

USER GUIDE TO XML & DATA MODEL

v3.4

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Introduction

The user guide to the AQ e-Reporting XML schema & data model is targeted at air quality experts working in cooperation with their IT support staff working on the implementation of reporting under [Decision 2011/850/EU](#). This guide aims to provide necessary information for all data-flows and elements required by this Decision.

The guide currently describes in detail the following information items from an AQ perspective:

- Online resources
- Common XML structure for e-reporting
- Common information elements / data types
 - The GML identifier
 - The INSPIRE identifier
 - The AQ reporting header
 - Environmental objective type
- Data flow B – Information on zones and agglomerations
- Data flow C – Information on the assessment regime
- Data flow D – Information on the assessment methods
- Data flow E – Information on assessment data (Observational data from fixed and indicative sampling points)
- Data flow G – Information on Attainment of Environmental Objectives

Online resources

In order to facilitate the implementation of the [Decision 2011/850/EU](#), the European Environment Agency (EEA) has set up the [Air Quality Portal](#) to support the transition to e-Reporting. The AQ portal, managed by ETC/ACM, is the central HUB for reporting air quality data across Europe via e-Reporting. The AQ portal includes online resources for:

- Guidelines & reports for e-Reporting - <http://www.eionet.europa.eu/aqportal/guidelines>
- Controlled code lists and vocabularies for e-Reporting – <http://www.eionet.europa.eu/aqportal/codelists>
- The latest data model & AQD schemata - <http://www.eionet.europa.eu/aqportal/datamodel>
- Central repository for data deliveries – piloting phase <http://www.eionet.europa.eu/aqportal/Drep1>
- Helpdesk for reporting – <http://www.eionet.europa.eu/aqportal/HelpdeskFAQ>

Guidance, guides and guideline documents

A range of guidance documents has been prepared by DG-ENV, the EEA and ETC/ACM to describe different components of the e-Reporting process. These support the implementation of both legal obligations (implementing provisions) and provide informative best practice on effective e-Reporting. A list is available on the [air quality portal](#)¹ covering:

- User guide to XML and data model (latest version)
- Aggregation rules for e-Reporting
- Aggregation benchmarking datasets
- The latest version of DG Environment's Guidance on the "Commission Implementing Decision laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air (Decision 2011/850/EU)".

¹ <http://www.eionet.europa.eu/aqportal/guidelines>

INSPIRE data specification and draft guidelines for AQ e-Reporting

A list of latest INSPIRE data specifications upon which the Air Quality Data Model has been based, is also available at the portal. Links to this information on the INSPIRE web site have been provide on the Portal and below. An air quality specific interpretation of these INSPIRE requirements including how they are implemented in the e-Reporting data model is summarised in this document to facilitate adoption of INSPIRE elements within the Air Quality Community:

[Data Specification on Area management/restriction/regulation zones and reporting units - Technical Guidelines](#)

[Data Specification on Environmental monitoring Facilities - Technical Guidelines](#)

[Data Specification on Atmospheric Conditions - Meteorological geographical features](#)

[INSPIRE Generic Conceptual Model](#)

[Guidelines for the use of Observations & Measurements and Sensor Web Enablement - related standards in INSPIRE Annex II and III data specification development](#)

Controlled code lists & vocabularies for AQ e-Reporting

The contents of many elements within the AQ e-Reporting data model are controlled via code lists & vocabulary managed by the EEA. The code lists are managed outside the schemata itself. Latest information and updates are available at <http://www.eionet.europa.eu/aqportal/codelists>. The full list of EEA vocabularies are available at: <http://dd.eionet.europa.eu/vocabularies>

The following vocabularies are of relevance to AQ e-Reporting:

- aq (Air Quality Directive e-Reporting)
- common (Shared vocabularies)
- uom (Units of Measurement)

The syntax to link to any air quality code is as follows: **`http://dd.eionet.europa.eu/vocabulary/aq/<CodeListId>/<ValueId>`**

Focus

Code list example – air quality domain

In order to declare to the pollutant being observed as Ozone (O₃), the code is constructed as follows:
`http://dd.eionet.europa.eu/vocabulary/aq/pollutant/7` - [url link](#).

In order to declare to the AQ zone as an Agglomeration, the code is constructed as follows:
`http://dd.eionet.europa.eu/vocabulary/aq/zonetype/agg` - [url link](#).

EEA's central vocabulary repository is also used for other environmental domains including water quality, biodiversity, noise etc. There are some common codes that use the syntax

`http://dd.eionet.europa.eu/vocabulary/common/<CodeListId>/<ValueId>`

`http://dd.eionet.europa.eu/vocabulary/uom/<CodeListId>/<ValueId>`

Focus**Code list example – units of measurement**

In order to declare the concentration unit of any measurement, like $\mu\text{g}/\text{m}^3$, the code is constructed as follows:

<http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3> - [url link](#).

To declare the time unit, the code would be like: <http://dd.eionet.europa.eu/vocabulary/uom/time/hour> - [url link](#).

In addition to the AQ e-Reporting specific code lists, some elements require entries from the INSPIRE codelists located at <http://inspire.ec.europa.eu/codelist/>. The syntax to be followed is the same as shown above, appending the CodeListId and ValueId to the base codelist path as follows: **<http://inspire.ec.europa.eu/codelist/<CodeListId>/<ValueId>>**.

Focus**Code list example – INSPIRE domain**

In order to declare that the media being monitored at an AQD_Station is air, the code is constructed as follows:

<http://inspire.ec.europa.eu/codelist/MediaValue/air> - [url link](#).

XML schema documents for AQ e-Reporting

The latest AQ e-Reporting schema is maintained at <http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0/>. This link can be accessed via the air quality portal. The folder contains the latest schema and accompanying information such as an Excel based mapping document which links AQD IPR data elements to the schema data elements using XPath notation. The AQ e-Reporting schema is version controlled to accommodate changes in the data model, which will be kept to a minimum but may occur from time to time². An internal schema version attribute tag is used to indicate the version of the schema e.g. version="1.0.7". When a schema version is superseded, this will be deprecated.

The latest stable XSD will always be found at <http://dd.eionet.europa.eu/schemas/id2011850eu-1.0/AirQualityReporting.xsd>

UPDATE

Focus

LATEST XML schema document

<http://dd.eionet.europa.eu/schemas/id2011850eu-1.0/AirQualityReporting.xsd>

Central repository for AQ e-Reporting data deliveries

The Central Data Repository (CDR) is part of EEA's ReportNet architecture. The data reports within each country collection are arranged under the relevant reporting obligations.

For AQ e-Reporting, Figure 1 shows an example of CDR folder for annual reporting of air quality information (excluding primary up-to-date (E2a) information). Links to all official country reports can be found at <http://www.eionet.europa.eu/eqportal/Drep1>

² EEA's policy for versioning of the Air Quality IPR e-Reporting XML schema can be accessed at <http://dd.eionet.europa.eu/schemas/id2011850eu-1.0/Rules%20for%20XML%20schema%20versioning-v1.1.pdf>

Reporting under air quality directives 2004/107/EC and 2008/50/EC

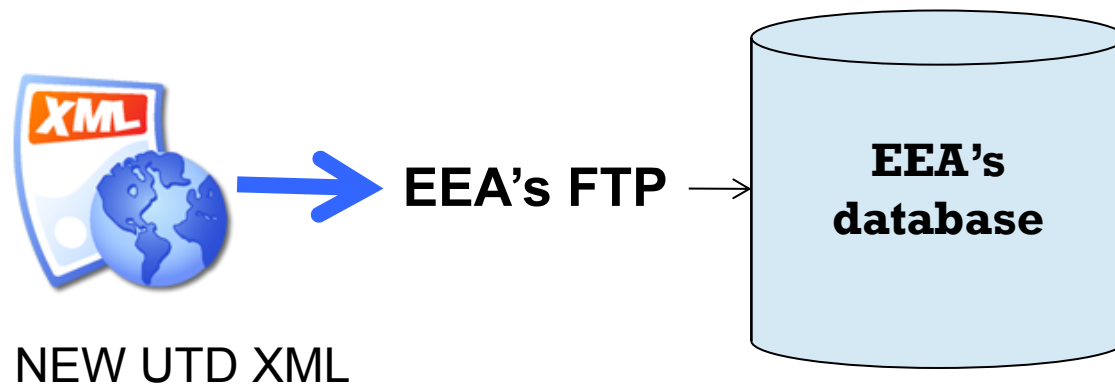
Envelopes and subcollections

-  [\(B\) Information on zones and agglomerations \(Article 6\)](#)
-  [\(B\) Preliminary information on zones and agglomerations \(Article 6\)](#)
-  [\(C\) Information on the assessment regime \(Article 7\)](#)
-  [\(C\) Preliminary information on the assessment regime \(Article 7\)](#)
-  [\(D\) Information on the assessment methods \(Articles 8 and 9\)](#)
-  [\(E1a\) Information on primary validated assessment data - measurements \(Article 10\)](#)
-  [\(E1b\) Information on primary validated assessment data - modelled \(Article 10\)](#)
-  [\(F1a\) Information on generated aggregated data - primary validated measurements \(Article 11\)](#)
-  [\(F1b\) Information on generated aggregated data - primary validated modelled \(Article 11\)](#)
-  [\(F2\) Information on generated aggregated data - primary up-to-date measurements \(Article 11\)](#)
-  [\(G\) Information on the attainment of environmental objectives \(Article 12\)](#)
-  [\(H\) Information on air quality plans \(Article 13\)](#)
-  [\(I\) Information on source apportionment \(Article 13\)](#)
-  [\(J\) Information on the scenario for the attainment year \(Article 13\)](#)
-  [\(K\) Information on measures \(Articles 13 and 14\)](#)

Figure 1 – Central repository for data deliveries - <http://cdr.eionet.europa.eu/CC/eu/aqd> where CC is the country ISO code.


Data deliveries for primary up-to-date data (E2a)

For the reporting of primary up-to-date assessment data (Article 10 of Decision 2011/850/EC), the EEA will facilitate protected ftp sites for the hourly delivery of data (<ftp://dataconnector.eea.europa.eu>) and harvesting from SOS instances that support the AQ e-Reporting data model. Please contact **both** Peter Kjeld (Peter.Kjeld@eea.europa.eu) and Jaume Targa (jaume.targa@4sfera.com) for username & passwords. If EEA needs to pick up UTD XML files from countries' ftp, please notify contacts above.



The EEA's helpdesk for AQ e-Reporting

EEA's AQ e-Reporting portal includes a helpdesk to support Eionet countries in participation in AQ e-Reporting. The helpdesk can be accessed directly from the portal and aims to provide quick response to questions and requests for support.

 **Message boards for pilot countries** [Zip download](#)

These message boards should support the resolution of practical issues during the piloting of [the e-reporting dataflows](#). Pilot data reporters and their IT support, ETC ACM, EEA and DG ENV pilot teams can add or reply to messages. Useful hints and examples from these messages can be re-used later in the formal Guidelines for reporting.

[Go to parent](#)

Submit: [Edit folder](#) [Delete folder](#) [Subobjects](#) [Approvals](#) [Sort order](#) [Restrict](#) [CSV import](#)

[Zip import](#)

[Select all](#) [Copy](#) [Cut](#) [Delete](#)








<input type="checkbox"/>	Type	Title	Owner	Modification date and time	File size	Edit
<input type="checkbox"/>		Aggregation Routines [2 comment(s)]	targajau (Jaume Targa)	27/05/2013, 13:29	n/a	
<input type="checkbox"/>		Codelist [2 comment(s)]	targajau (Jaume Targa)	27/05/2013, 13:29	n/a	
<input type="checkbox"/>		Data flow C - Attainment [2 comment(s)]	targajau (Jaume Targa)	30/05/2013, 15:33	n/a	
<input type="checkbox"/>		Dataset B - zones [2 comment(s)]	targajau (Jaume Targa)	27/05/2013, 13:29	n/a	
<input type="checkbox"/>		Dataset D - meta information [2 comment(s)]	targajau (Jaume Targa)	27/05/2013, 13:29	n/a	
<input type="checkbox"/>		Dataset E1a - Primary validated measurements [2 comment(s)]	targajau (Jaume Targa)	27/05/2013, 13:29	n/a	
<input type="checkbox"/>		Dataset E2a - Primary up-to-date measurements [2 comment(s)]	targajau (Jaume Targa)	27/05/2013, 13:29	n/a	

Figure 2 – Helpdesk for e-Reporting - <http://www.eionet.europa.eu/aqportal>

Focus

NEW helpdesk email

aqipr.helpdesk@eionet.europa.eu

Common AQ e-Reporting data types, information elements & XML structures

Within the AQ e-Reporting data model data flows, a number of data types or blocks of data regularly reappear. A description of these common data types is provided in the following section to avoid repetition later in this guide. Where they are reused in the data flows themselves, citations to the sections below are provided for detailed information; as needed contextual, data flow specific information, may also be provided.

Before identifying and describing those common elements and types within the XMLs, the common XML structure for e-Reporting is described.

Common XML structures used in AQ e-Reporting

All valid XML instance documents (deliveries) must contain elements and structures to comply with validation rules defined both by the basic W3C XML definitions, the GML encoding rules as well as by the AQ e-Reporting schema. These generalised XML rules are described below.

XML declarations

The AQ e-Reporting XML instance documents must declare both the version of XML being used in the XML document and the character encoding standard being used in the first line of the XML document. In all cases these will be set as follows.

Example

XML declaration

```
<?xml version="1.0" encoding="UTF-8"?>
```

Feature collection <gml:FeatureCollection>

The GML FeatureCollection element is the root element for all AQ e-Reporting XML instance documents. All spatial and non-spatial AQ data objects (features) with identity (discrete groups of AQ information e.g. stations, models, assessment regimes etc.) are child elements of the FeatureCollection element. These data objects are easy to identify within the AQD e-Reporting schema as their names all begin with “AQD”. The XML namespace (xmlns) attributes of this element specify the namespaces and schemas used (imported) by the AQ e-Reporting schema. These imported schemas are INSPIRE, OGC, W3C and ISO standards which have been extended to support AQ e-Reporting needs within the AQD e-Reporting schema.

Example**gml:FeatureCollection****UPDATE**

```
<gml:FeatureCollection xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:aqd="http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0"
xmlns:base="http://inspire.ec.europa.eu/schemas/base/3.3"
xmlns:base2="http://inspire.ec.europa.eu/schemas/base2/1.0"
xmlns:ef="http://inspire.ec.europa.eu/schemas/ef/3.0" xmlns:gml="http://www.opengis.net/gml/3.2"
xmlns:ompr="http://inspire.ec.europa.eu/schemas/ompr/2.0"
xmlns:sam="http://www.opengis.net/sampling/2.0"
xmlns:sams="http://www.opengis.net/samplingSpatial/2.0" xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:gmd="http://www.isotc211.org/2005/gmd" xmlns:gco="http://www.isotc211.org/2005/gco"
xmlns:om="http://www.opengis.net/om/2.0" xmlns:swe="http://www.opengis.net/swe/2.0"
xmlns:am="http://inspire.ec.europa.eu/schemas/am/3.0" xmlns:ad="urn:x-
inspire:specification:gmlas:Addresses:3.0" xmlns:gn="urn:x-
inspire:specification:gmlas:GeographicalNames:3.0"
xsi:schemaLocation="http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0
http://dd.eionet.europa.eu/schemas/id2011850eu-1.0/AirQualityReporting.xsd" gml:id="Some-gml-ID">
```

Feature collection identification <gml:id>

The gml:FeatureCollection root element contains a gml identifier (gml:id). This identifier is constrained to be unique within the XML data flow delivery document in which it occurs. In addition, there are strict syntax rules³ for the creation of a gml:id; for more detailed information, please see section 2 **Error! Reference source not found.**

Referencing gml:id (ONLY for observations)

As the OM_Observation type used for the provision of measurement data has been adopted directly from the ISO specification, it lacks an INSPIRE Identifier. In such cases, the gml:id of the OM_Observation object should be used instead of the localId of the INSPIRE identifier for the creation of xlink URLs. The namespace used for the provision of the other parts of the AQ e-Reporting should also be used in this case, the syntax of the URL should be the same as when referencing data objects with an INSPIRE Identifier. This is the only exception where gml:id are used to reference objects.

Example

Referencing objects using xlink and gml:Id – ONLY for OM:Observations

AQD_ReportingHeader referencing OM_Observation

UK example:

```
<aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/OBS-GB10001_00007_100_2014-05-01_P1M"/>
```

where <http://environment.data.gov.uk/air-quality/so/> is the INSPIRE base:namespace
& **OBS-GB10001_00007_100_2014-05-01_P1M** is the gml:id of the observation

³ gml:id cannot start with a number. It must be a letter or underscore “_”, after this characters may be letters, numbers or one of “_”, “-”, “.”

NL example:

```
<aqd:content xlink:href=" NL.RIVM.AQD/OBS-NL10001_9_100_2014-05-01_P1M"/>
```

where **NL.RIVM.AQD** is the INSPIRE base:namespace

& **OBS-NL10001_9_100_2014-05-01_P1M** is the gml:id of the observation

For AQ e-Reporting, the gml:id may be used to identify (describe) the high level content of the XML document. You may routinely also provide this kind of information in the filename of the XML document.

Example**gml:id with gml:FeatureCollection**

```
<gml:FeatureCollection gml:id="Observations_2012"> – a feature collection relating to observations of AQ made in 2012.
```

```
<gml:FeatureCollection gml:id="Zones_2103"> – a feature collection relating to AQ zones in 2012
```

XML namespace (xmlns) attribute declarations

From an AQ perspective you do not need to be concerned with either the required XML namespaces declarations or their meaning. What is important is that the correct namespaces are declared for each data flow in a standardised manner, the declarations presented above must always be provided as attributes of the FeatureCollection element within each data flow. If in doubt copy and paste the full text above, modifying the gml:id attribute appropriately; this will ensure that all necessary namespaces are declared.

For context, XML namespaces and namespace prefixes are used for uniquely identifying the source of named types as well as their elements and attributes in an XML document. Each xmlns attribute within the FeatureCollection consists of a string containing both the namespace prefix to be used as well as the unique namespace of the schema being referenced. For example, the namespace

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prefix “aqd” is defined as belonging to the schema with the namespace <http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0>, the following entry will be required in the namespace declaration of the FeatureCollection:

xmlns:aqd=” http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0”

Once this has been declared, it is clear that all elements prefixed with aqd: are to be interpreted as stemming from the schema with the namespace <http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0>

An example of a naming conflict which can be avoided using a namespace prefix relates to aqd:pollutant in the AQ e-Reporting schema. The aqd prefix indicates that this pollutant element belongs to the aqd namespace i.e. AQ e-Reporting and should be interpreted as such. The prefix also infers that the element may (will) have a different definition (and meaning) to a pollutant element that specified by the Water Framework Directive (for example). The prefix is given meaning by being assigned to the correct namespace in the FeatureCollection namespace declaration e.g.

xmlns:aqd=”http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0”

Other data elements are taken from the INSPIRE data specifications as well as from the underlying ISO standards. These data specifications each have their own unique namespaces to differentiate their elements from those defined within other namespaces. Examples of these base namespaces are:

- INSPIRE Environmental Monitoring Facilities
Namespace: ef
Declaration: xmlns:ef=<http://inspire.ec.europa.eu/schemas/ef/3.0>
Example: ef:mediaMonitored
- OGC GML
Namespace: gml
Declaration: xmlns:gml=<http://www.opengis.net/gml/3.2>
Example: gml:Point
- ISO Geographic MetaData
Namespace: gmd

Declaration: xmlns:gmd=<http://www.isotc211.org/2005/gmd>

Example: gmd:DQ_DomainConsistency

- W3C Xml LINK ing Language

Namespace: xlink

Declaration: xmlns:xlink=<http://www.w3.org/1999/xlink>

Example: xlink:href=<http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5/>

The gml:FeatureCollection example above provides a template XML namespace declaration which must be used in all XML instance documents to ensure validity.

The XML namespace within gml:FeatureCollection should not be confused with <base:namespace> element within “*inspireId*” which is discussed in the section “[The INSPIRE identifier](#)”.

Schema location identification – xsi:schemaLocation

The schema location attribute is used to indicate the actual location of the schema on the internet in order to use it in the validation of the XML instance document. In AQ e-Reporting instance documents this attribute will always include the XML namespace for the aq schema together with the physical URI of the AQ e-Reporting schema.

Example

gml:FeatureCollection

```
xsi:schemaLocation="http://dd.eionet.europa.eu/schemaset/id2011850eu-1.0
http://dd.eionet.europa.eu/schemas/id2011850eu-1.0/AirQualityReporting.xsd"
```

UPDATE

Feature member <gml:featureMember>

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Feature member is a child element of the Feature collection element that acts as a container for each individual feature (spatial and non-spatial AQ data objects with identity) being reported. Multiple Feature member elements are allowed within a Feature collection. As shown in the example below, all reported information is contained within individual featureMember elements.

Example

gml:featureMember

```
<gml:FeatureCollection xmlns:[...] gml:id="ZONs_2013">
  <gml:featureMember>
    <aqd:AQD_ReportingHeader gml:id="AQ_ReportHeader_6">
      <aqd:change>true</aqd:change>
      [...]
      <aqd:inspireId>
        <base:Identifier>
          <base:localId>AQ_ReportHeader_6</base:localId>
          <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
        </base:Identifier>
        [...]
        <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001">
        <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0002">
        <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0003">
        [...]
      </aqd:AQD_ReportingHeader>
    </gml:featureMember>
    <gml:featureMember>
      <aqd:AQD_Zone gml:id="Zone_UK0001">
        <am:inspireId>
          <base:Identifier>
            <base:localId>Zone_UK0001</base:localId>
            <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
          </base:Identifier>
          [...]
        </am:inspireId>
        [...]
      </aqd:AQD_Zone>
    </gml:featureMember>
    <gml:featureMember>
      <aqd:AQD_Zone gml:id="Zone_UK0002">
        <aqd:AQD_Zone>
        [...]
      </aqd:AQD_Zone>
    </gml:featureMember>
    <gml:featureMember>
```

UPDATE

```

    <aqd:AQD_Zone gml:id=" Zone_UK0003"> [...]
    </aqd:AQD_Zone>
  </gml:featureMember>
</gml:FeatureCollection>

```

Identifiers and referencing

In complex data models, it is necessary to link together different pieces of information to provide a complete picture. Some examples of this are:

- Linking SamplingPoints to Stations
- Linking SamplingPoints to Zones
- Linking Observations to SamplingPoints

In order to provide an unambiguous link to an object, the object must be identifiable. A unique object identifier must be assigned to this object that fulfills the following requirements:

- **Uniqueness** (i.e. the identifier is only used once, for one explicit data object; it will not be re-used in the future for a different object),
- **Persistence** (i.e. the identifier is always used for one explicit data object; the same object will not be provided using a different identifier),
- **Traceability** (i.e. the identifier has to provide sufficient information about the source of the spatial object), and feasibility (i.e. well aligned with any pre-existing national identifier systems to enable mapping).
- **Feasibility** (i.e. well aligned with any pre-existing national identifier systems to enable mapping).

Based on these unique object identifiers, it is then possible for one data object to provide a reference to a related data object, i.e. a SamplingPoint can include explicit information on its Zone. The following sections detail the identifiers used within AQ e-Reporting, as well as the mechanism defined for referencing between data objects.

The INSPIRE identifier

Within AQ e-Reporting the INSPIRE concept for a common framework for the unique identification of spatial objects is used not only for those objects that have been extended from the INSPIRE specifications such as the AQD_Station, it has also been applied to non-spatial data objects with identity e.g. an assessment regime.

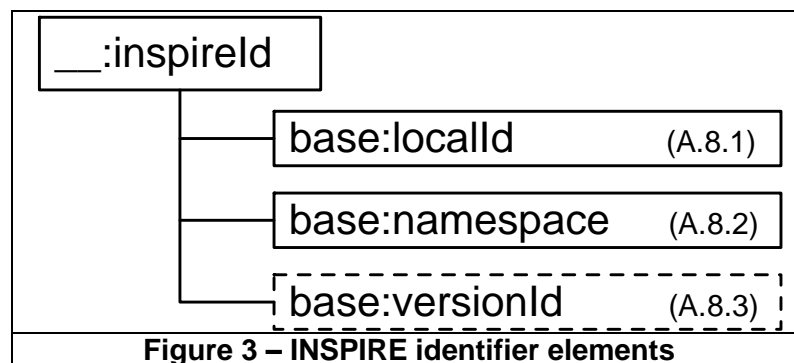
The INSPIRE unique identifiers used for spatial and non-spatial data objects in the AQ e-Reporting data model consist of three parts:

1. A namespace to identify the data source. The namespace is owned by the data provider and registered in the INSPIRE External Object Identifier Namespaces Register
2. A local identifier, assigned by the data provider. The local identifier is unique within the namespace, i.e. no other spatial object carries the same unique identifier.
3. An optional version identifier to be used in cases where an updated version of an existing data object is being provided is also available.

Identifiers have a key role in joining up the components of the AQ e-Reporting data model and need to allow for easy processing of identifiers in software applications of the e-Reporting data management systems, therefore some constraints are placed on the syntax of identifiers. Identifiers are not constrained in length, but in the characters they can use; they must start with a letter (capital or small) or an underscore (“_”) while the further characters must be either letters (capital or small), numbers or one of the following characters: underscore (“_”), dash (“-”), full stop (“.”).

A version identifier may also be included where data model contains life-cycle information for a spatial or non-spatial data object. The version identifier allows for differentiation between the different versions of the same spatial or data object. Within a set of all versions of an object, the version identifier is unique. The version identifier is not used when referencing an INSPIRE object.

The parent child relationship of XML elements that make up [the INSPIRE identifier](#) is shown in Figure 3.



Within the different data flows, the inspireId will be found within elements associated with the following namespaces:

- `<aqd:inspireId>` for objects specific to the Air Quality Directives
- `<ef:inspireId>` for objects based on INSPIRE Environmental Monitoring Facilities
- `<am:inspireId>` for objects based on INSPIRE Area management/restriction/regulation zones and reporting units
- For Observations & Measurements and Sensor Web Enablement, the inspireId is not used. Instead the gml:id is used as the unique identifier.

INSPIRE namespace

The INSPIRE namespace is key to identify the source of a dataset or spatial object. In the simplest sense it is a collection of names, assembled within a uniform resource identifier (URI) reference to ensure uniqueness across spatial datasets down to authority level. The namespace value will be owned by the data provider of the spatial object and will be registered in the INSPIRE External Object Identifier Namespaces Register. This latter requirement will necessitate a liaison between AQ e-Reporters and their local INSPIRE representatives. For the implementation of AQ e-Reporting two options are provided below. We recommend that air quality practitioners engage with national INSPIRE representatives in order to understand and align AQ systems with any pre-existing National implementation of INSPIRE namespaces.

Focus

Implementation of INSPIRE namespace at country level

- Identify national INSPIRE representatives
- The following INSPIRE pages provide lists with contact information:
<http://inspire.jrc.ec.europa.eu/index.cfm/pageid/481> or <http://inspire.jrc.ec.europa.eu/index.cfm/pageid/5041>
- Determine national URI scheme for the definition of INSPIRE namespaces as well as specific URI assigned to the data provider for AQD data

Option 1 – URI implementation at National level

When implementing a URI approach to namespace definition, the national INSPIRE authority within the member state needs to provide guidance on the agreed approach for creating and managing the INSPIRE namespaces within the MS. Some national approaches to defining the INSPIRE URI are shown below as an example

Example

inspireId namespace URI implementation – option 1

{inspireNamespace} = {prefix}/{type}/{theme}/{concept}

{prefix} = http://{domain}/{collection}

Where; [theme]: may be a 2-digit code for the relevant INSPIRE theme

[concept]: may be the sector specific concept name for the type of entities associated with a given reference designator. e.g.
road, school, river

Example from the United Kingdom: <http://environment.data.gov.uk/air-quality/so/>

Example from Germany: <http://gdi.uba.de/arcgis/rest/services/inspire/DE.UBA.AQD>

Option 2 – INSPIRE URN type namespace

When implementing a Unique Resource Name (URN) approach, the definition of the namespace should consist of three parts: The first part will identify the member state, the second part will identify the data provider within the member state and the third part will be used to distinguish between different data sources maintained and published by the data provider.

Example

inspireId namespace naming convention – option 2

{namespace} = {countryCode}.{agencyCode}.{productCode}

Where;

{countryCode}: ISO 3166-1 alpha-2 code for the MS

{agencyCode}: Short code for the reporting authority

{productCode}: Code for topic area

Example:

GB.defra.air-quality

AT.UBA.AQD

The constraints applicable to **<base:namespace>** are summarised below.

base:namespace	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1, one occurrence per feature Type (data object with identity) provided
IPR data specifications found at:	None, this is an INSPIRE property
Code list constraints:	None
QA/QC constraints:	None other than the multiplicity constraints above
Allowed formats:	Alphanumeric, max 45 characters. The localId and the namespace 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, and dash are allowed.
XPath to schema location:	Found within the INSPIRE identifier at the root level of every spatial and non-spatial data object with identity
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4.pdf

INSPIRE localId

INSPIRE local identifier must be unique for each feature Type (data object with identity) made available by a specific data provider (i.e. within one INSPIRE namespace). The localId must be managed by each local provider in order to ensure that no other spatial object carries the same unique identifier. In order to simplify this process, as well as to allow for easier identification of data objects, we provide a list of recommended prefixes for the data objects to be provided. These prefixes are provided in the table below:

<div>Focus</div> <div>Recommended acronym for localId Prefix</div>		
Object	Acronym	localId
Zones	ZON	ZON.ES001
Assessment Regimes	ARE	ARE.ES001.0005.HLV.prelim2014
Networks	NET	NET.ES0001
Stations	STA	STA.ES6699A
Sampling Point	SPO	SPO.GB6699A.0005.ZZZZ
Sampling Point Process	SPP	SPP.0005.method.equipment
Sample	SAM	SAM.GB6699A.0005.ZZZZ
Representative Area	REP	REP.GB6699A.0005.ZZZZ
Model	MOD	MOD.GB.0005.ZZZZ
Model Area	MOA	MOA.GB.0005.ZZZZ
Model Process	MOP	MOP.GB.0005.ZZZZ
Attainment	ATT	ATT.UK0001.0005.HLV.retro2012
Competent Authorities	CAU	CAU.retro2012
ReportingHeader	RHE	RHE.D.retro2012

UPDATE

Example**inspireId localId**

localId using a construction logic:

localId for Station = {**acronym**}.{**UniqueEolCode**} = **STA.ES0115A**

localId using an numerical sequence:

localId for Sampling Point = {**acronym**}.{**Unique numerical sequence**} = **SPO.GB74332**

The constraints applicable to **<base:localId>** are summarised below.

base:localId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1, one occurrence per feature Type (data object with identity) provided
IPR data specifications found at:	A.8.1, A.8.2, A.8.3
Code list constraints:	None
QA/QC constraints:	None other than the multiplicity constraints above
Allowed formats:	Alphanumeric, max 45 characters. The localId and the namespace 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, and dash are allowed.
XPath to schema location:	Found within the INSPIRE identifier at the root level of every spatial and non-spatial data object with identity
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4.pdf

INSPIRE versionId

The version identifier is optional within the InspireId. If applied, the version identifier is used to distinguish between different versions of a spatial object. Within the set of all versions of a spatial object, the version identifier is unique. For air quality reporting, the versionId should be used identify the lifecycle of deliveries of spatial objects.

When the providing data system uses versioning, this value can be incremented each time the data object changes. Thus, the initial version (which need not be provided) would be “1”, the next version “2”, and so on. However, in cases where the the providing data system does not provide explicit versioning, a simple solution is to provide a timestamp in the version field (ISO 8601 encoded, as all timestamps within the AQD e-Reporting). Thus, a unique version is provided each time the data object is provided. Whilst this

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option does not allow for the data consumer (in this case the EEA) to see if the data object has changed, it does provide uniqueness regardless.

