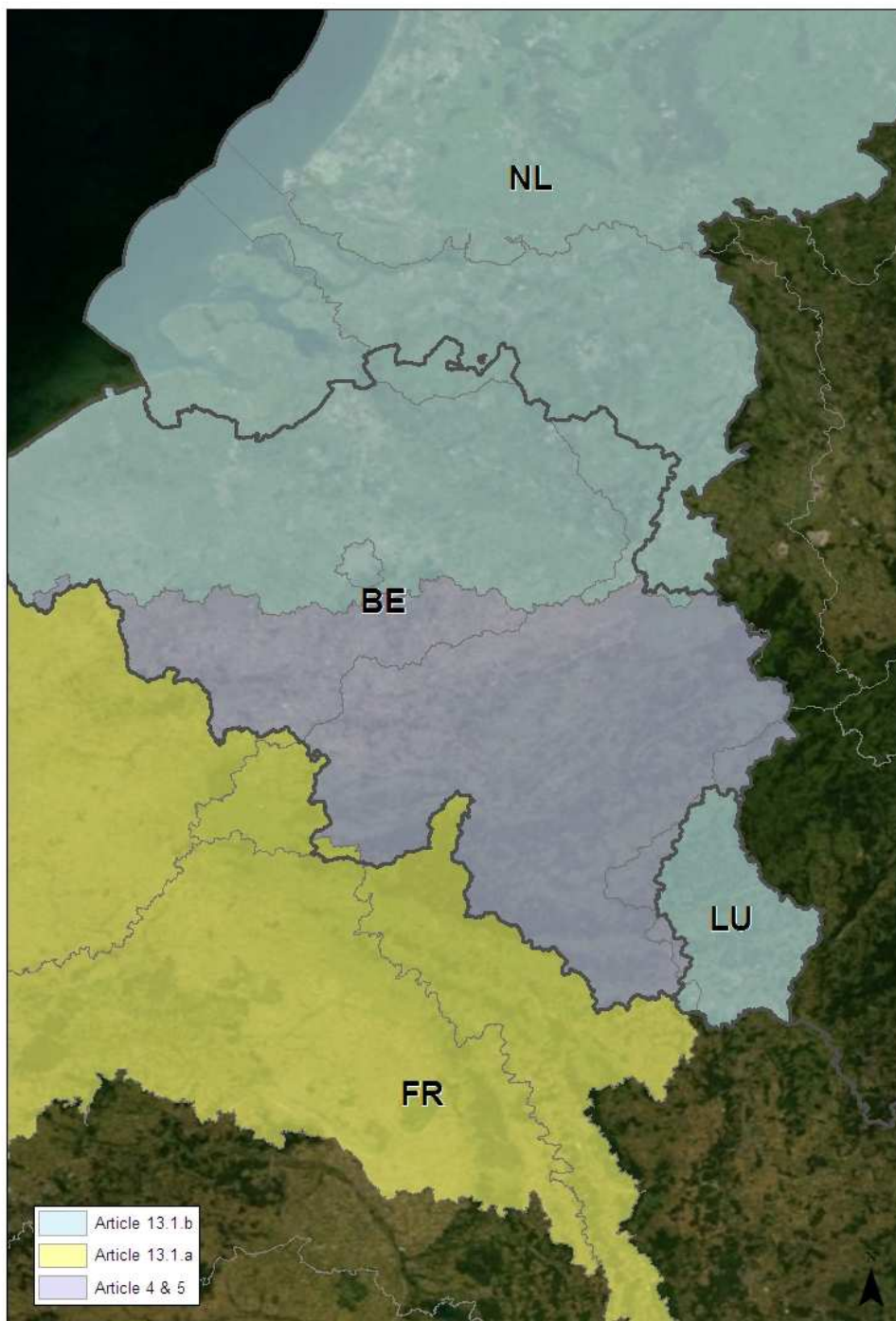
- Maps of the river basin district or unit of management at the appropriate scale including the borders of the river basins, sub-basins and, where existing, coastal areas, showing topography and land use

- Maps showing if articles 4, 5 or 13.1(a) or (b) have been applied and the conclusions of these articles in terms of identification of APSFR or the decision made to proceed to mapping and the production of flood risk management plans,

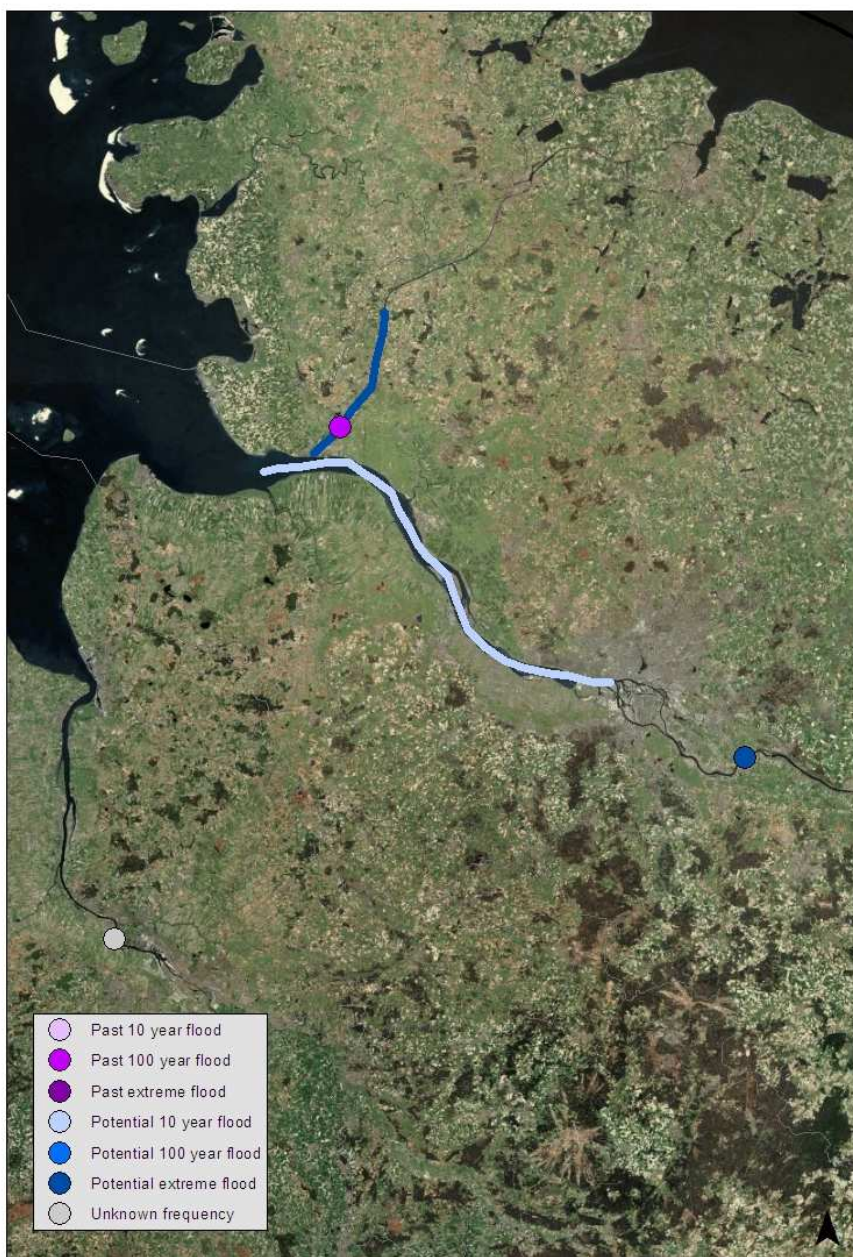
Maps of the entire territory of each RBD or Unit of Management, indicating which of the following options that have been applied for areas that:

