# Floods Directive reporting

A user guide for electronic reporting

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**Plan Design Enable**

# Contents

## Appendices

# Glossary of Terms

| Term | Meaning / Definition |
| --- | --- |
| APSFR | Area of Potential Significant Flood Risk (schema) |
| CA | Competent Authorities |
| CAUOM | Competent Authorities and Unit Of Management (schema) |
| CDR | Central Data Repository |
| DB | Database |
| FD | Floods Directive |
| FHRM | Flood Hazard and Risk Map (schema) |
| FRMP | Flood Risk Management Plans |
| GWB | Ground Water Body (schema) |
| GWMET | Ground Water Methodologies (schema) |
| GWST | Ground Water Monitoring Stations (schema) |
| MON | Monitoring (schema) |
| MS | Member State |
| PA | Protected Areas (schema) |
| POM | Programme Of Measures |
| PFRA | Preliminary Flood Risk Assessment (schema) |
| RBD | River Basin District |
| RBDSUCA | River Basin District/Sub Unit/Competent Authorities (schema) |
| RBMP | River Basin Management Plan (schema) |
| SWB | Surface Water Body (schema) |
| SWMET | Surface Water Methodologies (schema) |
| SWST | Surface Water Monitoring Stations (schema) |
| UoM | Unit of Management, in most cases the UoM will be the same as the RBD reported in the WFD. |
| WB | Water Body |
| WFD | Water Framework Directive |
| WISE | Water Information System for Europe |
| XML | Extensible Markup Language |

# 1. Introduction

The purpose of this guidance is to provide support to the workflow for the Floods Directive reporting Article 3, 4, 5, 6, 7 and 13. 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.

To facilitate the submission of information according to the schemas the following tools have been developed:

- Access database (back-end). This complements the schemas and organises the information into database tables. The database allows for manual entry, but also bulk data import can be used, depending upon the skill and the needs of the user.

- Access database (front-end). The front-end of the Access database is a user interface that also complements the schemas and organises the information into the back-end database tables. The front-end user interface only allows for manual entry and is only developed for the reporting of the CA and UoM.

- XML Conversion tool which generates the schemas from the Access database

- QA/QC rules help ensure the information is filled out correctly. The QA/QC is run from the following:

  - ReportNet

  - Desktop validation tool.

## 1.1 Schemas

The reporting schemas are not dealt with in detail in this document. The schemas are available from this web page http://icm.eionet.europa.eu/schemas/dir200760ec/resources/ along with supporting documentation.

## 1.2 Related documents

This is 'Document 1' providing support for the workflow. There are three other documents which provide additional support to the reporting process:

- **Document 2: Schema user guidance**
  http://icm.eionet.europa.eu/schemas/dir200760ec/resources/

- **Document 3: Guidance on the reporting of GIS information**
  http://icm.eionet.europa.eu/schemas/dir200760ec/resources/

- **Document 4: Guidance on reporting for FHRM of spatial information**
  http://icm.eionet.europa.eu/schemas/dir200760ec/resources/

## 1.3 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:

helpdeskWISEreporting@atkinsglobal.com
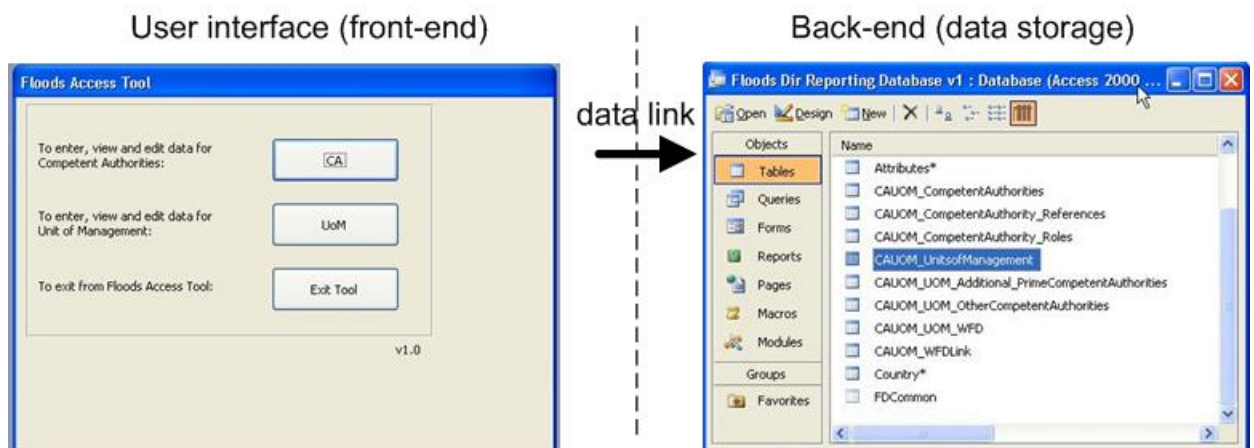
## 1.4    Overview of reporting steps

The main reporting steps are shown in the diagram below. The approach taken, depending on the tools and databases already available within the MS, can take different forms. Some MS are able to generate the XML files directly from their own systems and would therefore only be interested in the validation and upload steps. The reporting steps shown here are for MS where no local tools exist to easily build the xml files required for upload onto ReportNet.
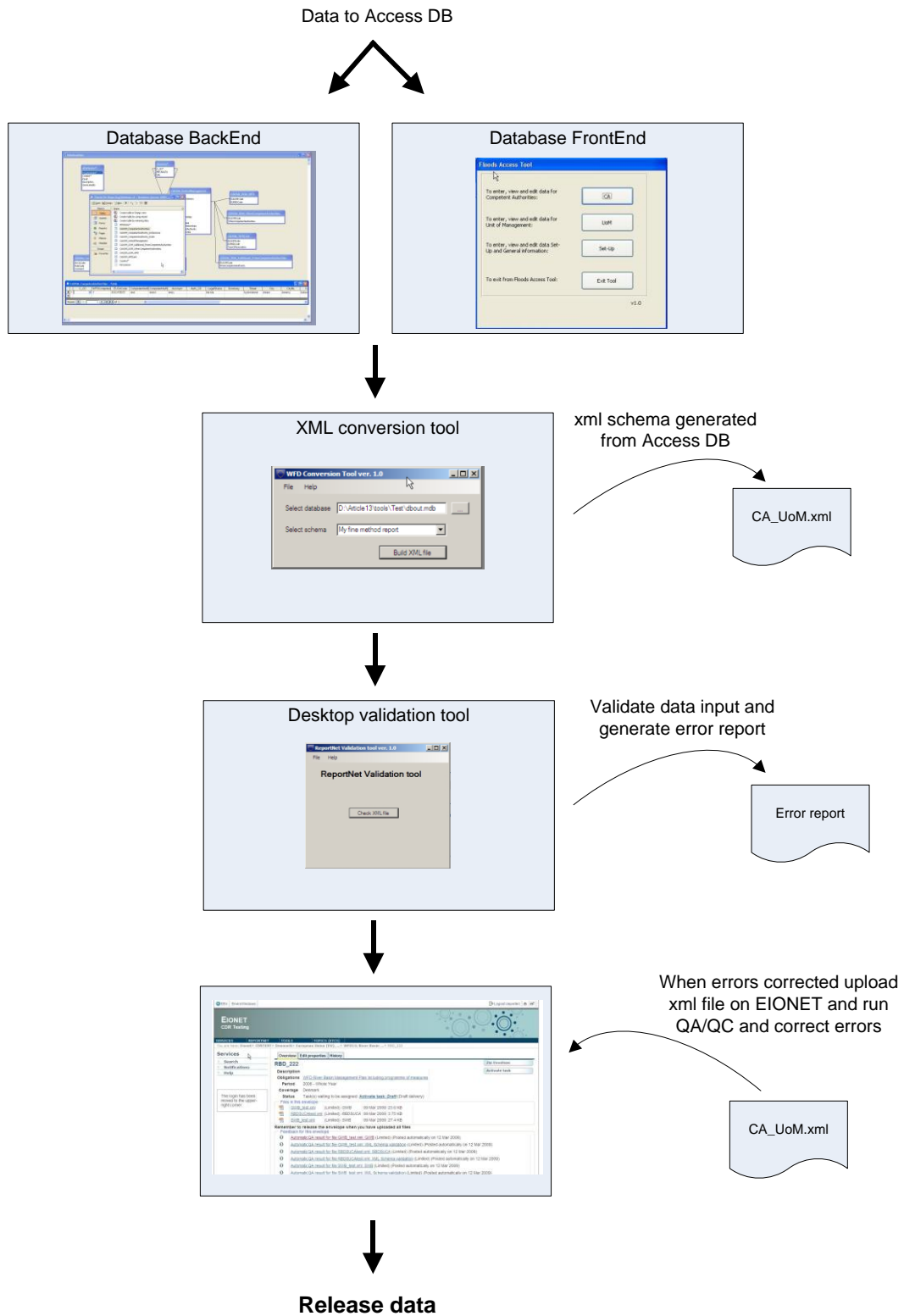
1.  **Access DB**: Structured around the agreed schemas (described in Document No.2: Floods Directive reporting: User Guide to the reporting schema v4.0, this MS Access database  can be used to import and structure MS data into the required format for the generation of the XML files.The database comprises front-end interface linked to back-end databases. The tool is split into two files:

    - **Floods Directive Reporting Database.mdb**. This is the back-end of the database. It contains only tables. All data are stored in this file.

    - **Floods Directive Reporting Database FrontEnd.mdb** This is the front-end of the database. It contains all the functionality: forms and system tables which are integral with the functionality. No data are stored in this file. Only the CAUoM is supported by the front-end.

    It is possible to enter both data into the user friendly interface of the Access database or to enter data directly into the database tables.

2.  **XML conversion tool**: This tool converts the data entered into the MS Access tool into the xml format required for reporting.

3.  **Desktop validation tool:** This tool checks the quality of the data within the xml files generated. It uses the same rules as the validation tool within ReportNet, and will detect and report any errors in the xml files at an early stage (rather than waiting until you have generated and uploaded onto ReportNet, only to have to go back to the start to correct errors). This tool can therefore save you a lot of time. This tool could be the starting point for those MS generating the XML files directly from their systems.

4.  **ReportNet upload**: Once the xml files have been generated, checked through the desktop validation tool, and no errors returned (or errors corrected), the files are ready to be uploaded onto ReportNet.

5.  **ReportNet QA/QC:** Once the xml have been uploaded into ReportNet, it is recommended to also finally run the QA/QC facility on ReportNet to ensure that there are no errors remaining in the XML files. Once you are satisfied that no such errors occur, the files are ready to be released and a cover letter will be automatically generated verifying the date of the reporting along with a list of reported documents / files.

Data to Access DB



Database BackEnd



Database FrontEnd

XML conversion tool

xml schema generated from Access DB

CA_UoM.xml

Desktop validation tool

Validate data input and generate error report

Error report

When errors corrected upload xml file on EIONET and run QA/QC and correct errors

CA_UoM.xml

**Release data**

# 2.    Access Database, back-end

## 2.1    Back-end, quick guide

A quick step by step guide for the advanced user who has experience in using previous similar reporting databases:

- Download the Access DB from

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


- Fill in the required information into the relevant tables (using the guidance provided in Appendix A)

- When all the data has been entered into the back end of the database use the xml conversion tool to generate the xml files


## 2.2    Download of back-end Access database

The Access DB will be available for download at http://icm.eionet.europa.eu/schemas/dir200760ec/resources/ and is available in 2000 version.

All the schemas are designed to contain information at UoM level, except for the CAUOM schema which will contain information about all the UoMs within the MS.