Focus

Implementation of INSPIRE versionId for AQ reporting

Version identifier is unique within same spatial object

versionId = {purpose}-{year}-{version}

prelim-2014-v0	Preliminary (forward look) for 2014
retro-2012-v0	Retrospective (backward look) for 2012
retro-2012-v1	Retrospective (backward look) for 2012 (updated submission)
2014-06-04T09:48:30+01:00	TimeStamp when data was provided or object updated

The constraints applicable to `<base:versionId>` are summarised below.

base:versionId	
Minimum occurrence:	0 (conditional)
Maximum occurrence:	1 per localId
IPR data specifications found at:	None, this is a INSPIRE property
Code list constraints:	None
QA/QC constraints:	The maximum length has been selected to allow for time stamps based on ISO 8601, for example, "2007-02-12T12:12:12+05:30" as the version identifier. VersionId is void (not required), if the data set does not distinguish between different versions of the spatial object. It is missing, if the spatial object type does not support any life-cycle information.
Allowed formats:	Alphanumeric, max 25 characters. The localId and the namespace 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, and dash are allowed.
XPath to schema location:	May be bound at the root level of spatial and non-spatial data object with identity
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4rc2.pdf

Example

inspireId within aqd:AQD_Zone – including life cycle information on the zone

```
<aqd:AQD_Zone gml:id="ZON_UK0001">
  <am:inspireId>
    <base:Identifier>
      <base:localId>ZON_UK0001</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so/</base:namespace>
      <base:versionId>prelim-2014-v0</base:versionId>
    </base:Identifier>
  </am:inspireId>
```

Example

inspireId within aqd:AQD_SamplingPoint – excluding life cycle information on the zone

```
<aqd:AQD_SamplingPoint gml:id="GB_SamplingPoint_25">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>GB_SamplingPoint_25</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so/</base:namespace>
    </base:Identifier>
  </ef:inspireId>[...]
```

The GML identifier attribute

The attribute **gml:id** supports provision of a handle for the XML element (data object with identity) in the AQ e-Reporting data model, allowing for unique identification of this data object. It is mandatory for each XML feature type (spatial and non-spatial AQ data objects with identity) and appears as an attribute of the XML element providing this feature type.

Example

gml:id as identifier for feature type (data object)

```
<aqd:AQD_Network gml:id="NET_ES0001">
<om:OM_Observation gml:id="OBS.AT30407.1.786a3d08-0396-46bc-bbde-81a798ecf969">
```

The **gml:id** is constrained to be unique within the XML data flow delivery document in which it occurs. However, the **gml:id** will not be used for referencing purposes within the AQ e-Reporting except for referencing to OM_Observations, as this function is covered by the INSPIRE Id as described above. **For simplicity and clarity, it is recommended to use the same entry for the gml:id as is used for the local id in the INSPIRE identifier.** However, there are elements which require **gml:id** that do not have a corresponding INSPIRE Id. For these elements, **gml:ids** must be created; the constraints applicable to **gml:id** attribute are summarised below.

gml:id	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1, one occurrence per XML document
IPR data specifications found at:	None, this is a GML property
Code list constraints:	None
QA/QC constraints:	Found at the root level of every spatial and non-spatial data object with identity
Allowed formats:	gml:id cannot start with a number. It must be a letter or underscore “_”, after this characters may be letters, numbers or one of “_”, “-”, “.”
XPath to schema location:	n/a
Further information found @	http://portal.opengeospatial.org/files/?artifact_id=20509 http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4rc2.pdf

The following syntax is recommended for the creation of gml:ids. The first part of the id should be the recommended prefix specified for the creation of the localId of the INSPIRE Id as described in section “INSPIRE localId”, the second part the gml:id should be the acronym for the datatype requiring the gml:id as listed in the table below. In order to assure uniqueness, a third unique part must be added to the identifier; this part can either be a simple sequence of numbers (as long as each number is only used once), or a GUID can be generated and used for this purpose (most programming languages support the automatic creation of unique GUIDs). As a further option, further parts of the localId of the main feature type can be added to provide more information on the context.

For OM_Observation feature types, the prefix OBS should be used. The rest of the gml:id for observations should be composed in the same manner as the localId part of the INSPIRE Id explained above.

Focus**Recommended acronym for gml:id prefix**

Object	Acronym	localId
OM:Observations	OBS	OBS.GB6699A.0005.ZZZZ

UPDATE**Example****gml:id** as identifier for an OM_Observation

A gml:id for an OM_Observation, using a GUID.

```
<om:OM_Observation gml:id="OBS.AT30407.1.786a3d08-0396-46bc-bbde-81a798ecf969">
```

A gml:id for an OM_Observation providing additional information on the Sampling Point (GB6699A) and the Pollutant (5) using a sequential number

```
<om:OM_Observation gml:id=" OBS.GB6699A.0005.ZZZZ ">
```

Focus**Recommended acronym for gml:id in datatypes****UPDATE**

Object	Acronym	localId
gml:TimePeriod	TP	RHE. TP .ES0001
gml:TimeInstant	TI	ZON. TI .ES001
gml:Point	PT	SAM. PT .GB6699A.0005.ZZZZ
gml:Polygon	PG	ZON. PG .4BE1D996E71D409BB839EE15E90309A1
gml:BaseUnit	BU	OBS. BU .GB6699A.0005.ZZZZ
ef:OperationalActivityPeriod	OP	SPO.OP.3019E77A0DED4AA1AC2384C0CAC49A9C
ef:ObservingCapability	OC	SPO. OC .GB6699A.0005.ZZZZ
base2:DocumentCitation	DC	MOP. DC .GB.0005.ZZZZ
base2:LegislationCitation	LC	ZON. LC .ES0001

Example**gml:id** as identifier for data type

A gml:id for the OperationalActivityPeriod of an AQD_Network, using a GUID

```
<gml:TimePeriod gml:id="NET.OP.E3605EAB8D964458AF49D1C0BC6B5502">
```

A gml:id for the ObservingCapability of an AQD_SamplingPoint providing additional information on the Sampling Point (number 1383) and the Pollutant (8) using a sequential number

```
<ef:ObservingCapability gml:id="SPO.OC.1383.8.1">
```

Referencing between data objects with xlink

Based on the requirements of AQ e-Reporting, the data model is composed of many individual data objects (featureTypes) that must reference each other. Examples of this are the links between a station and its sampling points, or the sampling points linked to an assessment regime. INSPIRE and AQ e-Reporting provide an URL based approach for referencing between all spatial and non-spatial data objects using the xlink:href attribute; the value of the xlink:href attribute provides a unique reference to the object to be linked to. All xlinks to data objects will be constructed by concatenating the unique namespace & the localId of the spatial object.

Using xlink, it is possible to provide complex information in more simple pieces. The data objects need not be nested within each other but can be provided individually, with an xlink entry showing how the pieces link together. This is especially useful in the more complex data flows such as data flow D. In this case, the individual components e.g. network information, station information, sampling point information etc can be provided individually as FeatureMembers within a FeatureCollection. Then, in the highest level data object, instead of including the entire nested data object, only an xlink uniquely identifying this nested data object is provided. Thus, an AQD_SamplingPoint need not include all information on it's corresponding station within the ef:broader element but instead can provide an xlink referencing to this data object. It is also possible to reference the same data object from different objects, making it possible to provide the relevant information only once, and then reference it wherever required

Referencing using inspireId

For referencing to data objects that contain an inspireId, the namespace and localId elements should be concatenated together to provide a unique reference to the data object being referenced. In the case that the MS INSPIRE coordinator has provided a different syntax, this syntax should be followed

Example**Referencing objects using xlink and inspireId****AQD_SamplingPoint referencing AQD_Station**

```
<ef:broader xlink:href="http://environment.data.gov.uk/air-quality/so/Station_GB0039R"/>
```

where <http://environment.data.gov.uk/air-quality/so/> is the INSPIRE base:namespace
& **Station_GB0039R** is the INSPIRE base:localId.

AQD_AssessmentRegime referencing AQD_SamplingPoint

```
<aqd:samplingPointAssessmentMetadata xlink:href="NL.RIVM.AQD/SPO_NL5252R_005_100_101"/>
```

where **NL.RIVM.AQD** is the INSPIRE base:namespace
& **SPO_NL5252R_005_100_101** is the INSPIRE base:localId.

Referencing gml:id (ONLY for observations)

As the OM_Observation type used for the provision of measurement data has been adopted directly from the ISO specification, it lacks an INSPIRE Identifier. In such cases, the gml:id of the OM_Observation object should be used instead of the localId of [the INSPIRE identifier](#) for the creation of xlink URLs. The namespace used for the provision of the other parts of the AQ e-Reporting should also be used in this case, the syntax of the URL should be the same as when referencing data objects with an INSPIRE Identifier. This is the only exception where gml:id are used to reference objects.

Example**Referencing objects using xlink and gml:Id – ONLY for OM:Observations****AQD_ReportingHeader referencing OM_Observation****UK example:**

```
<aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/OBS-GB10001_00007_100_2014-05-01_P1M"/>
```

where <http://environment.data.gov.uk/air-quality/so/> is the INSPIRE base:namespace
& **OBS-GB10001_00007_100_2014-05-01_P1M** is the gml:id of the observation

NL example:

```
<aqd:content xlink:href="NL.RIVM.AQD/OBS-NL10001_9_100_2014-05-01_P1M"/>
```

where [NL.RIVM.AQD/](#) is the INSPIRE base:namespace
& **OBS-NL10001_9_100_2014-05-01_P1M** is the gml:id of the observation

Common information elements and data types

Contact Details <base2:RelatedParty>

In many places within AQ e-Reporting, it is necessary to provide information about the person responsible for a certain activity. This information must be provided together with information on the organisation this person is working for, and the relevant contact information. As this piece of data is often repeated throughout the e-Reporting data flows, we provide an explanation here. The constraints applicable to < base2:RelatedParty > within the AQD reporting header are.

base2:RelatedParty	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per aqd:AQD_ReportingHeader)
IPR data specifications found at:	A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	A1.1 Responsible authority: base2:RelatedParty/base2:organisationName/gmd:LocalisedCharacterString A1.2 Web address; base2:RelatedParty/base2:contact/base2:Contact/base2:website A1.3 Name of responsible person: base2:RelatedParty/base2:individualName/gmd:LocalisedCharacterString A1.4 Address: Street Address base2:RelatedParty/base2:contact/base2:Contact/base2:address/ad:AddressRepresentation/ad:locatorDesignator Municipality base2:RelatedParty/base2:contact/base2:Contact/base2:address/ad:AddressRepresentation/ad:adminUnit/gn:GeographicalName/gn:spelling/gn:SpellingOfName/gn:text Postcode: aqd:AQD_ReportingHeader/aqd:reportingAuthority/base2:RelatedParty/base2:contact/base2:Contact/base2:address/ad:AddressRepresentation/ad:postCode" A1.5 Telephone number: base2:RelatedParty/base2:contact/base2:Contact/base2:telephoneVoice A1.6 E-mail: base2:RelatedParty/base2:contact/base2:Contact/base2:electronicMailAddress
Further information found @	HTML XSD at http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ReportingHeaderType.html

Please note that in addition to the XPaths listed in the table above, the INSPIRE RelatedParty type requires further attributes. However, as these are usually not available from within Member State AQ Databases, it is possible to declare them as missing using the XML attributes `xsi:nil="true"` `nilReason="missing"` as shown in the example below.

For the element `gn:language`, please enter the ISO 3-letter code from ISO 639-3 or ISO 639-5 corresponding the the language used. For the attribute `gn:script`, please provide the correct entry for the script used. The following values apply to the scripts used in European languages:

- "Latn": Latin (Roman)
- "Cyrl": Cyrillic
- "Grek": Greek

Example**aqd:reportingAuthority–** Reporting header

```

<aqd:reportingAuthority>
  <base2:RelatedParty>
    <base2:individualName>
      <gco:CharacterString>Emily Connolly</gco:CharacterString>
    </base2:individualName>
    <base2:organisationName>
      <gco:CharacterString>The Department for Environment, Food and Rural Affairs, The Scottish Government, The
Welsh Government and The Department of Environment - Northern Ireland</gco:CharacterString>
    </base2:organisationName>
    <base2:contact>
      <base2:Contact>
        <base2:address>
          <ad:AddressRepresentation>
            <ad:adminUnit>
              <gn:GeographicalName>
                <gn:language>eng</gn:language>
                <gn:nativeness xsi:nil="true" nilReason="missing" />
                <gn:nameStatus xsi:nil="true" nilReason="missing" />
                <gn:sourceOfName xsi:nil="true" nilReason="missing" />
                <gn:pronunciation xsi:nil="true" nilReason="missing" />
                <gn:spelling>
                  <gn:SpellingOfName>
                    <gn:text> London </gn:text>
                    <gn:script>Latn</gn:script>
                  </gn:SpellingOfName>
                </gn:spelling>
              </gn:GeographicalName>
            </ad:adminUnit>
            <ad:locatorDesignator> Atmosphere and Local Environment (ALE) Programme, Area 2C Nobel
House, 17 Smith Square, London SW1P 3JR </ad:locatorDesignator>
            <ad:postCode >SW1P 3JR</ad:postCode>
          </ad:AddressRepresentation>
        </base2:address>
        <base2:electronicMailAddress>emily.connolly@defra.gsi.gov.uk</base2:electronicMailAddress>
        <base2:telephoneVoice>+44 (0) 207 238 6476</base2:telephoneVoice>
        <base2:website>https://www.gov.uk/defra</base2:website>
      </base2:Contact>
    </base2:contact>
  </base2:RelatedParty>
</aqd:reportingAuthority>

```

Reporting header <aqd:AQD_ReportingHeader>

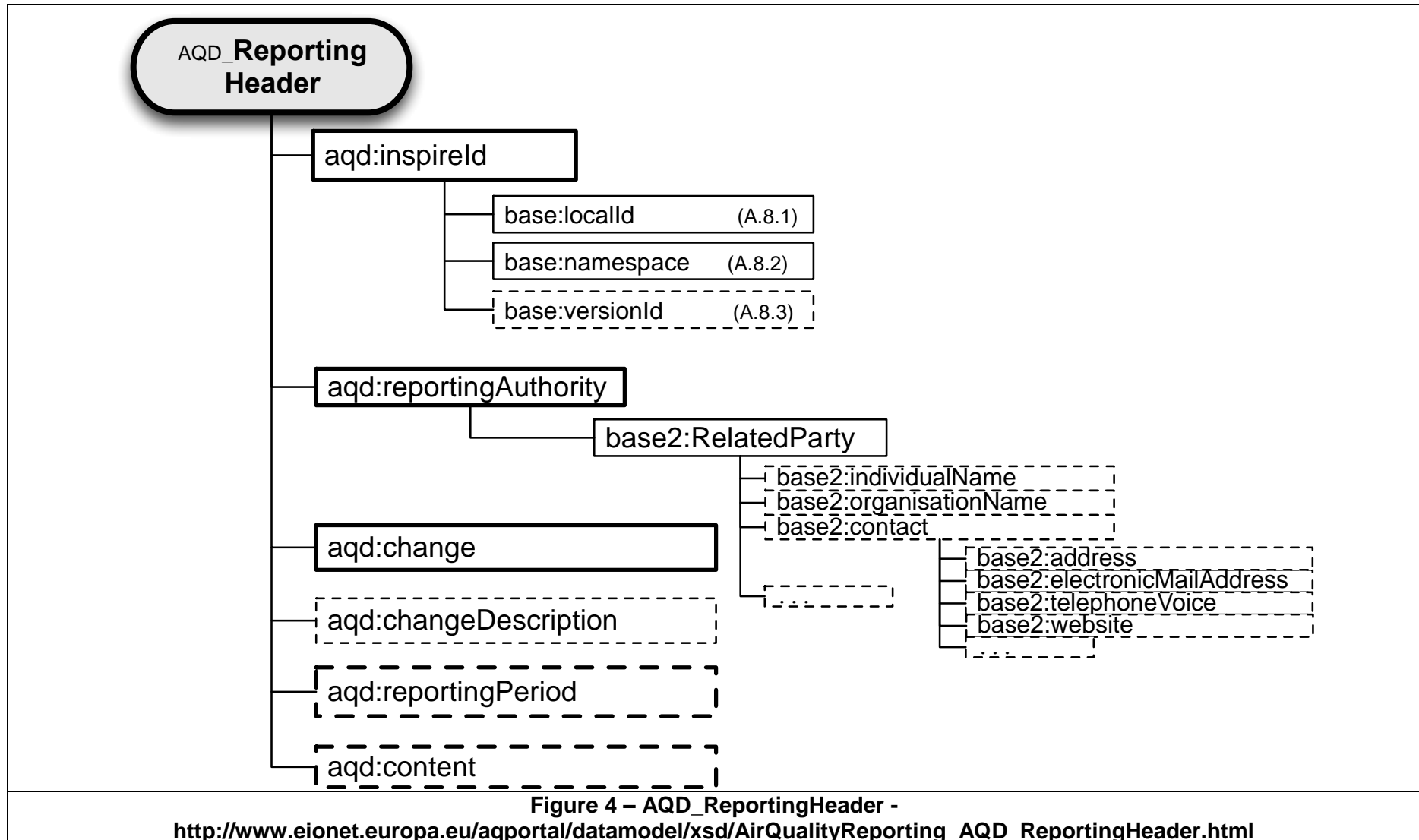
The AQ Reporting Header provides a wrapper for each data flow dataset and includes important high-level information on the data flow delivery. Each data flow dataset is encapsulated in an AQ reporting header. The hierarchical, parent-child relationship of the elements that make up the AQ Reporting Header is shown in Figure 4. A link to a detailed UML description and further explanation is provided below.

The constraints applicable to <aqd:AQD_ReportingHeader> are summarised as.

aqd:AQD_ReportingHeader	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	unbounded, one occurrence per data flow
IPR data specifications found at:	B1-B3; C1-C3; D1-D3; E1-E3; G1-G4
Code list constraints:	None
QA/QC constraints:	One occurrence per data flow, all data flows must have a reporting header
Allowed formats:	n/a
XPath to schema location:	Found at the root level of every data flow as inline or external encoding /aqd:AQD_ReportingHeader
Further information found @	Latest UML bmp at http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_ReportHeader.png HTML XSD at http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ReportingHeader.html

aqd:AQD_ReportingHeader includes:

- aqd:inspireId Mandatory
- aqd:reportingAuthority Mandatory
- aqd:change Mandatory
- aqd:changeDescription Conditional (M if aqd:change="True")
- aqd:reportingPeriod Voluntary (Mandatory for Attainment (dataflow G). Currently defined as voluntary, but always required by AQ e-Reporting)
- aqd:content Voluntary (M if aqd:change="True")



INSPIRE identifier - <aqd:inspireId>

Within AQ Reporting Header, the inspireId is found at /aqd:AQD_ReportingHeader/aqd:inspireId/base:Identifier/. See section “The INSPIRE identifier” for further support on this common data type. In addition to the RHE prefix, the localId of the ReportingHeader may contain information on the dataflow, the reporting year, version...

Example

aqd:inspireId – Reporting header

```
<aqd:inspireId>
  <base:Identifier>
    <base:localId>RHE.B.2013.V1</base:localId>
    <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
  </base:Identifier>
</aqd:inspireId>
```

Documentation on change

Within AQD_ReportingHeader, the elements change and changeDescription allow for the declaration whether any changes have been made to the associated dataflow and brief description of any changes since last delivery. The change documentation information promotes the concept of managing e-Reporting content by change. If no changes have been made, as declared via the Boolean statement ‘false’ in the change element, no further information on the data flow other than the provider is required within the content section. Change documentation information is encoded in the child elements <aqd:change> and <aqd:changeDescription> and states if information in the associated data flow has changed related to the previous delivery. The constraints applicable to <aqd:change> are summarised below.

aqd:change

Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1, one occurrence per AQD_ReportingHeader
IPR data specifications found at:	A7.1

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Code list constraints:	None
QA/QC constraints:	One occurrence per data flow, all data flows must have a reporting header change status
Allowed formats:	Boolean (true/false)
XPath to schema location:	aqd:AQD_ReportingHeader/aqd:change
Further information found @	http://dd.eionet.europa.eu/schema/id2011850eu/20130418_IPR_Mapping.xlsx

The constraints applicable to `<aqd:changeDescription>` are summarised below.

aqd:changeDocumentation	
Minimum occurrence:	0 (condition, required if aqd:change = "true")
Maximum occurrence:	1, one occurrence per AQD_ReportingHeader
IPR data specifications found at:	A7.2
Code list constraints:	None
QA/QC constraints:	One occurrence per data flow where change=true,
Allowed formats:	Alphanumeric max length 255 characters
XPath to schema location:	aqd:AQD_ReportingHeader/aqd:changeDescription
Further information found @	http://dd.eionet.europa.eu/schema/id2011850eu/20130418_IPR_Mapping.xlsx

Example

aqd:change & aqd:changeDescription – Reporting header

```

<aqd:change>true</aqd:change>
<aqd:changeDescription>Updates to the resident population of all zones</aqd:changeDescription>

<aqd:change>>false</aqd:change>
<aqd:changeDescription>No changes</aqd:changeDescription>

<aqd:change>true</aqd:change>
<aqd:changeDescription>Minor modifications to the delineation & attributes of zone UK0001 and
UK0021</aqd:changeDescription>

<aqd:change>>false</aqd:change>

```


Reporting authority

Within the AQD_ReportingHeader information class **<aqd:reportingAuthority>** allows for the declaration of the contact details for the organisation responsible for the delivery. For this purpose, the INSPIRE type base2:RelatedParty is used. The constraints applicable to **<aqd:reportingAuthority>** within the AQD reporting header are.

aqd:reportingAuthority	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per aqd:AQD_ReportingHeader)
IPR data specifications found at:	A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_ReportingHeader/aqd:reportingAuthority/base2:RelatedParty/
Further information found @	HTML XSD at http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ReportingHeaderType.html

For further information on the details of the base2:RelatedParty type, please see the section Contact Details <base2:RelatedParty>Reporting period

Within the AQD_ReportingHeader, **<aqd:reportingPeriod>** allows for the declaration of the time envelope to which the report and data flow datasets relate. Typically for regulatory data flows the reporting period will run from 1 January to 31 December for year X, although the period may be shorter for partial updates and for the UTD data flows. Reporting period uses the ISO 19108 TM_Period specification which is comprised of two date elements gml:beginPosition and gml:endPosition.

The values of the time stamps shall use the extended ISO 8601 extended format. The constraints applicable to **<aqd:reportingPeriod>** are summarised below.

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aqd:reportingPeriod	
Minimum occurrence:	1 (mandatory for ALL dataflow) - IMPORTANT
Maximum occurrence:	1, one occurrence per data flow
IPR data specifications found at:	n/a
Code list constraints:	None
QA/QC constraints:	One occurrence per reporting header
Allowed formats:	ISO 8601 extended format
XPath to schema location:	/aqd:AQD_ReportingHeader/gml:TimePeriod /aqd:AQD_ReportingHeader/gml:TimePeriod/gml:beginPosition /aqd:AQD_ReportingHeader/gml:TimePeriod/gml:endPosition
Further information found @	n/a

UPDATE

Example

aqd:reportingPeriod – for a complete reporting year

```
<aqd:reportingPeriod>
  <gml:TimePeriod gml:id="RHE.TP.BDD66E88931047B3B4FC67E134A3A0B6 ">
    <gml:beginPosition>2014-01-01T00:00:00+01:00</gml:beginPosition>
    <gml:endPosition> 2014-12-31T24:00:00+01:00</gml:endPosition>
  </gml:TimePeriod>
</aqd:reportingPeriod>
```

Example

aqd:reportingPeriod – for updates of D throughout the year

```
<aqd:reportingPeriod>
  <gml:TimePeriod gml:id="RHE.TP.1">
    <gml:beginPosition>2014-01-01T00:00:00+01:00</gml:beginPosition>
    <gml:endPosition> 2016-12-31T24:00:00+01:00</gml:endPosition>
  </gml:TimePeriod>
</aqd:reportingPeriod>
```

UPDATE

Report content

The content reported within the XML is listed within `<aqd:content>` tags via an xlink to the features reported. All reported features (like aqd:AQD_Zone, aqd:AQD_Station, aqd:AQD_SamplingPoint) are to be reported within individual gml:featureMember in the same XML.

The AQ reporting header XML block has to be encoded in the same XML file and uses references to the component XML encodings of the dataflow using the xlink:href attribute contained with the `<aqd:content>` tags. All xlink to data objects will be constructed by concatenating the unique namespace & the localId of the spatial object, or in the case of dataflow E, the the unique namespace & the gml:id of the spatial object. For further information on the xlink contents, please see the section on “Referencing between data objects with xlink” The constraints applicable to `<aqd:content>` are summarised below.

aqd:content	
Minimum occurrence:	0 if change = false
Maximum occurrence:	Unbounded , at least one occurrence per data flow if change = true
IPR data specifications found at:	B.4, C.4, D.4-D.8, E.4, G.5
Code list constraints:	None
QA/QC constraints:	at least one occurrence data flow if change = true
Allowed formats:	May contain a citation to an external XML document via xlink:href attribute or inline encoding of any AQ e-Reporting data flow.
XPath to schema location:	Found at the root level of every data flow as inline or external encoding /aqd:AQD_ReportingHeader/aqd:content
Further information found @	n/a

Example

aqd:AQD_ReportingHeader – external encoding

```
<?xml version="1.0" encoding="UTF-8" ?>
<gml:FeatureCollection xmlns:[...] gml:id="Zones_2013">
  <gml:featureMember>
    <aqd:AQD_ReportingHeader gml:id="RHE.B.2014.V">
      <aqd:change>true</aqd:change>
      <aqd:changeDescription>Change in Zone delimitation</aqd:changeDescription>
    [...]
```

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```

    <aqd:inspireId>
      <base:Identifier>
        <base:localId>RHE.B.2014.V</base:localId>
        <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
      </base:Identifier>
    </aqd:inspireId>
    <aqd:reportingAuthority>
    [...]
    </aqd:reportingAuthority>
    <aqd:reportingPeriod>
      <gml:TimePeriod gml:id="RHE.TP.1">
        <gml:beginPosition>2010-01-01</gml:beginPosition>
        <gml:endPosition>2011-01-01</gml:endPosition>
      </gml:TimePeriod>
    </aqd:reportingPeriod>
    <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_0001"/>
    <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_0002"/>
    <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_0003"/>
    <aqd:content xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_0004"/>
  </aqd:AQD_ReportingHeader>
</gml:featureMember>
<gml:featureMember>
  <aqd:AQD_Zone gml:id="Zone_UK0001">
    <am:inspireId>
      <base:Identifier>
        <base:localId>Zone_UK0001</base:localId>
        <base:namespace> http://environment.data.gov.uk/air-quality/so</base:namespace>
      </base:Identifier>
    </am:inspireId>
    [...]
  </aqd:AQD_Zone>
</gml:featureMember>
<gml:featureMember>
  <aqd:AQD_Zone gml:id="Zone_UK0002">
    <am:inspireId>
      <base:Identifier>
        <base:localId>Zone_UK0002</base:localId>
        <base:namespace> http://environment.data.gov.uk/air-quality/so</base:namespace>
      </base:Identifier>
    </am:inspireId>
    [...]
  </aqd:AQD_Zone>
</gml:featureMember>

```

```

    [...]
    </aqd:AQD_Zone>
  </gml:featureMember>
  <gml:featureMember>
    <aqd:AQD_Zone gml:id="Zone_UK0003">
      <am:inspireId>
        <base:Identifier>
          <base:localId>Zone_UK0003</base:localId>
          <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
        </base:Identifier>
      </am:inspireId>
    </aqd:AQD_Zone>
  </gml:featureMember>
  <gml:featureMember>
    <aqd:AQD_Zone gml:id="Zone_UK0004">
      <am:inspireId>
        <base:Identifier>
          <base:localId>Zone_UK0004</base:localId>
          <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
        </base:Identifier>
      </am:inspireId>
    </aqd:AQD_Zone>
  </gml:featureMember>
</gml:FeatureCollection>

```

Environmental objective type <aqd:environmentalObjective>

Environmental objective type is a complex datatype with 3 elements used for describing the applicable AQ environmental objective as a combination of its components:

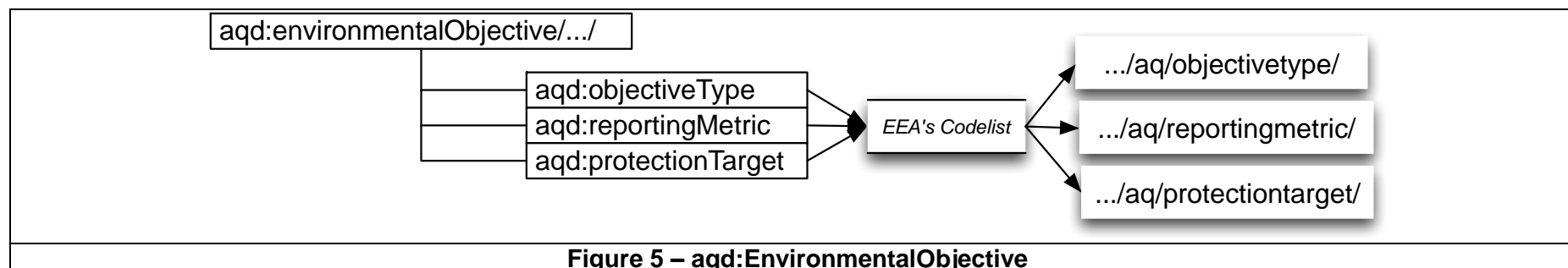
- Objective Type,
- Reporting Metric and
- Protection Target.

Annex I-B of 2011/850/EC specifies these child elements, for data encoding codelists with valid values are provided within codelists as specified below.

The environmental objective common datatype is reused in a number of places throughout the AQ e-Reporting data model where assessment of primary or aggregated data against an environmental or monitoring objective is performed. Generally some data flow specific supporting metadata is also provided.

The parent-child relationship of XML elements that make up the <aqd:environmentalObjective> is shown in Figure 5 and in UML [here](#). The child elements are aqd:objectiveType, aqd:reportingMetric and aqd:protectionTarget

aqd:environmentalObjective	
Minimum occurrence:	1 (Mandatory within <aqd:objectiveType>)
Maximum occurrence:	1
IPR data specifications found:	A3
Code list constraints:	n/a
XPath to schema location:	.../aqd:environmentalObjective/
Formats Allowed:	n/a
Further information found @	HTML XSD at http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_EnvironmentalObjective.html



The constraints applicable to **<aq:objectiveType>** are summarised below.

aq:objectiveType	
Minimum occurrence:	1 (Mandatory within <aq:objectiveType>)
Maximum occurrence:	1
IPR data specifications found:	A.3.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/
XPath to schema location:	./aq:environmentalObjective/aq:EnvironmentalObjective/aq:objectiveType/@xlink:href
Formats Allowed:	Alphanumeric, max. length 100 characters
Voidable:	No

The constraints applicable to **<aq:reportingMetric>** are summarised below.

aq:reportingMetric	
Minimum occurrence:	1 (Mandatory within <aq:objectiveType>)
Maximum occurrence:	1
IPR data specifications found:	A.3.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/
XPath to schema location:	./aq:environmentalObjective/aq:EnvironmentalObjective/aq:reportingMetric/@xlink:href
Formats Allowed:	Alphanumeric, max. length 100 characters
Voidable:	No

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The constraints applicable to `<aqd:protectionTarget>` are summarised below.

aqd:protectionTarget	
Minimum occurrence:	1 (Mandatory within <aqd:objectiveType>)
Maximum occurrence:	1
IPR data specifications found:	A.3.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/
XPath to schema location:	./aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:protectionTarget/@xlink:href
Formats Allowed:	Alphanumeric, max. length 100 characters
Voidable:	No

Example

aqd:environmentalObjective