- Have been assessed for potential flood risk in accordance with Art. 4 and 5, or,
 - Have been subject to an assessment and identified as an APSFR in accordance with Art. 13.1(a), or,
 - Where, in accordance with article 13.1(b), a decision has been taken to undertake flood mapping and to prepare a flood risk management plan, in accordance with Chapters III and IV, without undertaking any such assessment.
- Map of river basin, sub-basins, coastal stretches or other areas where there has in the past been a significant flood event or where potential future significant floods could occur, including specific location, where available,
 - Maps of RBD/UoM indicating the outlines of areas with potential significant flood risk (Articles 5 and 13.1.a).
 - Links to more detailed information

4.1.2.1 Example 3 of PFRA maps: [art 4-5, art 13.1.a or article 13.1.b (FICTIONAL EXAMPLES)]



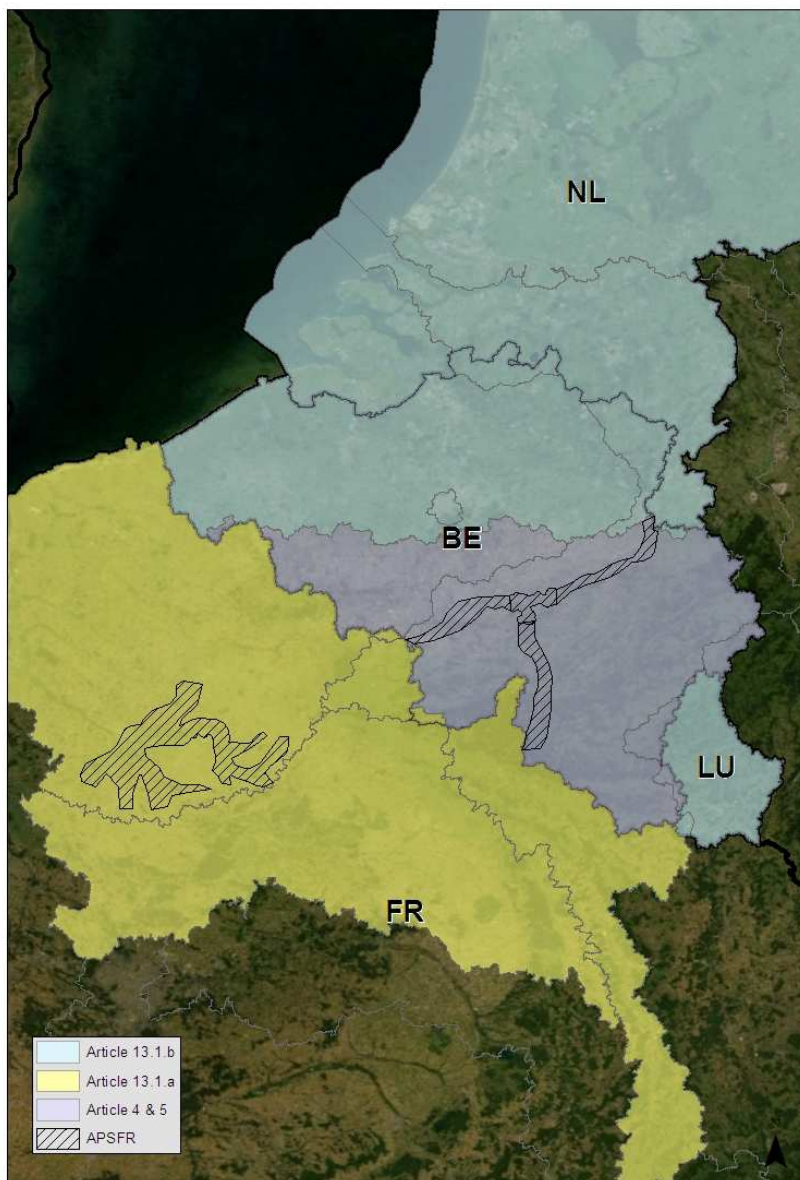
**4.1.2.2 Example 4 of PFRA maps – flood location: past flood events and potential future flood events associated with the flood location, indicated as stretches, points, shapes (taking into account that visualisation in expert view or public view is to be determined.)
FICTIONAL EXAMPLE.**



4.1.2.3 Example 5 of APSFR maps: Indicating areas of potential significant flood risk [FICTIONAL EXAMPLE]



4.1.2.4 Example 6 of APSFR maps: Map example 3 and 5 viewed together, so you see which areas have been identified, and which type of assessment was used



5. Maintenance

In accordance with the WISE reporting arrangements² Member States can update their data submitted to WISE at any time. Member States should ensure that the latest, correct information is available in WISE since that will be used for compliance checking and publication.

The quality, accuracy and validation of the information and data in WISE will be the responsibility of the Member States. Quality assurance and control processes will be carried out by the WISE partners. The Commission, the EEA or its contracted partners may contact the Member State in case there is an indication that any of the data may be erroneous or misleading. This could lead to a resubmission by the Member State.

6. Data content and structure

6.1 Context

For Floods reporting it is expected that the associated spatial object types below will be submitted. The associated schema is provided in parentheses.

- Units of Management (CA_UoM schema)
- Location of past significant floods or where potential future significant floods could occur (PFRA schema)
- Areas of RBD or Unit of Management, indicating which of the following options that have been applied (APSFR schema):
 - Assessed for potential flood risk in accordance with Art. 4 and 5, or,
 - Have been subject to an assessment and identified as an APSFR in accordance with Art. 13.1(a), or,
 - Where, in accordance with article 13.1(b), a decision has been taken to undertake flood mapping and to prepare a flood risk management plan, in accordance with Chapters III and IV, without undertaking any such assessment.
- Areas with potential significant flood risk (APSFR schema)

The attribute information for these spatial objects are defined in the associated schemas and attribute information should only be reported against the schemas. The spatial datasets defined here should only contain an attribute for the object code which allows them to be linked to the XML submission (further information on reporting in section 6.2.5).