The DB reflects this design and hence each reporting DB should contain data from only *one* UoM, along with the CAUOM schema (which needs to be common to all reporting DBs). A separate DB should therefore be created for every UOM in the MS and the CAUOM tables should be copied into every one of these DB as illustrated in Figure 2.1. The CAUOM tables can easily be identified within the database because the table names have the prefix CAUOM.
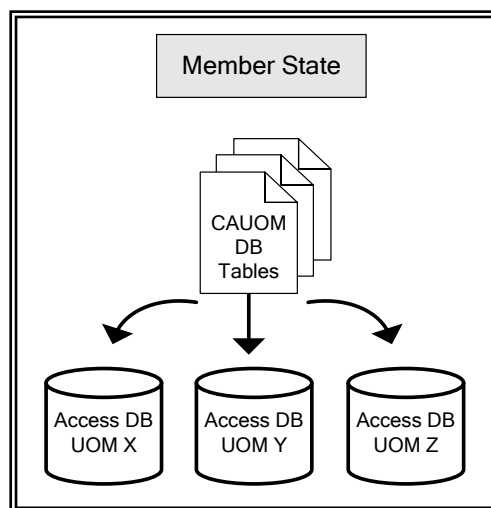


**Figure 2.1 – CAUOM tables need to be copied into each reporting DB for the MS.**

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## 2.3    Database design

### 2.3.1    Naming of the Tables within the Reporting Database

The Access database contains many tables. These tables have been structured to reflect the schema designs (Appendix A). The tables within the database are therefore related to one of the 4 individual schemas, and it is possible to see which schema each table relates to with the prefix schema name to the table name. For example, schemas linked to PFRA have a "PFRA" prefix to the table name.

In the same way that the schemas link to each other, so do the various tables within the reporting database. The linkages between the tables relating to any given schema can be seen in Appendix A. The required elements in the Access database tables are bold in Appendix A – however please note that several elements are conditional. To see the specific rules laid down for a specific element please look in either the User Guide to the reporting schema v4.0 or the Access database.

## 2.4    Back-end database design

### 2.4.1    Mandatory data

A large number of fields are **required** in order to ensure that the submission can be processed. Note that the term "mandatory" is no longer used in the context of schemas because of possible confusion with "mandatory" in the sense of legal compliance (i.e. failure to supply mandatory information is legally not in compliance with the directive). For all elements in the database it is indicated in the description field whether the element is 'required', 'optional' or a 'choice'.

**NOTE:**. Refer also to the schema to understand which information is required, optional or conditional (choice). The validation tool will indicate any required fields which have not been completed.

### 2.4.2    Field descriptions

Every table within the database contains detail on what each field means (Description), and what format of data is required in the field. To view these, click once on the table and go to Design view. This description has been taken directly from the schema annotations, but in some cases where the description was too long for the field length the description has been truncated and you should refer back to the schemas themselves.

### 2.4.3    Text fields

Most of the fields within the DB are defined as text fields and an indication of number of characters allowed can be found in either the description field (table design view), in the general field settings or in the schema (xml) file (as illustrated below).

**Figure 2.2 – Field design, illustrated in both Access DB table and in schema file**

If text fields in the DB are defined as "Memo" the information on how many characters allowed will be available in both the xml file and in the text description.

### 2.4.4 Enumeration / Drop-Down Lists

All code lists defined in the schemas have already been incorporated into the DB, and are used to create drop-down lists where appropriate, e.g. country code (C_CD) list. This ensures that only valid codes are entered into the DB. Code lists are defined in the system schema FDCommon.

### 2.4.5 Numeric fields

In some of the numeric fields it is possible to insert an exception. These will be available from a drop-down list in the DB:

-9999 = Unknown

-8888 = Yet to be measured

-7777 = Not Applicable

It will be possible to enter numeric data with decimals using both comma (2,75) and a period (2.75) separator. The XML conversion tool will translate all the comma separated data into period separated data.

### 2.4.6 Date and URL

Date format must be in the format yyyy-mm-dd if nothing else is specified and links (URL) to relevant documentation (must be a valid URL format).

**2.4.7** How to use access database table FHRM_FloodHazardMapsAdditionalFloodTypes

Probabilities can be reported on the basis of different flood types. If this is the case the specific flood type should be reported in the tables FHRM_FloodHazardMaps and if more than one flood type needs to be reported in a group then this should be done in the table FHRM_FloodHazardMapsAdditionalFloodTypes.

## 2.5 Order of populating the tables

The fields that form the link between tables will also be, in most cases, drop-down lists and it is therefore a good idea to fill information into the tables in a certain order since these drop-down lists will be created as the data is filled in.

At a schema level it is recommended to fill information into the tables in the following order:

1. Attributes

2. Country

3. schema tables (CAUOM, PFRA, APSFR, FHRM and FRMP)

This suggested order is also contained within Appendix A using colour coding of the tables.

**2.5.1** Linkage of low-level tables within the database

Most tables will be linked through unique identifiers given by the MS – e.g. EUUOMCode, APSFRCode– but some tables require the use of an auto generated unique ID from the "parent" table. Where this is the case, it is clearly stated in the description field within the tables and will also be marked in the table linkage diagrams in Appendix A. Drop-down lists make the information easier to fill in, as long as the 'parent' tables are filled in first.

In order for the tables within the DB to link to each other (in the same way that the schemas themselves link to each other), unique ID's are required in different tables to be referenced against the relevant data in other corresponding tables. For example:

- **PFRA_FloodTypesOther and PFRA_ConsequenceFatalities table** – both have a column named starting with UNIQUECODE_xx. The code is AUTO generated within the tables PFRA_FloodTypes and PFRA_TypeofConsequence. The unique Code is used to establish a link between the tables. A drop-down list is available for the tables PFRA_FloodTypesOther and PFRA_ConsequenceFatalities which have been generated on the basis of the information in table PFRA_FloodTypes and PFRA_TypeofConsequence - see Figure 2.3.

**Figure 2.3 - PFRA_FloodTypesOther table**

**NOTE:** The table PFRA_FloodTypesOther link to both floodtypes applied for a specific article (Column: ArticleApplied) and the type of flood to identify a flood event (Column: TypeofFlood). Both columns can not be used at the same time – see below example.



## 2.6     Complex structure

It is not enough just to use the database to fill in the information. It should be used in conjunction with the schemas. This is because there are some complex structures which need to be followed else a validation error will occur. The following are important to note:

### 2.6.1     Conditional checks

The Conditional check is required in order to ensure that an element is populated where a previous element is set to a defined value.  For example, if the element 'CategoryofFlood' in the PFRA schema is populated with 'past flood' then element 'DateofCommencement' is then required and must also be populated.

Conditional fields are clearly marked within the schemas themselves (with the word CONDITIONAL at the start of the description). It is important to understand which fields are conditional and therefore what other fields become required once a conditional field is populated. This will help you avoid validation errors.

### 2.6.2     Choice checks

In some cases there is a choice of what to report. For instance, it is mandatory to provide either length of inundated river stretch OR inundated area. This is marked in the schemas by the symbol in

Figure 2.4. The Choice check is required in order to ensure that an element has been populated where a choice of attached elements is provided.  In all cases, where an element requires a subsequent choice to be made from a series of attached elements, the choice options are set to minimum 1 and maximum 1, i.e. the validation routine should check that only one of the attached elements has been chosen and populated.  For example, in the 'PFRA' schema, one of element 'Area' or 'Length' must be populated, but not both.
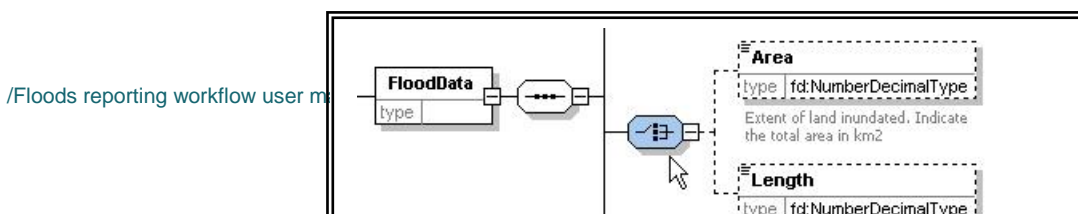
**Figure 2.4 – How to identify a choice field in the schemas**

## 2.7 Import previously reported CAUOM/PFRA/APSFR data to newer database version

Included in the latest version of the database is functionality to import all the table data for CAUOM tables from previous versions of the database.

1. Open the back-end database
2. Navigate to Access Objects > Forms
3.  Open the Form 'Import'
4. Press the button 'import CAUOM PFRA APSFR data'
5. Select the database to import from
6. Once the database is selected the script will import all the row data from the CAUOM/PFRA/APSFR tables in the selected database

ATKINS
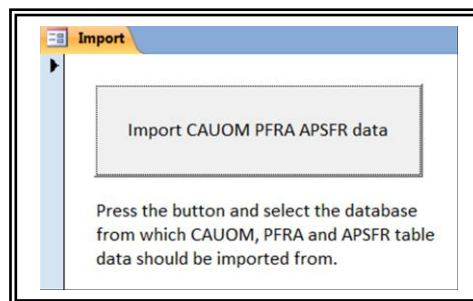
# 3. Access Database, user interface – only for the CAUOM schema

## 3.1 Download of front-end Access database

In order to set-up the front-end of the Access database it is necessary to download both the back-end and front-end of the Access database. Both are available for download at http://icm.eionet.europa.eu/schemas/dir200760ec/resources/ and are available in 2000 version.

## 3.2 Linkage of front-end with back-end Access database

To open the front-end, open **Floods Directive Reporting Database.mdb**. If the back-end database (**Floods Directive Reporting Database BackEnd.mdb)** are in the same folder, and have not been renamed, the front-end will automatically link with the back-end.

If the back-end cannot be located, either because it has been moved or renamed since last used, an error message similar to the following will be displayed:



When clicking 'OK' the *Locate backend* file browser window will open, which can be used to locate the back-end file:
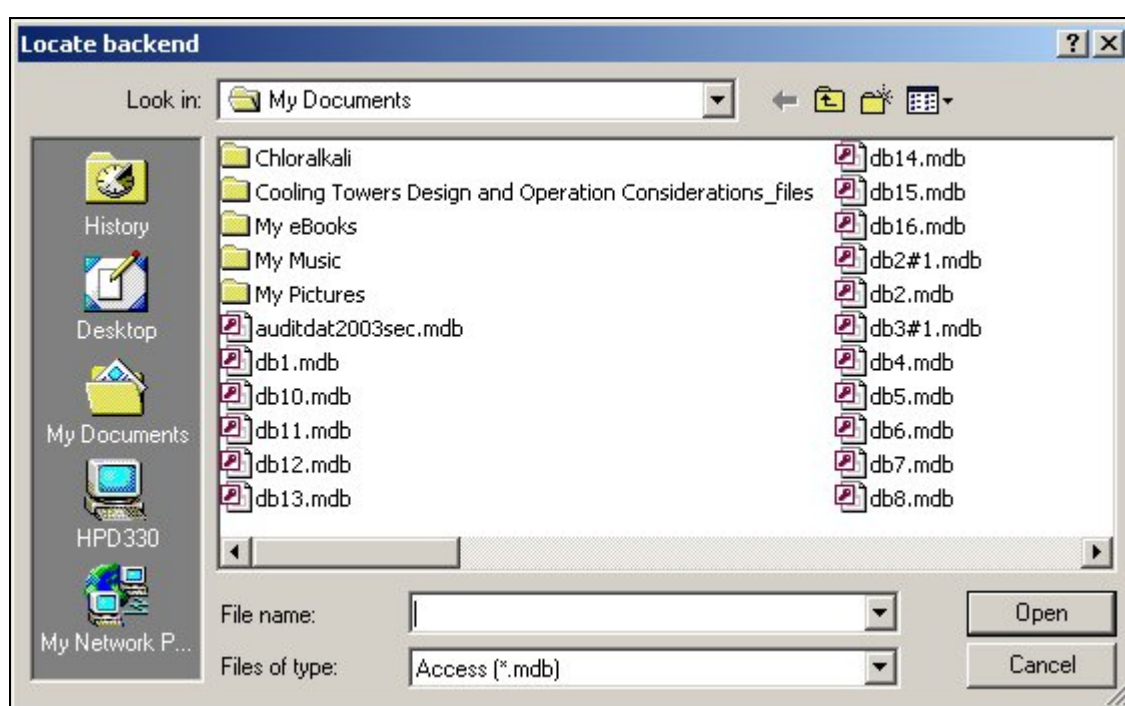
When the back-end file has been located, clicking the 'Open' button will restart the automatic linking process.