```
[...]  
<aqd:environmentalObjective>  
  <aqd:EnvironmentalObjective>  
    <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>  
    <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean"/>  
    <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>  
  </aqd:EnvironmentalObjective>  
</aqd:environmentalObjective>  
[...]
```


Focus**Allowed combinations of aq:environmentalObjective dependant on pollutant****UPDATE**

Pollutant*	objectiveType**	reportingMetric***	protectionTarget****	
1	LV	hrsAbove	H	
1	LV	daysAbove	H	
1	ALT	3hAbove	H	
1	CL	aMean	V	
1	CL	wMean	V	
7	TV	daysAbove-3yr	H	
7	LTO	daysAbove	H	
7	INT / ALT	hrsAbove	H	
7	TV	AOT40c-5yr	V	
7	LTO	AOT40c	V	
8	LV	hrsAbove	H	
8	LV	aMean	H	
8	LVmaxMOT	hrsAbove	H	(if timeExtension up to 2014)
8	LVmaxMOT	aMean	H	(if timeExtension up to 2014)
8	ALT	3hAbove	H	
9	CL	aMean	V	
5	LV	daysAbove	H	
5	LV	aMean	H	
6001	ECO	AEI	H	
6001	ERT	AEI	H	
6001	LV	aMean	H	
6001	LVMOT	aMean	H	
6001	TV	aMean	H	
10	LV	daysAbove	H	
5012	LV	aMean	H	
20	LV	aMean	H	
20	LVmaxMOT	aMean	H	(if timeExtension up to 2014)
5014	TV	aMean	H	
5018	TV	aMean	H	
5015	TV	aMean	H	
5029	TV	aMean	H	
Pollutants with Monitoring Objective	MO	NA	NA	

* <http://dd.eionet.europa.eu/vocabulary/aq/pollutant/>** <http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/>*** <http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/>**** <http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/>

B - Information on Zones and Agglomerations

(AQD IPR [Article 6](#)) – link to [e-Reporting logic](#)

Under the IPR Decision Member States shall make available information on the delimitation and type of zones and agglomerations established for the purposes of air quality assessment and management⁴. The legal obligations for reporting are set out in Article 6 and Part B of Annex II of the 2011/850/EC Decision.

Data flow B shall be reported in two forms;

1. As a forwarding looking report by 31 December each year to establish the zones that the Member States plans to implement for the assessment and management of air quality⁵ in the forthcoming calendar year.
2. As a retrospective report by 30 September each year to confirm (or otherwise) the zones that the Member States implemented for the assessment and management of air quality

The AQ zones data flow is a mandatory data flow for pollutants covered by Directive 2004/107/EC and Article 4 of Directive 2008/50/EC. The e-Reporting data model and schema breaks the data flow into the information items (classes) outlined below.

A delivery to the CDR shall include both the AQ reporting header information class relating to the zones and the AQ zones class (aqd:AQD_Zone) using inline or external encoding, see common section on [ReportingHeader](#).

Reporting header <aqd:AQD_ReportingHeader>

An explanation of the AQ reporting header information class can be found here [ReportingHeader](#). This is mandatory reporting requirement and includes common data types elements (B1, B2 and B3 from IPR excel mapping).

⁴, Article 3 of Directive 2004/107/EC and Article 4 of Directive 2008/50/EC.

⁵ In accordance with Directive 2004/107/EC and Article 4 of Directive 2008/50/EC.

The AQD zone <aqd:AQD_Zone>

AQD zone is the parent to the child information classes listed below which store information on the air quality zone. Elements that are specific to Air Quality e-Reporting appear with an aqd: prefix, elements specific to INSPIRE (and its adopted standards) receive other prefixes e.g. am: refers to the INSPIRE Area Management data specification. An indication of their cardinality is provided in addition to a reference to the location of the relevant data specification in the Commission's IPR guidance documentation for air quality classes. **aqd:AQD_Zone** includes:

- am:inspireId Mandatory (B.4.1)
- aqd:zoneCode Mandatory (B.4.2)
- am:name Mandatory (B.4.3)
- aqd:aqdZoneType Mandatory (B.4.4)
- am:geometry Mandatory (B.4.5)
- aqd:LAU Conditional (B.4.6)
- am:zoneType Mandatory (B.4.7)
- am:designationPeriod Mandatory (B.5)
- aqd:predecessor Conditional (B.5.3)
- aqd:changeDocumentation Voluntary (B.5.4)
- Information on population
 - aqd:residentPopulation Mandatory (B.6.1) * *updated*
 - aqd:residentPopulationYear Mandatory (B.6.2) * *updated*
 - aqd:area Mandatory (B.6.3) * *updated*
- aqd:pollutants ()
 - aqd:pollutantCode Mandatory (B.7.1)
 - aqd:protectionTarget Mandatory (B.7.2)
- aqd:timeExtensionExemption Mandatory (B.8) *for 2013 and 2014 reporting*
- aqd:shapefileLink Conditional (B.9)
- am:environmentalDomain Mandatory (B.10)
- am:competentAuthority Mandatory (B.11)
- am:beginLifespanVersion Mandatory
- am:legalBasis Mandatory

B – Zones

Detailed information on the constraints and content for these e-Reporting classes is provided below. Figure 6 summarises the information classes that constitute AQD_Zone.

Focus

AQD_Zone – external links

HTML based documentation for the element AQD_Zone:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Zone.html

Latest UML for AQD_Zone at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Zones.png

AQ zone is referenced by a number of other e-Reporting data flows. This is illustrated in Figure 7. Links to these data flows are provided below;

- B – AQD_Zone (Zone predecessor - <aqd:predecessor>)
- C – AQD_AssessmentRegime (Air Quality zone - <aqd:zone>)
- D – AQD_SamplingPoint (Air Quality zone - <aqd:zone>)

Air Quality zone - <aqd:zone>

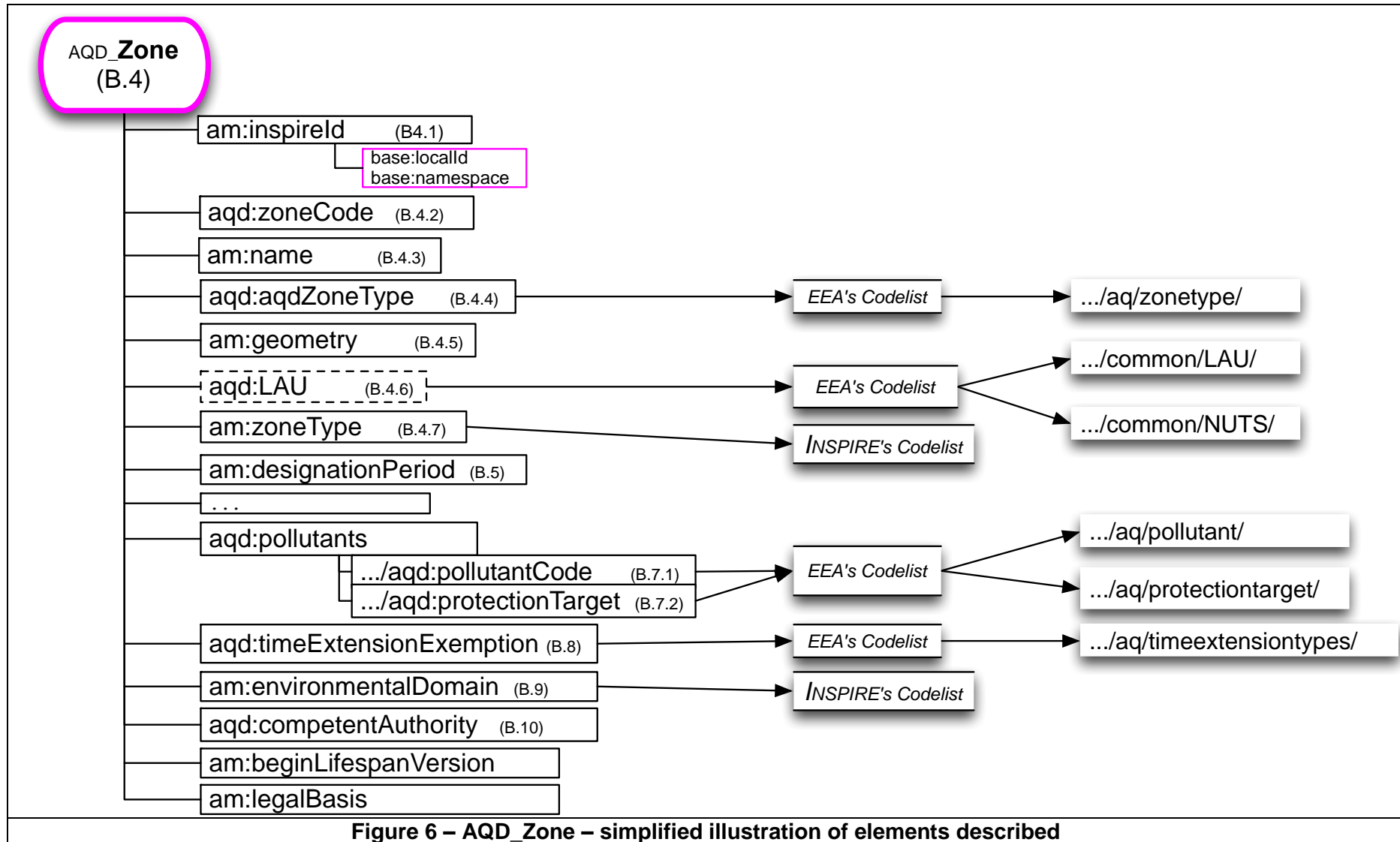
- D – AQD_Model (Air Quality zone - <aqd:zone>)
- G – AQD_Attainment (Air Quality zone - <aqd:zone>)

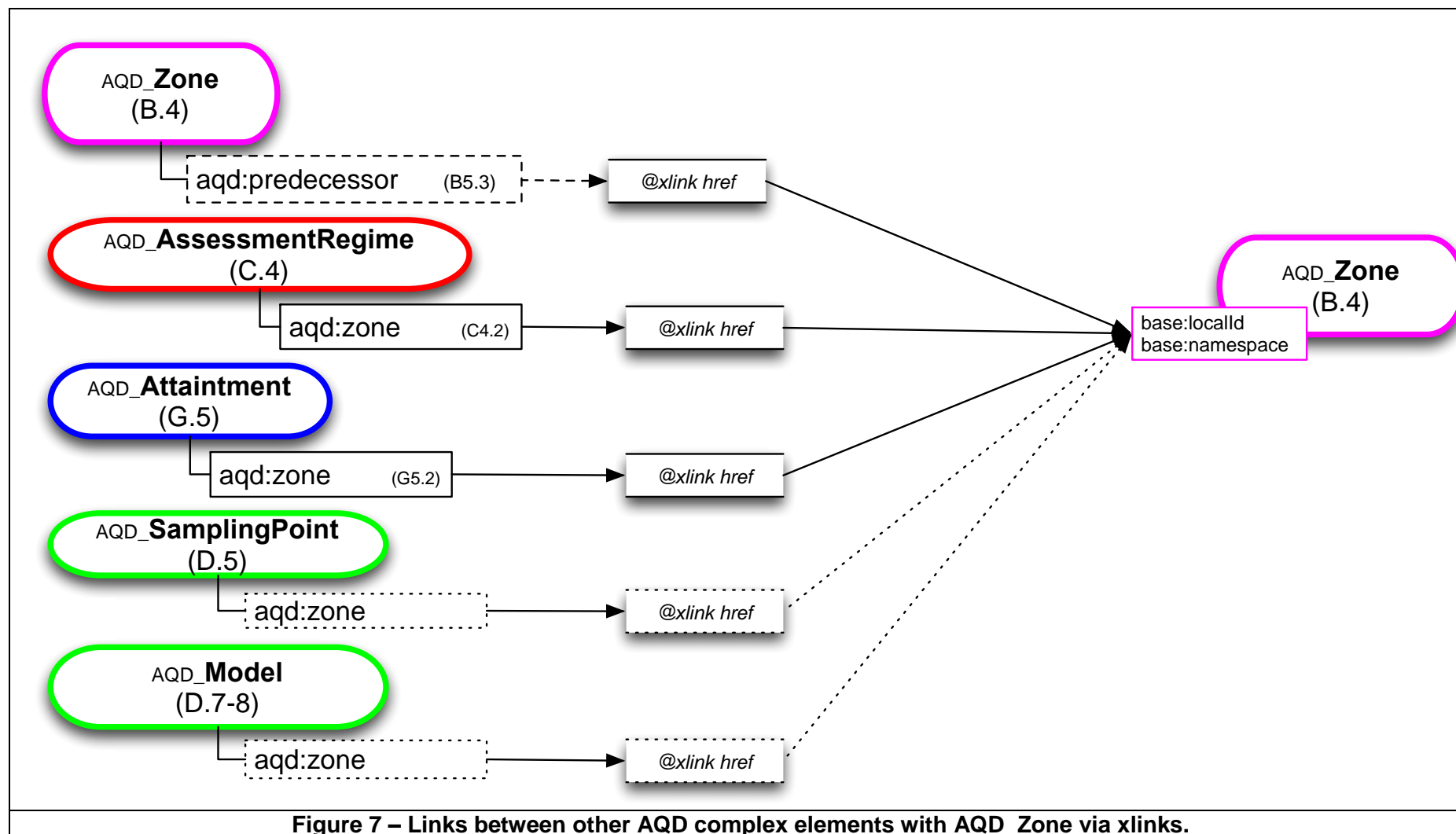
Focus**INSPIRE classes with AQD_Zone use the namespace “am” for area management**

Within AQD_Zone, those elements from INSPIRE start with the namespace “**am**”. These follow the Data specifications on Area management/restrictions/regulation zones and reporting units.

For example, inspireId is found as <am:inspireId> and geometry information within <am:geometry>

B – Zones





AQ zone identifier - <am:inspireId>

The AQ zone identifier provides for the unique identification of the AQ zone and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at “The INSPIRE identifier”.

am:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	B.4.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric, max 45 characters. The localId and the namespace 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, and dash are allowed.
XPath to schema location:	/aqd:AQD_Zone/am:inspireId/base:Identifier /aqd:AQD_Zone/am:inspireId/base:Identifier/base:localId /aqd:AQD_Zone/am:inspireId/base:Identifier/base:namespace /aqd:AQD_Zone/am:inspireId/base:Identifier/base:versionId
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4rc2.pdf

Example

aqd:AQD_Zone

```
<aqd:AQD_Zone gml:id="ZON.UK0001">
  <am:inspireId>
    <base:Identifier>
      <base:localId> ZON.UK0001 </base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so/ </base:namespace>
    </base:Identifier>
  </am:inspireId>
```


National AQ zone code <aqd:zoneCode>

The national zone code provides for the declaration of a plain text denotation of the unique code used at national (local) level to identify the a zone. A standard system for nomenclature has been traditionally used following specification CCXXXX, where CC represents 2-letter Member State code as defined by ISO-3166-1 and XXXX represents a unique code for the zone. This code is the same as that was previously as part of 2004/461/EC Form 2.

aqd:zoneCode	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1 per zone
IPR data specifications found:	B4.2
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 12 characters
XPath to schema location:	/aqd:AQD_Zone/aqd:zoneCode
Voidable:	No

Example

aqd:zoneCode

```
<aqd:zoneCode>UK0001</aqd:zoneCode>
<aqd:zoneCode>AT1234</aqd:zoneCode>
```

AQ zone name <am:name>

A plain text denotation of the name of the zone using the INSPIRE Geographic Names (see gn namespace) data specification. This name is the same as that was previously reported as part of 2004/461/EC Form 2.

am:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1 per zone
IPR data specifications found:	B.4.3
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Zone/am:name/gn:GeographicalName/gn:spelling/gn:SpellingOfName/gn:text
Voidable:	No

Example**am:name**

```

<am:name>
  <gn:GeographicalName>
    <gn:language>eng</gn:language>
    <gn:nativeness nilReason="unknown" xsi:nil="true"/>
    <gn:nameStatus nilReason="unknown" xsi:nil="true"/>
    <gn:sourceOfName nilReason="unknown" xsi:nil="true"/>
    <gn:pronunciation nilReason="unknown" xsi:nil="true"/>
    <gn:spelling>
      <gn:SpellingOfName>
        <gn:text>Greater London Urban Area</gn:text>
        <gn:script>Latn</gn:script>
      </gn:SpellingOfName>
    </gn:spelling>
  </gn:GeographicalName>
</am:name>

```

AQ zone type <aqd:aqdZoneType>

The AQ zone type allows for the declaration of type of zone in accordance with the 2004/107/EC, 2008/50/EC and their Guidelines. This zone type is the same as that was previously reported as part of 2004/461/EC Form 2.

aqd:aqdZoneType	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1 per zone
IPR data specifications found:	B.4.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/zonetype/
Formats Allowed:	See code list constraints
XPath to schema location:	aqd:AQD_Zone/aqd:aqdZoneType
Voidable:	No

Example**aqd:aqdZoneType**

OR

`<aqd:aqdZoneType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/zonetype/agg"/>``<aqd:aqdZoneType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/zonetype/noagg"/>`**AQ zone delimitation <am:geometry>**

The `<am:geometry>` class allows for the shape of the zone or agglomeration i.e. the geometry representing the spatial extent of the spatial object (zone).

Where the AQ zone delimitation is derived from a GIS file single part polygons i.e. multiple instances of the same zone object (this typically may occur where one of more islands form part of the same zone, or when a zone excludes a certain area within its surface), it is advised that multiple single part polygons are converted to a single multi-part polygon in order to limit the number of zone features. See also <http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#//001t0000006w000000.htm>

am:geometry	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1 per zone
IPR data specifications found:	B.4.5
Code list constraints:	None
Formats Allowed:	Typically as gml:polygon or gml:MultiSurface element encoded as a 2-dimensional gml:posList
XPath to schema location:	/aqd:AQD_Zone/am:geometry/gml:Polygon/gml:exterior/gml:LinearRing/gml:posList /aqd:AQD_Zone/am:geometry/gml:MultiSurface/gml:surfaceMember/gml:Polygon/gml:exterior/gml:LinearRing/gml:posList
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_AM_v3.0rc3.pdf http://www.sisostds.org/FEATProgrammersReference/geometryBasic2d_xsd.html#http_www.opengis.net_gml_3.2_Polygon

Example

am:geometry - complex shape

```

[...]  

<am:geometry>  

  <gml:MultiSurface srsName="urn:ogc:def:crs:EPSG::4258" gml:id="UK0001">  

    <gml:surfaceMember>  

      <gml:Polygon gml:id="UK0001_1">  

        <gml:exterior>  

          <gml:LinearRing>  

            <gml:posList srsDimension="2">51.274002 -0.396971 51.273658 -0.396707  

51.274097 -0.395435 51.273471 -0.394585 51.273091 -0.39535 51.272764 -0.394972 51.272063 -0.396127 51.271525 -0.398035  

51.271322 -0.398021 51.271405 -0.397502 51.270218 -0.396847 51.26985 -0.397057 51.269582 -0.398185 51.269126 -0.398002 51.269  

-0.398492 51.26806 -0.39801 51.269485 -0.393715 51.269909 -0.393737 51.26962 -0.3934 51.269843 -0.390951 51.271291 -0.392185  

51.274002 -0.396971</gml:posList>  

          </gml:LinearRing>  

        </gml:exterior>  

      </gml:Polygon>  

    </gml:surfaceMember>  

    [...]  

    <gml:surfaceMember>  

      <gml:Polygon gml:id="UK0010_8">  

        <gml:exterior>  

          <gml:LinearRing>  

            <gml:posList srsDimension="2">50.868285 -0.086885 50.867599 -0.086811  

50.867722 -0.086031 50.867364 -0.08579 50.867444 -0.084982 50.867044 -0.084787 50.867138 -0.083751 50.866438 -0.083192  

50.866154 -0.083233 50.866032 -0.083858 50.865448 -0.083361 50.865038 -0.083833 50.863774 -0.083548 50.863885 -0.087257  

50.863259 -0.087353 50.863883 -0.087903 50.863827 -0.088964 50.864189 -0.089347 50.864274 -0.090474 50.865856 -0.091042  

50.866048 -0.090461 50.866836 -0.090494 50.867089 -0.089651 50.867706 -0.08991 50.867611 -0.090671 50.868282 -0.090907  

50.868501 -0.090159 50.869322 -0.090398 50.870283 -0.089216 50.87036 -0.086762 50.868381 -0.086265 50.868285 -  

0.086885</gml:posList>  

          </gml:LinearRing>  

        </gml:exterior>  

      </gml:Polygon>  

    </gml:surfaceMember>  

  </gml:MultiSurface>  

</am:geometry>  

[...]
```

At a minimum each gml:Polygon element must have a valid srsName attribute (coordinated reference system) declared. For two-dimensional coordinate reference systems the preference for the datum used is for the European Terrestrial Reference System 1989 (ETRS89) for areas within Europe. For area outside the geographical scope of ETRS89 (continental Europe and neighbouring territories) the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS should be used. Compliant with the ITRS means that the system definition is based on the definition of the ITRS and there is a well-documented relationship between both systems, according to EN ISO 19111.

In order to adopt the INSPIRE mandated systems for View Services, the following coordinated reference systems are to be used:

- Geographical coordinate system based on ETRS89 in continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4258>
- Geographical coordinate system based on ITRS outside of continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4326> (WGS 84 2d)

Focus

Geographical coordinate system

Geographical coordinate system based on ETRS89 in continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4258>
srsName="urn:ogc:def:crs:EPSSG::4258"

Geographical coordinate system based on ITRS outside of continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4326>
srsName="urn:ogc:def:crs:EPSSG::4326"

Focus

Geographical coordinate system

When providing geographical coordinates using the following srsName (srsName="urn:ogc:def:crs:EPSSG::4258" or srsName="urn:ogc:def:crs:EPSSG::4326") please note that the order of the elements must be **Latitud & Longitud**.

B – Zones

Preference is for the ETRS89 geodetic coordinate reference systems (ETRS89 Ellipsoidal CRS in INSPIRE: ETRS89-GRS80h, EPSG code: 4937 hence urn:ogc:def:crs:EPSG::4937). As an interim measure until 2020, WGS84 may also be used (urn:ogc:def:crs:EPSG::4326). Where Member States are unable to convert National coordinated reference system to ETRS89 or WGS84 (and for an interim period only to end of 2015), Member States must at a minimum report a valid srsName attribute for the National coordinated reference system (For example, urn:ogc:def:crs:EPSG::27700 for OSGB 1936 / British Grid (<http://www.opengis.net/def/crs/EPSSG/0/27700>))

See also; <http://www.epsg-registry.org/>

http://www.crs-geo.eu/nn_124392/crseu/EN/CRS_Description/crs-description_node.html?_nnn=true

http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_AM_v3.0rc3.pdf

If the zone delimitation cannot be provided as a gml geometry, and thus is specified via LAU codes or an external shape file, the geometry element must still be provided in order to create valid XML

Example

am:geometry

```
[...]
<am:geometry>
  <gml:Polygon gml:id="FID_DEZAXX00020" srsName="urn:ogc:def:crs:EPSG::4326">
    <gml:exterior>
      <gml:LinearRing>
        <gml:posList srsDimension="2">13.971375575196623 52.133565641300812
13.971213340269607 52.133930581440232 13.970551315766256 52.134075901090007 13.970381611373929 52.134152876951227
13.969908590953521 52.134472812517558 13.969601699975815 52.134859962633186 13.969513333450031 52.135997232694216
13.96957274561939 52.136580868953367 13.969732998731985 52.1371435641031 13.969953170044946 52.13753341197593 13
52.133557647691312 13.971822705125565 52.133480598127576 13.971573788219565 52.133478828673589 13.971375575196623
52.133565641300812</gml:posList>
      </gml:LinearRing>
    </gml:exterior>
  </gml:Polygon>
</am:geometry>
```

Administrative units covered - <aqd:LAU>

The element allows for the declaration of the administrative units covered by the zone as a list of LAU2 codes or NUTS codes where large geographical areas are covered. LAU2 and NUTS codes must be those provided by Eurostat. One code per **aqd:LAU** element is allowed, multiple **aqd:LAU** elements are also allowed.

aqd:LAU	
Minimum occurrence:	Conditional, mandatory if geometry not reported and shapefile not provided
Maximum occurrence:	Unbounded, one code per instance of aqd:LAU
IPR data specifications found:	B.4.6
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/lau1/{countryCode}/{lau1 code} http://dd.eionet.europa.eu/vocabulary/lau2/{countryCode}/{lau2 code} http://dd.eionet.europa.eu/vocabulary/common/nuts/{nuts code}
XPath to schema location:	/aqd:AQD_Zone/aqd:LAU
Formats Allowed:	Alphanumeric, max. length 6 characters
Further information found @	http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/local_administrative_units and http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction
Voidable:	No

Example

aqd:LAU

Use of a single LAU code	<code><aqd:LAU xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>	
Use of several LAU codes	<code><aqd:LAU xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>	
	<code><aqd:LAU xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>	
Use of single NUTS code	<code><aqd:LAU xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>	or
	<code><aqd:LAU xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/ES512"/></code>	

Focus

KEY NOTE

The use of the element (aqd:LAU) is strongly discouraged due to difficulties in maintaining an update code list of LAU & NUTS codes and the difficulties in mapping such areas in AQ zones. EEA strongly encourages the use of gml geometry or the provision of shape files.

UPDATE

Area management zone type - <am:zoneType>

This is a high level INSPIRE classification defining the type of management, restriction or regulation zone. The allowed values for this element comprise the code list values specified in Annex C of the AM data specifications. The allowed values are listed below.

am:zoneType	
Minimum occurrence:	1 (mandatory for INSPIRE)
Maximum occurrence:	1
IPR data specifications found:	B.4.7
Code list constraints:	http://inspire.ec.europa.eu/codeList/ZoneTypeCode/airQualityManagementZone
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	aqd:AQD_Zone/am:zoneType
Voidable:	No

Example

am:zoneType

FIXED BY INSPIRE

```
<am:zoneType xlink:href="http://inspire.ec.europa.eu/codeList/ZoneTypeCode/airQualityManagementZone"/>
    <am:zoneType xlink:href="http://inspire.ec.europa.eu/codeList/ZoneTypeCode/airQualityManagementZone"/>
```


AQ zone history

Zone start and end dates - <am:designationPeriod>

AQ zone history start and end dates provide a description of the time envelope over which the AQ zone was legally designated or became effective in the real world. It uses the ISO 19108 TM_Period which is comprised of two date properties - gml:beginPosition and gml:endPosition. The values of the dates shall use the extended ISO 8601 extended format. Where a zone remains in force for an indeterminate period of time i.e. has no gml:endPosition then this element may receive an indeterminatePosition="unknown" attribute to state that the zone is still effective.

am:designationPeriod	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	B.5 (B.5.1 and B.5.2)
Code list constraints:	None
XPath to schema location:	/aqd:AQD_Zone/am:designationPeriod/gml:TimePeriod /aqd:AQD_Zone/am:designationPeriod/gml:TimePeriod/gml:beginPosition /aqd:AQD_Zone/am:designationPeriod/gml:TimePeriod/gml:endPosition
Formats Allowed:	ISO 8601 extended format for dates
Voidable:	Yes

Example

am:designationPeriod

```
<am:designationPeriod>
  <gml:TimePeriod gml:id="ZoneTimePeriodUK0003_1">
    <gml:beginPosition>2013-01-01T01:00+01:00</gml:beginPosition>
    <gml:endPosition indeterminatePosition="unknown" />
  </gml:TimePeriod>
</am:designationPeriod>
```

Zone predecessor - <aqd:predecessor>

When an existing (old) zone is superseded by a new active zone (in part or whole), <aqd:predecessor> shall be used to link the new zone with the old zone(s). If further territory is covered for which no zone has been attributed as yet, this may be documented in B.5.4.

aqd:predecessor	
Minimum occurrence:	0
Maximum occurrence:	Unbounded
IPR data specifications found:	B.5.3
Code list constraints:	None
Formats Allowed:	xlink referencing syntax as described in Referencing between data objects with xlink
XPath to schema location:	/aqd:AQD_Zone/aqd:predecessor/@xlink:href
Voidable:	No

Example

aqd:predecessor

```
<aqd:predecessor xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0005"/>
```

Documentation of predecessors

Provides a free text description of predecessors, especially in case that further territory is covered for which no zone has been attributed as yet.

aqd:changeDocumentation	
Minimum occurrence:	0 (Voluntary)
Maximum occurrence:	1
IPR data specifications found:	B.5.4
Code list constraints:	None

Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_Zone/aqd:changeDocumentation
Voidable:	No

Example**aqd:changeDocumentation**

```
<aqd:changeDocumentation>>free text</aqd:changeDocumentation>
or
<aqd:changeDocumentation>>no change</aqd:changeDocumentation>
```

Information on population and area

Resident population of the AQ zone - <aqd:residentPopulation>

The total number of normally resident citizens in the AQ zone.

aqd:residentPopulation	
Minimum occurrence:	0 (X; if this value cannot be provided by the Member State it will be generated by the EEA from centralised population statistics, reliable, up to date Member State derived data are preferred)
Maximum occurrence:	1
IPR data specifications found:	B.6.1
Code list constraints:	None
Formats Allowed:	Integer
XPath to schema location:	/aqd:AQD_Zone/aqd:residentPopulation
Voidable:	No

Example**aqd:ResidentPopulation**

```
<aqd:residentPopulation>24000</aqd:residentPopulation>
```

B – Zones

Resident population reference year - <aqd:residentPopulationYear>

The reference year for the resident population quoted in B.6.1. Necessary if reference year is different from reporting year

aqd:residentPopulationYear	
Minimum occurrence:	0 (X; if B.6.1 is derived from centralised statistics by the EEA, B.6.2 shall be generated by EEA also)
Maximum occurrence:	1
IPR data specifications found:	B.6.2
Code list constraints:	None
Formats Allowed:	YYYY
XPath to schema location:	/aqd:AQD_Zone/aqd:residentPopulationYear/gml:TimeInstant/gml:timePosition
Voidable:	No

Example

aqd:residentPopulationYear

```
<aqd:residentPopulationYear>
  <gml:TimeInstant gml:id="ZON.TO.UK0003.1">
    <gml:timePosition>2012</gml:timePosition>
  </gml:TimeInstant>
</aqd:residentPopulationYear>
```

Area of zone - <aqd:area>

The area of zone in km². This value is routinely available in GIS datasets and calculable in a GIS. Member States are strongly encouraged to supply it where am:geometry information is provided in B.4.5 or shapefile information is provided in B.9. Where it is not provided by Member State the area of the zone will be calculated or estimated by the EEA from central resources.

aqd:AQD_Zone	
Minimum occurrence:	0 (G)
Maximum occurrence:	1
IPR data specifications found:	B.6.3
Code list constraints:	None
Formats Allowed:	Decimal to 2 d.p.
XPath to schema location:	/aqd:AQD_Zone/aqd:area
Voidable:	No

Example**aqd:area**

```
<aqd:area uom="km2">1629.86</aqd:area>
```

AQ pollutants <aqd:pollutants>

This element specifies which pollutant(s) and protection target the zone has been designated for. If the zone is defined for more than one pollutant, the `<aqd:pollutants>` element may be repeated. The pollutants allowed are restricted to those with human health and vegetation protection objectives - SO₂, PM₁₀, PM_{2.5}, O₃, NO₂, NO_x, CO, Benzene, Pb in PM₁₀, BaP in PM₁₀, As in PM₁₀, Cd in PM₁₀ and Ni in PM₁₀. Only NO_x and SO₂ may have vegetation protect targets applied and vegetation protection cannot be assigned in an agglomeration zone.

aqd:pollutants**Minimum occurrence:**

1

Maximum occurrence:

unbounded

IPR data specifications found:

B.7 (B7.1 and B7.2)

Code list constraints:<http://dd.eionet.europa.eu/vocabulary/aq/pollutant/view><http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/view>**XPath to schema location:**`/aqd:AQD_Zone/aqd:pollutants/aqd:Pollutant``/aqd:AQD_Zone/aqd:pollutants/aqd:Pollutant/aqd:pollutantCode/@xlink:href``/aqd:AQD_Zone/aqd:pollutants/aqd:Pollutant/aqd:protectionTarget/@xlink:href`**Voidable:**

No

Example**aqd:pollutants – single pollutant zone**