The XSD schemas are the master document and it is expected, and part of the quality control procedures, that all objects defined in the schema will be present in the spatial dataset, and vice versa.

6.2 Data consistency and quality checking

Prior to submission it is important that datasets have been evaluated and a quality assessment study carried out. The following section provides the criteria which can be used to perform the study. The same quality control checks will be made once the spatial dataset has been submitted.

² [Guidance on practical arrangement for electronic reporting to the Water Information System for Europe \(WISE\): “WISE REPORTING ARRANGEMENTS”: Final Document \(01/03/2007\)](#)

6.2.1 Completeness

Test that only objects defined in the associated schema are present in the spatial dataset, and vice versa. Attention should be paid to incorrect coding, excess data and duplicate data present in the dataset.

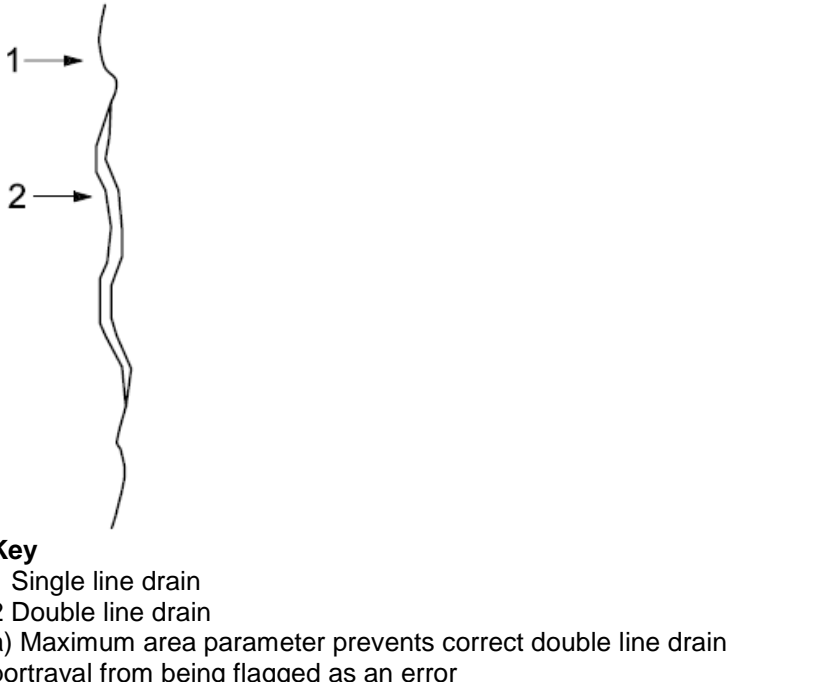
6.2.2 Topological consistency

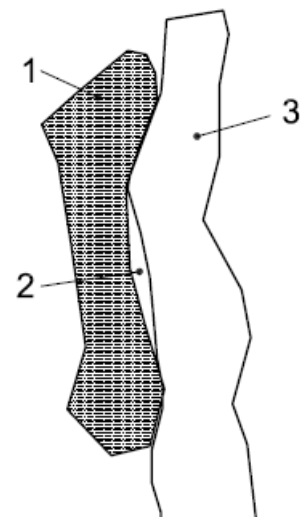
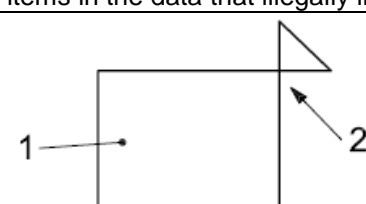
The objects of one type should be positionally consistent with spatial objects of related types.

Reported elements should be considered as reference data and geometric consistency with other themes may be achieved if these other themes use the reported data as background data during the production or the validation of their own data.

6.2.3 General topological consistency criteria

Before delivering a dataset, test for topological errors using the Topological toolbox (ArcGIS) or equivalent. The following are a subset of topological errors extracted from the Inspire Hydrography data specification.

| Name | Invalid slivers |
|-------------|---|
| Description | A sliver is an unintended area that occurs when adjacent surfaces are not digitized properly. The borders of the adjacent surfaces may unintentionally gap or overlap by small amounts to cause a topological error. |
| Example 1 |  <p>Key 1 Single line drain 2 Double line drain a) Maximum area parameter prevents correct double line drain portrayal from being flagged as an error</p> |

| | |
|-------------|--|
| |  <p>Key 1 Sand 2 Sliver 3 Double line drain b) Sliver is less than the maximum parameter and is flagged for evaluation of possible error</p> |
| Name | Invalid self-intersect errors |
| Description | items in the data that illegally intersect with themselves |
| Example |  <p>Key 1 RBD 1 2 Illegal intersection (loop)</p> |

6.2.4 Alignment across national borders

Datasets from national repositories are not necessarily geometrically aligned across national borders or to a pan-European coastline. To connect borders of Units of Management or rivers across national borders, it is strongly recommended for Member States to align their data with a selection of EuroRegionalMap at scale 1:250 000. This data selection essentially comprises the national borders, the coastline and hydrological features that cut across national borders. Member States will be able to download these data sets free of charge from a dedicated section of WISE.

The ERM-country boundary dataset (file: ERM v 2.2 - 1:250 000 country boundaries) can be requested from helpdeskFloods@atkinsglobal.com with the provision the data are not used for any other purpose:

The ERM data is in another coordinate system (GCS_WGS_1984) and care needs to be taken that data are in a common projection when aligning.

Transboundary GWBs should be harmonised with the respective neighbouring countries. Appendix B of the INSPIRE document D2.6 “Methodology for the development of Data specifications” provides recommendation regarding the geometric harmonisation of linear and polygon features across borders (edge matching).

The hydrographic network data should be edge-matched, reconciled and maintained across state borders by the respective authorities.

In considering reconciliation across state borders, the respective authorities should seek to fully resolve the positional alignment that minimises positional deficiencies. Positional deficiencies require repeated manual interval in updates and/or detract from the use of the data in applications.

Wherever a feature crosses a border it is recommended that the parties holding the source data for this feature across the border make arrangements for the geometry to be the same across the border, i.e. that at the same level of detail - no surface geometry meets a point or line geometry.

6.2.5 Shape file templates

Shape file templates are provided at the following url:

<http://water.eionet.europa.eu/schemas/dir200760ec/resources/spatial>

- All datasets have one attribute for the unique identifier.