If 'Cancel' is chosen the following error message will be displayed:



## 3.3 Reporting data in the User interface (front-end)

On successfully starting the tool, the start-up form enables the user to enter data for Competent Authorities, Unit of Management and Set-up and General information
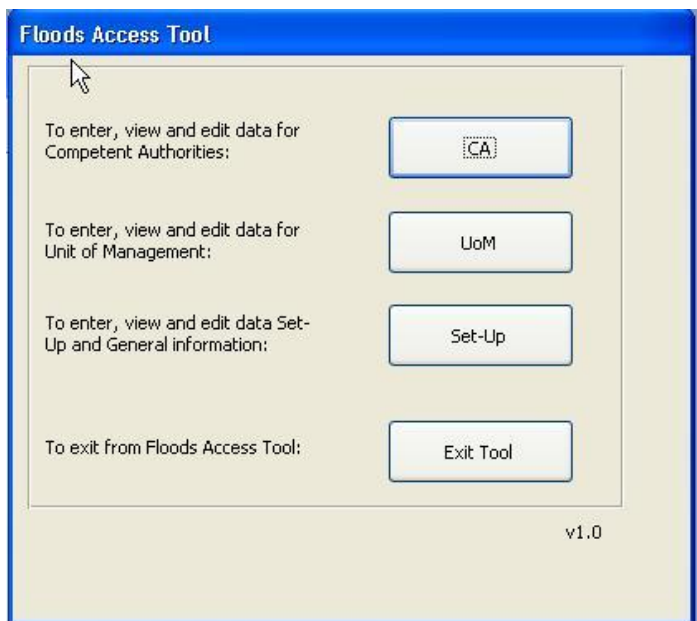


When clicking Competent Authorities (CA) on the start-up form the below *Select Competent Authority* form opens.
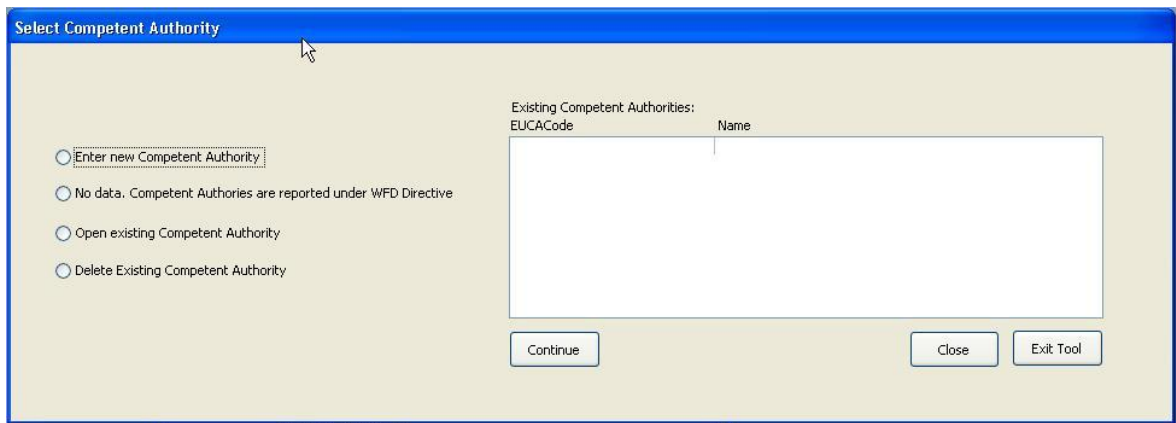
This is the main control form for reporting the Competent Authorities and gives four options:

- Enter new Competent Authority
- No data. Competent Authorities are reported under WFD Directive
- Open existing Competent Authority
- Delete existing Competent Authority

Same four options will be available for Unit of Management (UoM)



Select the Set-Up option to set attribute information, the Member State country code, metadata and url. The information entered on this form is used to generate the metadata for the XML files, for example the creator, email and description.



Please notice that some of the fields are red coloured. This means that this information is mandatory and must be filled out. The three fields in the Set_up and General Information form are the only mandatory fields in this reporting.

**NOTE:** Optional fields can be mandatory fields - these fields have not been marked. In some cases, an element may be optional but if provided, then some data becomes mandatory. For example, this is the case if the unit is part of an international unit then both International name and international relationship most be entered. The validation tool will indicate any mandatory fields which have not been completed.

## 3.4 Data entry

All data entered or edited via the front-end are saved automatically to the back-end database on closing the forms.  A change that has not yet been saved can be undone by pressing the *Esc* keyboard key.

It is recommended to enter data into the Competent Authority form before entering data into Unit of Management as the Competent Authority code also must be entered in Unit of Management.



### 3.4.1 Drop-down lists (Code Lists)

All code lists defined in the schemas have been incorporated into the front-end of the database, and are used to create drop-down lists where appropriate, e.g. country code list. This ensures that only valid codes are entered into the back-end database.

### 3.4.2 Field description

All annotations from the schema design have been incorporated into the front-end design. By clicking on a field a description – if this is available in the schema design – will appear in the bottom of screen as illustrated below. In some cases where the description was too long for the field length the description has been truncated and you should refer back to the schemas themselves.



### 3.4.3 Text fields

Text fields hold alphanumeric data. The maximum length of the string is determined by the schema. This has been included in the table definition so you cannot physically enter more than the defined number of characters. For example the EUCACode can have a maximum of 42 characters.

**NOTE:** A space counts as a character

### 3.4.4 Numeric fields

It will be possible to enter numeric data with decimals using both comma (2,75) and a period (2.75) separator. The XML conversion tool will translate all the comma separated data into period separated data. When actual values cannot be provided the user should (or must, if entry is mandatory) enter one of the negative integer codes listed to indicate the status of the requested data.

-9999 for 'Unknown'

-8888 for 'Yet to be measured'

-7777 for 'Not Applicable'

### 3.4.5 Multiple data entry

In embedded datasheets (see illustration below) it is possible to have multiple data entries.



Use the ▶* button to create a new record. If you do not select this, then the current record will be overwritten.

# 4. Creation of xml files – The DB-to-xml conversion tool

## 4.1 Concept

The purpose of the DB-to-xml conversion tool is to allow Member States to generate the required xml files from their own data without any prior knowledge of xml formats and standards. However, database knowledge (including MS Access) and advanced data transformation skills are still needed to use the conversion tool.

The tool extracts the data from the tables in the Access database (back-end), described in Section 2 and generates the schema.

This tool does not carry out any validation of the data that is used to create the xml files, nor does it validate the xml file produced. Validation is performed with the desktop validation tool and / or in ReportNet (as described later in this document).

Please note that the xml conversion tool will only function with the database structure which has been built specifically in the FD Access reporting database as supplied.

## 4.2 Computer Requirements

The DB-to-XML conversion tool requires the following;

- Windows XP or newer, 30 MB of free hard disk space and an 800x600 monitor (minimum).
- Microsoft .NET Framework 3.5 SP1 or higher. If .NET 3.5 SP1 is not already present, it will automatically be installed during the installation process. However the installation program itself requires at least Microsoft .NET Framework 2.0, see section 5.3.

**Important: Running the Database to XML conversion tool requires a connection to the internet.**

## 4.3 Installation / un-installation

### 4.3.1 Installation

The Database to XML conversion tool is installed through the internet from the URL below:

http://icm.eionet.europa.eu/schemas/dir200760ec/resources/conversiontool/

It should be noted that the installation will only run from Internet Explorer, not from other browsers (e.g. FireFox, googleCrome).

**Please note that if a previous version of the conversion tool is installed on the PC this will have to be uninstalled as the URL has changed.**

As described in section 4.2 the installation will automatically include the Microsoft .NET Framework 3.5 SP1, if this is not already present. However, it should also be noted that installation of .NET requires local administrator access.

In order to run the installation program itself, you must have Microsoft .NET Framework 2.0 (at least) already installed. To determine what versions of the Microsoft .NET Framework is installed have a look in the folder C:\Windows\Microsoft.NET\Framework. Versions of the .NET framework will be in numbered folders.

If you do not already have .NET 2.0 or higher, it is recommended that you install the latest version of .NET, which at the time of writing is 3.5 SP1. This is available from the URL below:

http://www.microsoft.com/downloads/details.aspx?familyid=ab99342f-5d1a-413d-8319-81da479ab0d7

Each time the Database to xml conversion tool is started an automatic check for new versions will be performed. If an update is found, but installation is skipped, it can be installed manually later on.

Running the installation as well as the DB-to-xml conversion tool through a proxy server might cause problems. In this case your administrator must change the network configuration in order to remove the proxy for the following websites:

- http://icm.eionet.europa.eu/schemas/dir200760ec/resources/conversiontool

- http://eionet.europa.eu

### 4.3.2 Un-installation

The DB-to-xml conversion tool has to be un-installed from the Control Panel.

## 4.4 Using the conversion tool

The DB-to-xml conversion tool is started from the start menu (Programs→The European Commission → Database to XML conversion tool).

To generate an XML file, first select the relevant database for which you want to generate the xml. When the 'Build XML file' button is pressed - the application builds the file and then prompts the user to save the file as follows:
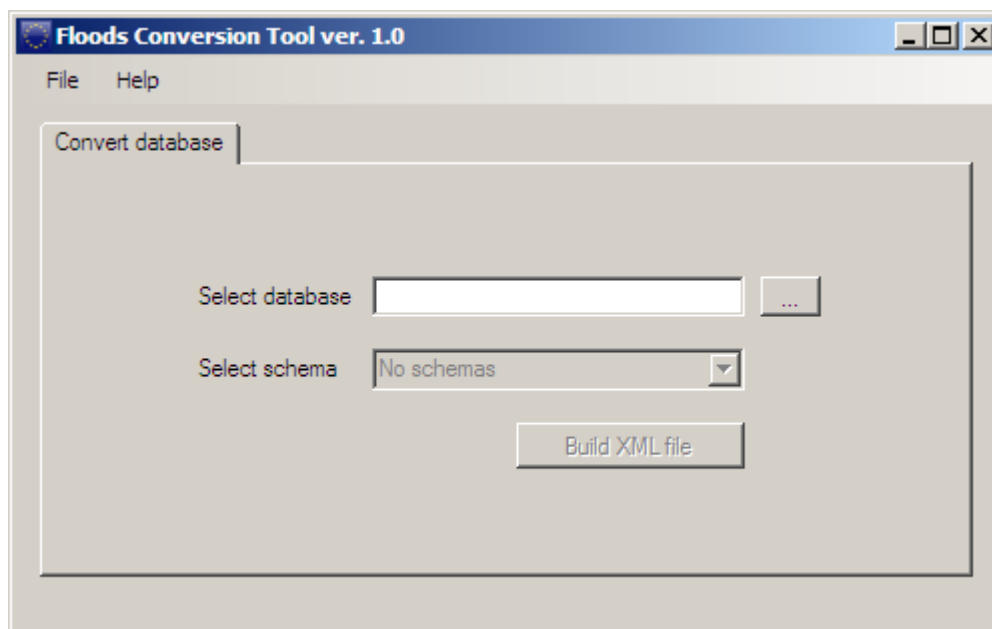


Note: The generation of XML files can take a long time if there is a lot of information to map between the database and the XML file.

As previously mentioned the conversion tool does not include any validation of the data. Therefore the generated xml file must be validated using the desktop validation tool (see section 5).

If the validation results in errors, it is important to verify whether the error exists in the database or in the nationally reported data. It is very important that the corrections are made in the national dataset, not just in the conversion tool database.

# 5. Desktop validation tool

## 5.1 Concept

The purpose of the desktop validation tool is to allow the Member States to validate their data prior to upload to ReportNet CDR (where another similar level of validation is performed, based on the same rules). By undertaking this task prior to uploading your xml files onto ReportNet, you can correct any validation errors earlier on in the process and therefore repeating the task later on (it will save you time).