```
[...]
<aqd:pollutants>
  <aqd:Pollutant>
    <aqd:pollutantCode xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
    <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
  </aqd:Pollutant>
</aqd:pollutants>
[...]
```

Example**aqd:pollutants – multi-pollutant zone**

```

    <aqd:pollutants>
      <aqd:Pollutant>
        <aqd:pollutantCode xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/10"/>
        <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
      </aqd:Pollutant>
    </aqd:pollutants>
    <aqd:pollutants>
      <aqd:Pollutant>
        <aqd:pollutantCode xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/20"/>
        <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
      </aqd:Pollutant>
    </aqd:pollutants>

```

AQ time extension exemption - <aqd:timeExtensionExemption>

This element allows for declaration of any time extensions that have been granted and remain applicable for each zone. Multiple records are allowed where more than one time extension is applicable.

aqd: timeExtensionExemption

Minimum occurrence:	1
Maximum occurrence:	unbounded
IPR data specifications found:	B.8
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/timeextensiontypes/view
XPath to schema location:	/aqd:AQD_Zone/aqd:timeExtensionExemption
Voidable:	No

Example**aqd:timeExtensionExemption**

```

<aqd: timeExtensionExemption xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/timeextensiontypes/none"/>
OR
<aqd: timeExtensionExemption xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/timeextensiontypes/PM10-24h"/>

```

AQ shapefile link - <aqd:shapefileLink>

This is a temporary element that allows the provision of a link to external shapefile of the zone. The group of files corresponding to the shapefile must be uploaded to the same CDR folder as the XML will be uploaded. Within the shape file it is essential that the attribute information clearly includes the zonecode (B4.2), localid and namespaces (found within B.4.1) used within the XML.

aqd: timeExtensionExemption

Minimum occurrence: 0

Maximum occurrence: 1

IPR data specifications found: B.9

Code list constraints:

XPath to schema location: /aqd:shapefileLink

Voidable: No

Example

aqd:shapefileLink

Logic

```
<aqd:shapefileLink xlink:href="http://cdr.eionet.europa.eu/CC/eu/aqd/b/ZZZZZZZ/CC_Zones_YYYY.shp"/>
```

Test example ES

```
<aqd:shapefileLink xlink:href="http://cdrtest.eionet.europa.eu/es/eu/aqd/b/envuqri6a/ES_Zones_2014.shp"/>
```

Example

Attribute information within the shape file

zonecode	localid	namespace
ES1301	ZON_ES1301	ES.BDCA.AQD
ES1308	ZON_ES1308	ES.BDCA.AQD
ES1309	ZON_ES1309	ES.BDCA.AQD
ES1310	ZON_ES1310	ES.BDCA.AQD
ES1311	ZON_ES1311	ES.BDCA.AQD

Example

Screenshot from CDR

B_Zones_2014

Zip Envelope

Description**Obligations** [\(B\) Preliminary information on zones and agglomerations \(Article 6\)](#)**Period** 2014 - Whole Year**Coverage** Spain**Reported** 2013/12/13 14:51:46.628481 GMT+1**Status** Task(s) waiting to be assigned: **Redeliver or Finish****Note**

If you want to stay updated about events in this envelope [Subscribe to receive notifications](#) for this country and the current dataflow(s).

Files in this envelope

1	ES B_Zones.xml	B_Zones_2014	13 Dec 2013	908 KB
2	ES_Zones_2014.dbf	B_Zones_2014	13 Dec 2013	116 KB
3	ES_Zones_2014.mxd	B_Zones_2014	13 Dec 2013	389 KB
4	ES_Zones_2014.prj	B_Zones_2014	13 Dec 2013	147 Bytes
5	ES_Zones_2014.sbn	B_Zones_2014	13 Dec 2013	1.59 KB
6	ES_Zones_2014.sbx	B_Zones_2014	13 Dec 2013	188 Bytes
7	ES_Zones_2014.shp	B_Zones_2014	13 Dec 2013	8.25 MB
8	ES_Zones_2014.shx	B_Zones_2014	13 Dec 2013	1.32 KB

Environmental domain - <am:environmentalDomain>

This is a mandatory INSPIRE field to describe the high-level environmental domain for which environmental objectives have been defined. For AQ e-Reporting the value of this element will always be "air"

am:environmentalDomain	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	B.10
Code list constraints:	http://inspire.ec.europa.eu/codeList/EnvironmentalIssueType/air
XPath to schema location:	/aqd:AQD_Zone/am:environmentalDomain/@xlink:href
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_AM_v3.0rc3.pdf
Voidable:	No

Example

am:environmentalDomain

FIXED BY

```
<am:environmentalDomain xlink:href="http://inspire.ec.europa.eu/codeList/MediaValue/air"/>
```

Competent authority - <am:competentAuthority>

This is a mandatory INSPIRE element describing the organisation(s) responsible for managing, restricting or regulating measures or activities within the zone. The element makes use of the INSPIRE <base2:RelatedParty> class. Multiple competent authorities may be declared for a zone where this applies. This element should not be confused with the reporting authority provided within the AQD_ReportingHeader required for each data-flow and covered in “Reporting header <aqd:AQD_ReportingHeader>”.

am:competentAuthority	
Minimum occurrence:	1
Maximum occurrence:	Unbounded
IPR data specifications found:	B.11
Code list constraints:	None
XPath to schema location:	/aqd:AQD_Zone/aqd:competentAuthority /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:organisationName/gmd:LocalisedCharacterString /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:onlineResource/gmd:CI_OnlineResource/gmd:linkage/gmd:URL /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:individualName/gmd:LocalisedCharacterString "/aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:address/gmd:CI_Address/gmd:deliveryPoint/gmd:LocalisedCharacterString /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:address/gmd:CI_Address/gmd:city/gmd:LocalisedCharacterString /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:address/gmd:CI_Address/gmd:postalCode/gmd:LocalisedCharacterString" /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:phone/gmd:CI_Telephone/gmd:voice/gmd:LocalisedCharacterString /aqd:AQD_Zone/am:competentAuthority/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:address/gmd:CI_Address/gmd:electronicMailAddress/gmd:LocalisedCharacterString
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_DataSpecification_AM_v3.0.pdf
Voidable:	Yes

For further information on the details of the base2:RelatedParty type, please see the section Contact Details <base2:RelatedParty>

AQ zone version start time - <am:beginLifespanVersion>

Specifies the date and time at which this version of the spatial object was inserted or changed in the spatial data set or AQ zone data flow. Please note that this is not the time as of which the Zone itself was designated pertains purely to the electronic spatial object describing this Zone.

am:beginLifespanVersion	
Minimum occurrence:	1
Maximum occurrence:	1 per zone
IPR data specifications found:	n/a
Code list constraints:	None
XPath to schema location:	/aqd:AQD_Zone/am:beginLifespanVersion
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
Voidable:	Yes

Example

am:beginLifespanVersion

```
<am:beginLifespanVersion>2013-03-15T19:29:05Z</am:beginLifespanVersion>
```

Legal basis for the zone - <am:legalBasis>

This mandatory INSPIRE attribute provides a reference to, or citation of the legal instrument or document that required the establishment of the zone. It is required within INSPIRE to differentiate legal drivers for zones from different environmental domains. Multiple occurrences of <am:legalBasis> are allowed where multiple legal drivers exist.

am:legalBasis	
Minimum occurrence:	1
Maximum occurrence:	Unbounded
IPR data specifications found:	n/a
Code list constraints:	Standardised text proposed below.
XPath to schema location:	/aqd:AQD_Zone/am:legalBasis
Formats Allowed:	Alphanumeric, standard text
Voidable:	Yes

Example**am:legalBasis**

```

<am:legalBasis>
  <base2:LegislationCitation gml:id="LegislationCitation_UK0003_1">
    <base2:name>2011/850/EU: Commission Implementing Decision of 12 December 2011 laying down rules
for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of
information and reporting on ambient air quality (notified under document C(2011) 9068)</base2:name>
    <base2:shortName>AQ IPR for e-Reporting</base2:shortName>
    <base2:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco>Date>2011-12-12</gco>Date>
        </gmd:date>
        <gmd:dateType />
      </gmd:CI_Date>
    </base2:date>
    <base2:link>http://eur-lex.europa.eu/legal-
content/EN/TXT/?uri=uriserv:OJ.L_.2011.335.01.0086.01.ENG</base2:link>
    <base2:identificationNumber>2011/850/EC</base2:identificationNumber>
    <base2:officialDocumentNumber>OJ L 335, 17.12.2011, p. 86–106</base2:officialDocumentNumber>
    <base2:dateEnteredIntoForce>2014-01-01</base2:dateEnteredIntoForce>
    <base2:level xlink:href="http://inspire.ec.europa.eu/codeList/LegislationLevelValue/european" />
  </base2:LegislationCitation>
</am:legalBasis>

```

C - Information on the assessment regime

(AQD IPR [Article 7](#)) – link to [e-Reporting logic](#)

Under the IPR Decision Member States shall make available information on the assessment regime to be applied in the following calendar year for each pollutant. This data flow allows for comprehensive description of the assessment methods applied which will include fixed measurements and may include indicative measurements, modelling and objective estimation; according to Article 2 (4) of the Directive 2008/50/EC, 'assessment' shall mean any method used to measure, calculate, predict or estimate levels'. The legal obligations for reporting are set out in Article 7 and [Part C of Annex II](#) of the 2011/850/EC Decision.

Data flow C shall be reported in two forms;

1. As a forwarding looking report by 31 December each year to establish the assessment regime that the Member States plans to implement for the assessment and management of air quality⁶ in the forthcoming calendar year.
2. As a retrospective report by 30 September each year to confirm (or otherwise) the assessment regime that the Member States implemented for the assessment and management of air quality in the previous calendar year.

The AQ assessment regime data flow is a mandatory data flow for pollutants covered by Directive 2004/107/EC and Article 4 of Directive 2008/50/EC. The e-Reporting data model and schema breaks the data flow into the information items (classes) outlined below.

In addition, information about designated competent authorities and bodies responsible for different aspects of quality assurance must be provided under this data flow.

The reporting XML is comprised of one instance of the AQ reporting header information class, one instance of the AQD_AssessmentRegime class for each assessment regime reported as well as one instance of the Competent Authorities class.

⁶ In accordance with Directive 2004/107/EC and Article 4 of Directive 2008/50/EC.

Reporting header <aqd:AQD_ReportingHeader>

An explanation of the AQ reporting header information class can be found in the section Reporting header <aqd:AQD_ReportingHeader>. This is mandatory and includes common elements required for reporting (C1, C2 and C3 from the Commission’s IPR guidance documentation for air quality classes).

Air quality assessment regimes <aqd:AQD_AssessmentRegime>

The AQD Assessment Regime is the parent to the child information classes listed in the following sections and holds information on the air quality assessment regime planned or used to assess air quality with regard to the environmental objectives set by 2008/50/EC and 2004/107/EC. Information classes that are specific to Air Quality e-Reporting appear with an aqd: prefix. Classes specific to INSPIRE (and its adopted standards) receive other prefixes e.g. gml: refers to the OGC Geography Markup Language (GML) data specification.

Complete information on assessment regimes is to be provided if any information pertaining to the assessment regimes has changed since the last delivery, so if the ReportingHeader for this data flow states change as “true”. According to Article 2 (4) of the Directive 2008/50/EC, ‘assessment’ shall mean any method used to measure, calculate, predict or estimate levels; ‘

aqd: AQD_AssessmentRegime	
Minimum occurrence:	0 (Conditional, Mandatory if first reporting or change=true)
Maximum occurrence:	Unbounded
IPR data specifications found:	C.4
Code list constraints:	n/a
Formats Allowed:	
URL to schema location:	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_AssessmentRegime.html
Voidable:	

The AQ and INSPIRE information classes that make up the AQD assessment regime data flow are listed below. An indication of their cardinality is provided together with references the location of the relevant data specification in the Commission’s IPR guidance documentation for air quality classes. The following elements need to be provided in the XML deliveries.

aqd:AQD_AssessmentRegime (C.4) includes:

• aqd:inspireId	Mandatory (C.4.1)
• aqd:zone	Mandatory (C.4.2)
• aqd:pollutant	Mandatory (C.4.3)
• aqd:assessmentThreshold	Mandatory (C.4.4)
• aqd:EnvironmentalObjective	Mandatory (C.4.4.1)
• aqd:objectiveType	Mandatory (A.3.1)
• aqd:reportingMetric	Mandatory (A.3.2)
• aqd:protectionTarget	Mandatory (A.3.3)
• aqd:exceedanceAttainment	Mandatory (C.4.4.2)
• aqd:classificationDate	Mandatory (C.4.4.3)
• aqd:classificationReport	Mandatory (C.4.4.4)
• aqd:AssessmentMethods	Mandatory (C.4.5)
• aqd:assessmentType	Mandatory (C.4.5.1)
• aqd:assessmentTypeDescription	Mandatory (C.4.5.2)
• aqd:samplingPointAssessmentMetadata	Conditional, mandatory (C.4.5.3)
• aqd:modelAssessmentMetadata	Conditional, mandatory (C.4.5.4)

aqd:AQD_competentAuthorities

	Conditional, mandatory (C.5)
• aqd:assessmentAirQuality	Mandatory (C.5.1)
• aqd:approvalMeasurementSystems	Mandatory (C.5.2)
• aqd:accuracyMeasurements	Mandatory (C.5.3)
• aqd:analysisAssessmentMethod	Mandatory (C.5.4)
• aqd:nation-wideQualityAssurance	Mandatory (C.5.5)
• aqd:cooperationMSCCommission	Mandatory (C.5.6)

C – Assessment Regime

Detailed information on the constraints and content for these e-Reporting classes is provided below. Figure 8 illustrates the majority of information classes that constitute AQD_AssessmentRegime.

Focus

AQD_AssessmentRegime – external links

HTML based documentation for the element AQD_AssessmentRegime:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_AssessmentRegime.html

Latest UML for AQD_AssessmentRegime at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Assessment.png

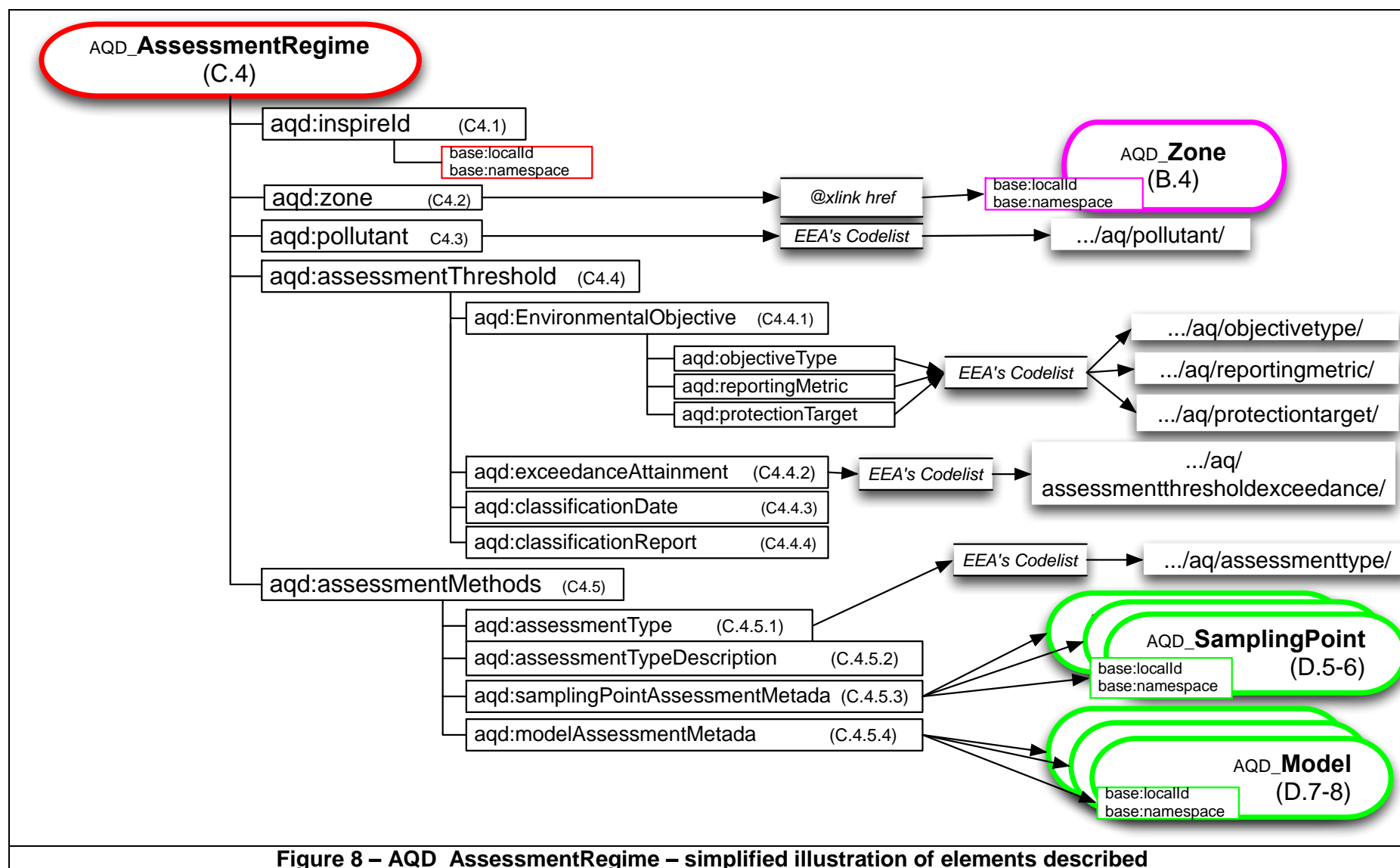


Figure 8 – AQD_AssessmentRegime – simplified illustration of elements described

AQ Assessment Regime identifier - <aqd:inspireId>

The AQ assessment regime identifier provides for the unique identification of the assessment regime and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at [“The INSPIRE identifier”](#).

aqd:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per AQD_AssessmentRegime)
IPR data specifications found at:	C.4.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:inspireId/base:Identifier /aqd:AQD_AssessmentRegime/aqd:inspireId/base:Identifier/base:localId /aqd:AQD_AssessmentRegime/aqd:inspireId/base:Identifier/base:namespace /aqd:AQD_AssessmentRegime/aqd:inspireId/base:Identifier/base:versionID
Further information found @	

Example**aqd:inspireId within aqd:AQD_AssessmentRegime**

```

<aqd:AQD_AssessmentRegime gml:id="GB_AssessmentRegime_1">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>GB_AssessmentRegime_1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
      <base:versionId>prelim-2013-v0</base:versionId>
    </base:Identifier>
  </aqd:inspireId>

```

Air Quality zone - <aqd:zone>

AQ zone type links the assessment regime to an AQ zone already defined in Data flow B via an xlink:href statement. One AQ zone may be declared in different assessment regimes, as one zone may cover multiple pollutants. However, assessment regimes are dedicated to individual zones and pollutants.

aqd:zone	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	C4.2
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 12 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:zone/@xlink:href
Voidable:	No

Example**aqd:zone**

```
<aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/ZON.UK0001"/>
```

For Assessment Regimes at Member State (national) level like the assessments for AEI or those for pollutant with monitoring objective (MO) [sampling points for the AEI, ERT, ECO and sampling points involved in monitoring objective type assessment (e.g. measurements of ozone precursors, speciation of PM_{2.5} and deposition of PAH and heavy metals)], this element is not applicable as is voided like **<aqd:zone nilReason="inapplicable"/>**.

Focus**Voiding aqd:zone when Assessment Regime is at country (national) level**

```
<aqd:zone nilReason="inapplicable"/>
```

UPDATE

AQ pollutants <aqd:pollutants>

This element specifies which pollutant(s) the assessment regime is applicable with the specified AQ zone. If the regime is applicable for more than one pollutant, the <aqd:pollutants> element is repeated. The pollutants allowed are restricted to those with human health and vegetation protection objectives - SO₂, PM₁₀, PM_{2.5}, O₃, NO₂, NO_x, CO, Benzene, Pb in PM₁₀, BaP in PM₁₀, As in PM₁₀, Cd in PM₁₀ and Ni in PM₁₀. Only NO_x and SO₂ may have vegetation protect targets applied and vegetation protection cannot be assigned in an agglomeration zone.

aqd:pollutants	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	C4.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:pollutant/@xlink:href
Voidable:	No

Example**aqd:pollutant**

```
<aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/18"/>
```

Classification of AQ zone in relation to the Assessment thresholds - <aqd:assessmentThreshold>

This is a complex group of elements used to specify the classification of pollution levels within the zone identified in relation to the assessment thresholds applicable to the pollutant(s). Some supporting metadata is also provided. The data is comparable to that previously found in the 2004/461/EC Forms 10 submissions. The group contains several elements which are described in detail in subsections below.

The parent child relationship of XML elements that make up the `<aqd:assessmentThreshold>` is shown in Figure 9. Detailed schema documentation is available [here](http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AssessmentThreshold.html)⁷. The constraints applicable to `<aqd:assessmentThreshold>` are listed below.

aqd:assessmentThreshold	
Minimum occurrence:	1 Mandatory
Maximum occurrence:	unbounded
IPR data specifications found:	C.4.4, C.4.4.1, (A.3.1, A.3.2, A.3.3), C.4.4.2, C.4.4.3, C.4.4.4
Code list constraints:	None
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentThreshold /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:environmentalObjective/aqd:EnvironmentalObjective /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:objectiveType/@xlink:href /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:reportingMetric/@xlink:href /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:protectionTarget/@xlink:href /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:exceedanceAttainment/@xlink:href /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:classificationDate/gml:TimeInstant/gml:timePosition /aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:classificationReport
Formats Allowed:	Variable
Voidable:	No

⁷ http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AssessmentThreshold.html

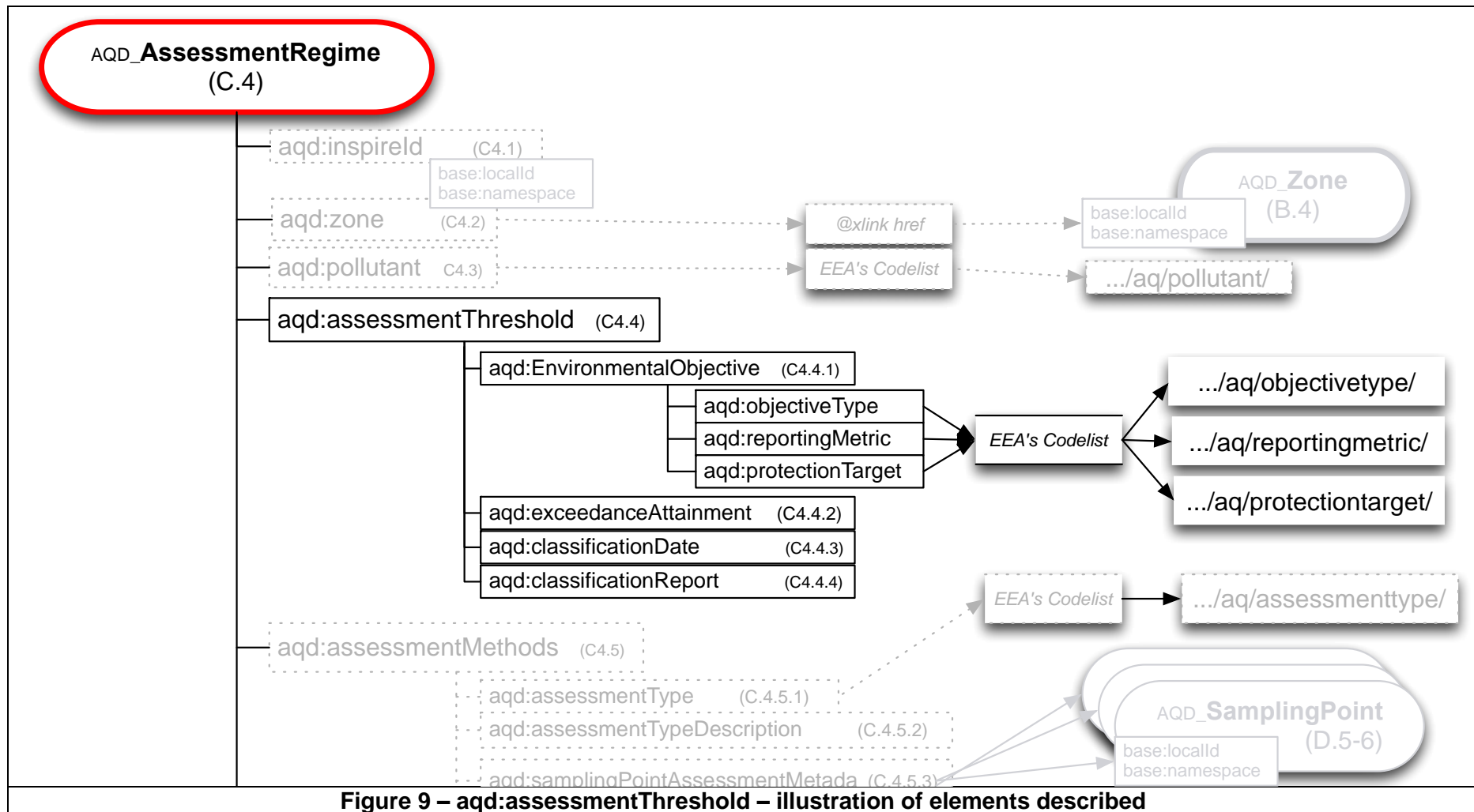


Figure 9 – aqd:assessmentThreshold – illustration of elements described

Environmental Objective - <aqd:environmentalObjective>

The constraints applicable to the <aqd:environmentalObjective> common data type are summarised in common section “Environmental objective type <aqd:environmentalObjective>”.

Example

aqd:environmentalObjective

```
<aqd:environmentalObjective>
  <aqd:EnvironmentalObjective>
    <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/ALT/" />
    <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean/" />
    <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H/" />
  </aqd:EnvironmentalObjective>
</aqd:environmentalObjective>
[...]
```

AQ exceedance / attainment statement <aqd:exceedanceAttainment>

This element specifies the observed pollution levels (measured in previous years) in relation to the Assessment Thresholds for the specified zone and pollutant. A codelist with values is provided.

aqd:exceedanceAttainment

Minimum occurrence:	Mandatory
Maximum occurrence:	1 (per <aqd:assessmentThreshold> group)
IPR data specifications found:	C.4.4.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmentthresholdexceedance/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:exceedanceAttainment/@xlink:href
Voidable:	No

Example

aqd:exceedanceAttainment

```
<aqd:exceedanceAttainment xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmentthresholdexceedance/belowLAT" />
```

Assessment threshold classification date <aqd:classificationDate>

This element specifies the year of the last assessment of the pollution level in the zone in relation to the assessment thresholds.

aqd:classificationDate	
Minimum occurrence:	1 Mandatory
Maximum occurrence:	1 (per <aqd:assessmentThreshold> group)
IPR data specifications found:	C.4.4.3
Code list constraints:	None
Formats Allowed:	YYYY / YYYY-MM-DD / full extended
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:classificationDate/gml:TimeInstant/gml:timePosition
Voidable:	No

Example**aqd:classificationDate**

or

```

<aqd:classificationDate>
  <gml:TimeInstant gml:id="TimeInstant_2">
    <gml:timePosition>2011</gml:timePosition>
  </gml:TimeInstant>
</aqd:classificationDate>

or

<aqd:classificationDate>
  <gml:TimeInstant gml:id="TimeInstant_2">
    <gml:timePosition>2011-05-07</gml:timePosition>
  </gml:TimeInstant>
</aqd:classificationDate>

```


Link to assessment threshold classification report <aqd:classificationReport>

Provides a URL to an on line report or resource describing the classification procedure being reported with thin the assessment regime.

aqd:classificationReport	
Minimum occurrence:	1 Mandatory
Maximum occurrence:	1
IPR data specifications found:	C.4.4.4
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentThreshold/aqd:AssessmentThreshold/aqd:classificationReport
Voidable:	No

Example

aqd:classificationReport

```
<aqd:classificationReport>http://www.umweltbundesamt.at/Luftgueteberichte/</aqd:classificationReport>
```

AQ assessment methods <aqd:assessmentMethods>

This is a complex group of elements that provides the characteristics of the assessment methods used in the classification of pollution levels within the zone identified in relation to the assessment thresholds applicable to the pollutant(s). The parent child relationship of XML elements that make up the <aqd:assessmentMethods> is shown here Figure 10 and schema documentation [here](http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AssessmentMethods.html)⁸.

⁸ http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AssessmentMethods.html

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The constraints and child elements associated with `<aqd:assessmentMethods>` are listed below.

aqd:assessmentMethods	
Minimum occurrence:	1
Maximum occurrence:	unbounded
IPR data specifications found:	C.4.5
Code list constraints:	None
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentMethods /aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentType/@xlink:href /aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentTypeDescription /aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:samplingPointAssessmentMetadata/@xlink:href /aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:modelAssessmentMetadata/@xlink:href
Voidable:	No

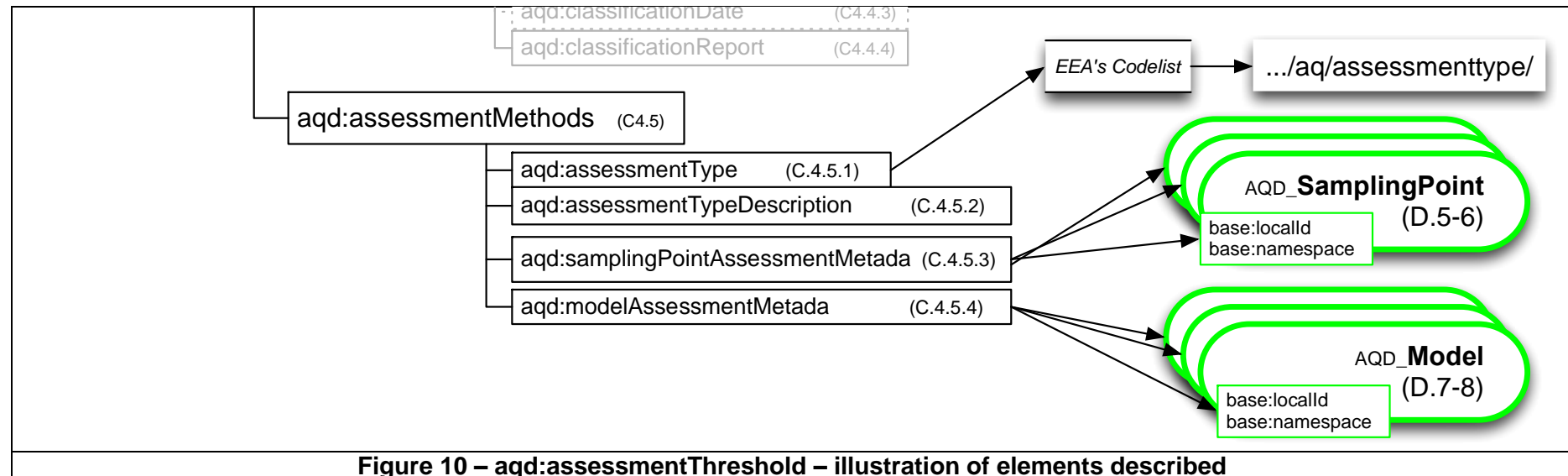


Figure 10 – aqd:assessmentThreshold – illustration of elements described

AQ assessment type <aqd:assessmentType>

The AQ assessment type elements allows for the classification (grouping) of assessment methods into common types. The types of assessment are those management by data flow D on assessment methods e.g. fixed measurement, modelling, indicative measurement, objective estimation. The types are controlled by a code list.

aqd:assessmentType	
Minimum occurrence:	1 (Mandatory on first reporting or if change = "true")
Maximum occurrence:	1
IPR data specifications found:	C.4.5.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentType/@xlink:href
Voidable:	No

Example

aqd:assessmentType