6.2.5.1 Units of Management shape file attributes (CA_UOM schema)

| Attribute name | Obligation | Type | Description |
|----------------|------------|-------------|--|
| EU_CD_UM | Mandatory | string (42) | International code of the River Basin District as defined in the CA_UoM reporting schema (EUUOMCode). Codes MUST have a 1-to-1 relationship with further attribute data described in the related XML file. |

6.2.5.2 Flood Location code (past or potential future significant floods associated with the flood location) (Flood Location PFRA schema) shape file attributes

| Attribute name | Obligation | Type | Description |
|----------------|------------|-------------|--|
| EU_CD_FL | Mandatory | string (42) | <p>Unique code for the flood location - up to 40 characters in total as defined in the PFRA reporting schema (FloodLocationCode). Codes MUST have a 1-to-1 relationship with further attribute data described in the related XML file.</p> <p>Please note if the flood location is represented by one or more surface water bodies designated under the Water Framework Directive (WFD) it is possible to provide the unique EUSurfaceWaterBodyCode reported under the WFD in the PFRA xml schema. If the EUSurfaceWaterBodyCode is reported as a representation of the flood location no spatial data needs to be reported as this information is already reported under the WFD.</p> |

6.2.5.3 Type of assessment/decision (Article 4 or Article 13.1.a assessment or Article 13.1.b decision) (PFRA Specific Area schema) shape file attributes

| Attribute name | Obligation | Type | Description |
|----------------|------------|-------------|--|
| EU_CD_FA | Mandatory | string (42) | <p>Unique code for the specific area - up to 40 characters in total as defined in the PFRA reporting schema (SpecificAreaCode). Codes MUST have a 1-to-1 relationship with further attribute data described in the related XML file.</p> <p>This shape file covers submissions for Article 4, TransitionalMeasuresArt13.1.a or TransitionalMeasuresArt13.1.b. It will be derived from the schema by matching the SpecificAreaCode with Article applied</p> <p>If data are reported under a specific article in the PFRA xml schema but no information has been reported for a specific area it is assumed that the article apply for the entire UoM.</p> |

6.2.5.4 Areas of Flood risk (APSFRR schema) shape file attributes

| Attribute name | Obligation | Type | Description |
|----------------|------------|-------------|--|
| EU_CD_FR | Mandatory | string (42) | <p>Unique EU code for the area of potential significant flood risk as defined in the APSFR reporting schema (APSFRRCode). Codes MUST have a 1-to-1 relationship with further attribute data described in the related XML file.</p> |

6.3 ID management

No two spatial objects of spatial object types can have the same identifier. The identifier has to be unique within all the spatial objects published in WISE. The identifier can not be used again if an object is modified.

The same spatial object shall be reported always using the same identifier (e.g. monitoring stations reported to SoE, WFD, Nitrates Directive, etc).

6.3.1 ID Structure

The following structure for a unique identifier should be used for designated water bodies. The water body identification shall be unique within both the MS as well as on EU level.

At European level the following structure should be used

MS = a 2 character Member State identifier, in accordance with ISO 3166-1-Alpha-2 country codes³; and #₁#₂...#₂₂ = an up to 22 character feature identifier that is unique within the Member State.

(symbol # = wildcard character (a wildcard character can be used to substitute for any other character or characters in a string)).

At MS level the ISO country code can be left out of the unique identifier.

According to these definitions the code for a coastal water body in Germany could look as follows:

| Name | Data type | Min/max length | Example |
|---------|-----------|----------------|----------|
| MS_code | character | 1-22 | CW7596 |
| EU_code | character | 3-24 | DECW7596 |

Special advice given is that:

- The local identifier shall only use the following set of characters: {"A"... "Z", "a"... "z", "0"... "9", "_", ".", "-", ",", "}, i.e. only letters from the Latin alphabet, digits, underscore, point, comma, and dash are allowed;
- The identifier should contain no spaces;
- Alphabetical characters should always be in UPPER CASE;
- Special characters must be avoided, such as '\$', '!', '&', 'ë', 'á', etc;
- Digits should be used where practical to help avoid the above problems.

7. Data production

7.1 Spatial dataset identification

| Object type | Representation | Minimum area/length |
|---------------------------|------------------------|---------------------|
| Units of Management | Polygon | |
| Flood location | Polygon, line or point | |
| Flood assessment/decision | Polygon or line | |
| Flood risk areas | Polygon or line | |

7.1.1 Flood Location Information (past or potential future significant floods)(Flood Location PFRA schema)

Location of past significant floods or where potential future significant floods could occur where spatial features – line or polygon – can be provided

³ http://www.iso.org/iso/country_codes.htm

(The format of how information can be provided is flexible, such as by simple X, Y coordinates, or the geographic location of an urban area or other area affected by the flood (i.e., not precisely define a flood location, but provide a general location (e.g., centroid) of the town or other area that was flooded, or stretches of rivers /coastal areas, recognising that not all MSs may have available or readily derivable geo-referenced information on all past floods in electronic format).

Please note if the flood location is represented by one or more surface water bodies designated under the Water Framework Directive (WFD) it is possible to provide the unique EUSurfaceWaterBodyCode reported under the WFD in the PFRA xml schema. If the EUSurfaceWaterBodyCode is reported as a representation of the flood location no spatial data needs to be reported as this information is already reported under the WFD.

When presenting this in WISE a clear distinction will be made between past floods and potential future floods.

7.1.2 Type of assessment/decision (Article 4, Article 13.1.a assessment or Article 13.1.b decision) (PFRA Specific Area schema)

Location of areas – line or polygon – where article 4, article 13.1(a) or article 13.1(b) has been applied for the initial step of the Directive in accordance with Chapters III and IV of the Floods Directive. This will be presented in WISE to explain how the decision has been made, as the underlying data available to the public may differ. If data are reported under a specific article in the PFRA xml schema but no information has been reported for a specific area it is assumed that the article apply for the entire UoM.

7.1.3 Flood risk areas - Areas of Flood risk (APSFR schema)

Areas with potential significant flood risk. (APSFR can be indicated as entire or stretches of river/coastal areas, areas, polygons, entire river basins. When presented to the public in WISE, it will be presented in a transparent manner together with the information reported above, on the possible use of article 13.1 (a) or (b),).

7.2 Spatial resolution

7.2.1 Scale

Member States are recommended not to simplify spatial data before submitting to WISE. The accuracy of the data should however be documented in the metadata so the simplification process performed in WISE during e.g. reference data production can respect the original accuracy.

Considering both the WISE needs and the practical constraints of data availability, the GIS Working Group recommends that the required positional accuracy for reported data should be better than 125 metres (1:250 000). The positional accuracy should always be kept as high as possible and ideally be similar to the national operational datasets.

7.2.2 Positional accuracy

This quality sub-element shows the closeness of reported coordinate values to values accepted as or being true. All spatial objects should be provided at the source accuracy where possible. Where more than one geometry is available at the source, the provided geometry should be the one with the highest spatial detail; i.e. a surface geometry is provided where both surface and point geometry is available or where both surface and linear geometry is available.