The validation tool implies that an xml file has already been generated. Thus, it is not possible to generate the xml file through the validation tool. If the xml file cannot be generated directly from the MS national database, the MS Access Reporting DB / tool should be used followed by the DB-to-xml conversion tool.

## 5.2 Computer Requirements

The desktop validation tool requires;

- Windows XP or newer
- 30 MB of free hard disk space
- an 800x600 monitor (minimum)
- Microsoft .NET Framework 3.5 SP1 or higher. If .NET 3.5 SP1 is not already present, it will automatically be installed during the installation process. However the installation program itself requires at least Microsoft .NET Framework 2.0, see section 5.3.

**Important: Running the ReportNet desktop validation tool requires access to the internet.**

## 5.3 Installation / uninstallation

### 5.3.1 Installation

The ReportNet desktop validation tool can be installed via the internet from the URL below:

http://icm.eionet.europa.eu/schemas/dir200760ec/resources/validationtool

Please note that the installation will only run from Internet Explorer, not from other browsers (e.g. FireFox, googleChrome).

As described in section 5.2 the installation will automatically include the Microsoft .NET Framework 3.5 SP1, if this is not already present. However, it should be noted that installation of .NET requires local administrator access and you may therefore need to contact your system administrator.

In order to run the installation program itself Microsoft .NET Framework 2.0 (or later) must be installed. To determine what versions of the Microsoft .NET Framework is installed have a look in the folder C:\Windows\Microsoft.NET\Framework, and if present, the versions of the .NET framework will be in numbered folders.

If you do not already have .NET 2.0 or higher, you are recommended to install the latest version of .NET, which at the time of writing is 3.5 SP1. This is available from the URL below:

http://www.microsoft.com/downloads/details.aspx?familyid=ab99342f-5d1a-413d-8319-81da479ab0d7

Each time the desktop validation tool is started an automatic check for new versions will be performed. If an update is found, but installation is skipped, it can be installed manually later on.

Running the installation of the desktop validation tool (as well as running the tool itself) through a proxy server might cause problems. In this case your administrator must change the network configuration in order to remove the proxy for the following websites:

- http://icm.eionet.europa.eu/schemas/dir200760ec/resources/validationtool

- http://eionet.europa.eu

### 5.3.2 Uninstallation

The ReportNet desktop validation tool has to be uninstalled from the Control Panel.

## 5.4 Principles of validation

The purpose of the validation of an xml file is to check that it is complying with required xml schema form. It checks that the xml is well formed and the technical validation is met.

The first validation carried out checks that the xml is well formed (and adheres to the common structure rules outlined in section 7.1.

The second validation carried out checks that xml adheres to the complex structure as outlined in section 7.2.

The desktop validation tool only works if you have a connection to the internet, because the tool pulls down the latest version of the relevant schema directly from ReportNet. This ensures that any validation is always consistent with the latest version of the schema.

### 5.4.1 Schema definition (schemaLocation)

The XML file should contain a reference to the schema definition file so that the validation can be undertaken. The reference is an attribute to the root element and consists of two parts – namespace and location

e.g. xsi:schemaLocation="http://water.eionet.europa.eu/schemas/dir200760ec http://icm.eionet.europa.eu/schemas/dir200760ec/CA_UoM_0p3.xsd"

For the validation tool to successfully retrieve the other validation rules from ReportNet then the schema definition needs to point at the schema held on ReportNet. The urls to the latest schema versions can be found at this location (Description='FD Reporting'):

http://converters.eionet.europa.eu/do/uplSchemas

The first validation, described below, checks this definition.

### 5.4.2 Cross-schema and within-schema validation checks

The desktop validation tool checks the integrity of the xml files generated, in terms of data structure, format, and duplicates.

## 5.5 Using the validation tool

The desktop validation tool can be accessed through the Start menu on your desktop, simply go to Start → Programs → The European Commission → ReportNet desktop validation tool

### 5.5.1    Validating an xml file

To validate an xml file, click the "Check XML file" button (see Figure 5.1), browse to the relevant xml file you wish to validate and the validation is run as soon as OK is clicked.
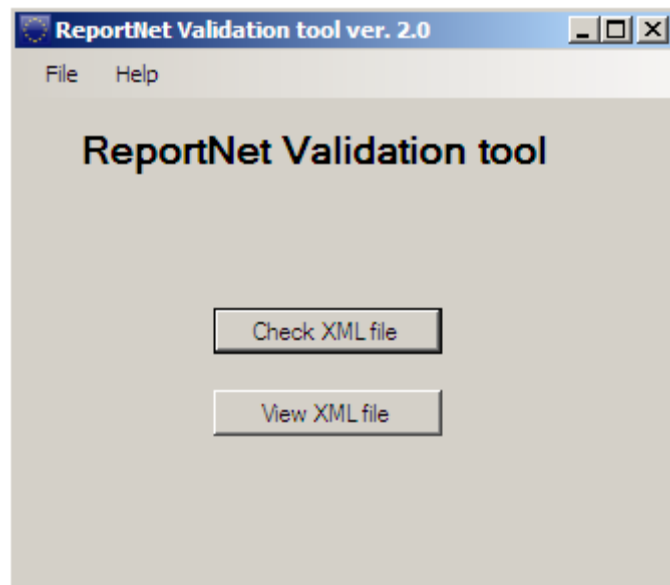


**Figure 5.1 The desktop validation tool**

The main output from the validation tool is presented as shown in Figure 5.2.



**Figure 5.2 Result of validations**

For each of the validations run the result is shown. The detailed reports are marked with the symbols below.

❌ The validation was not passed. The detailed report contains information about the validation including the errors found.

⚠️ The validation was passed with warnings. The detailed report contains information about the validation including the warnings (not shown).

ⓘ The validation was passed successfully. The detailed report contains additional information about the validation.

The detailed reports can be seen by clicking the "Show details…" link. This will open the report as shown below.
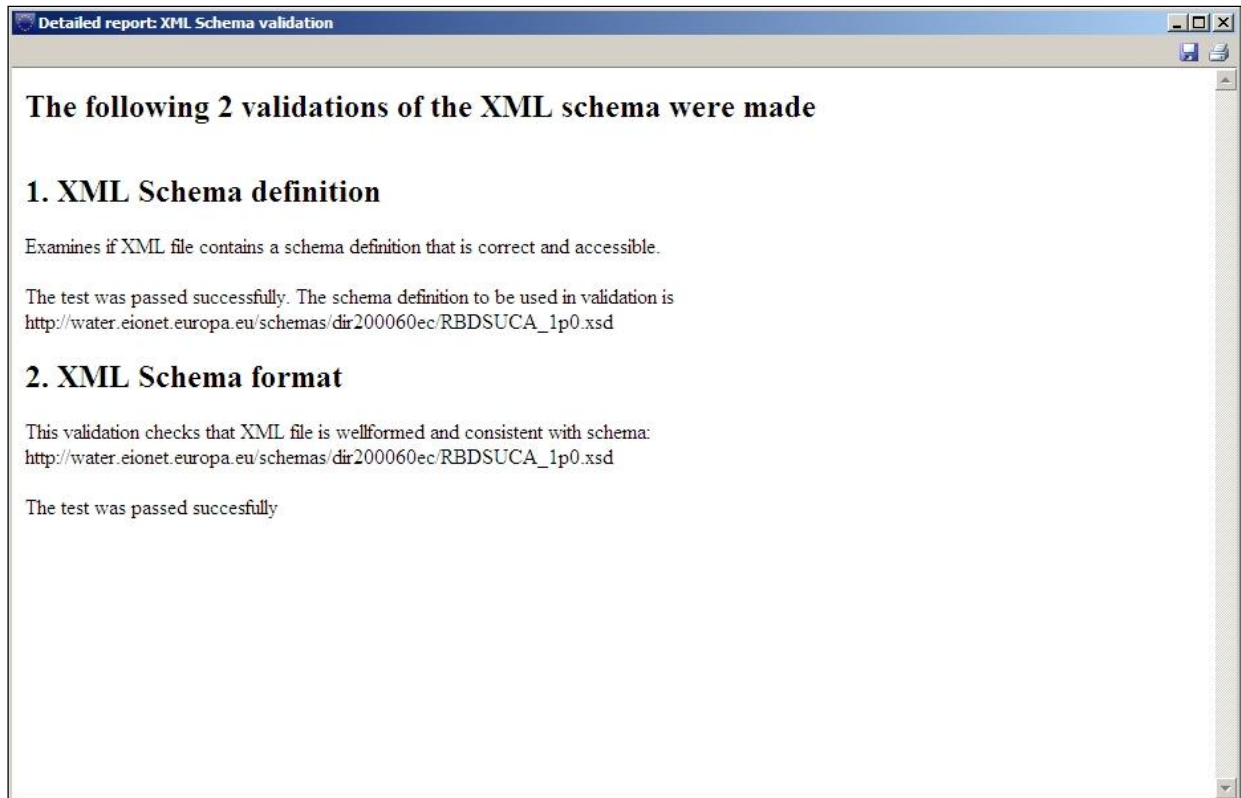


**Figure 5.3 Example of desktop validation output (high level)**
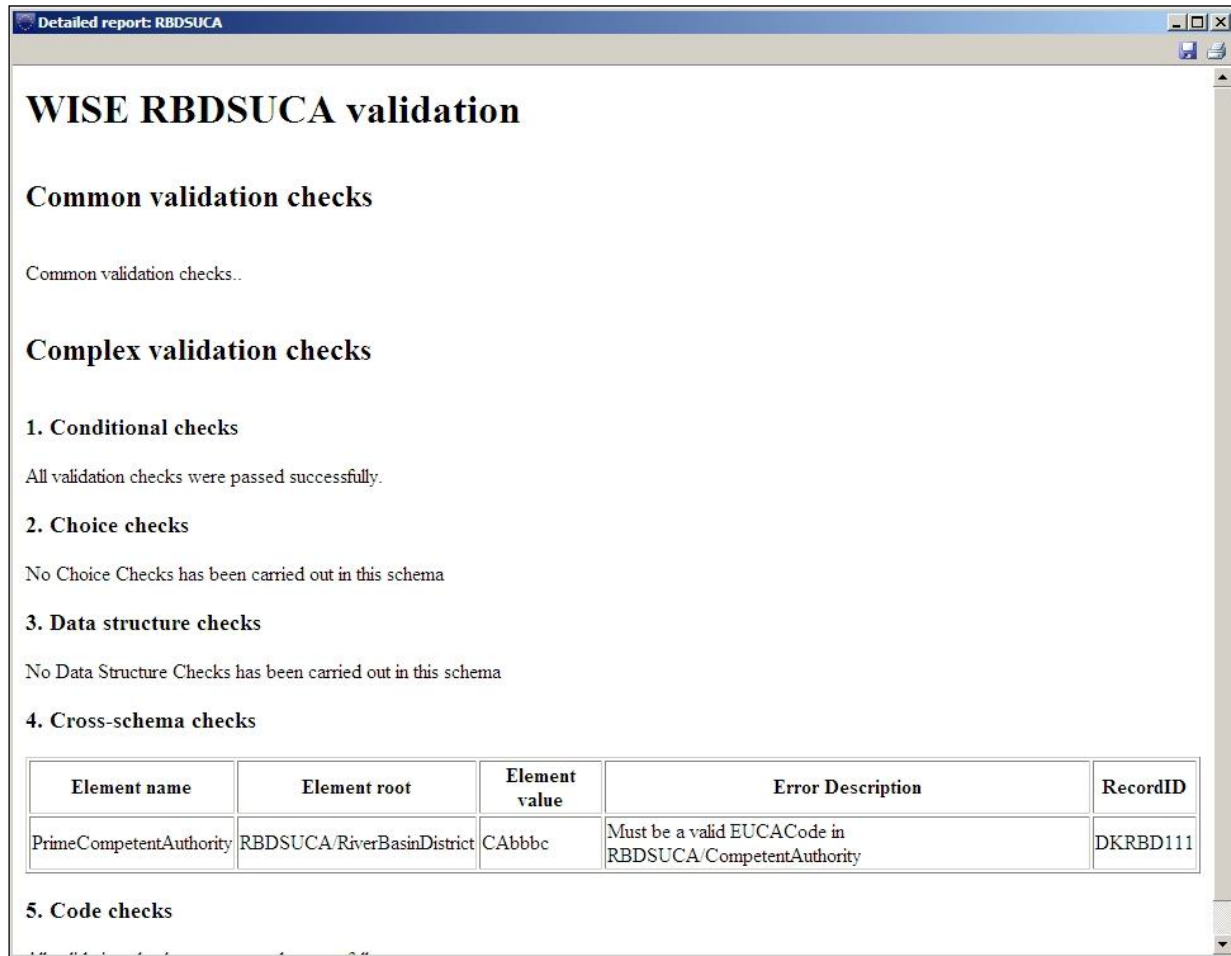
**Figure 5.4 Example of desktop validation output (detailed)**

The results of the validation can be saved and printed from the tool bar in the upper right corner.