```
<aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed"/>
```

AQ assessment type

Makes provision for a short textual description of the assessment type and how it is applied. Here for example data providers may also make reference to fixed measurements declared at a zone level for Assessment Regimes but assessed at Member State (national) level e.g. sampling points for the AEI, ERT, ECO and stations involved in monitoring objective type assessment e.g. measurements of ozone precursors, speciation of PM_{2.5} and deposition of PAH and heavy metals.

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aqd:assessmentTypeDescription	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	C.4.5.2
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 255 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentTypeDescription
Voidable:	No

Example

aqd:assessmentTypeDescription

```
<aqd:assessmentTypeDescription>Fixed measurement</aqd:assessmentTypeDescription>

<aqd:assessmentTypeDescription>Fixed measurements of ozone precursors to fulfil national monitoring objective
obligations</aqd:assessmentTypeDescription>
```

Link to assessment method metadata <aqd:modelAssessmentMetadata> or <aqd:samplingPointAssessmentMetadata>

Makes provision for referencing of the assessment method metadata records for sampling points (fixed and indicative) and/or modelling methods (models and objective estimations) to be employed or commissioned as part of the assessment regime. The metadata records must pre-exist or be generated in within data flow D to enable referencing of these records via an xlink:href attribute.

aqd:samplingPointAssessmentMetadata & aqd:modelAssessmentMetadata	
Minimum occurrence:	1 (dependant on the aqd:assessmentType provided, either aqd:samplingPointAssessmentMetadata or aqd:modelAssessmentMetadata must be provided)
Maximum occurrence:	Unbounded
IPR data specifications found:	C.4.5.3 and C.4.5.4
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:samplingPointAssessmentMetadata/@xlink:href

	/aqd:AQD_AssessmentRegime/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:modelAssessmentMetadata /@xlink:href
Voidable:	No

Example**aqd:samplingPointAssessmentMetadata**

```

<aqd:assessmentMethods>
  <aqd:AssessmentMethods>
    <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model" />
    <aqd:assessmentTypeDescription>Description of the modeling</aqd:assessmentTypeDescription>
    <aqd:modelAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Model_19" />
  </aqd:AssessmentMethods>
</aqd:assessmentMethods>

<aqd:assessmentMethods>
  <aqd:AssessmentMethods>
    <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed" />
    <aqd:assessmentTypeDescription>
      Automatic & sampler based fixed measurements of ambient air pollution
    </aqd:assessmentTypeDescription>
    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_16"/>
    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_98"/>
    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_33"/>
    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_26"/>
  </aqd:AssessmentMethods>
</aqd:assessmentMethods>

```

Information on Competent Authorities - <aqd:competentAuthorities>

Information about designated competent authorities and bodies responsible for different aspects of quality assurance must be provided. The data block C.5 requests information about competent authorities on various tasks related to AQ Assessment, according to Article 3 of Directive 2008/50EC. The format of this information is specified in the datatype Contact Details.

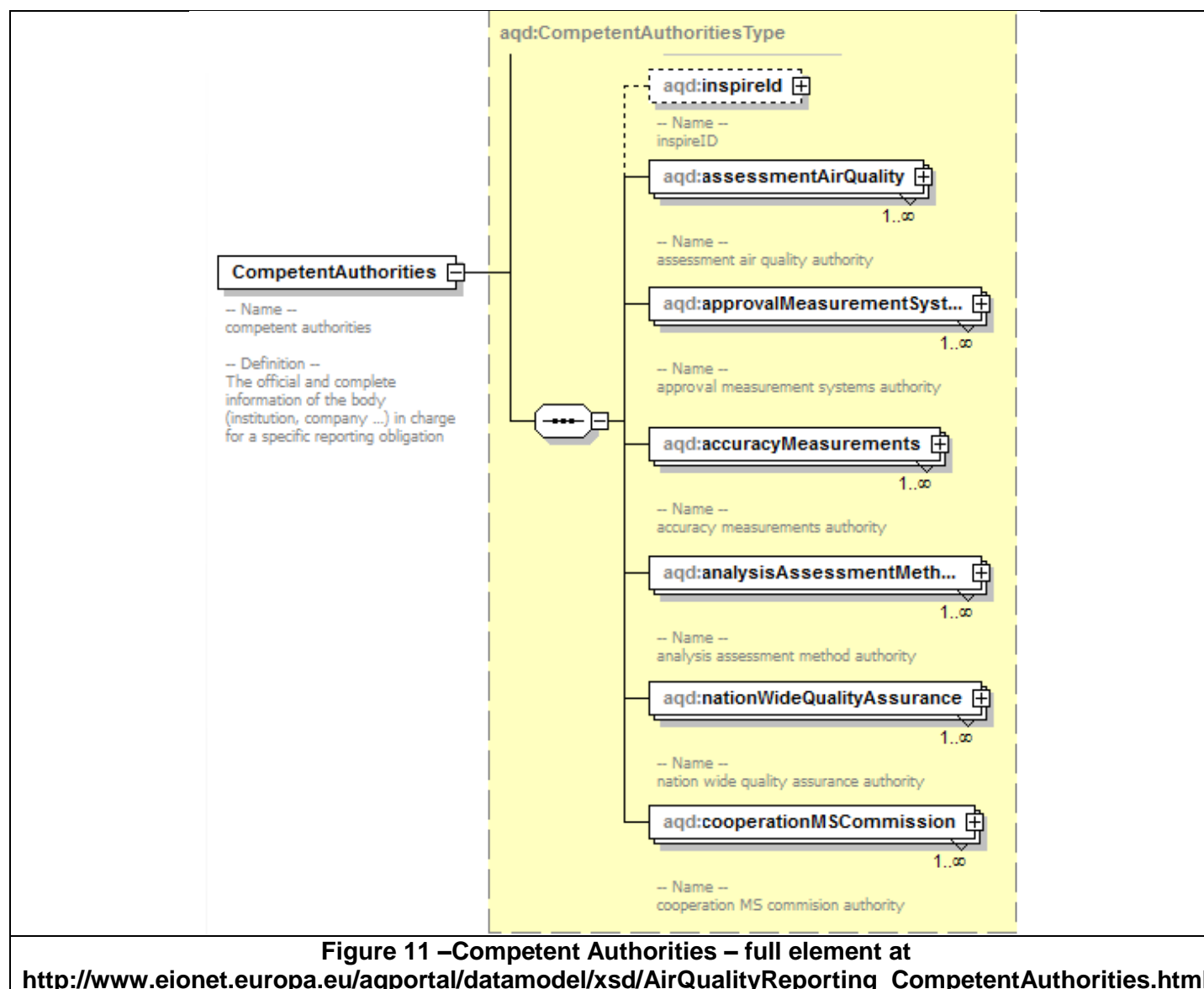
In addition, an identifier should be provided for this information block in order to enable referencing from the ReportingHeader.

aqd:competentAuthorities	
Minimum occurrence:	0 (Conditional, Mandatory if first reporting or change=true)
Maximum occurrence:	1
IPR data specifications found:	C.5
Code list constraints:	n/a
Formats Allowed:	
XPath to schema location:	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_CompetentAuthorities.html
Voidable:	

The AQ and INSPIRE information classes that make up the AQD Competent Authorities regime data flow are listed below. An indication of their cardinality is provided and references the location of the relevant data specification in the Commission's IPR guidance documentation for air quality classes. The following elements need to be declared in the XML deliveries.

aqd:comptentAuthorities (C.5) includes:

- | | |
|-----------------------------------|--|
| • aqd:inspireId | Conditional, mandatory if used with services |
| • aqd:assessmentAirQuality | Mandatory (C.5.1) |
| • aqd:approvalMeasurementSystems | Mandatory (C.5.2) |
| • aqd:accuracyMeasurements | Mandatory (C.5.3) |
| • aqd:analysisAssessmentMethod | Mandatory (C.5.4) |
| • aqd:nation-wideQualityAssurance | Mandatory (C.5.5) |
| • aqd:cooperationMSCommission | Mandatory (C.5.6) |



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Example

aqd:competentAuthorities

```
<aqd:competentAuthorities>
  <aqd:inspireId></aqd:inspireId>
  <aqd:assessmentAirQuality></aqd:assessmentAirQuality>
  <aqd:approvalMeasurementSystems></aqd:approvalMeasurementSystems>
  <aqd:accuracyMeasurements></aqd:accuracyMeasurements>
  <aqd:analysisAssessmentMethod></aqd:analysisAssessmentMethod>
  <aqd:nation-wideQualityAssurance></aqd:nation-wideQualityAssurance>
  <aqd:cooperationMSCommission></aqd:cooperationMSCommission>
</aqd:competentAuthorities>
```

Competent Authority identifier - <aqd:inspireId>

The AQ Competent Authority identifier provides for the unique identification of the Competent Authority block and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at [“The INSPIRE identifier”](#).

aqd:inspireId

Minimum occurrence:	0 (formally optional for compliance purposed)
Maximum occurrence:	1
IPR data specifications found at:	C.5.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:CompetentAuthorities /aqd:inspireId/base:Identifier /aqd:CompetentAuthorities /aqd:inspireId/base:Identifier/base:localId /aqd:CompetentAuthorities /aqd:inspireId/base:Identifier/base:namespace /aqd:CompetentAuthorities /aqd:inspireId/base:Identifier/base:versionID

Example

aqd:inspireId within aqd:AQD_AssessmentRegime

```
<aqd: CompetentAuthorities gml:id="CAU.GB1">
  <aqd:inspireId>
    <base:Identifier>
```



```

<base:localId>CAU.GB1</base:localId>
<base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
<base:versionId>prelim-2013-v0</base:versionId>
</base:Identifier>
</aqd:inspireId>

```

Competent Authority Descriptions

A description must be provided for each type of competent authority specified in the directive, and listed above.

aqd:competentAuthority/aqd:.../	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	
IPR data specifications found at:	C.5.2 (A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6) C.5.3 (A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6) C.5.4 (A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6) C.5.5 (A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6) C.5.6 (A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6) C.5.7 (A.1.1, A.1.2, A.1.3, A.1.4, A.1.5, A.1.6)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:competentAuthorities/aqd:.../base2:RelatedParty/gmd:LocalisedCharacterString /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:organisationName/gmd:LocalisedCharacterString /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:contact/base2:Contact/base2:website /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:individualName/gmd:LocalisedCharacterString /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:contact/base2:Contact/base2:address/ad:AddressRepresentation/ad:locatorDesignator /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:contact/base2:Contact/base2:address/ad:AddressRepresentation/ad:adminUnit/gn:GeographicalName/gn:spelling/gn:SpellingOfName/gn:text /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:contact/base2:Contact/base2:address/ad:AddressRepresentation/ad:postCode" /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:contact/base2:Contact/base2:telephoneVoice /aqd:competentAuthorities/aqd:.../base2:RelatedParty/base2:contact/base2:Contact/base2:electronicMailAddress
Further information found @	HTML XSD at http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_CompetentAuthorities.html

For further information on the details of the base2:RelatedParty type, please see the section Contact Details <base2:RelatedParty>

D - Information on the assessment methods

(AQD IPR [Article 8 and 9](#)) - link to [e-Reporting logic](#)

Under the IPR Decision Member States shall make available information on the assessment methods established for the purposes of air quality assessment and management⁹. The legal obligations for reporting are set out in Article 8 and 9 and [Part D of Annex II](#) of the 2011/850/EC Decision, Articles 6, 9 and 10(6) of Directive 2008/50/EC and Article 4 of 2004/107/EC.

Data flow D shall be reported as a retrospective report by 30 September each year to confirm the assessment that the Member States implemented for the assessment and management of air quality. The data flow may include metadata for the following assessment types;

- Fixed or indicative measurements
- Modelling or objective estimation techniques

The reporting XML contains both the AQ reporting header information class together with a collection of other AQ classes AQD_SamplingPoint, AQD_SamplingPointProcess, AQD_Sample, AQD_RepresentativeArea, AQD_Station and AQD_Network.

Reporting header <aqd:AQD_ReportingHeader>

An explanation of the AQ reporting header information class can be found here “Reporting header <aqd:AQD_ReportingHeader>”. This is mandatory and includes common data types elements (D1, D2 and D3 from IPR excel mapping). In contrast to the other data flows where the contents being reported are usually all of the same class, for data flow D the reporting header must contain references to the following information classes:

- AQD_SamplingPoint

⁹, Article 3 of Directive 2004/107/EC and Article 4 of Directive 2008/50/EC.

Fixed & Indicative - AQD_SamplingPoint

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- AQD_SamplingPointProcess
- AQD_Sample
- AQD_RepresentativeArea
- AQD_Station
- AQD_Network

Fixed / indicative measurements

The metadata for fixed and indicative measurements is composed of data grouped into information blocks (objects) as listed below. Each group is composed of several child-elements which describe in detail the properties (attributes) of each object. Some elements are linked to others and these relationships are important for reporting metadata correctly.

The main information classes used to describe fixed and indicative measurements are presented below. A detail specification of the data requirements is provide by a series of links (URLs) to supporting document.

- AQD_SamplingPoint (link to [D.5.1](#) mapping excel, [html](#) based doc and UML [bmp](#)).
- AQD_SamplingPointProcess (link to [D.5.1.6](#) mapping excel, [html](#) based doc and UML [bmp](#)).
- AQD_Sample (link to [D.5.1.7.1](#) mapping excel, [html](#) based doc and UML [bmp](#)).
- AQD_RepresentativeArea (link to [D.5.1.7.2](#) mapping excel, [html](#) based doc and UML [bmp](#)).
- AQD_Station (link to [D.5.2](#) mapping excel, [html](#) based doc and UML [bmp](#)).
- AQD_Network (link to [D.5.3](#) mapping excel, [html](#) based doc and UML [bmp](#)).

Figure 12 shows the relationships between a simple fixed measurement where only one pollutant is measured. In this example, AQD_SamplingPoint is linked to AQD_SamplingPointProcess, AQD_Sample, AQD_Station and AQD_Network. AQD_Sample is linked to AQD_RepresentativeArea. AQD_Station also links to the network it belongs to (AQD_Network).

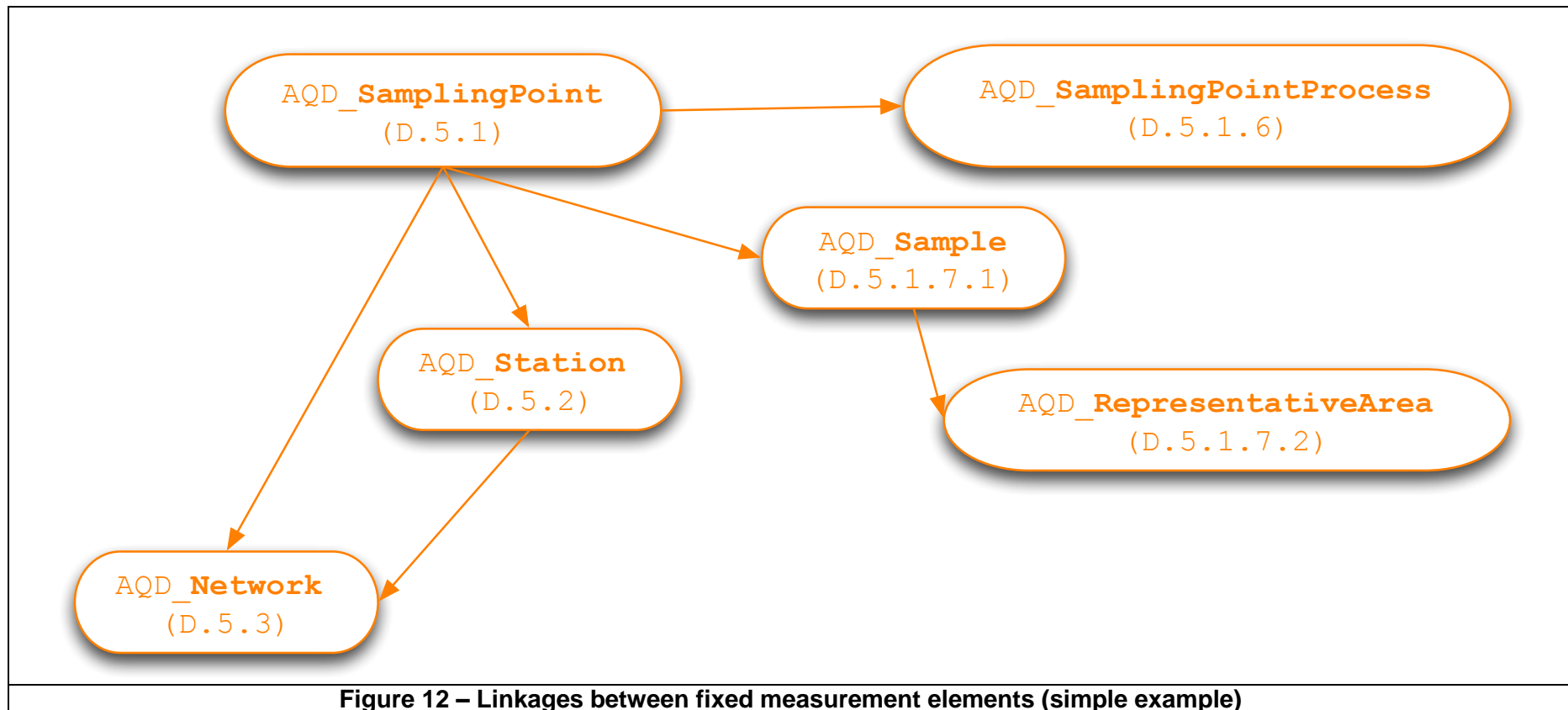


Figure 13 shows the relationships between information objects in a more complex fixed measurement configuration (two pollutants being measured at same station). In this example, an AQD_SamplingPoint is linked to one AQD_SamplingPointProcess, a common AQD_Sample, a common AQD_Station and a common AQD_Network. The common AQD_Sample is linked to AQD_RepresentativeArea. The common AQD_Station also links to the common network.

A second AQD_SamplingPoint is linked to a second AQD_SamplingPointProcess (for the second pollutant), the common AQD_Sample, the common AQD_Station and the common AQD_Network.

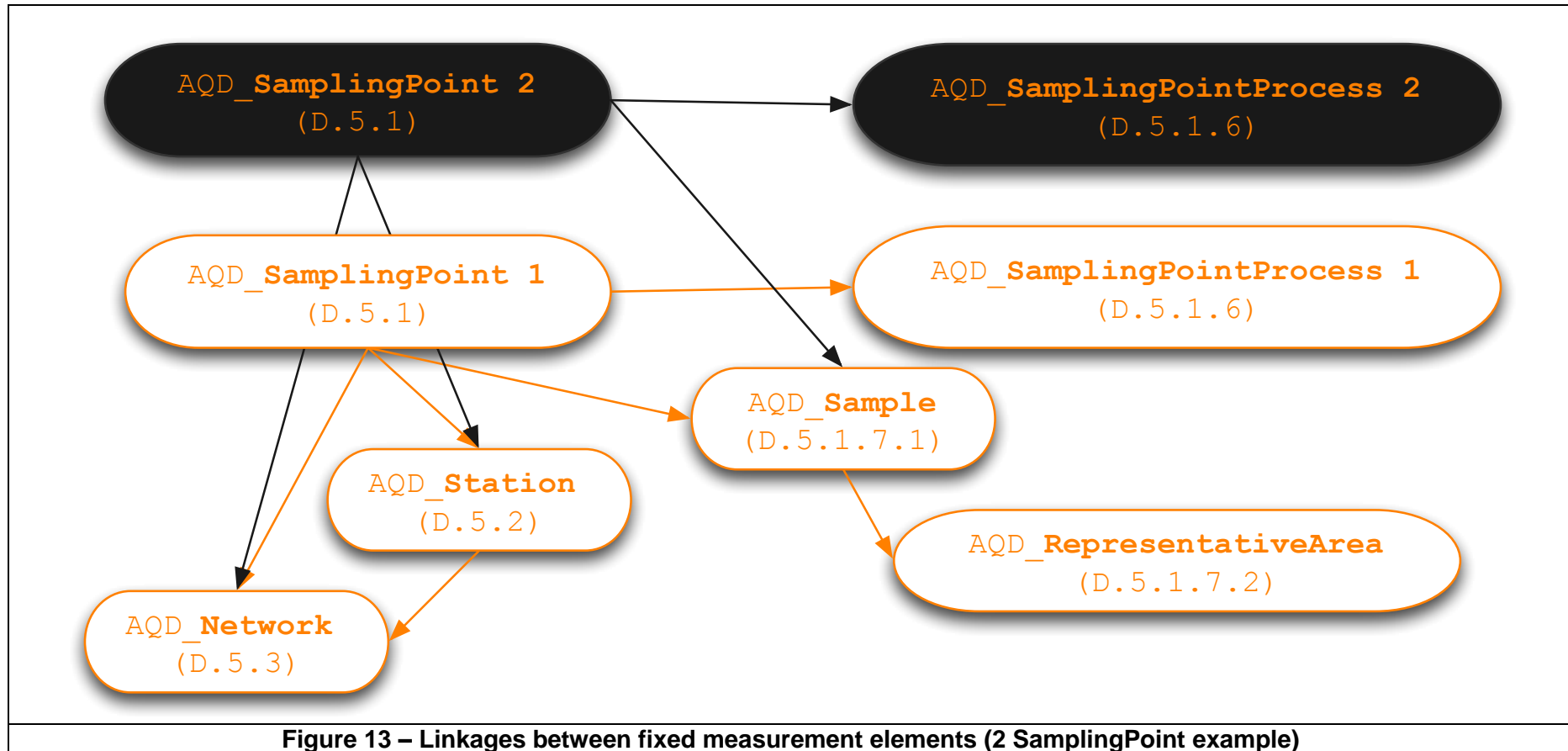
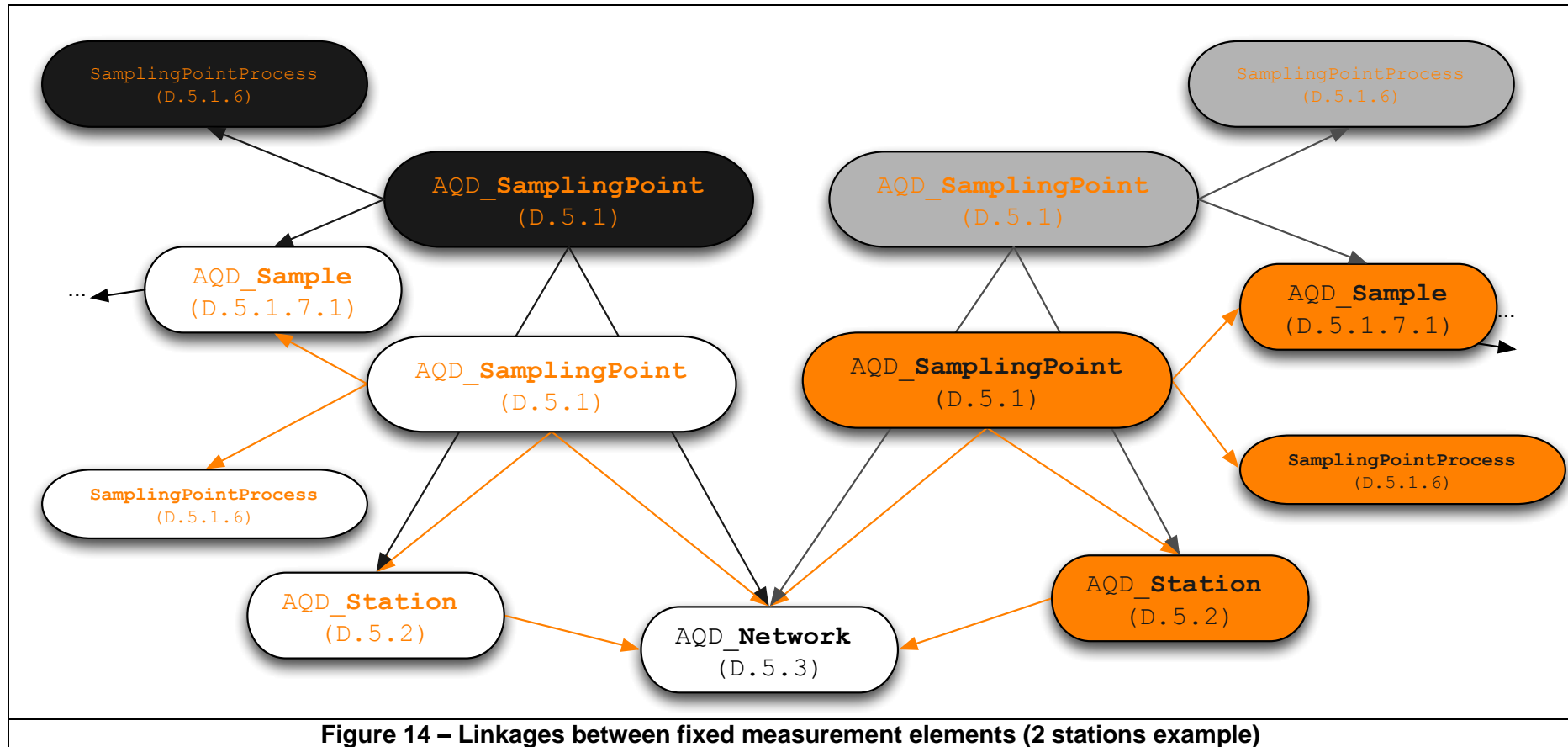


Figure 14 shows the links of a further more complex fixed measurement configuration where two pollutants being measured at two different stations which belong to the same network).



Sampling Point or measurement configuration - <aqd:AQD_SamplingPoint>

Information on the configuration of each measurement method shall be provided on a pollutant by pollutant basis. According to [Article 2 \(3\)](#) of Decision 2011/850/EU, a 'Measurement Configuration' means the technical facilities used for the measurement of one pollutant or one of its compounds at a specific station. For a pollutant, more than one Measurement Configuration can be in operation at a single station.

aqd:AQD_SamplingPoint	
Minimum occurrence:	1 (mandatory if fixed or indicative measurement used)
Maximum occurrence:	Unbounded
IPR data specifications found at:	D.5.1
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_SamplingPoint
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_SamplingPoint.html

Example

aqd:AQD_SamplingPoint