Considering both the WISE needs and the practical constraints of data availability, it is recommended that the **required positional accuracy** for reported data is set to **a minimum of 125 metres** (corresponding to a scale of 1:250.000) and **a maximum of 500 meters** (corresponding to a scale of 1:1.000.000). The positional accuracy should however always be kept as high as possible and ideally be to the same as the national operational datasets.

For more information see Chapter 5.1, WISE GIS guidance document, second edition.

7.3 Spatial representation

The spatial representation shall be vector data, where UoM shall be represented as polygons. Flood location can be represented as polygons, lines or points. The specific areas can be represented as polygons or lines. The areas of potential significant flood risk can be represented as polygons.

7.4 Coordinate reference system

Data should be delivered in the spheroid coordinates (decimal degrees) in the geodetic datum ETRS-89 (EPSG code 3035, <http://www.epsg-registry.org/>). For islands not belonging to the European continental landmass the use of ETRS89 may not be applicable. For those areas the WGS84 (World Geodetic System 1984) should be used as the geodetic datum.

Vertical co-ordinates should be in metres in the “European Vertical Reference System” realised by *EVRF2000*.

At national level, a series of different coordinate reference systems is used. It is essential that conversion from a national coordinate reference system is done with care. If conversion is not done correctly data will lose positional accuracy. Proper transformation routines have to be observed.

The National Mapping Agencies (NMA) (or comparable institutions and organisations) have provided the information for the descriptions of the national Coordinate Reference Systems and for the transformation parameters between the national Coordinate Reference Systems and the European Coordinate Reference System ETRS89. Formulae can be requested from the NMAs or are directly accessible at <http://crs.bkg.bund.de/crs-eu/>

The transformation between national systems and the European coordinate reference system is done using the agreed transformation parameters for different countries (see the link above).

8. Data exchange format

8.1 Formats

- Polygon features are reported both as shapefiles and in form of XML documents. XML documents again have their schema and the simple guidelines for shapefiles are:
 - A valid shapefile under FD reporting is a set of 4 files: geometry (*.shp), index (*.shx), attributes (*.dbf) and projection (*.prj)
 - All 4 files MUST have the same (meaningful) file name (case sensitive), plus the above-mentioned file name suffixes (the latter ones either in lower or in UPPER case, but not in MiXeD case)

- There must be 1 feature attribute in the dbf file for the unique identifier (EUUOMCode)
- Unique feature identifiers in the dbf file MUST have a 1-to-1 relationship with further attribute data described in the related XML file
- In order to facilitate further data processing, shapefiles shall be uncompressed inside Reportnet envelopes. If your shapefile is in ZIP format, make use of Reportnet's "Upload zipfile" function, which will uncompress your ZIP archive, before adding the files into the envelope
- When in doubt, or in case of questions please contact helpdeskFloods@atkinsglobal.com or helpdesk@eionet.europa.eu

All submitted data shall be submitted with metadata, see section 10: Metadata, for details on completing this.

8.1.1 GML

GML will only be required for the reporting through web services, which are not yet established.

8.2 Naming of files

When uploading files it is required that the file naming has the following structure:

[Country ID]_UOM]_[Feature set name] [Date]

- Country ID (ISO code³)
- UOM code
- Feature set name as an acronym (PFRA_FL / PFRA_FA / APSFR_FR). See shape file templates.
- Date: this should be the date of data submission (Upload date) – YYYYMMDD

8.3 Data upload

Data submission is through the ReportNet Central Data Repository (CDR) <http://cdr.eea.europa.eu>. Full submission instructions are detailed in Section 5 of the 'Floods Directive reporting - A user manual' [5]. An eionet login is required.

Submissions made at the national level are submitted into the national level envelope created by the user. Files submitted at RBD level are added into the appropriate RBD level envelope.

8.4 Resubmission and data update

If data are updated/resubmitted complete datasets have to be submitted.

All reported data in the FD are linked to a geographical area or point through a set of layers with an increased level of spatial detail. It is therefore of crucial importance to update the spatial datasets so that spatial links to previous reported data are maintained if this is not the case data will be lost and the reported data from MS will appear as incomplete datasets.

9. Metadata

9.1 WISE metadata profile

Metadata is information and documentation which describes the content, quality, origin etc. and makes data understandable and shareable between users and receivers over time.

The information which should be provided for all spatial data sets reported in relation to the Floods Directive and additional updates to previous spatial data sets are to be found in the table in **Appendix B.1**.

Further information on both mandatory and optional metadata elements of the WISE profile can be found in both Chapter 5.5 and Appendix 11 in the GIS Guidance¹. Metadata should be reported using the WISE profile.

Appendix 11 of the GIS Guidance provides guidance on the implementation of the profile in XML.

Geographic data submitted to WISE will not be accepted without the proper metadata as specified in the WISE metadata profile.

9.2 Metadata creation

The authoring and editing of metadata in WISE can be done in a number of ways including the use of a metadata editor, capable of outputting metadata according to the recognised WISE metadata XML schema. This can be carried out directly (i.e. if the tool can be configured to export according to this schema), or indirectly (i.e. using XSL transformations to map from the native XML schema of the specific tool to the WISE XML schema). A dedicated WISE metadata web-based entry page, with basic client-side validation does not exist at present time.

Until a metadata editor is released by WISE, the suggested workaround is to make use of the XML example which can be found at this url:

This example was produced using the Inspire metadata editor and then the WISE specific elements added manually afterwards. The WISE elements are marked in the document with comments. The XML uses the example elements from the metadata table in Appendix A.1

No XML Schema for developing WISE metadata will be released.

10. Data access and constraints

The MS have in the Guidance on practical arrangements for electronic reporting to WISE⁴ agreed on the access rights for data submitted to WISE.

The access rights to data submitted to WISE are already agreed with Member States and appear in the WISE reporting arrangements⁵. Annex 1 of the Paper specifies the “WISE spatial data policy” – data use and data distribution.

⁴ Guidance on practical arrangement for electronic reporting to the Water Information System for Europe (WISE). WISE reporting arrangements. Final document (01.03.2007).

http://eea.eionet.europa.eu/Public/irc/eionet-circle/eionet-teleomatics/library?l=technical_developments/various_items/reporting_arrangements/ EN_1.0 &a=d

⁵ Guidance on practical arrangement for electronic reporting to the Water Information System for Europe (WISE); “WISE REPORTING ARRANGEMENTS”; Final Document (01/03/2007)

10.1 Data usage

The Commission and the EEA are authorised to use the geographic data in the context of environmental policy definition, implementation, assessment and analysis

- as geographic reference, i.e. creating a geographical context for other data;
- for the production of maps, publications, posters, presentations, web sites and any other electronic publication on the Internet. Electronic publication will be in the form of image maps;
- for spatial and statistical analysis;
- for deriving new geographic datasets by applying data manipulation procedures, e.g. combining different geographic datasets, generalisation procedures including smoothing and dropping of spatial features and adding new attribute information⁶.
- For inclusion of the geographic data in other applications provided that it will not be possible to extract the original geographic data.