### 5.5.2 Viewing an XML file

To view an xml file, click the "View XML file" button (see Figure 5.1) and browse to the relevant xml file you wish to view. When OK is clicked the tool will use the valid schema definition to retrieve the possible conversions which have been set up for this schema in ReportNet.

The conversions listed (see figure 16) with hyperlinks to View the files (if the size of the XML is less then 250kb) or to Save the files, from where they can be opened using the appropriate application by the user.
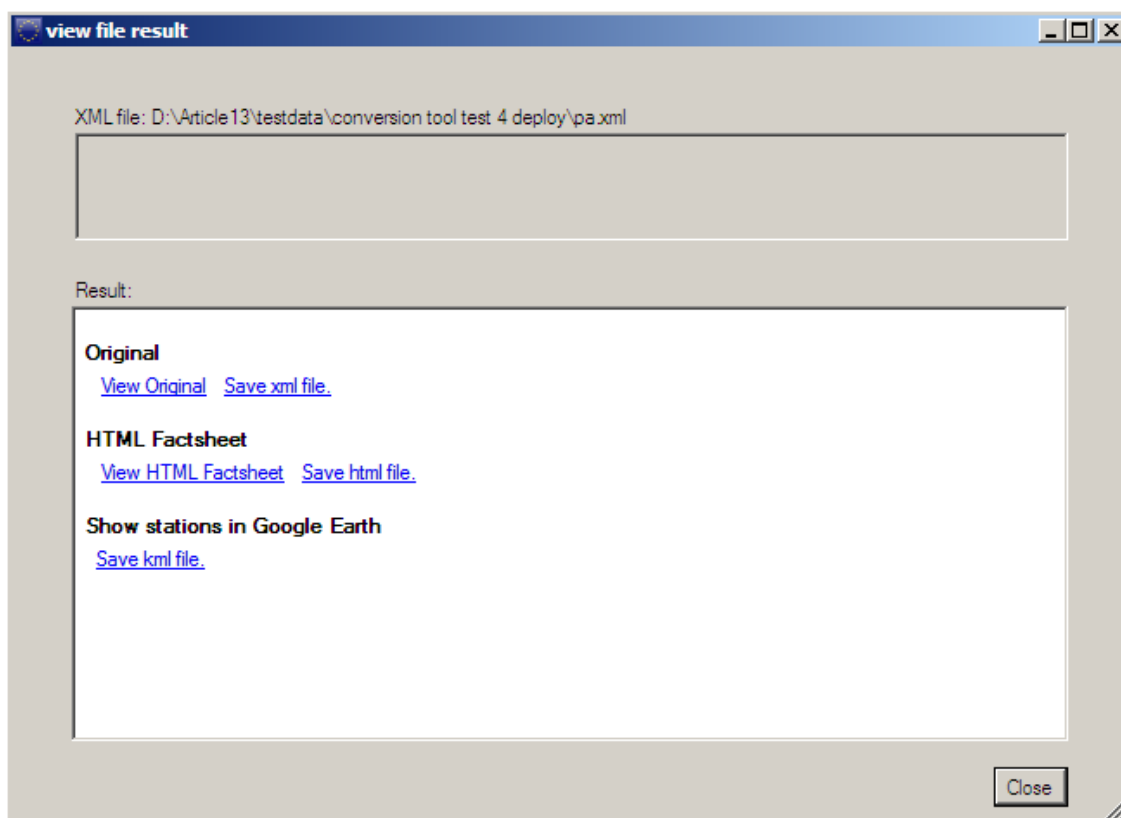
**Figure 16 Example of desktop translation output**

## 5.6 Understanding desktop validation output

If errors are reported under the first schema check – xml schema validation – the line number in the schema where the error was found and a description of the error itself are provided. The checks are typically those described in section 5. You should use a text editor (or similar viewer which gives line numbers - e.g. Notepad++) to display the xml schema and systematically work through the error list correcting as you go. Some examples of errors are:

| Line | Error |
|------|-------|
| 13 | The 'http://water.eionet.europa.eu/schemas/dir200060ec:LAT' element is invalid - The value '15N' is invalid according to its datatype 'http://water.eionet.europa.eu/schemas/dir200060ec/wfdcommon:CoordinateType' - The Pattern constraint failed. |
| 14 | The 'http://water.eionet.europa.eu/schemas/dir200060ec:LON' element is invalid - The value '43562656' is invalid according to its datatype 'http://water.eionet.europa.eu/schemas/dir200060ec/wfdcommon:CoordinateType' - The Pattern constraint failed. |
| 16 | The 'http://water.eionet.europa.eu/schemas/dir200060ec:Natural' element is invalid - The value 'ArtificialArtificialArtificialArtificialA' is invalid according to its datatype 'String' - The Enumeration constraint failed. |
| 27 | The 'http://water.eionet.europa.eu/schemas/dir200060ec:YesNo' element is invalid - The value 'B' is invalid according to its datatype 'http://water.eionet.europa.eu/schemas/dir200060ec/wfdcommon:YesNoCode' - The Enumeration constraint failed. |

**Figure 5.5 - example of validation error message**

You will typically find the first list of errors is not the full list, but as you fix things fresh errors are thrown. This is because as you fix things, more content is added which hasn't been checked previously.
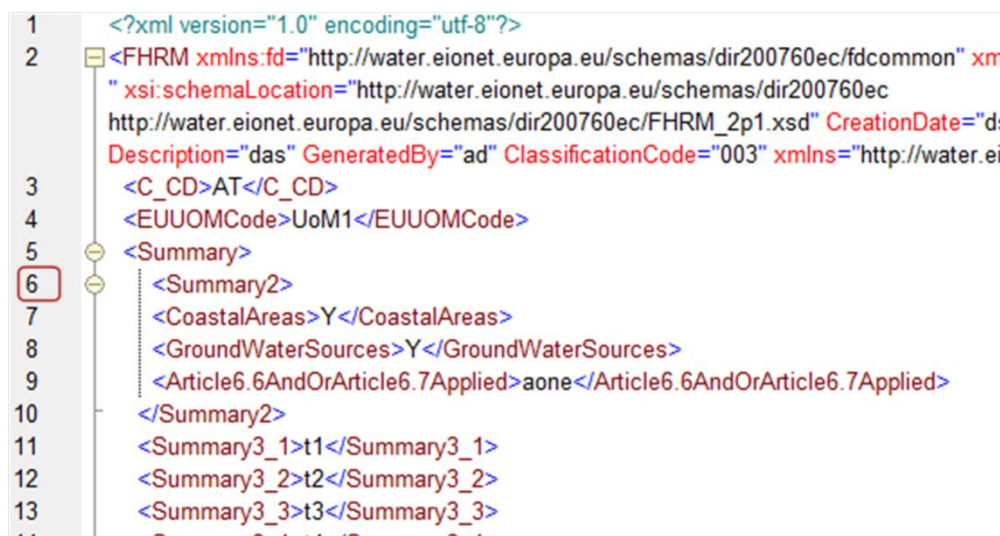
Fixing errors requires a lot of detective work, but with experience recognition of the cause of errors becomes easier. A good practice is not to approach the error list sequentially, but to address simple errors causing multiple messages in order to reduce the size of the list.

### 5.6.1 Being the detective

The validation tool gives the following error message:

| 6 | The element 'Summary' in namespace 'http://water.eionet.europa.eu/schemas/dir200760ec' has **invalid child element** 'Summary2' in namespace 'http://water.eionet.europa.eu/schemas/dir200760ec'. List of possible elements expected: 'Summary1' in namespace 'http://water.eionet.europa.eu/schemas/dir200760ec'. |
|---|---|

Open the generated schema in your test editor and go to line 6



The error message says it was expecting content at line 6 which wasn't there and it also says which elements it was expecting to find. So in this case the tool says that Summary1 is expected – but only Summary2 was found

Part of the detective work is finding in which section of the schema the error has been raised because this tells us which table in the database to look at. Above we work up the schema from the error and we can see we are in the Summary part.

We can look at the schema to see what structure is expected there. The schema diagrams are available as clickable HTML from the resources page. From this diagram we can see the expected structure
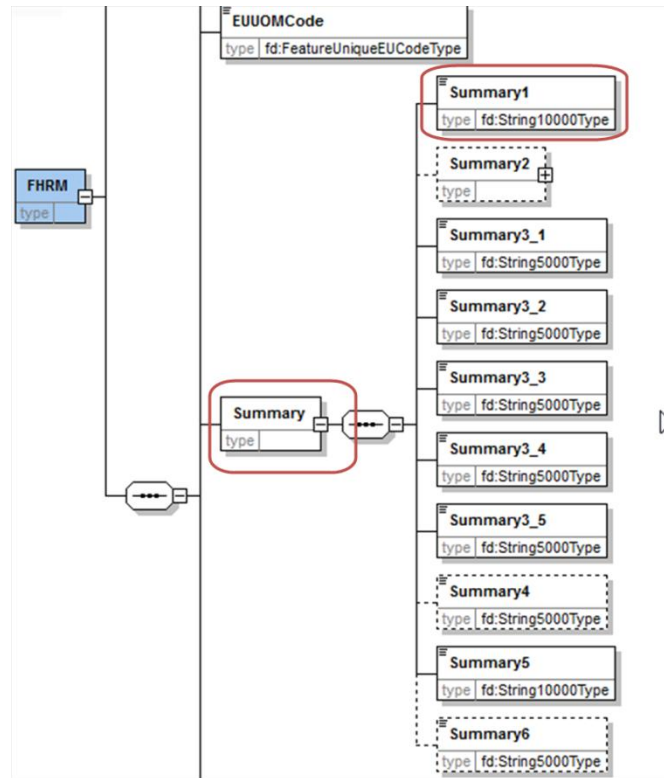
So this agrees with the error message that there should be a Summary1 node here (in this hypothetical case).

So we now know we need to look in the database under the FHRM_Summary table.

Add the required information and then regenerate the XML file for validation again.

Address each error until the validation tool reports no errors. Or reports errors for which you know the reason and intend to report in this way.