```
<aqd:AQD_SamplingPoint gml:id="SPO.CC0001A.001">
<aqd:AQD_SamplingPoint gml:id="GB_SamplingPoint_335">
```

Focus

AQD_SamplingPoint

HTML based documentation for the element AQD_SamplingPoint:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_SamplingPoint.html

Latest UML for AQD_SamplingPoint at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_SamplingPoint.png

AQD Sampling Point is parent to the following child information elements, which hold information on both the physical properties & attributes of the monitoring sampling point & abstract information for the management of data within XML. The following elements must be provided in the XML. **aqd:AQD_SamplingPoint** includes:

• ef:inspireId		Mandatory (D.5.1.1)
• ef:ResponsibleParty		Conditional, mandatory (D.4.1)
• aqd:assessmentType		Mandatory (D.4.2)
• aqd:zone		Mandatory if used for AQD (D.4.3)
• ef:broader		Mandatory (D.5.1.2)
• ef:supersedes	New	Mandatory if updating SamplingPoint localId
• ef:belongsTo		Mandatory (D.5.1.3)
• ef:operationalActivityPeriod	Important	Mandatory (D.5.1.4)
• aqd:relevantEmissions		Mandatory (D.5.1.5)
• aqd:stationClassification		Mandatory (D.5.1.5.1)
• aqd:mainEmissionSources		Conditional, mandatory (D.5.1.5.2)
• aqd:trafficEmissions		Voluntary (D.5.1.5.3)
• aqd:heatingEmissions		Voluntary (D.5.1.5.4)
• aqd:industrialEmissions		Conditional, mandatory (D.5.1.5.5)
• aqd:distanceSource		Conditional, mandatory (D.5.1.5.6)
• ef:ObservingCapability	Essential	Mandatory (<i>not enumerated</i>)
• ef:procedure	Essential	Mandatory (D.5.1.6) – see aqd:AQD_SamplingPointProcess
• ef:observedProperty	Essential	Mandatory (D.4.4) – Pollutant
• ef:featureOfInterest	Essential	Mandatory (D.5.1.7) – see aqd:AQD_Sample
• sam:sampledFeature		Mandatory (D.5.1.7.2) – see aqd:AQD_RepresentativeArea
• aqd:usedAQD		Mandatory (D.5.1.8)
• aqd:environmentalObjective		Mandatory (D.5.1.9)
• aqd:changeAEIStations		C, Mandatory (D.5.1.10) if AEI “stations” have been relocated
• ef:mediaMonitored		Mandatory (D.5.1.11)

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Fixed & indicative - AQD_SamplingPoint

• ef:measurementRegime	Mandatory (D.5.1.12)
• ef:mobile	Mandatory (D.5.1.13)
• ef:processType	Mandatory (D.5.1.14)
• ef:resultNature	Mandatory(D.5.1.15)
• aqd:reportingDB	Voluntary (D.5.4.1)
• aqd:reportingDBOther	Voluntary (D.5.4.2)
• ef:geometry	Mandatory (D.5.1.7)
• ef:involvedIn	Mandatory (D.5.1.16)where sampling point is used in the AEI
• aqd:assessmentMethodWSS	Mandatory if Art.21 applies (D.5.5.1)
• aqd:assessmentMethodNS	Mandatory if Art.20 applies (D.5.5.2)
• aqd: adjustmentMethods	Mandatory if Art. 20 or 21 applies (awaiting)

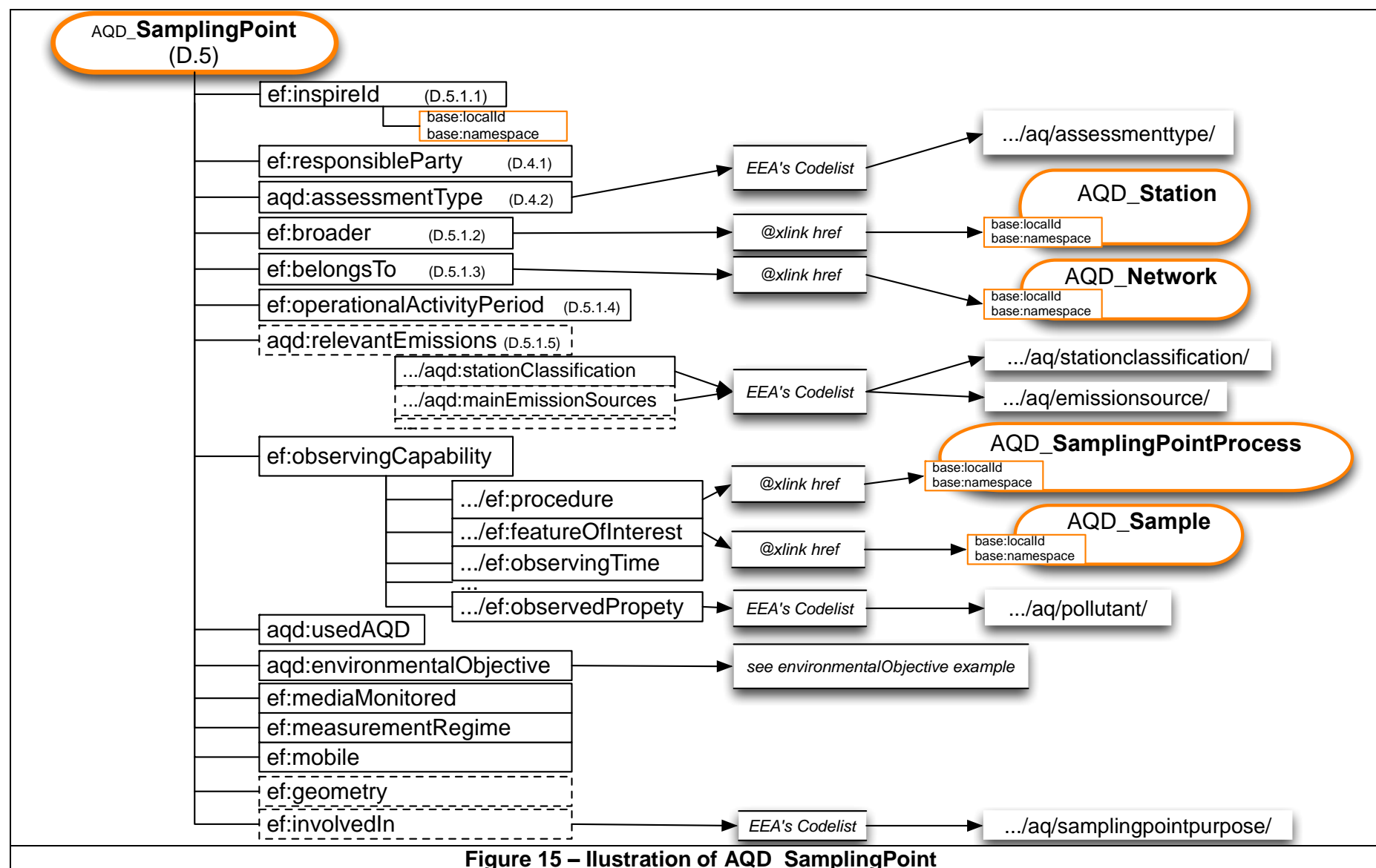


Figure 15 – Illustration of AQD_SamplingPoint

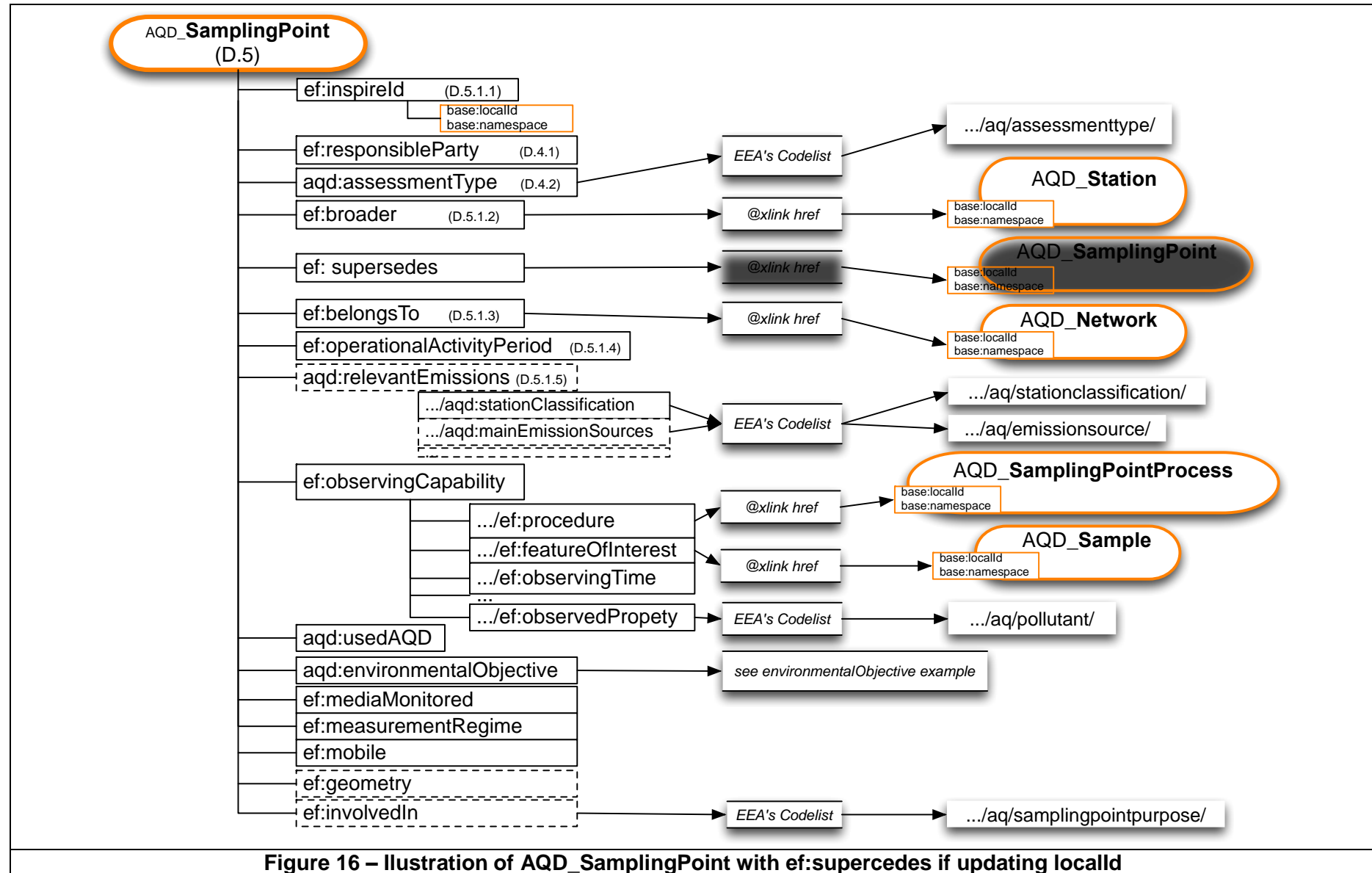


Figure 16 – Illustration of AQD_SamplingPoint with ef:supersedes if updating localId

AQD Sampling Point identifier - <ef:inspireId>

The AQ Sampling Point identifier provides for the unique identification of the AQ Sampling Point and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at [“The INSPIRE identifier”](#).

ef:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per AQD_SamplingPoint object provided)
IPR data specifications found at:	D.5.1 1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:inspireId/base:Identifier /aqd:AQD_SamplingPoint/ef:inspireId/base:Identifier/base:localId /aqd:AQD_SamplingPoint/ef:inspireId/base:Identifier/base:namespace /aqd:AQD_SamplingPoint/ef:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_SamplingPoint**

Generic	<pre> <aqd:AQD_SamplingPoint gml:id="SPO.CC0001A.ZZZZ.100"> <ef:inspireId> <base:Identifier> <base:localId> SPO.CC0001A.ZZZZ.100</base:localId> <base:namespace>CC.CCCC.AQD</base:namespace> <base:versionId>YY</base:versionId> </base:Identifier> </ef:inspireId> </pre>
UK example	<pre> <aqd:AQD_SamplingPoint gml:id="GB_SamplingPoint_335"> <ef:inspireId> <base:Identifier> <base:localId>GB_SamplingPoint_335</base:localId> <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace> </base:Identifier> </ef:inspireId> </pre>

ef:ResponsibleParty

Information on the organisation responsible for the sampling point must be provided in this class.

ef:ResponsibleParty	
Minimum occurrence:	1 (C, Mandatory if different from D.2)
Maximum occurrence:	1
IPR data specifications found:	D.4.1
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:ResponsibleParty
Voidable:	No

For further information on the details of the base2:RelatedParty type, please see the section Contact Details <base2:RelatedParty>

AQ assessment type <aqd:assessmentType>

The AQ assessment type elements allows for the classification (grouping) of assessment methods into common types. The types of assessment are fixed measurement, modelling, indicative measurement, objective estimation. The types are controlled by a code list.

aqd:assessmentType	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.4.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:assessmentType/@xlink:href
Voidable:	No

Example**aqd:assessmentType**

```
<aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed"/>
```

Air quality zone

AQ zone element links the sampling point with the coinciding AQ zone already defined in Data flow B. The linkage is maintained via an xlink:href attribute statement. For further information on referencing to spatial data objects via xlink, please see the section “Referencing between data objects with xlink”

aqd:zone	
Minimum occurrence:	0 (mandatory if Sampling Point is used for AQD assessment)
Maximum occurrence:	1
IPR data specifications found:	D.4.3
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 12 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:zone/@xlink:href
Voidable:	No

Example

aqd:zone

XML example

```
< aqd:zone xlink:href="[xlink to zone]"/>
```

UK example

```
<aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001"/>
```

ef:broader

For the provision of information on which station (AQD_Station D5.2) a sampling point belongs to, we utilize the INSPIRE element ef:broader. The linkage is provided via an xlink:href attribute referencing [the INSPIRE identifier](#) of the relevant station. For information on how to formulate the xlink URI to the corresponding station, please see section “Referencing between data objects with xlink”.

ef:broader	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.2
Code list constraints:	
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	aqd:AQD_SamplingPoint/ef:broader/@xlink:href
Voidable:	No

Example**ef:broader**

```
<ef:broader xlink:href="[xlink to AQD Station]"/>
```

UK example: `<ef:broader xlink:href="http://environment.data.gov.uk/air-quality/so/STA.GB0682A" />`

ef:supersedes**NEW if updating SamplingPoint localId**

Since the adoption of the Decision 2011/850/EU and the consequent adaptation of countries reporting air quality data to EEA, it has been apparent the difficulty in the management of unique local identifiers for assessment methods elements at country level. Despite the guidance on ensuring that identifiers are unique and their lifecycle is managed (see “The INSPIRE identifier”).

Changes of local identifiers have great implications on EEA’s management on the medium to long term:

- Broken links between previews Assessment Regime (C) and Assessment Methods (D)
- Broken links between previews Attainment (G) and Assessment Methods (D)
- Unreal discontinuity of time-series (E1a)

Between the different data-flows, the key element, which joins them together, is Sampling Point local Identifier.

In order to prevent these discontinuity problems, we utilize the INSPIRE element ef:supersedes. The linkage is provided via an xlink:href attribute referencing [the INSPIRE identifier](#) of the relevant sampling point (via the old localId). For information on how to formulate the xlink URI to the corresponding sampling point, please see section “Referencing between data objects with xlink”.

ef:supersedes	
Minimum occurrence:	1 (Mandatory if changing SamplingPoint localId)
Maximum occurrence:	1
IPR data specifications found:	
Code list constraints:	
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	aqd:AQD_SamplingPoint/ef:supersedes/@xlink:href
Voidable:	No

Example**ef:supersedes**

```
<ef:supersedes xlink:href="[xlink to AQD SamplingPointn]"/>
```

AD example: `<ef:broader xlink:href="AD.GovernAndorra.AQ/SPO-AD0945A-0007"/>`

ef:belongsTo

For the provision of information on which network (AQD_Network D5.3) a Sampling Point belongs to, we utilize the INSPIRE element ef:belongsTo . The linkage is maintained via an xlink:href attribute referencing [the INSPIRE identifier](#) of the relevant Network. For more information on how to formulate the xlink URI to the corresponding Network, please see section “Referencing using ”.

ef:belongsTo	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.5.1.3

Code list constraints:	
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:belongsTo/@xlink:href
Voidable:	No

Example**ef:belongsTo**

Generic example

`<ef:belongsTo xlink:href="{namespace}/{network_localId}"/>`

UK example

`<ef:belongsTo xlink:href="http://environment.data.gov.uk/air-quality/so/NET.GB.1" />`**ef:operationalActivityPeriod (Sampling Point time references)**

Provides a description of the time envelope over which the Sampling Point has been active. Time stamps shall use the extended ISO 8601 extended format. A Sampling Point start date shall always be provided. Where the Sampling Point continues to be operation i.e. has not stopped monitoring, gml:endPosition must receive an attribute indeterminatePosition="unknown" to state that the sampling point is still operational (`<gml:endPosition indeterminatePosition="unknown"/>`).

ef:OperationalActivityPeriod	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.4, D.5.1.4.1, D.5.1.4.2
Code list constraints:	None
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:operationalActivityPeriod/ef:OperationalActivityPeriod/ef:activityTime /aqd:AQD_SamplingPoint/ef:operationalActivityPeriod/ef:OperationalActivityPeriod/ef:activityTime/gml:TimePeriod/gml:beginPosition /aqd:AQD_SamplingPoint/ef:operationalActivityPeriod/ef:OperationalActivityPeriod/ef:activityTime/gml:TimePeriod/gml:endPosition
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
Voidable:	No

Example**ef:operationalActivityPeriod - logic**

Generic example

```

<ef:operationalActivityPeriod>
  <ef:OperationalActivityPeriod gml:id="[SamplingPointActivityPeriod_ID]">
    <ef:activityTime>
      <gml:TimePeriod gml:id="[SamplingPointTimePeriod_ID]">
        <gml:beginPosition>YYYY-MM-DDThh:mm:ss+01:00</gml:beginPosition>[D.5.2.6.1]
        <gml:endPosition>YYYY-MM-DDThh:mm:ss+01:00</gml:endPosition>[D.5.2.6.2]
      </gml:TimePeriod>
    </ef:activityTime>
  </ef:OperationalActivityPeriod>
</ef:operationalActivityPeriod>

```

UK example

```

<ef:operationalActivityPeriod>
  <ef:OperationalActivityPeriod gml:id="SamplingPointActivityPeriod_335">
    <ef:activityTime>
      <gml:TimePeriod gml:id=" SamplingPointTimePeriod_335">
        <gml:beginPosition>1997-07-17T00:00:00Z</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown"/>
      </gml:TimePeriod>
    </ef:activityTime>
  </ef:OperationalActivityPeriod>
</ef:operationalActivityPeriod>

```

Example if SamplingPoint closes & re-opens

```

<ef:operationalActivityPeriod>
  <ef:OperationalActivityPeriod gml:id=" SamplingPointActivityPeriod_335">
    <ef:activityTime>
      <gml:TimePeriod gml:id="SamplingPointTimePeriod_335">
        <gml:beginPosition>1997-01-01T01:00:00+01:00</gml:beginPosition>
        <gml:endPosition>2000-05-15T24:00:00+01:00</gml:endPosition>
      </gml:TimePeriod>
    </ef:activityTime>
  </ef:OperationalActivityPeriod>
</ef:operationalActivityPeriod>
<ef:operationalActivityPeriod>
  <ef:OperationalActivityPeriod gml:id=" SamplingPointActivityPeriod_336">
    <ef:activityTime>

```

```

        <gml:TimePeriod gml:id=" SamplingPointTimePeriod_336">
          <gml:beginPosition>2005-01-01T01:00:00+01:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
      </ef:activityTime>
    </ef:OperationalActivityPeriod>
  </ef:operationalActivityPeriod>

```

Focus**gml:endPosition for objects still operational**

```
<gml:endPosition indeterminatePosition="unknown"/>
```

aqd:relevantEmissions

The aqd:relevantEmissions class allows for the emissions with predominant influence upon the sampling point to be characterised for each measurement configuration (sampling point), thereby describing the emissions and sources of emission responsible for the largest (relative) contribution to the observed concentration for the specific pollutant. This information is relevant for the interpretation of the measured data and the assessment of the representativeness of the site. The child elements of the aqd:relevantEmissions class are described below.

aqd:dispersionSituation	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.5, D.5.1.5.1, D.5.1.5.2, D.5.1.5.3, D.5.1.5.4, D.5.1.5.5, D.5.1.5.6
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/stationclassification/ http://dd.eionet.europa.eu/vocabulary/aq/emissionsource
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:relevantEmissions /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:stationClassification/@xlink:href /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:mainEmissionSources/@xlink:href /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:trafficEmissions /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:heatingEmissions /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:industrialEmissions /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:distanceSource
Voidable:	No

Example**aqd:relevantEmissions**

XML example

```

<aqd:relevantEmissions>
  <aqd:RelevantEmissions>
    <aqd:stationClassification
      xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/stationclassification/[code]"/> <!--[D.5.1.5.1] →
    <aqd:mainEmissionSources
      xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/emissionsource/[code]"/> <!-- [D.5.1.5.2] →
    <aqd: trafficEmissions uom="http://dd.eionet.europa.eu/vocabulary/uom/emission/t.km-1.year-
1">50</aqd:trafficEmissions> <!-- [D.5.1.5.3] →
    <aqd: heatingEmissions uom="http://dd.eionet.europa.eu/vocabulary/uom/emission/t.km-2.year-
1">50</aqd:heatingEmissions> <!-- [D.5.1.5.4] →
    <aqd:industrialEmissions uom="http://dd.eionet.europa.eu/vocabulary/uom/emission/t.year-
1">50</aqd:industrialEmissions> <!-- [D.5.1.5.5] →
    <aqd:distanceSource
      uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">50</aqd:distanceSource> <!-- [D.5.1.5.6] →
    </aqd:RelevantEmissions >
  </aqd:relevantEmissions >

```

aqd:stationClassification

Describes the classification of station in relation to major emission sources relevant for the measurement configuration (SamplingPoint). The classification is made on a pollutant by pollutant basis.

aqd:stationClassification	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.5.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/stationclassification
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:stationClassification/@xlink:href
Further information @	
Voidable:	No

Example**aqd:stationClassification**

XML example

`<aqd:stationClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/stationclassification/[code]"/>`

Example

`<aqd:stationClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/stationclassification/traffic"/>`**aqd:mainEmissionSources (Main emission sources)**

Allows for the description of the main emission source for the pollutant specified within the ef:ObservingCapability (D.5.1.6) class of the measurement configuration.

aqd:mainEmissionSources**Minimum occurrence:** 1 (Conditional, mandatory if available)**Maximum occurrence:** 1**IPR data specifications found:** D.5.1.5.2**Code list constraints:** <http://dd.eionet.europa.eu/vocabulary/aq/emissionsource/>**QA/QC constraints:** Must be a valid code in the codelist**Allowed formats:****XPath to schema location:** /aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:mainEmissionSources/@xlink:href**Voidable:** No**Example****aqd:mainEmissionSources**XML example `<aqd:mainEmissionSources xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/emissionsource/[code]"/>` Example`<aqd:mainEmissionSources xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/emissionsource/1A3"/>`

aqd: trafficEmissions

Allows for the declaration of the emissions from road traffic for a section of road representative of at least 100 m. Units = t/km.year.

aqd: trafficEmissions	
Minimum occurrence:	Voluntary
Maximum occurrence:	1
IPR data specifications found:	D.5.1.5.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/emission for UoM
QA/QC constraints:	UoM must refer to http://dd.eionet.europa.eu/vocabulary/uom/emission/t.km-1.year-1
Allowed formats:	Numeric integer value, units of measure = t/km/year
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:trafficEmissions
Voidable:	Yes

Example**aqd:trafficEmissions**

```
<aqd: trafficEmissions uom="http://dd.eionet.europa.eu/vocabulary/uom/emission/t.km-1.year-1">[ D.5.1.5.3]</aqd: trafficEmissions>
```

aqd heatingEmissions (Emissions from domestic heating)

Allows for the declaration of the emissions from domestic heating for a representative area of approximately 1 km².
Units = t/m².year.

aqd heatingEmissions	
Minimum occurrence:	Voluntary
Maximum occurrence:	1
IPR data specifications found:	D.5.1.5.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/emission for UoM
QA/QC constraints:	UoM must refer to http://dd.eionet.europa.eu/vocabulary/uom/emission/t.km-2.year-1
Allowed formats:	Numeric integer value, units of measure = t/km ² /year
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:heatingEmissions
Further information @	

Voidable:	No
------------------	----

Example**aqd:heatingEmissions**

```
<aqd heatingEmissions uom="http://dd.eionet.europa.eu/vocabulary/uom/emission/t.km-2.year-1">[ D.5.1.5.4]</aqd:heatingEmissions>
```

aqd:industrialEmissions (Emissions from industrial source)

Allows for the declaration of the emissions from industry for a representative area of approximately 1 km². Units = t/km².year. This element is mandatory for sampling points where aqd:stationClassification is industrial. For all other stations classifications it is voluntary.

aqd:industrialEmissions

Minimum occurrence:	1 (Mandatory for D.5.1.5.1 = [industrial])
Maximum occurrence:	1
IPR data specifications found:	D.5.1.5.5
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/emission/ for UoM
QA/QC constraints:	UoM must refer to http://dd.eionet.europa.eu/vocabulary/uom/emission/t.year-1
Allowed formats:	Numeric integer value, units of measure = t/year
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:industrialEmissions
Voidable:	No

Example**aqd:industrialEmissions**

```
<aqd:industrialEmissions uom=" http://dd.eionet.europa.eu/vocabulary/uom/emission/t.year-1">[D.5.1.5.5]</aqd:industrialEmissions>
```


aqd:distanceSource (Distance from predominant industrial source or source area)

Allows for the declaration of the distance from predominant industrial source or source area. The distance to the stack in case of point sources or to the nearest edge of a source area in case of spatially distributed emissions shall be provided. This element is mandatory for sampling points where aqd:stationClassification is industrial. For all other stations classifications it is voluntary.

aqd:distanceSource	
Minimum occurrence:	1 (Mandatory where in AQD_SamplingPoint the aqd:stationClassification = "industrial")
Maximum occurrence:	1
IPR data specifications found:	D.5.1.5.6
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/length/ for UoM
QA/QC constraints:	UoM must refer to http://dd.eionet.europa.eu/vocabulary/uom/length/m
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:relevantEmissions/aqd:RelevantEmissions/aqd:distanceSource
Voidable:	No

Example**aqd:distanceSource**

```
<aqd:distanceSource uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">[D.5.1.5.6]</aqd:distanceSource>
```

ef:observingCapability

This information class from the INSPIRE data specifications provides information on the observed property (air quality pollutant), the procedure used (measurement technique) as well as the details of the sampling location (Measurement inlet height, distance to kerb etc.).

From within the child elements of ef:observingCapability, xlink href attributes are used extensively to describe the observing capability of the Sampling Point using code lists and via references to other data flow D metadata records stored elsewhere in the XML document. The child elements include:

- ef:procedure Mandatory (D.5.1.6)
- ef:featureOfInterest Mandatory (D.5.1.7)
- ef:observingTime INSPIRE Mandatory
- ef:processType INSPIRE Mandatory
- ef:resultNature INSPIRE Mandatory
- ef:observedProperty Mandatory (D.4.4)

ef:observingCapability	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.5.1.6, D.5.1.7, 3 unreferenced elements within IPR, D4.4
Code list constraints:	
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:procedure /aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest/@xlink:href /aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:observingTime /aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:processType /aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:resultNature /aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:observedProperty/@xlink:href
Voidable:	No
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ObservingCapability.html	

Example**ef:observingCapability**

Generic example

```

<ef:observingCapability>
  <ef:ObservingCapability gml:id="Capability_1">
    <ef:observingTime>
      <gml:TimePeriod gml:id="TimePeriod_3">
        <gml:beginPosition>[StartTime of Observation]</gml:beginPosition>
        <gml:endPosition>[EndTime of Observation]</gml:endPosition>
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="[fixed for AQ][http://inspire.ec.europa.eu/codeList/ProcessTypeValue/process]"/>
    <ef:resultNature xlink:href="[fixed for AQ][http://inspire.ec.europa.eu/codeList/ResultNatureValue/primary]"/>
    <ef:procedure xlink:href="[xlink to AQD_SamplingPointProcess]"/> [D.5.1.6]
    <ef:featureOfInterest xlink:href="[xlink to AQD_Sample]"/> [D.5.1.7]
    <ef:observedProperty xlink:href="[D.4.4]http://dd.eionet.europa.eu/vocabulary/aq/pollutant/[code]"/>
  </ef:ObservingCapability>
</ef:observingCapability>

```

UK example

```

<ef:observingCapability>
  <ef:ObservingCapability gml:id="GB_Capability_335">
    <ef:observingTime>
      <gml:TimePeriod gml:id="TimePeriod_335">
        <gml:beginPosition>1997-07-17T12:00:00Z</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown" />
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="http://inspire.ec.europa.eu/codeList/ProcessTypeValue/process" xsi:nil="true" />
    <ef:resultNature xlink:href="http://inspire.ec.europa.eu/codeList/ResultNatureValue/primary" xsi:nil="true" />
    <ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_StationProcess_1029" />
    <ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingFeature_1029" />
    <ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8" />
  </ef:ObservingCapability>
</ef:observingCapability>

```

Throughout the lifetime of a SamplingPoint, equipment get updated and changed. When a data provider considers that the measurement with a new process is consistent with the previous process (historically known as same "measurement configuration group"), the SamplingPoint will contain another ObservingCapability as the example below:

Example**ef:observingCapability - updating process within same observingCapability**

UK example

```

<ef:observingCapability>
  <ef:ObservingCapability gml:id="GB_Capability_335_1">
    <ef:observingTime>
      <gml:TimePeriod gml:id="TimePeriod_335_1">
        <gml:beginPosition>1997-07-17T12:00:00Z</gml:beginPosition>
        <gml:endPosition>2001-12-31T24:00:00Z</gml:endPosition>
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="http://inspire.ec.europa.eu/codeList/ProcessTypeValue/process" />
    <ef:resultNature xlink:href="http://inspire.ec.europa.eu/codeList/ResultNatureValue/primary" />
    <ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_StationProcess_1029" />
    <ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingFeature_1029" />
    <ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8" />
  </ef:ObservingCapability>
</ef:observingCapability>
<ef:observingCapability>
  <ef:ObservingCapability gml:id="GB_Capability_335_2">
    <ef:observingTime>
      <gml:TimePeriod gml:id="TimePeriod_335_2">
        <gml:beginPosition>2002-01-01T00:00:00Z</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown" />
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="http://inspire.ec.europa.eu/codeList/ProcessTypeValue/process" />
    <ef:resultNature xlink:href="http://inspire.ec.europa.eu/codeList/ResultNatureValue/primary" />
    <ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_StationProcess_1030" />
    <ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingFeature_1030" />
    <ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8" />
  </ef:ObservingCapability>
</ef:observingCapability>

```

ef:procedure

The ef:procedure element provides an xlink href attribute which references the detailed description of the sampling point measurement configuration within an AQD_SamplingPointProcess D5.1.6 object.

ef:procedure	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6
Code list constraints:	
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:procedure/@xlink:href
Voidable:	No

Example**ef:procedure**

UK example

```
<ef:procedure xlink:href=" [xlink to AQD_SamplingPointProcess]" /> [D.5.1.6]
```

```
<ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/SPP.GB1029" />
```

ef:featureOfInterest

The ef:featureOfInterest element provides an xlink href attribute which references the detailed description of the sampling point location within AQD_Sample, see D5.1.7.

ef:featureOfInterest	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.1.7
Code list constraints:	
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest/@xlink:href
Voidable:	No

Example**ef:featureOfInterest**

UK example

<ef:featureOfInterest xlink:href=[xlink to AQD_Sample]"/> [D.5.1.7]

<ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/SAM. 1030"/>

ef:observingTime

The ef:observingTime element is an INSPIRE information requirement which describes the time period over which observations can be expected for the measurement configuration (process) cited by ef:procedure. Where the measurement configuration continues to be operation i.e. has not stopped monitoring, gml:endPosition must receive an attribute indeterminate Position="unknown" to state that the sampling point is still operational (**<gml:endPosition indeterminatePosition="unknown"/>**).

ef:observingTime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Unreferenced elements within IPR, INSPIRE Mandatory
Code list constraints:	
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:observingTime
	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:observingTime/gml:beginPosition
	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:observingTime/ gml:endPosition
Voidable:	No

ef:processType

The ef:processType element is an INSPIRE information requirement which describes the type of object used for the description of the measurement process. For AQ e-Reporting purposes, where we utilize the INSPIRE Process type, this element references an INSPIRE code list and should always contain the value <http://inspire.ec.europa.eu/codeList/ProcessTypeValue/process>

ef:processType	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	unreferenced elements within IPR, INSPIRE Mandatory
Code list constraints:	http://inspire.ec.europa.eu/codeList/ProcessTypeValue/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:processType
Voidable:	No

Example**ef:processType****FIXED BY INSPIRE**

```
<ef:processType xlink:href="http://inspire.ec.europa.eu/codeList/ProcessTypeValue/process"/>
```

ef:resultNature

The ef:resultNature is an INSPIRE information requirement which describes the types of observations being described by ef:observingCapability, be they primary observations, processed data or simulated (modelled) values. For AQ e-Reporting purposes for fixed and indicative measurements, the value of this element will be constrained to an INSPIRE code list which is <http://inspire.ec.europa.eu/codeList/ResultNatureValue/primary>

From [INSPIRE_DataSpecification_EF_v3.0](#), the code “primary” indicates that “The result provided with the observation is the direct result of an estimate of a property on the featureOfInterest. No further processing has been performed. Processing may have taken place, but only in the sense of the measurement methodology itself, i.e. converting the millivolt returned from the sensor to the concentration of a substance”.

ef:resultNature	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	unreferenced elements within IPR, INSPIRE Mandatory
Code list constraints:	http://inspire.ec.europa.eu/codeList/ResultNatureValue/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:resultNature
Voidable:	No

Example**ef:resultNature****FIXED BY INSPIRE**

```
<ef:resultNature xlink:href="http://inspire.ec.europa.eu/codeList/ResultNatureValue/primary"/>
```

ef:observedProperty

The ef:observedProperty element is an INSPIRE element used to describe the property (pollutant) being measured or observed at this sampling point. The value of this element is defined as an xlink href attribute to EEA's pollutant code list at <http://dd.eionet.europa.eu/vocabulary/aq/pollutant/>

ef:observedProperty

Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D4.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:observingCapability/ef:ObservingCapability/ef:observedProperty/@xlink:href
Voidable:	No
	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ObservingCapability.html

Example**ef:observedProperty**

```
<ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8" />
```


aqd:usedAQD

The aqd:usedAQD element is used to declare whether the sampling point is used for regulatory assessment under 2008/50/EC and 2004/107/EC or whether it is limited for informative reporting (Exchange of Information). If a sampling point is to be cited with data flows C (assessment regimes) or G (attainment) the aqd:usedAQD must also evaluate to “true”.

aqd:usedAQD	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.1.8
Code list constraints:	None
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:usedAQD
Formats Allowed:	A true/false boolean statement
Voidable:	No

Example**aqd:usedAQD**

XML example

`<aqd:usedAQD>true</aqd:usedAQD>+`**aqd:environmentalObjective**

See common section on [aqd:environmentalObjective](#).

aqd:environmentalObjective	
Minimum occurrence:	0 (Mandatory if Sampling Point used for AQD Assessment)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.5.1.9
Code list constraints:	Yes. 3 codelist listed in environmentalObjective section
Formats Allowed:	Alphanumeric
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:environmentalObjective /aqd:AQD_SamplingPoint/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:objectiveType/@xlink:href /aqd:AQD_SamplingPoint/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:reportingMetric/@xlink:href /aqd:AQD_SamplingPoint/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:protectionTarget/@xlink:href

Example**aqd:environmentalObjective**

```
[...]
<aqd:environmentalObjective>
  <aqd:EnvironmentalObjective>
    <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>
    <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean"/>
    <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
  </aqd:EnvironmentalObjective>
</aqd:environmentalObjective>
[...]
```

aqd:changeAEIStations

This element provides for the opportunity of providing a free text description of any reasons for change the location or operational status (including cessation of operations or change in measurement configuration) for any sampling point that has been involved in the calculation or definition of a Member State AEI. Mandatory if changes for all AEI sampling points.

aqd:changeAEIStations

Minimum occurrence:	0 (Mandatory if changes for all AEI sampling points)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.10
Code list constraints:	None
Formats Allowed:	Alphanumeric
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:changeAEIStations
Voidable:	No

Example**aqd:changeAEIStations**

XML example `<aqd:changeAEIStations>Some descriptive text</ aqd:changeAEIStations >`

ef:mediaMonitored (Media monitored)

The ef:mediaMonitored element is an INSPIRE information requirement which provides a code list constrained description of the environmental media being monitored, measured, sampled or observed. This is also declared at station level as it is an element mandatory for INSPIRE (see D.5.2.12).

ef:mediaMonitored	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.1.11
Code list constraints:	http://inspire.ec.europa.eu/codeList/MediaValue/air
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:mediaMonitored/@xlink:href
Voidable:	No

Example

ef:mediaMonitored

FIXED BY INSPIRE**UPDATE**

```
<ef:mediaMonitored xlink:href=" http://inspire.ec.europa.eu/codeList/MediaValue/air"/>
```

ef:measurementRegime (Measurement regime)

The ef:measurementRegime element is an INSPIRE information requirement which provides a code list constrained description of the type of measurement regime in operation. This is also declared at station level as it is an element mandatory for INSPIRE (see D.5.2.13).

ef:measurementRegime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.1.12
Code list constraints:	http://inspire.ec.europa.eu/codeList/MeasurementRegimeValue/continuousDataCollection
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Station/ef:measurementRegime/@xlink:href

Example**ef:measurementRegime****FIXED BY INSPIRE**