10.2 Data Distribution

The Commission and the EEA are authorised to distribute geographic data, if

- the source is acknowledged and,
- the data is not used for commercial purpose – unless approved by the provider - and,
- the data provider has not explicitly restricted their dissemination beyond what specified at point 2

Category 1: Internal use within Commission and EEA, publication as maps on paper or in electronic format as image maps.

Category 2: Distribution of derived data and products under predefined conditions with the aim of decreasing the spatial accuracy or resolution of the geographic data.

Category 3: Distribution of original data electronically as feature service or on physical support.

Furthermore it is specified in this paper that “the metadata related to the geographic data and the derived geographic data will be distributed via a data catalogue service within the Commission, the EEA and to the public without any restrictions”.

11. Coordination and organisation

11.1 Helpdesk

The EEA will provide a content related helpdesk for questions related to these reporting rules and procedures which will be informed related to the WISE data flow concerned. EEA will provide a central helpdesk for all technical questions. The EEA may delegate these tasks to contracted partners. The contact details of the WISE technical help desk are:

Phone: +32 2714 87 87 from Monday through Friday 9:00 to 17:00 CET

Email: helpdesk@eionet.europa.eu

⁶ Examples of derived geographic data are the Main Rivers map

Web page: <http://nmc.eionet.europa.eu/>

12. Reporting documents and links

- [1] Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Guidance Document No 22 “ Updated Guidance on Implementing the Geographical Information System (GIS) Elements of the EU Water policy. 17. November 2008.
http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/guidance-no22-_nov08pdf_1/_EN_1.0_&a=d
- [2] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.
http://ec.europa.eu/environment/water/water-framework/index_en.html
- [3] Guidance on practical arrangement for electronic reporting to the Water Information System for Europe (WISE). WISE reporting arrangements. Final document (01.03.2007).
http://eea.eionet.europa.eu/Public/irc/eionet-circle/eionet-telematics/library?l=/technical_developments/various_items/reporting_arrangements/_EN_1.0_&a=d
- [4] INSPIRE. <http://inspire.jrc.ec.europa.eu/>
- [5] INSPIRE Data Specification on Hydrography – Guidelines.
http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_HY_v3.0.pdf

Appendix A

A.1 Description and specification of metadata elements for the reporting of the geographic information.

For further information about metadata element description and definition see Appendix 11 of Guidance Document No. 22: Updated Guidance on Implementing the Geographical Information System (GIS) Elements of the EU Water policy; Draft Guidelines – INSPIRE metadata implementing rules based on ISO 19115 and ISO 19119; ISO 19115 Geographic information – Metadata.

| Element Name | Description | Condition | Value Domain | Recommended input | Example |
|--------------------------------|---|--|---|---|---|
| IDENTIFICATION | | | | | |
| 1.1 Resource title | This is a characteristic, and often-unique, name by which the resource is known. | Mandatory | Free text See section 8.1 of this guidance document for a list of feature types | Derived from the type of information being reported and the place [Feature type] [Country] | Groundwater Bodies Austria |
| 1.2 Resource abstract | This is a brief narrative summary of the content of the resource | Mandatory | Free text | | Water Framework Directive (WFD) Article 5 groundwater bodies; dataset contains topography according to the scale 1:250,000 which covers the whole country; GWBs have been harmonized with neighbouring countries |
| 1.3 Resource type | This is the type of resource described by the metadata | Mandatory | MD_ScopeCode CodeList (see Annex B of ISO 19115 for full list) Dataset Series (if reporting multiple files e.g by Protected Area type) | | Dataset |
| 1.4 Resource locator | The resource locator defines the link(s) to the resource and/or the link to additional information about the resource | Mandatory if a URL is available to obtain more information on the resource, and/or access related services | Character string expressed by a URL | | http://www.geonorge.no |
| 1.5 Unique resource identifier | A value uniquely identifying the resource | Mandatory | MD_identifier (ISO 19115) Character string + | Identification of the authority providing the resource + identification of the dataset = name | AT_1000_GWB_20100322 |

| | | | | | |
|-----------------------|---|--|---|---|------------|
| | | | character string namespace | of the dataset [ISO 3166 country code]_[RiverBasinDistrict (MS_CD)]_GWB_[date of submission/upload date] | |
| 1.6 Coupled resource | Identification of the target spatial data set(s) of the services through their Unique Resources Identifiers (URI) | Mandatory if linkage to the service is available | MD_DataIdentification (ISO 19115) Character string code + character string namespace | Not applicable to dataset and dataset series. | |
| 1.7 Resource language | The language(s) used within the resource | Mandatory if the resource includes textual information | Codelist ISO 639-2 The list of codes for the 23 official EU languages is: Bulgarian – bul Czech – cze Danish – dan Dutch – dut English – eng Estonian – est Finnish – fin French – fre German – ger Greek – gre Hungarian – hun Irish – gle Italian – ita Latvian – lav Lithuanian – lit Maltese – mlt Polish – pol Portuguese – por Romanian – rum Slovak – slo Slovenian – slv | | dan |

| | | | | | |
|--|--|--|--|---|---|
| | | | Spanish – spa Swedish – swe | | |
| CLASSIFICATION OF SPATIAL DATASETS & SERIES | | | | | |
| 2.1 Topic category | High-level classification scheme | Mandatory | MD_TopicCategoryCode (ISO 19115) Enumeration (see B.5.2.27 of ISO 19115) | 012 (inlandWaters) | 012 (inlandWaters) |
| 2.2 Spatial data service type | <i>This is a classification to assist in the search of available spatial data services</i> | <i>Mandatory</i> | <i>Part D.3 of the MD IR</i> | <i>Not applicable to dataset and dataset series.</i> | |
| KEYWORDS | | | | | |
| 3.1 Keyword value | A commonly used word, formalized word or phrase used to describe the subject | Spatial data set or spatial data set series: at least one keyword from GEMET | Free text | WISE recommendations: http://converters.eionet.europa.eu/xmlfile/WISE_metadata_keywords_1.xml GEMET: http://www.eionet.europa.eu/gemet | Groundwater, Water Framework Directive, Groundwater Directive, Groundwater Bodies |
| | | <i>Spatial data service: at least one keyword from Part D.4 of the MD IR</i> | <i>Part D.4 of the MD IR</i> | <i>Not applicable to dataset and dataset series.</i> | |
| 3.2 Originating controlled vocabulary | The citation of the originating controlled vocabulary shall include at least its title and a reference date (publication, last revision or creation) | Mandatory if the keyword originates from a Controlled vocabulary | Free text + date | GEMET - Concepts, version 2.1, 2008-06-13 http://www.eionet.europa.eu/gemet | GEMET - Concepts, version 2.1, 2008-06-13 http://www.eionet.europa.eu/gemet |
| GEOGRAPHIC LOCATION | | | | | |