### 5.6.2 Typical validation errors

**Invalid child element** can apply to a whole node missing which could be either a row missing (as the above example) in a table or a whole table has not been filled in:

**Invalid child element** on just one field means typically a field has not been filled in for a row in a table. So you need to find which table and which row and check which filed is missing some information:

If you have an item then you can also do a search on the schema HTML page
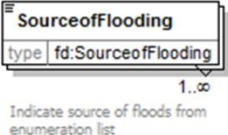
**5-6 Searching for elements in the HTML page**

**The enumeration constraint failed**. Other typical errors include invalid element types – for example where a value has been reported which is not part of an enumeration list

| Line | Error |
|------|-------|
| 23 | The 'http://water.eionet.europa.eu/schemas/dir200760ec:SourceofFlooding' element is invalid - The value 'S14' is invalid according to its datatype 'http://water.eionet.europa.eu/schemas/dir200760ec/fdcommon:SourceofFlooding' - **The Enumeration constraint failed**. |

Here the value S14 is not part of the defined enumeration list which apply to the element 'SourceofFlooding'. By searching for the 'SourceofFlooding' in the HTML – it will be clear that S14 is not part of the defined list

```
element FHRM/FloodHazardMaps/HazardArea/TypeofFloods/SourceofFloodin
```

| | |
|---|---|
| diagram | **SourceofFlooding**<br>type fd:SourceofFlooding<br>1..∞<br>Indicate source of floods from enumeration list |
| type | **SourceofFlooding** |
| facets | Kind          Value annotation<br>enumeration A11<br>enumeration A12<br>enumeration A13<br>enumeration A14<br>enumeration A15<br>enumeration A16<br>enumeration A17 |
| annotation | documentation<br>Indicate source of floods from enumeration list |

### 5.6.3 Correction of validation errors

If the validation results in errors, these must be corrected before uploading the XML file to Reportnet. **It is very important that the data are corrected in the database or original source date, not just in the XML file**. See Appendix D.6 for an explanation on interpreting the error reports.

### 5.6.4 Exceptions to error rules

In some cases an error generated is legitimate and can be ignored. If in doubt, contact the helpdesk. Some general guidelines:
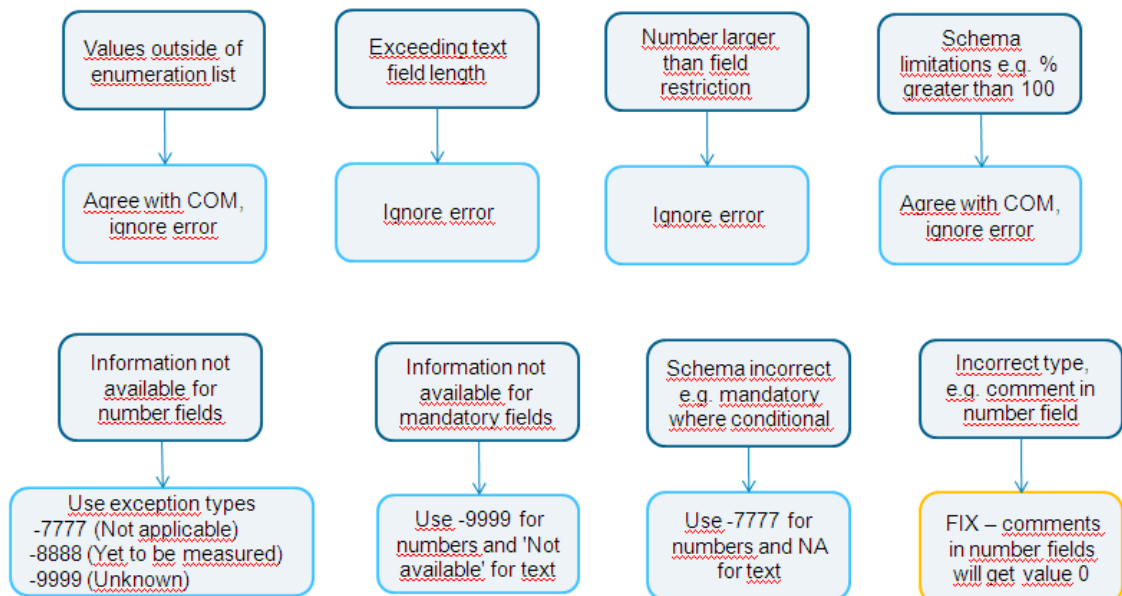


## 5.7 Complex validation checks by element

The table in Appendix H contains full details of the complex checks that are carried out on elements within the schemas in addition to the technical (first) validation checks described in the

previous section. Note: Cross-schema checks are run as part of a manual process after MS has completed submission. The cross-schema check will check if eg. the MarineUnitID's used in all the schemas are defined in the MSFD4Geo schema.

### 5.7.1    Validation check output

The example below shows the validation error output and the information that is given to help determine where the error is:

## Floods Directive FHRM validation

### Complex validation checks

#### 1. Conditional checks

| Element name | Element root | Element value | Error Description | RecordID |
|---|---|---|---|---|
| LowProbability | FHRM/FloodHazardMaps/HazardArea/TypeofFloods | -Not reported- | LowProbability must be populated if Y has been reported in the element 'Article6.6_6.7' under the MediumProbability' | APSFR4 |

- Element name: The name of the element (tag) within the schema which has caused the error
- Element root: Where this element is found within the schema
- Element value: The value which has caused the error (if there is one)
- Error description: Why the error occurred
- RecordID: An ID of the record within which the error was thrown

To find the error requires some detective work because this type of validation does not provide line numbers. If the element value is provided then searching for that value in the XML would be the quickest approach.

### 5.7.2    Correction of validation errors

If the validation results in errors, these must be corrected.

**It is very important that the data are corrected in the source data, not just in the XML file**.

ATKINS

# 6. Uploading xml files onto ReportNet

## 6.1 A Quick guide

This quick guide outlines the Central Data Repository (CDR) delivery procedure in quick steps for the experienced ReportNet User:

1. Download the xml schemas and use your chosen method of generating the information to report against them (i.e. the Access reporting tool supplied, or another).

2. Use the desktop validation tool to check your data and correct any errors found.

3. Enter the Central Data Repository (CDR) by going to http://cdr.eionet.europa.eu

4. Click on the country for which you want to make the delivery

5. Go to: data collection→ European Union (EU) → obligations

6. Click on the relevant subcollection → e.g. Floods Directive Unit of Management and Competent Authorities

7. Add a new envelope called the todays date – e.g. May 26 2010

8. Activate the task (upper right corner)

9. Upload xml file into the envelope and name it [CountryCode]_CAUoM_[YYYYMMDD] - please use PFRA, APSFR, FHRM, FRMP for the other relevant xml files

10. Check that everything is correct and meets your national quality requirements

11. Release envelope and QA and cover letter will automatically be generated.

## 6.2 Overview

To participate in the upload process, you need to first log in with your Eionet username and password by going to http://cdrtest.eionet.europa.eu/ and clicking on the top-right Login button.

If you do not have an Eionet username and password then please contact helpdesk@eionet.europa.eu

If you already started this work and you want to be reminded of the URL of the envelope you are working on, or if you want to see what you can do next, consult the Global Worklist linked from the left-side grey button available from every page.

Whether your job implies drafting the delivery, inspecting the result or finalising the work, the way to start it, and also inform other users that you are executing that action, is to activate a task (e.g. Draft for creating/updating the delivery).

Activation reserves the envelope for you and prevents your colleagues from inadvertently corrupting the data. If you want to transfer the task to someone else, you can deactivate the envelope.

## 6.3 Creating the envelope

First you should login.

There is grey button on the right side of the page saying "New envelope". Click on it to create a delivery envelope. Most of the necessary metadata is already filled out. You need to enter a title for the envelope (E.g name: May 26 2010) and the date, which is the reference date of the data you are reporting.

/Floods reporting workflow user manual v6.0.docx **36**

Then click on "Add". You now have an envelope that you must activate by pressing the 'Activate task' button and uploading files.

## 6.4    Managing the envelope

After activation, you have reserved the envelope for yourself to work on. Other users will not be able to intervene until you:

- complete the task - in which case the system will move forward to the next step in the reporting process; or

- deactivate the task - from the corresponding right-side blue button which keeps the work already done and makes it possible for someone else to take over the task

It is possible to see if anyone else is working on a particular task by consulting the *Status* of the envelope:



To track progress of the upload task, take a look at the History tab of that envelope.

When you have activated a task, you will notice a new tab in the envelope. The system will automatically place you there. This is the activity tab. It contains the information and guidance necessary for you to carry out your task.

## 6.5    Uploading data onto ReportNet

To fulfil the reporting obligations you are required to upload the xml file

The upload facility enables you to upload the xml file, and also add the required shapefiles (or where necessary a .zip file containing the shapefiles). Please remember to use the unzip function in Reportnet if a zip file is uploaded.

### 6.5.1    Naming convention for the xml to be uploaded

The files should be named according to the following format:

> **[EUUOMCode]_[Schema name]_[dateYYYYMMDD].xml**
>
> e.g. DK1234_PFRA_20111222

### 6.5.2    Use of EU Languages

You may use any of the official EU languages to report in the free text fields. You are, however, requested to use only one language for the information within any single schema. It is not necessary to use the same language for all the schemas.

## 6.6    No data to be reported

If no data are available for a UOM – then leave the envelope for the specific UOM empty. It is recommended to upload a short note though explaining the no data availability for the specific UOM.

## 6.7 Checking data quality

Once you have uploaded your xml file, you need to check the quality of your data within Reportnet / EIONET.

The quality assessment (QA) consists of a set of rules checked against each individual report. It happens in two ways:

- During the drafting of the report into the envelope, QA is manually triggered by the user in order to fix possible errors at that stage; it is done by clicking the corresponding "QA" button next to each factsheet. During drafting, the QA result is not stored in the envelope, but is just displayed to the user on a web page. You can save it on your own PC if you wish for your records.

- After the data reporter completes the envelope, QA is automatically triggered by the system on all reports; in this case, the result is stored in the envelope as "Feedback" object; the rules checked are the same as in the case of manual QA.

**Hint: the QA rules are available at [http://converters.eionet.europa.eu/queriesindex.jsp](http://converters.eionet.europa.eu/queriesindex.jsp)**

To start the QA, click on the 'Run QA' links next to your uploaded files. This will run a collection of quality assessment scripts and produce a report describing the specific tests carried out and the results. It can typically detect syntax issues, but won't know if your information makes sense in terms of the other schemas uploaded or not.

More detail on the specific QA functions is provided in chapter 7 of this document.

## 6.8 Understanding validation output in ReportNet

Validation in ReportNet can be run at two points. Manually after an XML file has been uploaded. (Buttons will appear next to the filename in the envelope "QA1" and "QA2"). Output from a manual validation is not saved anywhere, just displayed on-screen. Secondly when an envelope is released all the validations are run on the sub-missed XML file in that envelope and the output is saved.

**XML Schema validation checks "QA1"**

The first schema check (QA1) is the xml schema validation which carries out checks that the XML file is well formed and simple validation checks as described in section 7.1.

Errors detected in this validation will be returned as a table within a texteditor file. The errors within the table will be labelled with the corresponding line and column numbers from the schema so you can easily find and correct the error within your schemas (example below).

| Type | Position | Error message |
|---|---|---|
| ERROR | Line: 7, Col: 30 | cvc-datatype-valid.1.2.1: 'this is not a url' is not a valid value for 'anyURI'. |
| ERROR | Line: 7, Col: 30 | cvc-type.3.1.3: The value 'this is not a url' of element 'URL' is not valid. |
| ERROR | Line: 13, Col: 17 | cvc-pattern-valid: Value '15N' is not facet-valid with respect to pattern '\-{0,1}[0-9]{1,2}\.[0-9]{1,5}' for type 'CoordinateType'. |
| ERROR | Line: 13, Col: 17 | cvc-type.3.1.3: The value '15N' of element 'LAT' is not valid. |
| ERROR | Line: 14, Col: 22 | cvc-pattern-valid: Value '43562656' is not facet-valid with respect to pattern '\-{0,1}[0-9]{1,2}\.[0-9]{1,5}' for type 'CoordinateType'. |
| ERROR | Line: 14, Col: 22 | cvc-type.3.1.3: The value '43562656' of element 'LON' is not valid. |
| ERROR | Line: 27, Col: 21 | cvc-enumeration-valid: Value 'B' is not facet-valid with respect to enumeration '[Y, N, ]'. It must be a value from the enumeration. |
| ERROR | Line: 27, Col: 21 | cvc-type.3.1.3: The value 'B' of element 'YesNo' is not valid. |

Although QA1 performs the same checks as the desktop validation tool the error messages generated in Reportnet validation are not written the same as those in the desktop validation tool. (This is because they use a different engine. Schema validation follows the W3C XML specification http://www.w3.org/TR/xmlschema-1/#concepts-schemaConstraints.)