```
<ef:measurementRegime xlink:href="http://inspire.ec.europa.eu/codeList/MeasurementRegimeValue/continuousDataCollection"/>
```

ef:mobile (Mobile boolean statement)

The ef:mobile element is an INSPIRE information requirement which declares whether the stations is mobile or not via a true/false boolean statement. For compliance monitoring ef:mobile will be expected to evaluate to “false”. This is also declared at station level as it is an element mandatory for INSPIRE (see D.5.2.14).

ef:mobile	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.13
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	A true/false boolean statement
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:mobile
Further information @	
Voidable:	No

Example**ef:mobile**

```
<ef:mobile>false</ef:mobile>
```

aqd:reportingDB & aqd:reportingDBOther

The voluntary elements provide further context on the geographical level at which the sampling point observations are collated or reported. This xlinks to EEA’s codelist at <http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/>. In cases where air quality data is reported to programmes not listed in the codelist, the codelist entry “other” should be selected, and information on this reporting programm provided in the field <http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/>

aqd:reportingDB	
Minimum occurrence:	0 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D4.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:reportingDB/@xlink:href /aqd:AQD_SamplingPoint/aqd:reportingDBOther (Mandatory if aqd:reportingDB = "other")
Voidable:	No

Example**ef:reportingDB**

XML example

```
<aqd:reportingDB xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/[code]"/>
```

or

```
<aqd:reportingDB xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/other"/>
<aqd:reportingDBOther>[other]</aqd:reportingDBOther>
```

ef:geometry (Geographical coordinates)

Allows for reporting of the geographical coordinates (geographical longitude and latitude) of the Sampling Point. For e-Reporting the schema for geometry of the sampling point is optimised for reporting as a point centred of the station in decimal degrees notation to 5 decimal places at a minimum.

ef:geometry	
Minimum occurrence:	1 (mandatory for e-Reporting, voluntary within INSPIRE)
Maximum occurrence:	1
IPR data specifications found:	n/a
Code list constraints:	None
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:geometry/gml:Point/gml:pos
Voidable:	No

Example**ef:geometry**

Generic example

```

<ef:geometry>
  <gml:Point srsName="[Coordinate System]" gml:id="[StationLatLong_ID]">
    <gml:pos srsDimension="2"> [LATITUDE] [LONGITUDE]</gml:pos>
  </gml:Point>
</ef:geometry>

```

UK example

```

<ef:geometry>
  <gml:Point srsName="urn:ogc:def:crs:EPSG::4326" gml:id="Coord_GB_335">
    <gml:pos srsDimension="2"> 51.522530 -0.154611</gml:pos>
  </gml:Point>
</ef:geometry>

```

The coordinate reference system (CRS) to be used shall be ETRS 1989 (or WGS 1984 in a transitional period to 2020). The CRS must be declared as an attribute of a GML geometry type (**gml:Point** in the example above); **<gml:Point srsName="urn:ogc:def:crs:EPSG::4258" gml:id="Coord_GB_335">**. The coordinates for the centre of the monitoring station are provided by the **gml:pos** element. Latitude being the first item in the **gml:pos** list, longitude the second for EPSG::4326. Note, this sequence for declaring coordinates is not followed by all CRS, countries should check the definition of the CRS they are using.

Countries are encouraged to use ETRS89-LAEA Europe, also known in the EPSG Geodetic Parameter Dataset under the identifier: EPSG:3035. The Geodetic Datum is the European Terrestrial Reference System 1989 (EPSG:6258). The Lambert Azimuthal Equal Area (LAEA) projection is centred at 10°E, 52°N. Coordinates are based on a false Easting of 4321000 meters, and a false Northing of 3210000 meters. As an interim measure until 2020, WGS84 may also be used (urn:ogc:def:crs:EPSG::4326). Where Member States are unable to convert National coordinated reference system to ETRS89 or WGS84 (and for an interim period only to end of 2015), Member States must at a minimum report a valid srsName attribute for the National coordinated reference system.

At a minimum each gml:Point element must have a valid srsName attribute (coordinated reference system) declared. As noted above for areas within Europe ETRS89-LAEA Europe is recommended. For area outside the geographical scope of ETRS89 (continental Europe and neighbouring territories) the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS should be used. Compliant with the ITRS means that the system definition is based on the definition of the ITRS and there is a well-documented relationship between both systems, according to EN ISO 19111.

Focus**Geographical coordinate system**

Geographical coordinate system based on ETRS89 in continental Europe - <http://www.opengis.net/def/crs/EPSG/0/4258>

`srsName="urn:ogc:def:crs:EPSG::4258"`

Geographical coordinate system based on ITRS outside of continental Europe -
<http://www.opengis.net/def/crs/EPSG/0/4326>

`srsName="urn:ogc:def:crs:EPSG::4326"`

Focus**Geographical coordinate system**

When providing geographical coordinates using the following srsName (srsName="urn:ogc:def:crs:EPSG::4258" or srsName="urn:ogc:def:crs:EPSG::4326") please note that the order of the elements must be Latitude & Longitude.

See also;

- The most recent version of the reference grid dataset in EEA data service http://www.eea.europa.eu/data-and-maps/data/ds_resolveuid/D63BFD62-6597-4D5F-BD35-9E06265102E0

- Short Proceedings of the Workshop on European Reference Grids, Ispra, 27-29 October 2003
http://eusoils.jrc.ec.europa.eu/projects/alpsis/Docs/ref_grid_sh_proc_draft.pdf
- EPSG Geodetic Parameter Registry, <http://epsg-registry.org/>
- D2.8.1.2 INSPIRE Specification on Geographical Grid Systems – Guidelines
http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/INSPIRE_Specification_GGS_v3.0.1.pdf

ef:involvedIn

The ef:involvedIn element is a voluntary INSPIRE information element which provides information on activities the Sampling Point is involved in. Within AQ e-Reporting it can be used to indicate where a sampling point is involved in e.g. estimation of the AEI, winter-sanding or –salting, nature sources calculation, EMEP monitoring etc.

ef:involvedIn	
Minimum occurrence:	Voluntary, mandatory if sampling point is used for AEI
Maximum occurrence:	Unbounded
IPR data specifications found:	INSPIRE data element not specified in IPR data
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/samplingpointpurpose
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	/aqd:AQD_SamplingPoint/ef:involvedIn/@xlink:href
Voidable:	Yes

Example**ef:involvedIn** – for AEI, WSS or NS

```
<ef:involvedIn xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/samplingpointpurpose/AEI"/>
```

aqd:assessmentMethodWSS

In this element, a textual description of the assessmentMethod used for deductions pertaining to winter salting and sanding is provided. The details of the adjustment are reported via aqd:adjustmentMethod

aqd:assessmentMethodWSS	
Minimum occurrence:	0 (Mandatory if deductions are claimed for winter salting and sanding)
Maximum occurrence:	1
IPR data specifications found:	
Code list constraints:	
QA/QC constraints:	
Allowed formats:	Free text
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:assessmentMethodWSS
Voidable:	Yes

aqd:assessmentMethodNS

In this element, a textual description of the assessmentMethod used for deductions pertaining to natural sources is provided. The details of the adjustment are reported via aqd:adjustmentMethod

aqd: assessmentMethodNS

Minimum occurrence:	0 (Mandatory if deductions are claimed for natural sources)
Maximum occurrence:	1
IPR data specifications found:	
Code list constraints:	
QA/QC constraints:	
Allowed formats:	Free text
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd: assessmentMethodNS
Voidable:	Yes

aqd:adjustmentMethod

AQD adjustment assessment methods element allows for linking the SamplingPoint to an adjustment methods used to adjust for Natural Sources or Winter-sanding or –salting. This information class is a complex element which should be provided if there is an established methodology for the demonstration and substration of exceedances attributable to natural sources or to winter-sanding or –salting. Declaration of adjustment applicable are made within child elements of <aqd:AdjustmentMethod>:

1. aqd:assessmentMethod provides a collection of xlink references to the assessment method (SamplingPoints) in D that is used to assess the levels of natural source / winter salting and sanding contribution. This element is mandatory all cases where a correction is applied.
2. aqd:adjustmentType provides an xlink reference to a codelist describing the type of correction /adjustment applied. It is mandatory in all cases; if no corrections are applied, the value “noneApplied” must be provided.
3. aqd:adjustmentSource provides an xlink reference to a codelist detailed description of the source being adjusted e.g. sea spray or volcanic activity with the country. This element is mandatory all cases where a correction is applied.

aqd:adjustmentMethod	
Minimum occurrence:	0
Maximum occurrence:	Unbounded (Mandatory if deduction applied)
IPR data specifications found:	A.2.4.1
Code list constraints:	
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	/aqd:AQD_SamplingPoint/aqd:adjustmentMethods/
Voidable:	Yes

Example**aqd:adjustmentMethod** – example for Natural Source contribution

```

<aqd:adjustmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:assessmentMethods>
      <aqd:AssessmentMethods>
        <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed/">
          <aqd:assessmentTypeDescription>SamplingPoints used for WSS</aqd:assessmentTypeDescription>
          <aqd:samplingPointAssessmentMetadata xlink:href="AT.UBA.AQD/SamplingPoint_11"/>
          <aqd:samplingPointAssessmentMetadata xlink:href="AT.UBA.AQD/SamplingPoint_12"/>
          <aqd:samplingPointAssessmentMetadata xlink:href="AT.UBA.AQD/SamplingPoint_13"/>
        </aqd:AssessmentMethods>
      </aqd:assessmentMethods>
      <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection/">
      <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/G2/">
    </aqd:AdjustmentMethod>
  </aqd:adjustmentMethod>

```

Example**aqd:adjustmentMethod** – No adjustments claimed

```

<aqd:adjustmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied"/>
  </aqd:AdjustmentMethod>
</aqd:adjustmentMethod>

```

Sampling Point Process - <AQD_SamplingPointProcess>

This information class stores metadata concerning the measurement method/technique used by the sampling point. The aqd:AQD_SamplingPointProcess is referenced directly by AQD_SamplingPoint using an xlink href attribute within ef:procedure (D.5.1.6).

AQD_SamplingPointProcess	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	D.5.1.6
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_SamplingPointProcess
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_SamplingPointProcess.html

Example

aqd:AQD_SamplingPointProcess

Generic example

```
<aqd:AQD_SamplingPointProcess gml:id="SPP_ZZZZ">
  <ef:inspireId>
    <base:Identifier>
      <base:localId> SPP_ZZZZ </base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>
```

UK example

```
<aqd:AQD_SamplingPointProcess gml:id="SPP.GB.1">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>SPP.GB.1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </ef:inspireId>
```

Focus**AQD_SamplingPointProcess**

HTML based documentation for the element AQD_SamplingPointProcess:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_SamplingPointProcess.html

Latest UML for AQD_SamplingPointProcess at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_SamplingPointProcess.png

AQD_SamplingPointProcess is parent to the following child information elements, which hold information on attributes of the measurement/sampling technique. The following elements need declaring in the XML

- | | |
|--|--|
| • ompr:inspireId | Mandatory (D.5.1.6.1) |
| • ompr:responsibleParty | Mandatory (D.5.1.6.2) |
| • ompr:type | Mandatory (D.5.1.6.7) |
| • aqd:measurementType | Mandatory (D.5.1.6.3.1) |
| • aqd:measurementMethod | Mandatory if MT= Automatic or Remote (D.5.1.6.3.2) |
| • aqd:measurementEquipment | C (M if available) (D.5.1.6.3.3) |
| • aqd:samplingMethod | Mandatory if MT= Active or Passive (D.5.1.6.3.4) |
| • aqd:analyticalTechnique | Mandatory if MT= Active or Passive (D.5.1.6.3.6) |
| • aqd:SamplingEquipment | C (M if available) (D.5.1.6.3.5) |
| • aqd:equivalenceDemonstration | Mandatory (D.5.1.6.4) – Voluntary for indicative |
| • aqd:dataQuality | Mandatory (D.5.1.6.4) |
| • aqd:duration | Mandatory (D.5.1.6.6.1) |
| • aqd:cadence | Mandatory (D.5.1.6.6.2) |
| • ompr:processParameter (SamplingPoint) | Mandatory (D.5.1.6.8) |
| • ompr:processParameter (AssessmentType) | Mandatory (D.5.1.6.9) |

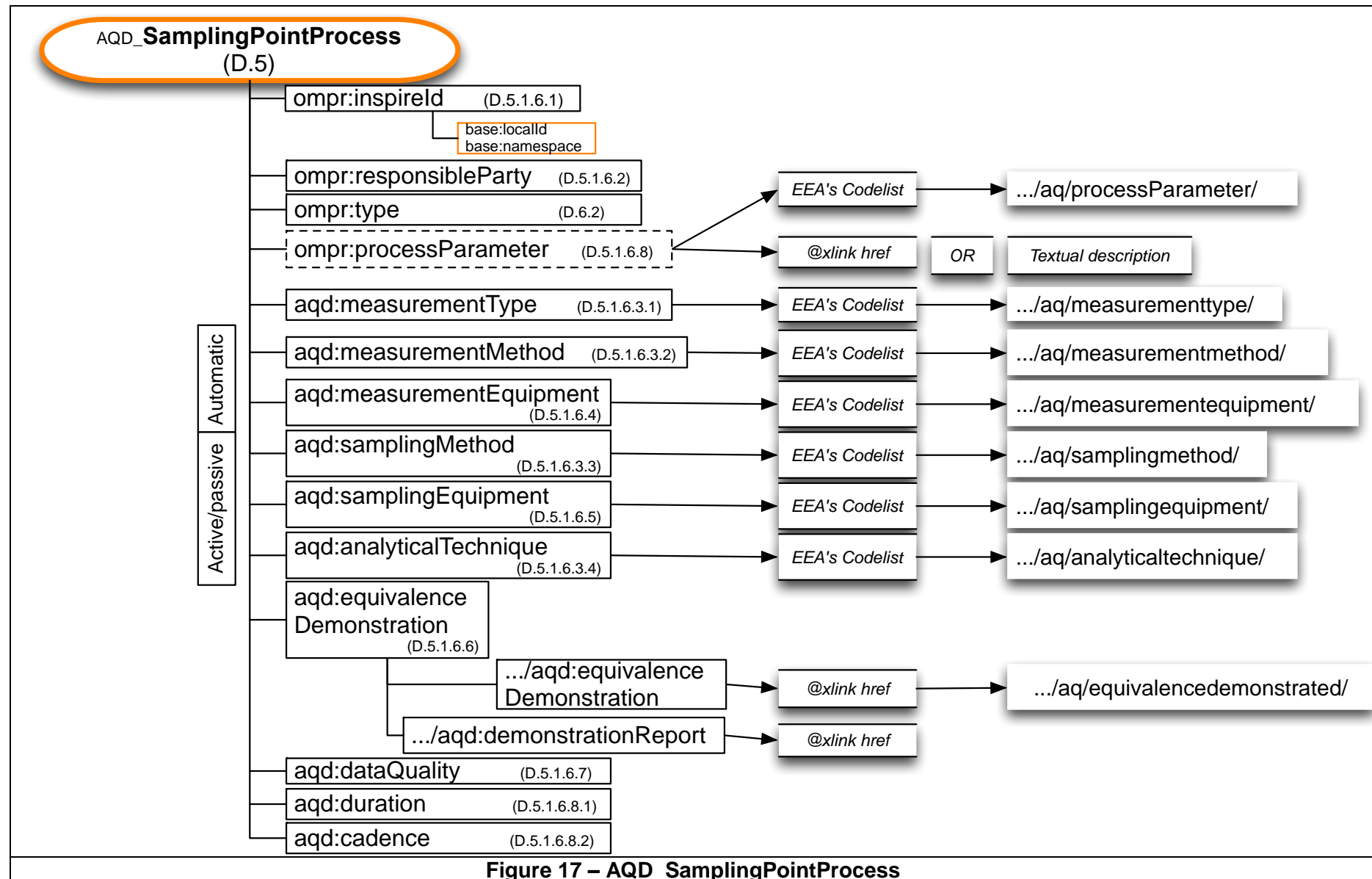


Figure 17 – AQD_SamplingPointProcess

AQD SamplingPointProcess identifier - <ompr:inspireId>

The AQ Sampling Point Process identifier provides for the unique identification of the AQD_SamplingPointProcess and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at “The INSPIRE identifier”.

It is possible to reuse a set of AQD_SamplingPointProcess (measurement procedure) at multiple AQD_SamplingPoints where the configuration is identical.

ompr:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	D.5.1 6.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_SamplingPointProcess/ompr:inspireId/base:Identifier /aqd:AQD_SamplingPointProcess/ompr:inspireId/base:Identifier/base:localId /aqd:AQD_SamplingPointProcess/ompr:inspireId/base:Identifier/base:namespace /aqd:AQD_SamplingPointProcess/ompr:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_SamplingPointProcess**

```

<aqd:AQD_SamplingPointProcess gml:id=" SPP_ZZZZ_1 ">
  <ompr:inspireId xsi:nil="false">
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ompr:inspireId>

```

Responsible Party <ompr:ResponsibleParty>

The complex element provides information on the organisation(s) responsible for the configuration of the measurement process.

ompr:responsibleParty	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.5.1.6.2
Formats Allowed:	
XPath to schema location:	/aqd:AQD_SamplingPointProcess/ompr:responsibleParty
Voidable:	No

Example**ompr:responsibleParty**

```

<ompr:responsibleParty>
  <base2:RelatedParty xmlns:base2="http://inspire.ec.europa.eu/schemas/base2/1.0rc3">
    <base2:individualName>
      <gco:CharacterString>Emily Connolly</gco:CharacterString>
    </base2:individualName>
    <base2:organisationName>
      <gco:CharacterString>The Department for Environment, Food and Rural Affairs, The Scottish Government,
The Welsh Government and The Department of Environment - Northern Ireland</gco:CharacterString>
    </base2:organisationName>
    <base2:contact>
      <base2:Contact>
        <base2:address>
          <ad:AddressRepresentation>
            <ad:adminUnit>
              <gn:GeographicalName>
                <gn:language>eng</gn:language>
                <gn:nativeness xsi:nil="true" nilReason="missing" />
                <gn:nameStatus xsi:nil="true" nilReason="missing" />
                <gn:sourceOfName xsi:nil="true" nilReason="missing" />
                <gn:pronunciation xsi:nil="true" nilReason="missing" />
                <gn:spelling>
                  <gn:SpellingOfName>

```



```

Programme, Area 2C Nobel House, 17 Smith Square, London SW1P 3JR </gn:text>
<gn:script xsi:nil="true" nilReason="missing" />
</gn:SpellingOfName>
</gn:spelling>
</gn:GeographicalName>
</ad:adminUnit>
<ad:locatorDesignator>London</ad:locatorDesignator>
<ad:postCode xsi:nil="false">SW1P 3JR</ad:postCode>
</ad:AddressRepresentation>
</base2:address>
<base2:electronicMailAddress>emily.connolly@defra.gsi.gov.uk</base2:electronicMailAddress>
<base2:telephoneVoice>+44 (0) 207 238 6476</base2:telephoneVoice>
<base2:website>https://www.gov.uk/defra</base2:website>
</base2:Contact>
</base2:contact>
</base2:RelatedParty>
</ompr:responsibleParty>

```

Process type <ompr:Type>

The ompr:type element is a mandatory INSPIRE requirement which provides a the textual description of measurement process configuration. For AQ e-Reporting the value for this element shall be “Ambient air quality measurement instrument configuration”.

ompr:Type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.6.2
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_SamplingPointProcess/ompr:type/@xsi:nil
Voidable:	No

Example**ompr:type**

```
<ompr:type> Ambient air quality measurement instrument configuration </ompr:type>
```

AQ measurement type <aqd:measurementType>

The AQ measurement type elements allows for the classification (grouping) of measurement methods into generic types. The types of measurements include: Automatic analyser, Remote sensor, Active sampling and Passive sampling .The types are controlled by a code list.

aqd:measurementType	
Minimum occurrence:	1 (Mandatory on first reporting or if change = "true")
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.3.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/measurementtype/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:measurementType/@xlink:href
Voidable:	No

Example**aqd:measurementType**

```
<aqd:measurementType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/measurementtype/[code]"/>
```

If AQ measurement type is **Automatic or remote**, the following elements must be specified:

- aqd:measurementMethod Mandatory (D.5.1.6.3.2)
- aqd:measurementEquipment C (M if available) (D.5.1.6.4)

If AQ measurement type is **active or passive**, the following elements must be specified:

- aqd:samplingMethod Mandatory (D.5.1.6.3.3)
- aqd:analyticalTechnique Mandatory (D.5.1.6.3.4)
- aqd:SamplingEquipment C (M if available) (D.5.1.6.5)

AQ measurement method <aqd:measurementMethod>

This is a complex group of elements that allows the specification of the measurement methods used for Automatic analysers and Remote sensors (i.e. Chemiluminescence, Tapered Element Oscillating Microbalance (TEOM), UV fluorescence etc.). If the measurement type is not of the Automatic analysers and Remote sensors type, this element may be omitted. If the measurement method used is not available from the codelist, please enter the value “other” and provide a description under aqd:otherMeasurementMethod.

aqd:measurementMethod	
Minimum occurrence:	0 (Mandatory if aqd:measurementType = Automatic or Remote)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.3.2 (D.5.1.6.3.2.1, D.5.1.6.3.2.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/measurementmethod/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:measurementMethod /aqd:AQD_SamplingPointProcess/aqd:measurementMethod/aqd:MeasurementMethod/aqd:measurementMethod /aqd:AQD_SamplingPointProcess/aqd:measurementMethod/aqd:MeasurementMethod/aqd:otherMeasurementMethod
Voidable:	No

Example**aqd:measurementMethod**

Generic example

```

<aqd:measurementMethod>
  <aqd:MeasurementMethod>
    <aqd:measurementMethod xlink:href="
      http://dd.eionet.europa.eu/vocabulary/aq/measurementmethod/[code]"/>
    <aqd:otherMeasurementMethod>[text if method is "other"]</aqd:otherMeasurementMethod>
  </aqd:MeasurementMethod>
</aqd:measurementMethod>

```

Specific example:

```

<aqd:measurementMethod>
  <aqd:MeasurementMethod>

```

```

        <aqd:measurementMethod
          xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/measurementmethod/chemi"/>
        </aqd:MeasurementMethod>
    </aqd:measurementMethod>

```

AQ measurement Equipment <aqd:measurementEquipment>

This is a complex group of elements that allows for the specification of the measurement equipment itself. Data providers are encouraged to provide information in this element for completeness. If the measurement equipment used is not available from the codelist, please enter the value “other” and provide a description under aqd:otherEquipment.

aqd:measurementEquipment	
Minimum occurrence:	0 (Mandatory if available & aqd:measurementType = Automatic or Remote)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.4 (D.5.1.6.4.1, D.5.1.6.4.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/measurementequipment/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:measurementEquipment /aqd:AQD_SamplingPointProcess/aqd:measurementEquipment/aqd:MeasurementEquipment/aqd:Equipment/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:measurementEquipment/aqd:MeasurementEquipment/aqd:otherEquipment
Voidable:	No

Example

aqd:measurementEquipment

Generic example

```

    <aqd:measurementEquipment>
      <aqd:MeasurementEquipment>
        <aqd:measurementEquipment xlink:href="
          http://dd.eionet.europa.eu/vocabulary/aq/measurementmeasurementequipment/[code]"/>
        <aqd:otherMeasurementEquipment>[text if method is "other"]</aqd:otherMeasurementEquipment>
      </aqd:MeasurementEquipment>
    </aqd:measurementEquipment>

```

Specific example:

```
<aqd:measurementEquipment>
  <aqd:MeasurementEquipment>
    <aqd:measurementEquipment xlink:href="
      http://dd.eionet.europa.eu/vocabulary/aq/measurementequipment/horibaAPHA360"/>
    </aqd:MeasurementEquipment>
  </aqd:measurementEquipment>
```

AQ sampling method <aqd:samplingMethod>

This is a complex group of elements that allows the specification of the sampling methods used for Active or passive sampling measurement types (i.e. Passive adsorbent, Low Volume Sampling with automatic filter change...). If the measurement type is not of the Active or passive sampling type, this element may be omitted. If the sampling methods used is not available from the codelist, please enter the value “other” and provide a description under aqd: otherSamplingMethod.

aqd:samplingMethod	
Minimum occurrence:	0 (Mandatory if aqd:measurementType = Active or Passive)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.3.3 (D.5.1.6.3.3.1, D.5.1.6.3.3.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/samplingmethod/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:samplingMethod /aqd:AQD_SamplingPointProcess/aqd:samplingMethod/aqd:SamplingMethod/aqd:samplingMethod/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:samplingMethod/aqd:SamplingMethod/aqd:otherSamplingMethod
Voidable:	No

Example

aqd:samplingMethod

Generic example

```
<aqd:samplingMethod>
  <aqd:SamplingMethod>
```

Specific example:

```

        <aqd:samplingMethod xlink:href="
        http://dd.eionet.europa.eu/vocabulary/aq/samplingmethod/[code]"/>
        <aqd:otherSamplingMethod>[text if method is "other"]</aqd:otherSamplingMethod>
    </aqd:SamplingMethod>
</aqd:samplingMethod>

    <aqd:samplingMethod>
        <aqd:SamplingMethod>
            <aqd:samplingMethod xlink:href="
            http://dd.eionet.europa.eu/vocabulary/aq/samplingmethod/LVSauto1"/>
        </aqd:SamplingMethod>
    </aqd:samplingMethod>

```

AQ Analytical Technique <aqd:analyticalTechnique>

This is a complex group of elements that allows the specification of the analytical technique used for Active or passive sampling (i.e. Griess-Saltzman reaction, Gravimetric analysis...). If the measurement type is not of the Active or passive sampling type, this element may be omitted. If the analytical technique used is not available from the codelist, please enter the value "other" and provide a description under aqd: otherAnalyticalTechnique.

aqd:analyticalTechnique	
Minimum occurrence:	0 (Mandatory if aqd:measurementType = Active or Passive)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.3.4 (D.5.1.6.3.4.1, D.5.1.6.3.4.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/analyticaltechnique/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:analyticalTechnique /aqd:AQD_SamplingPointProcess/aqd:analyticalTechnique/aqd:AnalyticalTechnique/aqd:analyticalTechnique/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:analyticalTechnique/aqd:AnalyticalTechnique/aqd:otherAnalyticalTechnique
Voidable:	No

Example**aqd:analyticalTechnique**

Generic example:

```

<aqd:analyticalTechnique>
  <aqd:AnalyticalTechnique>
    <aqd:analyticalTechnique xlink:href="
      http://dd.eionet.europa.eu/vocabulary/aq/analyticaltechnique/[code]"/>
    <aqd:otherAnalyticalTechnique>[text if method is "other"]</aqd:otherAnalyticalTechnique>
  </aqd:AnalyticalTechnique>
</aqd:analyticalTechnique>

```

Specific example:

```

<aqd:analyticalTechnique>
  <aqd:AnalyticalTechnique>
    <aqd:analyticalTechnique xlink:href="
      http://dd.eionet.europa.eu/vocabulary/aq/analyticaltechnique/gravi"/>
    </aqd:AnalyticalTechnique>
  </aqd:analyticalTechnique>

```

AQ sampling Equipment <aqd:samplingEquipment>

This is a complex group of elements that allows for the specification of the sampling and analytical equipment itself. Data providers are encouraged to provide information in this element for completeness. If the sampling and analytical equipment used is not available from the codelist, please enter the value “other” and provide a description under aqd:otherEquipment.

aqd:samplingEquipment	
Minimum occurrence:	0 (Mandatory if available & aqd:measurementType = Active or Passive)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.5 (D.5.1.6.5.1, D.5.1.6.5.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/samplingequipment/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:SamplingEquipment/ /aqd:AQD_SamplingPointProcess/aqd:SamplingEquipment/aqd:SamplingEquipment/aqd:Equipment/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:SamplingEquipment/aqd:SamplingEquipment/aqd:otherEquipment
Voidable:	No

Example**aqd:samplingEquipment**

Generic example:

```
<aqd:samplingEquipment>
  <aqd:SamplingEquipment>
    <aqd:SamplingEquipment xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/samplingequipment/[code]"/>
    <aqd:otherSamplingEquipment>[text if method is "other"]</aqd:otherSamplingEquipment>
  </aqd:SamplingEquipment>
</aqd:samplingEquipment>
```

Specific example:

```
<aqd:samplingEquipment>
  <aqd:SamplingEquipment>
    <aqd:SamplingEquipment xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/samplingequipment/palmes"/>
  </aqd:SamplingEquipment>
</aqd:samplingEquipment>
```


AQ Equivalence Demonstration <aqd:equivalenceDemonstration>

This is a group of elements that specifies the equivalence status of the measuring/sampling process according to Annex VI.B of Dir. 2008/50/EC and Annex V of Dir. 2004/107/EC. This element is optional for indicative measurements and fixed measurement not used for the assessment of environmental objective in relation to 2008/50/EC and 2004/107/EC. If a method other than the reference methods are used, a link to the equivalence demonstration report must be provided under aqd:demonstrationReport.

aqd:equivalenceDemonstration	
Minimum occurrence:	1 (Voluntary for indicative measurements)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.6 (D.5.1.6.6.1, D.5.1.6.6.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/equivalencedemonstrated/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:equivalenceDemonstration /aqd:AQD_SamplingPointProcess/aqd:equivalenceDemonstration/aqd:EquivalenceDemonstration/aqd:equivalenceDemonstrated/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:equivalenceDemonstration/aqd:EquivalenceDemonstration/aqd:demonstrationReport
Voidable:	No

Example**aqd:equivalenceDemonstration**

```

<aqd:equivalenceDemonstration>
  <aqd:EquivalenceDemonstration>
    <aqd:equivalenceDemonstration
      xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/equivalencedemonstrated/yes"/>
    <aqd:demonstrationReport>
      www.umweltbundesamt.at/Luft/equivalenceReports.html
    </aqd:demonstrationReport>
  </aqd:EquivalenceDemonstration>
</aqd:equivalenceDemonstration>

```

AQ Data Quality <aqd:dataQuality>

This is a complex group of elements that specifies data quality information related to the measuring/sampling process including detection limit, some descriptive text on documentation of traceability and URL to online QA/QC documentation.

aqd:dataQuality	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.7 (D.5.1.6.7.1 (A.12.1 & A.12.2), D.5.1.6.7.2 & D.5.1.6.7.3)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/equivalencedemonstrated/ http://dd.eionet.europa.eu/vocabulary/uom/concentration/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:dataQuality /aqd:AQD_SamplingPointProcess/aqd:dataQuality/aqd:DataQuality/aqd:detectionLimit /aqd:AQD_SamplingPointProcess/aqd:dataQuality/aqd:DataQuality/aqd:detectionLimit/UoM /aqd:AQD_SamplingPointProcess/aqd:dataQuality/aqd:DataQuality/aqd:documentation /aqd:AQD_SamplingPointProcess/aqd:dataQuality/aqd:DataQuality/aqd:qaReport
Voidable:	No

Example

```

<aqd:dataQuality>
  <aqd:DataQuality>
    <aqd:detectionLimit uom="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3">14.0</aqd:detectionLimit>
    <aqd:documentation>In preparation</aqd:documentation>
    <aqd:qaReport>http://uk-air.defra.gov.uk/inPreparation</aqd:qaReport>
  </aqd:DataQuality>
</aqd:dataQuality>

```

Sampling/measurement time <aqd:duration>

This is a group of elements that specifies the expected sampling duration of the measurement or sampling method. A combination of a time unit and the number of the selected time units is required. The sampling time may be expected to vary slightly although an average or expected sampling time is to be provided here. The actual sampling time for each observation is provided with the primary assessment data. Where the measurement or sampling duration is highly variable the value of <aqd:duration> may be set to “variable”; as <aqd:numUnits> must also be provided, this should be set to 1.

aqd:duration	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.8.1 (D.5.1.6.8.1.1 & D.5.1.6.8.1.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/time/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:duration /aqd:AQD_SamplingPointProcess/aqd:duration/aqd:TimeReferences/aqd:unit/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:duration/aqd:TimeReferences/aqd:numUnits
Voidable:	No

Example