| | | | | | |
|-----------------------------|--|--|--|---|--|
| 4.1 Geographic bounding box | Extent of the resource in the geographic space | Spatial data set or spatial data set series: Mandatory | Decimal degrees with at least two decimals - 180.00 ≤ westBoundLongitude ≤ 180.00 -180.00 ≤ eastBoundLongitude ≤ 180.00 -90.00 ≤ southBoundLatitude ≤ northBoundLatitude southBoundLatitude ≤ northBoundLatitude ≤ 90.00 | | -81.80 93.20 71.92 -29.86 |
| | | <i>Spatial data service: Mandatory for services with an explicit geographic extent</i> | <i>Decimal degrees with at least two decimals</i> | <i>Not applicable to dataset and dataset series.</i> | |
| TEMPORAL REFERENCE | | | | | |
| 5.1 Temporal extent | Time period covered by the resource as an individual date, an interval of dates or a mix of both | At least one of the metadata elements referred to points 5.1 to 5.4 | Date ISO 8601 | Provide the period covered by the spatial data reported. The period should be defined by the planning period the groundwater bodies are valid, e.g. RBMP period 2009-2015. The input of this element is required | From 2006-03-22 to 2010-03-22 |
| 5.2 Date of publication | Date of publication or entry into force of the resource | At least one of the metadata elements referred to | Date ISO 8601 | Provide the date of the reporting deadline of the period specified with Metadata element 5.1. The input of this element is | 2010-03-22 |

| | | | | | |
|-------------------------------|--|---|--|--|--|
| | | points 5.1 to 5.4 | | required | |
| 5.3 Date of last revision | Date of last revision of the resource | At least one of the metadata elements referred to points 5.1 to 5.4 | Date ISO 8601 | Provide the date of the revision of the dataset; in case of the first data upload for the period specified with Metadata element 5.1 the Date of last revision = Date of publication. [(1) – example below]. The input of this element is required. | 2010-03-22 |
| 5.4 Date of creation | Date of creation of the resource | At least one of the metadata elements referred to points 5.1 to 5.4 | Date ISO 8601 | Optional element | |
| QUALITY & VALIDITY | | | | | |
| 6.1 Lineage | Statement on process history and/or overall quality of the spatial data set | Mandatory | Free text | The required input for the element Lineage is described below | |
| 6.2 Spatial resolution | Level of detail of the dataset: it shall be expressed as a set of zero to many resolution distances or equivalent scales | Mandatory | Equivalent scale expressed as an integer; resolution distance expressed as a numerical value. A distance is a Number expressing the distance value and a unit of measure of the distance value. | | Example scale: 250000 (e.g. 1:250,000 scale map) Example distance: 3 metres |
| CONFORMITY | | | | | |
| 7.1 Specification | Citation of the implementing rules | Mandatory | Free text + date | | Title: “INSPIRE Implementing rules laying down technical arrangements for the |

| | | | | | |
|--|---|-----------|--|--|--|
| | adopted under Article 7(1) of Directive 2007/2/EC or other specification to which a particular resource conforms | | | | interoperability and harmonisation of administrative boundaries” Date: Date type: publication Date: 2009-05-15 |
| 7.2 Degree | Degree of conformity of the resource to the implementing rules adopted under Article 7(1) of Directive 2007/2/EC or other specification | Mandatory | Part D.5 of the MD IR - True if conformant - False if not conformant | | true |
| CONSTRAINTS RELATED TO ACCESS AND USE | | | | | |
| 8.1 Conditions applying to access and use | Conditions for access and use of spatial data sets and services, and where applicable, corresponding fees | Mandatory | Free text + URL if applicable for information on any fees | If data should be used only for a certain purpose, this should be named here | Example: not to be displayed at a scale larger than 1:250,000 |
| 8.2 Limitations on public access | Limitations on public access and the reasons for them | Mandatory | Free text | (3) – the limitations to public access are described in section 11.2 The codelist for the input is as follows: <ul style="list-style-type: none"> • WISE category 1 • WISE category 2 • WISE category 3 | WISE category 3 |
| RESPONSIBLE ORGANISATIONS | | | | | |
| 9.1 Responsible party | Description of the organisation responsible for the establishment, management, | Mandatory | Free text + e-mail address as a character string | The following properties are expected: <ul style="list-style-type: none"> • organisationName: CharacterString • contactInfo: | organisationName: Institut Géographique National contactInfo: |

| | | | | | |
|--------------------------------|--|-----------|---|---|---|
| | maintenance and distribution of the resource | | ISO19115 CI_ResponsibleParty | o address: electronicMailAddress [1..*]: CharacterString | address: electronicMailAddress: support@ign.fr |
| 9.2 Responsible party role | Role of the responsible organisation | Mandatory | Part D.6 of the MD IR CodeList (see B.5.5 of ISO 10115) ISO19115 CI_RoleCode | | 001 (resourceProvider) |
| METADATA | | | | | |
| 10.1 Metadata point of contact | Description of the organisation responsible for the creation and maintenance of the metadata | Mandatory | Free text + e-mail address as a character string ISO19115 CI_ResponsibleParty | The following properties are expected: • organisationName: CharacterString • contactInfo: o address: ▪ electronicMailAddress [1..*]: CharacterString • role: CI_RoleCode | organisationName: European Environment Agency contactInfo: o address: ▪ john.smith@eea.europa.eu role: 007 (pointOfContact) |
| 10.2 Metadata date | Date the metadata record was created or updated | Mandatory | ISO 8601 | | 2008-08-27 |
| 10.3 Metadata language | Language in which the metadata are expressed | Mandatory | Codelist ISO 639-2 The list of codes for the 23 official EU languages is: Bulgarian – bul Czech – cze Danish – dan Dutch – dut English – eng Estonian – est Finnish – fin French – fre | | eng |