These error messages are XML specified validation rules or constraints. Constraints have unique names and numbered parts. At the following link http://www.w3.org/TR/xmlschema-1/#concepts-schemaConstraints there is a reference in which any error messages can be looked up. As all errors relate to one of the following general rules https://svn.eionet.europa.eu/projects/Reportnet/wiki/SchemaValTec, it is easier to examine the element and if it is throwing an error, go through each criteria to see if that would throw a specific error. Reference to the original schema can also help pinpoint where the error is coming from.

**Complex validation checks "QA2"**

The second validation that is carried is the business rules as described in section 7.2

## 6.9    Completing the envelope

When you click on  **Release envelope**  you submit your report to EEA.

> **You will not be able to modify any files in the envelope after you click this button.**

The full automated QA process will run on your delivery and a feedback report will be posted to the envelope. EEA and the team responsible for the expert manual review will receive an automatic email that you have completed the envelope. The completion process also automatically generates a cover letter acknowledging receipt of the data uploaded to CDR, including a list of all files uploaded and their precise location within the CDR.

### 6.9.1    Restricted or confidential data

The ReportNet approach means that submitted data is made available for the public to see. However you can specifically restrict individual files from public view if this is your national policy.

To restrict viewing of a file, click on the filename in the envelope. This will lead you to a page showing you the metadata of the file. There you will see a check box which allows you to restrict public access to the file after the envelope has been completed. EEA and the team responsible for the expert manual review can still access all files.

## 6.10    Resubmissions

If you wish to make an amendment to any data already submitted (i.e. envelope released), you must resubmit the whole schema again. This means that if a MS corrects information for e.g. some Unit of Management, the MS has to re-submit the full CAUOM file again, including all the information in the schema, not just those corrected.  This file will replace the previous version. Within the envelope create a new envelope for the re-submission.

# 7. QA/QC

## 7.1 Common validation checks

The following checks are carried out for all elements within the schema.

### 7.1.1 Element types and maximum and minimum limits

Submitted data needs to conform to the data types that have been used for each element in the schema. The data types are as follows:

- String: all characters allowed. The maximum and minimum settings define the maximum number and minimum number of characters that are allowed.

- Integer: only integers are allowed. The maximum and minimum values define the maximum and minimum values that are allowed.

- Decimal: any number is allowed. The maximum and minimum values define the maximum and minimum values that are allowed.

- URL: must be a valid URL format.

### 7.1.2 Required / Conditional / Optional elements

The data within the schemas may be Required, Conditional or Optional for the purposes of automatic validation.

The logic for determining whether an element is considered to be Required, Conditional or Optional is based on the minimum number of occurrences defined for that element and whether the element has been designated as Conditional. All elements that are Conditional are identified in the table in Appendix B and also in the annotation of the schemas themselves.

The logic used is as follows:

- Required: minimum occurrence is set to > 0.

- Conditional: minimum occurrence is set to 0 and there is a conditional check as described in the table in Appendix B.

- Optional: minimum occurrence is set to 0 and there is no conditional check described in the table in Appendix B.

### 7.1.3 Choice check

The Choice check is required in order to ensure that an element has been populated where a choice of attached elements is expected in the schema. In all cases, where an element requires a subsequent choice to be made from a series of attached elements, the choice options are set to minimum 1 and maximum 1, i.e. the validation routine should check that only one of the attached elements has been chosen and populated. For example, either 'FloodData' or the elements under 'FloodNoData' must be populated, but not both.

### 7.1.4 Multiple occurrences

There are instances when multiple occurrences of elements are required. These are required when the maximum occurrence set for an element is > 1.

The following options exist in the schemas:

- Minimum occurrence = 1, maximum occurrence = infinity: there must be at least 1 occurrence of the element (or sequence of elements) and there is no limit to the number of times that element (or sequence of elements) can be repeated.

- Minimum occurrence = 0, maximum occurrence = infinity: there may be no occurrences of the element and there is no limit to the number of times that element (or sequence of elements) can be repeated.

- Minimum occurrence = 1, maximum occurrence = n: there must be at least 1 occurrence of the element (or sequence of elements) and that element (or sequence of elements) can be repeated up to a maximum of n times.

- Minimum occurrence = n, maximum occurrences = n: there must be n occurrences of the element (or sequence of elements) and that element (or sequence of elements) can be repeated up to a maximum of n times.

### 7.1.5    Yes / No elements

There are elements that require a Yes / No answer.  These must be checked to ensure that the correct codes have been used.

The FD Common schema stores codelists that may be referred to by more than one element within the schema.  There are two Yes / No types that have been defined in the FD Common schema:

- YesCode: Y.

- YesNoCode: Y, N.

Where Y= Yes, N=No

### 7.1.6    Code check

The Code check is the most common validation check and is required to ensure that, where relevant, valid codes are selected from the attached codelist defined in the FD Common schema, and that, in almost all cases, only one occurrence of the selected code exists in the data submission, avoiding the creation of duplicates.  For example, element C_CD must be populated with a valid country code defined in the codelist 'CountryCodeType' within the FD Common schema.

# 8. Documents and links

Floods Directive: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32007L0060:EN:NOT

Schema guide:

Document No.1: Floods Directive reporting: User manual v3.0

Document No.2: Floods Directive reporting: User Guide to the reporting schema v3.0

Spatial guidance:

Document No.3: Floods Directive reporting: User Guide to reporting spatial data v3.0

Circabc:

https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp

# Appendix A

## A.1    CAUOM tables linkages

**Country**

| U1 | C_CD |
| | METADATA |
| | URL |

**CAUOM_CompetentAuthorities**

| FK1,I1 | C_CD |
| | WFDCompetentAuthorities |
| U1 | EUCACode |
| | CompetentAuthorityName |
| | CompetentAuthorityNameNL |
| | Acronym |
| | Auth_CD |
| | LegalStatus |
| | Summary |
| | Street |
| | City |
| | CityNL |
| | Country |
| | Postcode |
| | URL |

**CAUOM_CompetentAuthority_References**

| FK1,I1 | EUCACode |
| | Reference |

**CAUOM_CompetentAuthority_Roles**

| FK1,I1 | EUCACode |
| I2 | RoleCode |
| | Comment |

**CAUOM_UnitsofManagement**

| FK1,I1 | C_CD |
| | WFDRiverBasinDistricts |
| U1 | EUUOMCode |
| | UOMName |
| | UOMNameNL |
| | UOM_MS_CD |
| | Area |
| | NationalRelationships |
| | International |
| | InternationalName |
| | InternationalRelationships |
| | PrimeCompetentAuthority |
| | OtherRelevantRoles |

**CAUOM_UOM_OtherCompetentAuthorities**

| FK1,I1 | EUUOMCode |
| | OtherCompetentAuthorities |

**CAUOM_UOM_Additional_PrimeCompetentAuthorities**

| FK1,I1 | EUUOMCode |
| | PrimeCompetentAuthority |

**Attributes**

| | CreationDate |
| | Creator |
| | Email |
| | Description |
| | GeneratedBy |

**CAUOM_UOM_WFD**

| FK1,I1 | EUUOMCode |
| | EURBDCode |

**CAUOM_WFDLink**

| FK1,I2 | EUUOMCode |
| I1 | EURBDCode |
| | TypeOfAssociation |

Legend:

+O--O< One to many relation

Order to fill data into table
— Level 0
— Level 1
— Level 2
— Not linked

## A.2    PFRA tables linkages

**CAUOM_UnitsofManagement**

| I1 | C_CD |
| U1 | EUUOMCode |
| | UOMName |
| | UOMNameNL |
| | UOM_MS_CD |

**PFRA_ArticleApplied**

| FK1 | EUUOMCode |
| U1 | ArticleApplied |
| | OverallApproach |
| | PastAdverseConsequences |
| | SignificantAdverseConsequences |

**PFRA_SpecificArea**

| FK1 | ArticleApplied |
| | SpecificAreaCode |
| | NameofSpecificArea |

Attributes shall be filled with the required information in order to create the xml schema from the conversion tool.

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**\***
Link to CAUOM table can only be established if the EUUOMCode has been reported in the CAUOM schema.

## A.3 APSFR tables linkages

| CAUOM_UnitsofManagement | |
| --- | --- |
| | C_CD |
| I1 | C_CD |
| FK1,U1 | EUUOMCode |
| | UOMName |
| | UOMNameNL |
| | UOM_MS_CD |
| | Area |

**\***

| APSFR_Summary | |
| --- | --- |
| U1 | EUUOMCode |
| | SummaryofMethodology |
| | SummaryofCoordination |

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Attributes shall be filled
with the required
information in order to
create the xml schema
~~from the conversion tool.~~

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Attributes shall be filled
with the required
information in order to
create the xml schema
from the conversion tool.

**\***
 Link to CAUOM table can only be established
if the EUUOMCode has been reported in the
CAUOM schema.

# A.4 FHRM tables linkages (Medium Probability used as example)

**Attributes**

| | |
|---|---|
| U1 | Schema name |
| | CreationDate |
| | Creator |
| | Email |
| | Language |
| | Description |
| | GeneratedBy |
| | ClassificationCode |

**FHRM_Summary**

| | |
|---|---|
| U1 | EUUOMCode |
| | Summary1 |
| | Summary2_CoastalAreas |
| | Summary2_GroundWaterSources |
| | Summary2_Article6_6AndOrArticle6_7 |
| | Summary3_1 |
| | Summary3_2 |
| | Summary3_3 |
| | Summary3_4 |
| | Summary3_5 |
| | Summary4 |
| | Summary5 |
| | Summary6 |

**FHRM_MedProbIdentifier_HMP**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | EU_CD_HMP |

Attributes shall be filled with the required information in order to create the xml schema from the conversion tool.

**FHRM_OtherInformation**

| | |
|---|---|
| FK1,I1 | EUUOMCode |
| | Hyperlink |
| | DescriptionLink |

**FHRM_FloodHazardMapsAdditionalFloodTypes**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| I2 | TypeofFlooding |
| | OtherTypeofFlooding |

**FHRM_MedProbability**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | Article6_6AndOr6_7Applied |
| | DescriptionofProbability |
| | Frequency |
| | Recurrence |
| | ProbabilityofOccurence |

**FHRM_MedProbEconomicActivity**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | TypeEconomicActivity |
| | OtherConsequenceDescription |

**FHRM_FloodHazardMaps**

| | |
|---|---|
| U1 | FHM_UniqueCode |
| FK1,I2 | EUUOMCode |
| I1 | APSFRCode |
| I3 | SourceofFlooding |
| | OtherSource |

**FHRM_MedProbEconomicActivityNACECodes**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | NACECodes |

**FHRM_MedProbInhabitantsAffected**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | OverAll_InhabitantsAffected |
| | Day |
| | Night |
| | TransitoryPopulation |
| | OtherPeople |

**FHRM_MedProbEnvironmentIED_EPRTRCodes**

| | |
|---|---|
| FK1,I2 | FHM_UniqueCode |
| I1 | EPRTRCode |

**FHRM_MedProbEnvironmentConsequences**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | TypeEnvironment |
| | OtherConsequenceDescription |

**FHRM_MedProbEnvironmentTypeIED**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| I2 | TypeIEDInstallation |
| | NaceCode |

**FHRM_MedProbEnvironmentIED**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | AffectedIEDInstallations |

**FHRM_MedProbEnvironmentPA**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| I2 | ProtectedAreas |
| | ThematicID |

**FHRM_MedProbOtherConsequences**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | TypeofPotentialConsequence |
| | ExplanationPotentialConsequence |

**FHRM_MedProbCulturalHeritageConsequence**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | TypeCulturalHeritage |
| | OtherCulturalHeritageConsequenceDescription |

**FHRM_MedProbEnvironment**

| | |
|---|---|
| FK1,I1 | FHM_UniqueCode |
| | OtherInformation |

Legend:
- ⊢O⟨ One to many relation
- Order to fill data into table
- Level 0
- Level 1
- Level 2
- Level 3
- Not linked