| | | | | | |
|---|--|-----------|---|--|---|
| | | | <p>German – ger Greek – gre Hungarian – hun Irish – gle Italian – ita Latvian – lav Lithuanian – lit Maltese – mlt Polish – pol Portuguese – por Romanian – rum Slovak – slo Slovenian – slv Spanish – spa Swedish – swe</p> | | |
| WISE METADATA (additional WISE Metadata, not INSPIRE) | | | | | |
| 11.2 Distribution format | Provides a description of the distributor, format and version of the data to be distributed and the digital transfer options | Mandatory | <p>Free text ISO19115: MD_Format (B.2.10.4) MD_Distributor (B.2.10.3) MD_DigitalTransferOptions (B.2.10.2)</p> | <p>Provide at least the Format information</p> <p><u>Format:</u> provide information on the format:</p> <ul style="list-style-type: none"> • Format name • Format version <p><u>Distributor:</u> provide information on the distributor</p> <p>The following properties are expected:</p> <ul style="list-style-type: none"> • organisationName: CharacterString • contactInfo: <ul style="list-style-type: none"> o address: <p>electronicMailAddress [1..*]: CharacterString</p> | <p><u>Format:</u> Name: shape file Version: [not necessary to provide if the format is shape file; if wished, the GIS software, which has been used to export the shape file, can be named; e.g. ArcGIS9.2]</p> <p><u>Distributor:</u> OrganisationName: Institut Géographique National contactInfo: address: electronicMailAddress: support@ign.fr</p> <p><u>Digital transfer option:</u> Online:</p> |

| | | | | | |
|----------------------------------|---|---|---|--|--|
| | | | | <p><u>Digital transfer option:</u> provide information, if the data can be provided online or offline</p> <ul style="list-style-type: none"> • Online: provide the URL • Offline: provide the name of the medium on which the resource can be received | <p>http://gis.umweltbundesamt.at/shop/index.jsp Offline: cdROM</p> |
| 11.3 Metadata standard name | Name of the metadata standard (including profile name) used | Mandatory | Free text | ISO 19115 Geographic information – Metadata; WISE Metadata profile | ISO 19115 Geographic information – Metadata; WISE Metadata profile |
| 11.4 Metadata standard version | Version (profile) of the metadata standard used | Mandatory | Free text | ISO 19115:2003 | ISO 19115:2003 |
| 11.5 Metadata file identifier | Unique identifier for this metadata file | Optional | Free text | Globally unique identifier – GUID http://www.guidgenerator.com/ | e88bfd4-c70b-4a3d-9dae-1595d8fe27ad |
| 11.6 Metadata character set | Full name of the character coding standard used for the dataset | Optional | http://www.isotc211.org/2005/resources/Codelist/gmxCodelists.xml#MD_SpatialRepresentationTypeCode | utf8 | utf8 |
| 11.7 Reference system | Description of the spatial and temporal reference systems used in the dataset | Optional | MD_ReferenceSystem (B.2.7) | referenceSystemIdentifier: code: ETRS_89 codeSpace: INSPIRE RS registry | ETRS_89 |
| 11.8 Spatial representation type | Method used to spatially represent geographic information | Conditional: if the resource is a dataset or dataset series | http://www.isotc211.org/2005/resources/Codelist/gmxCodelists.xml#MD_SpatialRepresentationTypeCode | Vector | Vector |

| | | | | | |
|-------------------------|--|----------|---|--|---|
| 11.9 Credit | Recognition of those who contributed to the resource(s) | Optional | Free text | | Organisation X |
| 11.10 Presentation form | Mode in which the resource is represented | Optional | http://www.isotc211.org/2005/resources/CodeList/gmxCodelists.xml#CI_PresentationFormCode | documentDigital | documentDigital |
| 11.11 Purpose | Summary of the intentions with which the resource(s) was developed | Optional | Free text | | WFD Article 5, mapping of the location and boundaries of GWBs, developed for the first analysis of GWBs and risk assessment reported in 2005 |
| 11.12 Specific usage | Brief description of the resource and/or resource series usage | Optional | Free text | The following information is required <ul style="list-style-type: none"> • description of the use of the resource including the reporting period or planning period the dataset is valid/should be used • description of the relationship to referenced datasets | Use: assessment of the status of groundwater bodies for the RBMP period 2009-2016 Referenced datasets: the dataset AT_1000_MonStat_20070322 refers to the GWB dataset; all monitoring stations provided in the dataset should be located within GWB provided with this dataset |
| 11.13 Vertical extent | Provides vertical component of the extent of the referring object | Optional | EX_VerticalExtent | The vertical extent is provided as attribute to the dataset; no input required for this element | |

C.1.1 Element 6.1 Lineage: Further information

Under category “QUALITY & VALIDITY “ the following information should be given by the data provider. If applicable, further needs for information can be specified:

Description of the process history, covering the total life cycle of the dataset from initial collection to its current form:

- Source information: describing the origin of the dataset;
- Process steps: record the events of transformation in the lifetime of the dataset (including information on generalisation and harmonisation)
- Intervals to maintain the dataset.

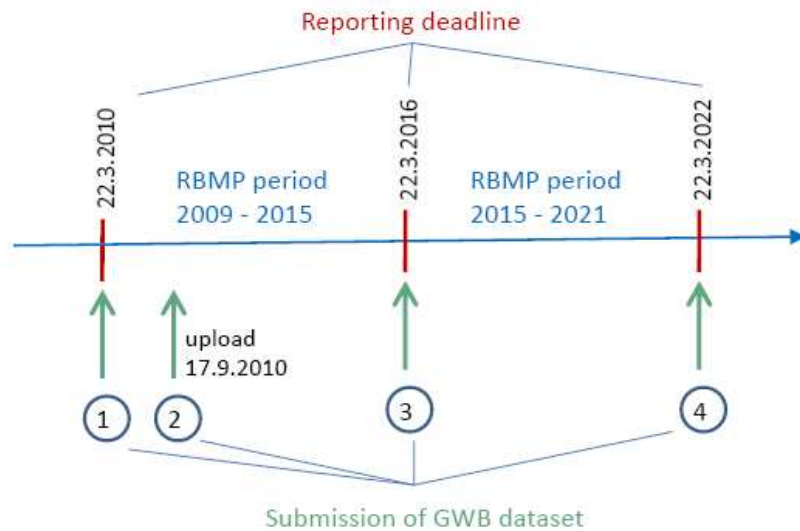
If a previous reported dataset will be updated with the current dataset, the following information should be given:

- Providing the name of the data which will be updated with the current dataset;
- Short description of the amendments done to the previous reported dataset (change of geometry and/or attributes);
- Providing a reference to a source that gives information on life cycle rules of features.

Describe the data quality. Provide statements on:

- Completeness
- Logical consistency
- Positional accuracy
- Thematic accuracy

C.1.2 Temporal reference – Example



Metadata for GWB datasets submitted

| Example | Temporal extent | Date of publication | Date of last revision |
|---------|-----------------------------|---------------------|-----------------------|
| 1 | From 22.3.2010 to 22.3.2016 | 22.3.2010 | 22.3.2010 |
| 2 | From 22.3.2010 to 22.3.2016 | 22.3.2010 | 17.9.2010 |
| 3 | From 22.3.2016 to 22.3.2022 | 22.3.2016 | 22.3.2016 |
| 4 | From 22.3.2022 to 22.3.2028 | 22.3.2022 | 22.3.2022 |