# A.5  A.5 FRMP tables linkages

**FRMP_SummaryReview**

| | |
|---|---|
| U1 | EUUOMCode |
| | SummaryChanges |
| | SummaryFRMPProgress |
| | SummaryAdditionalMeasures |

**FRMP_SummaryOverall**

| | |
|---|---|
| FK1,I2 | EUUOMCode |
| I1 | APSFRCode |
| | SummaryObjectives |
| | SummaryAspects |
| | SummaryFloodExtent |
| | SummaryDevelopment |
| | SummaryCoordination |
| | SummaryCostBenefit |
| | SummaryConsultation |
| | SummaryProgress |
| | SummaryClimateChange |

**FRMP_WFDMeasureCode**

| | |
|---|---|
| FK1,I1 | EUUOMCode |
| I2 | WFDMeasureCode |

**FRMP_MeasureCodes**

| | |
|---|---|
| FK1,FK2,FK3,I1 U1 | EUUOMCode |
| | MeasureCode |
| | MeasureName |
| | MeasureAspect |
| | MeasureLocation |
| | GeographicCoverage |
| | Objectives |
| | Timetable |
| | CategoryofPriority |
| | Summary |
| | ProgressofImplementation |
| | ProgressDescription |
| | Cost |
| | CostExplanation |
| | OtherCommunityAct |
| | OtherDescription |

**FRMP_Hyperlinks**

| | |
|---|---|
| FK1,FK2,I1 | EUUOMCode |
| | Hyperlink |
| | DescriptionofHyperlink |

**FRMP_MeasureType**

| | |
|---|---|
| FK1,I1 | MeasureCode |
| | MeasureType |

**Attributes**

| | |
|---|---|
| U1 | Schema name |
| | CreationDate |
| | Creator |
| | Email |
| | Description |
| | GeneratedBy |
| I1 | MD_ClassificationCode |

**FRMP_ResponsibleAuthorities**

| | |
|---|---|
| FK1,I1 | MeasureCode |
| | NameResponsibleAuthority |
| | LevelofResponsibility |

# Appendix B

## B.1 Complex validation checks

Key to Type of Check:

1 = Conditional check

2 = Cross-schema check

| Element name | Element root | Type of Check | Description/Error message |
|---|---|---|---|
| **Schema: CA_UOM** | | | |
| EUCACode | CA_UOM | 2 | EUCACode must be unique within the MS. |
| CompetentAuthority | CA_UOM/CompetentAuthority | 1 | Must be populated if 'WFDCompetentAuthorities' are set to "N". |
| EUUOMCode | CA_UOM/ UnitsOFManagement | 2 | EUUOMCode must be unique within the MS. |
| NationalRelationships | CA_UOM/ UnitsOFManagement | 1 | Must be populated if OtherCompetentAuthorities is populated. |
| InternationalName | CA_UOM/ UnitsOFManagement | 1 | Must be populated if International = "Y". |
| InternationalRelationships | CA_UOM/ UnitsOFManagement | 1 | Must be populated if International = "Y". |
| PrimeCompetentAuthority | CA_UOM/ UnitsOFManagement | 2 | Must be a valid EUCACode in CA_UoM/CompetentAuthority. |
| OtherCompetentAuthorities | CA_UOM/ UnitsOFManagement | 2 | Must be a valid EUCACode in CA_UoM /CompetentAuthority. |
| **Schema: PFRA** | | | |
| EUUOMCode | PFRA | 2 | Must be a valid EUUOMCode in CA_UOM/ UnitsOfManagement or valid sub-unit code (EUSubUnitCode) ind the WFD, RBDSUCA Schema. |
| PFRAInformation | PFRA /PFRAInformation | 1 | At least one of the elements FloodInformationArt4, TransitionalMeasuresArt13.1.a or TransitionalMeasuresArt13.1.b must be populated |
| PFRASummaryInformation | PFRA /Article4Applied | 1 | Must be populated if article 4 and/or article 13.1.a has been applied and in the case that A13.1.b is applied for a part of the UoM/RBD or for a specific flood type. |
| DateofCommencement | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData | 1 | Must be populated if CategoryofFlood = "past flood" |
| DurationofFlood | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData | 1 | Must be populated if CategoryofFlood = "past flood" |
| OtherSource | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData / TypeofFloods | 1 | Must be populated if SourceofFlooding = "A16" (other) |

| Element name | Element root | Type of Check | Description/Error message |
|---|---|---|---|
| OtherMechanism | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData / TypeofFloods | 1 | Must be populated if MechanismofFlooding = "A25" (other) |
| OtherCharacteristics | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData / TypeofFloods | 1 | Must be populated if CharacteristicsofFlooding = "A39" (other) |
| OtherConsequenceDescription (HumanHealth) | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData /TypeofConsequence/ HumanHealth | 1 | Must be populated if TypeHumanHealth = "B13" (Other) |
| OtherConsequenceDescription (Environment) | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData /TypeofConsequence/ Environment | 1 | Must be populated if TypeEnvironment = "B24" (Other) |
| OtherConsequenceDescription (CulturalHeritage) | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData /TypeofConsequence/ CulturalHeritage | 1 | Must be populated if TypeCulturalHeritage = "B33" (Other) |
| OtherConsequenceDescription (EconomicActivity) | PFRA /PFRAInformation / Article4Applied / FloodEvents/ FloodData /TypeofConsequence/ EconomicActivity | 1 | Must be populated if TypeEconomicActivity = "B45" (Other) |
| OtherSource | PFRA /PFRAInformation / TransitionalMeasuresArt13.1.a/TypeofFloods/TypeofFlood | 1 | Must be populated if SourceofFlooding = "A16" (other) |
| OtherMechanism | PFRA /PFRAInformation / TransitionalMeasuresArt13.1.a/TypeofFloods/TypeofFlood | 1 | Must be populated if MechanismofFlooding = "A25" (other) |
| OtherCharacteristics | PFRA /PFRAInformation / TransitionalMeasuresArt13.1.a/TypeofFloods/TypeofFlood | 1 | Must be populated if CharacteristicsofFlooding = "A39" (other) |
| OtherSource | PFRA /PFRAInformation / TransitionalMeasuresArt13.1.b/TypeofFloods/TypeofFlood | 1 | Must be populated if SourceofFlooding = "A16" (other) |
| OtherMechanism | PFRA /PFRAInformation / TransitionalMeasuresArt13.1.b/TypeofFloods/TypeofFlood | 1 | Must be populated if MechanismofFlooding = "A25" (other) |
| OtherCharacteristics | PFRA /PFRAInformation / TransitionalMeasuresArt13.1.b/TypeofFloods/TypeofFlood | 1 | Must be populated if CharacteristicsofFlooding = "A39" (other) |
| InternationalInformationExchange | PFRA /PFRAInformation /PFRASummaryInformation | 2 | Must be populated if International = "Y" in CA_UOM/ UnitsOfManagement |
| **Schema: APSFR** | | | |
| EUUOMCode | APSFR | 2 | Must be a valid EUUOMCode in CA_UOM/ UnitsOfManagement or valid sub-unit code (EUSubUnitCode) ind the WFD, RBDSUCA Schema |
| AreasofFloodRisk | APSFR | 2 | Must be populated if either FloodInformationArt4 and/or TransitionalMeasuresArt13.1.a in PFRA /PFRAInformation are populated |
| Art13.1.bSpatialInformation | APSFR | 2 | Must be populated if TransitionalMeasuresArt13.1.b in PFRA /PFRAInformation is populated |
| SummaryofMethodology | APSFR | 2 | Must be populated if either FloodInformationArt4 and/or TransitionalMeasuresArt13.1.a in PFRA /PFRAInformation are populated |

| Element name | Element root | Type of Check | Description/Error message |
|---|---|---|---|
| SummaryofCoordination | APSFR | 2 | Must be populated if either FloodInformationArt4 and/or TransitionalMeasuresArt13.1.a in PFRA /PFRAInformation are populated and if International = "Y" in CA_UOM/UnitsOfManagement is populated |
| APSFRCode | APSFR /AreasofFloodRisk | 2 | APSFRCode must be unique within the MS |
| OtherSource | APSFR /AreasofFloodRisk /TypeofFloods | 1 | Must be populated if SourceofFlooding = "A16" (other) |
| OtherMechanism | APSFR /AreasofFloodRisk /TypeofFloods | 1 | Must be populated if MechanismofFlooding = "A25" (other) |
| OtherCharacteristics | APSFR /AreasofFloodRisk /TypeofFloods | 1 | Must be populated if CharacteristicsofFlooding = "A39" (other) |
| OtherConsequenceDescription | APSFR /AreasofFloodRisk /TypeofPotentialConsequences | 1 | Must be populated if TypeHumanHealth = "B13" (Other) |
| OtherConsequenceDescription | APSFR /AreasofFloodRisk /TypeofPotentialConsequences | 1 | Must be populated if TypeEnvironment = "B24" (Other) |
| OtherConsequenceDescription | APSFR /AreasofFloodRisk /TypeofPotentialConsequences | 1 | Must be populated if TypeCulturalHeritage = "B33" (Other) |
| OtherConsequenceDescription | APSFR /AreasofFloodRisk /TypeofPotentialConsequences | 1 | Must be populated if TypeEconomicActivity = "B45" (Other) |
| InternationalInformationExchange | PFRA /PFRAInformation /PFRASummaryInformation | 2 | Must be populated if International = "Y" in CA_UOM/ UnitsOfManagement |
| **Schema: FHRM** | | | |
| APSFRCode | FHRM / FloodHazardMaps | 2 | APSFRCode must be unique within the MS |
| OtherSource | FHRM /FloodHazardMaps/HazardArea/TypeofFloods | 1 | Must be populated if SourceofFlooding = "A16" (other) |
| OtherMechanism | FHRM /FloodHazardMaps/HazardArea/TypeofFloods | 1 | Must be populated if MechanismofFlooding = "A25" (other) |
| OtherCharacteristics | FHRM /FloodHazardMaps/HazardArea/TypeofFloods | 1 | Must be populated if CharacteristicsofFlooding = "A39" (other) |
| LowProbability | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood | 1 | Must be populated if Y has been reported in the element 'Article6.6_6.7' under the MediumProbability |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ LowProbability/ FloodRiskMap/ ExposedElement/ EconomicActivity/ EconomicActivityConsequence | 1 | Must be populated if TypeEconomicActivity = "B45" (Other) |

| Element name | Element root | Type of Check | Description/Error message |
|---|---|---|---|
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ LowProbability/ FloodRiskMap/ ExposedElement/ Environment/ EnvironmentalConsequences | 1 | Must be populated if TypeEnvironment = "B24" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ LowProbability/ FloodRiskMap/ ExposedElement/ | 1 | Must be populated if TypeCulturalHeritage = "B33" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ MediumProbability/ MediumScenario/ FloodRiskMap/ ExposedElement/ EconomicActivity/ EconomicActivityConsequence | 1 | Must be populated if TypeEconomicActivity = "B45" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ MediumProbability/ MediumScenario/ FloodRiskMap/ ExposedElement/ Environment/ EnvironmentalConsequences | 1 | Must be populated if TypeEnvironment = "B24" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ MediumProbability/ MediumScenario/ FloodRiskMap/ ExposedElement/ | 1 | Must be populated if TypeCulturalHeritage = "B33" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ HighProbability/ HighScenario/ FloodRiskMap/ ExposedElement/ EconomicActivity/ EconomicActivityConsequence | 1 | Must be populated if TypeEconomicActivity = "B45" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ HighProbability/ HighScenario/ FloodRiskMap/ ExposedElement/ Environment/ EnvironmentalConsequences | 1 | Must be populated if TypeEnvironment = "B24" (Other) |
| OtherConsequenceDescription | FHRM /FloodHazardMaps/HazardArea/ QuantitativeLikelihood/ HighProbability/ HighScenario/ FloodRiskMap/ ExposedElement/ | 1 | Must be populated if TypeCulturalHeritage = "B33" (Other) |