```
<aqd:duration>
  <aqd:TimeReferences>
    <aqd:unit xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/time/hour"/>
    <aqd:numUnits>1</aqd:numUnits>
  </aqd:TimeReferences>
</aqd:duration>
```

Sampling interval time <aqd:cadence>

This is a group of elements that specifies the time interval between the start of two consecutive measurements or samples. The sampling time may be expected to vary slightly although an average or expected sampling time is to be provided here. The actual sampling time for each observation is provided with the primary assessment data. To indicate continuous sampling <aqd:duration> and <aqd:cadence> shall be equal. If <aqd:duration> is set to “variable” the <aqd:cadence> shall be set to “variable” also, with <aqd:numUnits> set to 1.

aqd:cadence	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.8.2 (D.5.1.6.8.2.1 & D.5.1.6.8.2.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/time/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/aqd:cadence /aqd:AQD_SamplingPointProcess/aqd:cadence/aqd:TimeReferences/aqd:unit/@xlink:href /aqd:AQD_SamplingPointProcess/aqd:cadence/aqd:TimeReferences/aqd:numUnits
Voidable:	No

Example

```
<aqd:cadence>
  <aqd:TimeReferences>
    <aqd:unit xlink:href=" http://dd.eionet.europa.eu/vocabulary/uom/time/hour"/>
    <aqd:numUnits>1</aqd:numUnits>
  </aqd:TimeReferences>
</aqd:cadence>
```

ompr:processParameter (SamplingPoint)**Mandatory ()**

The <ompr:processParameter> element is used to provide information on the SamplingPoint to which the SamplingPointProcess is associated. The <ompr:processParameter> is a generic element from the INSPIRE GCM for providing additional information on the measurement process, the <ompr:name> element is used to define the meaning of the value provided in the <ompr:description> element. Thus, for providing information on the SamplingPoint, <ompr:name> shall reference via xlink:href to the code list entry “<http://dd.eionet.europa.eu/vocabulary/aq/processparameter/SamplingPoint>” while the <ompr:description> tags should contain a link to the SamplingPoint the SamplingPointProcess is attached to.

ompr:processParameter (SamplingPoint)	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.8
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/ompr:processParameter
Voidable:	No

Example

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/SamplingPoint"/>
    <ompr:description>http://www.gisaustria.at/AT.0008.20.AQ/AQD_SamplingPoint/SPO.1936</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

ompr:processParameter (AssessmentType)**Mandatory (D.5.1.6.9)**

The <ompr:processParameter> element is used to provide information on the AssessmentType the SamplingPointProcess is describing. The <ompr:processParameter> is a generic element from the INSPIRE GCM for providing additional information on the measurement process, the <ompr:name> element is used to define the meaning of the value provided in the <ompr:description> element. Thus, for providing information on the AssessmentType, <ompr:name> shall reference via xlink:href to the codelist entry “<http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType>” while the <ompr:description> tags should contain an entry from the codelist for AssessmentType at <http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/>.

ompr:processParameter (SamplingPoint)	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.6.8
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/ http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/
XPath to schema location:	/aqd:AQD_SamplingPointProcess/ompr:processParameter
Voidable:	No

Example

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType"/>
    <ompr:description>http://dd.eionet.europa.eu/vocabulary/aq/AssessmentType/fixed</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Sample Inlet information - <AQD_Sample>

The AQD_Sample element provides information about the location of the air inlet (the physical location of the sample). This information is relevant for the interpretation of local dispersion situations and the assessment of the microscale siting criteria laid down in Annex III.C of Dir. 2008/50/EC and Annex III.I of Dir. 2004/107/EC. The aqd:AQD_Sample is cited directly by AQD_SamplingPoint using an xlink href attribute within ef:featureOfInterest (D.5.1.7).

aqd:AQD_Sample	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	D.5.1.6.3
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_Sample
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Sample.html

Example

aqd:AQD_Sample

Generic

```
<aqd:AQD_Sample gml:id="SAM_ZZZZ">
  aqd:inspireId>
    <base:Identifier>
      <base:localId>SAM_ZZZZ_</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </aqd:inspireId>
```

UK example

```
<aqd:AQD_Sample gml:id="SAM.1">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>SAM.1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </aqd:inspireId>
```

Focus**AQD_Sample**

HTML based documentation for the element AQD_Sample:

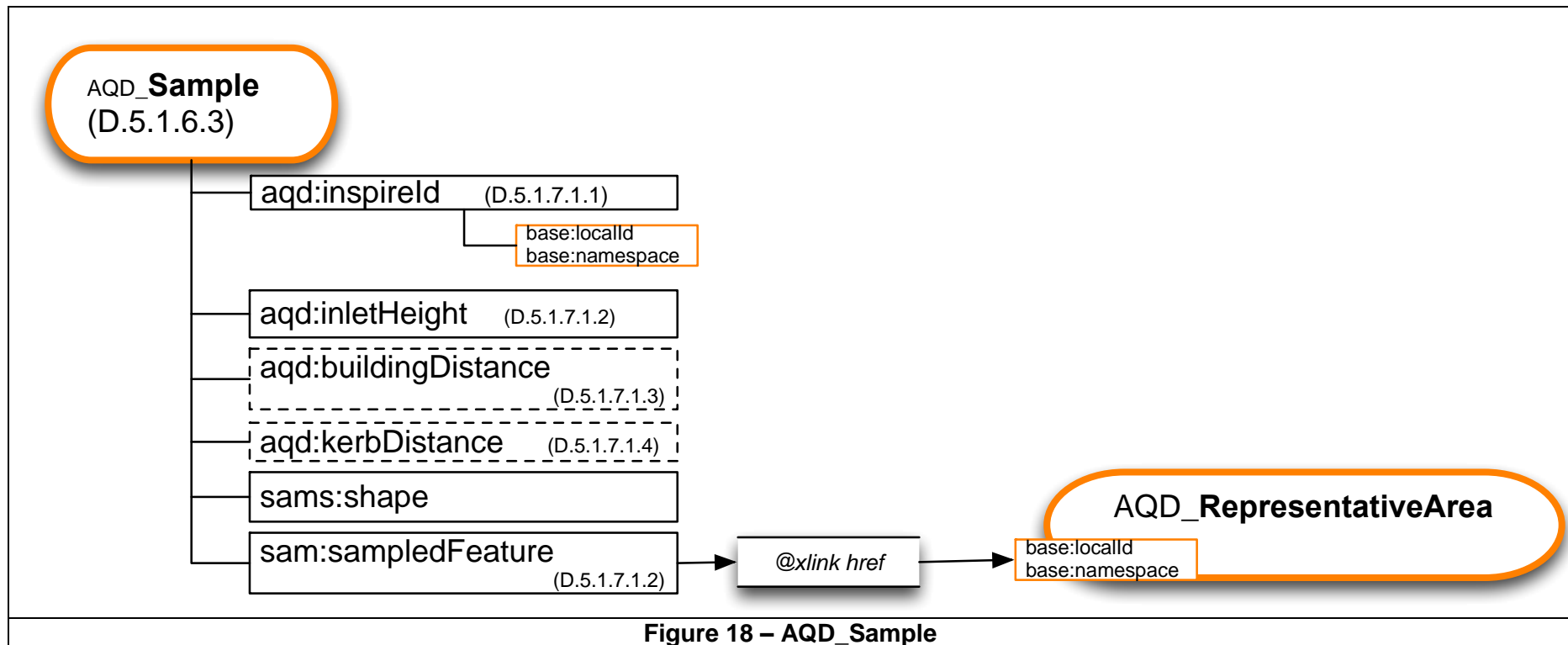
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Sample.html

Latest UML for AQD_Sample at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Sample.png

AQD_Sample is parent to the following child information elements, which hold information on attributes of the sample inlet. The following elements need “declaring” in the XML

- aqd:inspireId Mandatory (D.5.1.7.1.1)
- aqd:inletHeight Mandatory (D.5.1.7.1.2)
- aqd:buildingDistance C, Mandatory for traffic stations (D.5.1.7.1.3)
- aqd:kerbDistance C, Mandatory for traffic stations (D.5.1.7.1.4)
- sams:shape M (provides coordinates for the inlet)
- sam:sampledFeature Mandatory (D.5.1.7.2 & D.6.4.2)



AQD Sample identifier <aqd:inspireId>

The AQ Sample identifier provides for the unique identification of the AQ Sample and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at “The INSPIRE identifier”.

aqd:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per object)
IPR data specifications found at:	D.5.1.7.1 1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_Sample/aqd:inspireId/base:Identifier /aqd:AQD_Sample/aqd:inspireId/base:Identifier/base:localId /aqd:AQD_Sample/aqd:inspireId/base:Identifier/base:namespace /aqd:AQD_Sample/aqd:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_Sample**

```

<aqd:AQD_Sample gml:id="SAM.CC0001A.YYYY">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>SAM.CC0001A.YYYY</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </aqd:inspireId>

```

Inlet height <aqd:inletHeight>

The <aqd:inletHeight> elements allows for the declaration of the height of the inlet above the ground in metres.

aqd:inletHeight	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.7.1.2
Code list constraints:	UoM must be http://dd.eionet.europa.eu/vocabulary/uom/length/m/
QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_Sample/aqd:inletHeight
Voidable:	No

Example**aqd: inletHeight**

```
<aqd:inletHeight uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">numerical value</aqd:inletHeight>[D.6.1.7.1.2]
```

Distance of inlet to building <aqd:builddingDistance>

The <aqd:building distance> allows for the declaration of the horizontal distance of the inlet to the nearest building in metres.

AQD:builddingDistance	
Minimum occurrence:	0, (Mandatory if aqd:stationClassification = traffic)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.7.1.3
Code list constraints:	UoM must be http://dd.eionet.europa.eu/vocabulary/uom/length/m/
QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_Sample/aqd:builddingDistance
Voidable:	No

Example**aqd:builddingDistance**

```
<aqd:builddingDistance uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">numerical </aqd:builddingDistance> [D.6.1.7.1.3]
```

Distance of inlet to kerb <aqd:kerbDistance>

The <aqd:kerbDistance> element allows for the declaration of the horizontal distance of the inlet to the nearest kerb in metres.

AQD:kerbDistance	
Minimum occurrence:	C, (Mandatory if aqd:stationClassification = traffic)
Maximum occurrence:	1
IPR data specifications found:	D.6.1.7.1.4
Code list constraints:	UoM must be http://dd.eionet.europa.eu/vocabulary/uom/length/m/
QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_Sample/aqd:kerbDistance
Voidable:	No

Example**aqd:kerbDistance**

```
<aqd:kerbDistance uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">numerical value</aqd:kerbDistance> [D.6.1.7.1.4]
```

Geographical location of inlet <sams:shape>

The <sams:shape> INSPIRE element allows for reporting of the geographical coordinates (geographical longitude and latitude) of the inlet. For e-Reporting the schema for geometry of the inlet itself is optimised for reporting as a point in decimal degrees notation to 5 decimal places at a minimum.

sams:shape	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.7.1.5
Code list constraints:	None
XPath to schema location:	/aqd:AQD_Sample/sams:shape/gml:Point/gml:pos
Voidable:	No

Example**sams:shape**

Generic example

```

<sams:shape>
  <gml:Point srsName="Coordinate System" gml:id="[INLETatLong_ID]">
    <gml:pos srsDimension="2"> [LATITUDE] [LONGITUDE][53.712450 -1.863240]</gml:pos>
  </gml:Point>
</sams:shape>

```

UK example

```

<sams:shape>
  <gml:Point srsName="urn:ogc:def:crs:EPSG::4326" gml:id="Coord_GB_335">
    <gml:pos srsDimension="2">51.522530 -0.154611</gml:pos>
  </gml:Point>
</sams:shape>

```

OR

```

<sams:shape>
  <gml:Point gml:id="SAM.PT.1234" srsName="urn:ogc:def:crs:EPSG::4326" srsDimension="2">
    <gml:pos>51.488197 -3.228471</gml:pos>
  </gml:Point>
</sams:shape>

```

Note: Please note that srsDimension is allowed both within gml:Point element and within gml:pos

The coordinate reference system (CRS) to be used shall be ETRS 1989 (or WGS 1984 in a transitional period to 2020). The CRS must be declared as an attribute of a GML geometry type (**gml:Point** in the example above); **<gml:Point srsName="urn:ogc:def:crs:EPSG::4258" gml:id="Coord_GB_335">**. The coordinates for the centre of the monitoring station are provided by the **gml:pos** element. Latitude being the first item in the **gml:pos** list, longitude the second for EPSG::4326. Note, this sequence for declaring coordinates is not followed by all CRS, countries should check the definition of the CRS they are using.

Countries are encouraged to use ETRS89-LAEA Europe, also known in the EPSG Geodetic Parameter Dataset under the identifier: EPSG:3035. The Geodetic Datum is the European Terrestrial Reference System 1989 (EPSG:6258). The Lambert Azimuthal Equal Area (LAEA) projection is centred at 10°E, 52°N. Coordinates are based on a false Easting of 4321000 meters, and a false

Northing of 3210000 meters. As an interim measure until 2020, WGS84 may also be used (urn:ogc:def:crs:EPSG::4326). Where Member States are unable to convert National coordinated reference system to ETRS89 or WGS84 (and for an interim period only to end of 2015), Member States must at a minimum report a valid srsName attribute for the National coordinated reference system.

Focus**Geographical coordinate system**

Geographical coordinate system based on ETRS89 in continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4258>
`srsName="urn:ogc:def:crs:EPSG::4258"`

Geographical coordinate system based on ITRS outside of continental Europe -
<http://www.opengis.net/def/crs/EPSSG/0/4326>
`srsName="urn:ogc:def:crs:EPSG::4326"`

Focus**Geographical coordinate system**

When providing geographical coordinates using the following srsName (srsName="urn:ogc:def:crs:EPSG::4258" or srsName="urn:ogc:def:crs:EPSG::4326") please note that the order of the elements must be Latitud & Longitude.

Sampled feature <sam:sampledFeature>

The <aqd:sampledFeature> element provides a reference (via an xlink href attribute) to information about the representative area of the monitoring site for the pollutant. This information is voluntary. Further details on the declaration of the representative area element can be found within next section on <AQD_RepresentativeArea>.

sam:sampledFeature	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.1.7.2
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	
XPath to schema location:	/aqd:AQD_Sample/sam:sampledFeature/@xlink:href
Voidable:	No

Example**sams:sampledFeature**

Generic example

```
<sam:sampledFeature xlink:href="[xlink to AQD_RepresentativeArea]"/> [D.5.1.7.2][
```

UK example

```
<sam:sampledFeature xsi:nil="true" nilReason="unknown"/>
```

AT example (if information is available)

```
<sam:sampledFeature xlink:href="AT.0008.20.AQ/REP.AT52000.00001.500"/>
```

Inlet / Sample area of representivity <AQD_RepresentativeArea>

Information concerning the area of representativeness of the sample inlet is provided by the element AQD_RepresentativeArea. This element is referenced by AQD_Sample using an xlink href attribute within sam:sampledFeature (D.5.1.7.2). The element is a voluntary information requirement.

aqd:AQD_Sample	
Minimum occurrence:	0 (mandatory where available)
Maximum occurrence:	1
IPR data specifications found at:	D.5.1.7.2
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_RepresentativeArea
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_RepresentativeArea.html

Example

aqd:AQD_RepresentativeArea

```
<aqd:AQD_RepresentativeArea gml:id="REP.AT52000.00001.500">
```

Focus

AQD_RepresentativeArea

HTML based documentation for the element AQD_RepresentativeArea:

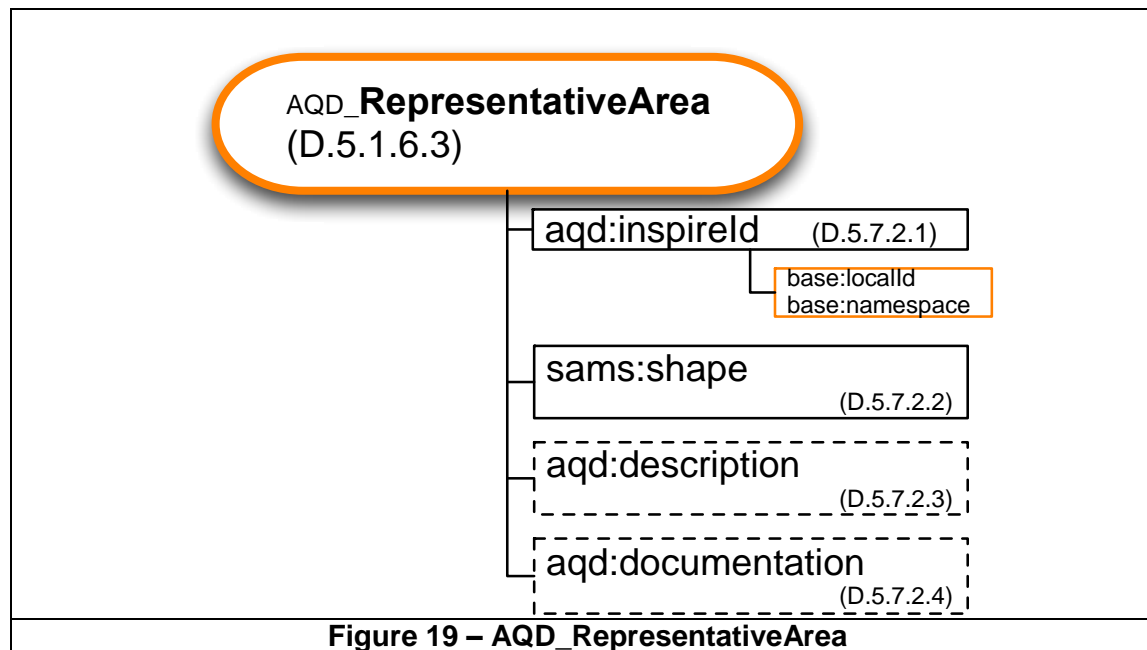
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_RepresentativeArea.html

Latest UML for AQD_RepresentativeArea at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Sample.png

AQD_RepresentativeArea is parent to the following child information elements, which hold information on the spatial extent over which observed levels are likely to be representative of. The following elements need “declaring” in the XML

- aqd:inspireId Mandatory (D.5.1.7.2.1)
- sams:shape C, Mandatory if available (D.5.1.7.2.2)
- aqd:description C, Mandatory if available (D.5.1.7.2.3)
- aqd:documentation C, Mandatory if available (D.5.1.7.2.4)



INSPIRE ID - <aqd:inspireId>

The AQ Representative Area identifier provides for the unique identification of the AQ Representative Area and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at “The INSPIRE identifier”.

aqd:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per object)
IPR data specifications found at:	D.5.1.7.2.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_RepresentativeArea/aqd:inspireId/base:Identifier /aqd:AQD_RepresentativeArea/aqd:inspireId/base:Identifier/base:localId /aqd:AQD_RepresentativeArea/aqd:inspireId/base:Identifier/base:namespace /aqd:AQD_RepresentativeArea/aqd:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_Sample**

```

<aqd:AQD_RepresentativeArea gml:id=" REP.AT52000.00001.500">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>SampledArea_C0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>

```

Area (Spatial Extent) of representative area - <sams:shape >

The <sams:shape> element allows for the delimitation of the spatial extent of the area of representivity using geometry feature (as in AQD_Zone). Typically the geometry of a representative area shall be a surface or multi-surface. Where a representative area forms as a polygon (box or circle centred on the sample inlet), this should be encoded within a gml:polygon attribute as a gml:posList. A maximum of one exterior ring element (gml:exterior) is allowed. No Interior rings are allowable (gml:interior).

sams:shape	
Minimum occurrence:	0 (Conditional, mandatory if available)
Maximum occurrence:	1
IPR data specifications found:	D.6.1.7.1.2.2
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	n/a
XPath to schema location:	/aqd:AQD_RepresentativeArea/sams:shape/gml:Polygon/gml:exterior/gml:LinearRing/gml:posList
Voidable:	No

Example**sams:shape**

```

<sams:shape>
  <gml:Polygon gml:id=" REP.PG.AT52000.00001.500" srsName="urn:ogc:def:crs:EPSG::4258">
    <gml:exterior>
      <gml:LinearRing>
        <gml:posList count="4" srsDimension="2">19.6856534817236 48.6886762376192 19.6850950126256 48.6892127722526
19.6850150763855 48.6898202553015 19.6850478566741 48.6906926606387 </gml:posList>
      </gml:LinearRing>
    </gml:exterior>
  </gml:Polygon>
</sams:shape>

<sams:shape>
  <gml:Polygon gml:id=" REP.PG.AT52000.00001.500" srsName="urn:ogc:def:crs:EPSG::4258">

```

```

        <gml:exterior>
          <gml:LinearRing>
            <gml:posList srsDimension="2" count="4">19.6856534817236
48.6886762376192 19.6850950126256 48.6892127722526 19.6850150763855 48.6898202553015 19.6850478566741
48.6906926606387 </gml:posList>
          </gml:LinearRing>
        </gml:exterior>
      </gml:Polygon>
    </sams:shape>

```

Evaluation of representivity description <aqd:description>

The aqd:description element allows for a simple free text description of the methods used to define the area of representivity.

<aqd:description>	
Minimum occurrence:	0 (Conditional, mandatory if available)
Maximum occurrence:	1
IPR data specifications found:	D.6.1.7.1.2.3
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	n/a
XPath to schema location:	/aqd:AQD_RepresentativeArea/aqd:description
Voidable:	No

Example

aqd:description

```
<aqd:description>A free text description of the representative area</aqd:description>
```

spatial extent - <aqd:documentation>

The aqd:documentation element allows for the citation of an online resource (report) via a URL described in detail the methods used to define the area of representivity.

<aqd:description>	
Minimum occurrence:	0 (Conditional, mandatory if available)
Maximum occurrence:	1
IPR data specifications found:	D.6.1.7.1.2.4
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	n/a
XPath to schema location:	/aqd:AQD_RepresentativeArea/aqd:documentation
Voidable:	No

Example**aqd:description**

`<aqd:documentation>Any URL</aqd:description>`

Station information - <aqd:AQD_Station>

Information on monitoring stations is to be provided for each monitoring station. According to Article 2 (1) of the IPR, a 'Station' means a location where measurements and/or samples are taken at one or more sampling points at the same site within an area of some 100 m². A station may have several measurement configurations. This element is referenced by AQD_SamplingPoint using an xlink href attribute within ef:broader (D.5.1.2)

aqd:AQD_Station	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications found at:	D5.2
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_Station
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Station.html

Example

aqd:AQD_Station

Generic

```
<aqd:AQD_Station gml:id="STA_CC0001A">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>
```

UK example

```
<aqd:AQD_Station gml:id="Station_GB0682A">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>Station_GB0682A</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </aqd:inspireId>
```

Example**aqd:AQD_Station**

AT Example

```

<aqd:AQD_Station gml:id="STA-AT20444">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>STA-AT20444</base:localId>
      <base:namespace>AT.0008.20.AQ</base:namespace>
    </base:Identifier>
  </ef:inspireId>
  <ef:name>"Arnoldstein Kugi"</ef:name>
  <ef:mediaMonitored xlink:href="http://inspire.ec.europa.eu/codeList/MediaValue/air"/>
  <ef:geometry>
    <gml:Point srsName="urn:ogc:def:crs:EPSG:4258" gml:id="STA_G-AT20444">
      <gml:pos srsDimension="2">46.554167 13.698625</gml:pos>
    </gml:Point>
  </ef:geometry>
  <ef:measurementRegime xlink:href="http://inspire.ec.europa.eu/codeList/MeasurementRegimeValue/continiousDataCollection"/>
  <ef:mobile>false</ef:mobile>
  <ef:operationalActivityPeriod>
    <ef:OperationalActivityPeriod gml:id="STA_P-AT20444">
      <ef:activityTime>
        <gml:TimePeriod gml:id="STA_T-AT20444">
          <gml:beginPosition>1997-02-07T00:00:00+01:00</gml:beginPosition>
          <gml:endPosition indeterminatePosition="unknown"/>
        </gml:TimePeriod>
      </ef:activityTime>
    </ef:OperationalActivityPeriod>
  </ef:operationalActivityPeriod>
  <aqd:natlStationCode>02444</aqd:natlStationCode>
  <aqd:municipality>Arnoldstein</aqd:municipality>
  <aqd:EUStationCode>AT20444</aqd:EUStationCode>
  <aqd:meteoParams xlink:href="No meteo measured"/>
  <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
  <aqd:altitude uom="http://dd.eionet.europa.eu/vocabularyconcept/uom/length/m/">570</aqd:altitude>
</aqd:AQD_Station>

```

Focus**AQD_Station**

HTML based documentation for the element AQD_Station:

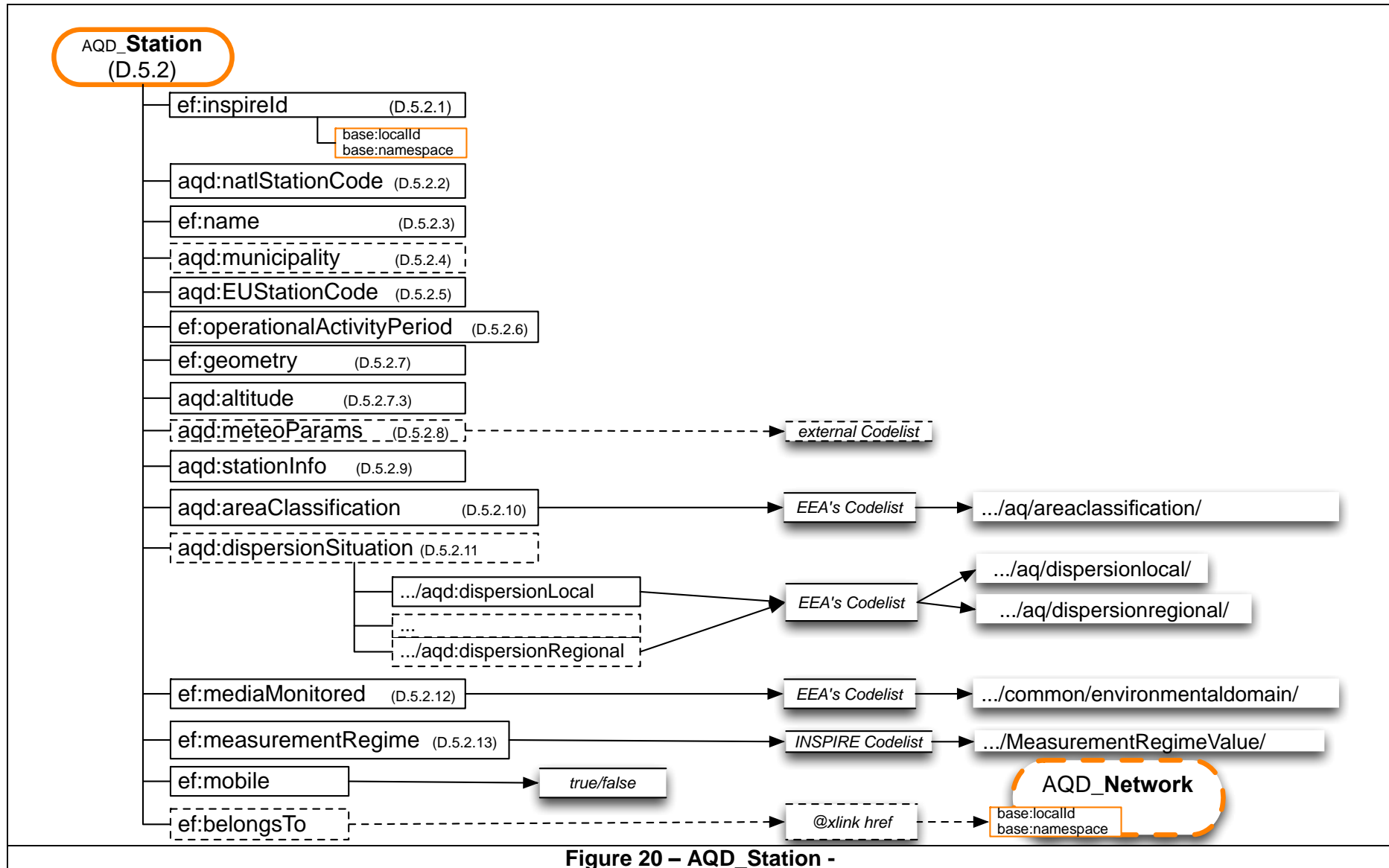
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Station.html

Latest UML for AQD_AssessmentRegime at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Station.png

AQD station is parent to the following child information elements which hold information on both the physical properties & attributes of the monitoring station & abstract information for the management of data within XML. The following elements need to be provided in the XML

- | | |
|--------------------------------|---|
| • ef:inspireId | Mandatory (D.5.2.1) |
| • aqd:natlStationCode | Mandatory (D.5.2.2) |
| • ef:name | Mandatory for e-Reporting (D.5.2.3) |
| • aqd:municipality | Externally provided (D.5.2.4) |
| • aqd:EUSationCode | Mandatory (D.5.2.5) |
| • ef:operationalActivityPeriod | Mandatory (D.5.2.6) |
| • ef:geometry | Mandatory for e-Reporting (D.5.2.7) |
| • aqd:altitude | Mandatory (D5.2.7.3) |
| • aqd:meteoParams | Voluntary (D.5.2.8) |
| • aqd:stationInfo | Voluntary, mandatory for if available (D.5.2.9) |
| • aqd:areaClassification | Mandatory (D.5.2.10) |
| • aqd:dispersionSituation | Conditional, mandatory elements (D.5.2.11) |
| • ef:mediaMonitored | Mandatory (D.5.2.12) |
| • ef:measurementRegime | Mandatory (D.5.2.13) |
| • ef:mobile | Mandatory (D.5.2.14) |
| • ef:belongsTo | Conditional (not found in IPR) |



AQD station identifier <ef:inspireId>

The AQ station identifier provides for the unique identification of the AQ station and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. published by the responsible data provider with the intention that they may be used by third parties to reference the spatial object within INSPIRE. An explanation of the identifier class can be found at “The INSPIRE identifier”_

ef:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	D.5.2.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_Station/ef:inspireId/base:Identifier /aqd:AQD_Station/ef:inspireId/base:Identifier/base:localId /aqd:AQD_Station/ef:inspireId/base:Identifier/base:namespace /aqd:AQD_Station/ef:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_Station**

```

<aqd:AQD_Station gml:id="STA.CC0001A">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>

```

National station code <aqd:natlStationCode>

A plain text denotation of the code used at national (local) level to identify the monitoring station.

aqd:natlStationCode	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.2
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 12 characters
XPath to schema location:	/aqd:AQD_Station/aqd:natlStationCode
Voidable:	No

Example**aqd:natlStationCode**

`< aqd:natlStationCode > Any national code</ aqd:natlStationCode >`

UK example for Marylebone Rd (GB0682A) `< aqd:natlStationCode >UKA00315</ aqd:natlStationCode >`

Station name (ef:name)

A plain text denotation of the name of the monitoring station. Guidance on station names is provided in Annex II (D) of the IPR Guidance I ([link](#)).

ef:name	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.3
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Station/ef:name
Voidable:	No

Example**ef:name**

`<ef:name>[Station name]</ef:name>`

UK example `<ef:name>London Marylebone Road</ef:name>`

Municipality name <aqd:municipality>

A plain text description of the name of the municipality in which the monitoring station is located.

aqd:municipality	
Minimum occurrence:	X (generated for e-Reporting by central resources at the EEA, if not provided)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.4
Code list constraints:	None
XPath to schema location:	/aqd:AQD_Station/aqd:municipality
Formats Allowed:	Alphanumeric, max. length 255 characters
Voidable:	No

Example**ef:municipality**

```
<aqd:municipality>Municipality name</ aqd:municipality >
```

UK example < aqd:municipality >London</ aqd:municipality>

European Eol station code <aqd:EUStationCode>

The EU station code shall be the "Eol code" used historically for Eol reporting. The EU station code comprises the two-digit national code, as defined by ISO-3166-1, and five additional alphanumeric digits. These may be directly related to the national station code if the national station code adheres to these rules and the format is appropriate and unambiguous. The **aqd:EUStationCode** shall be maintained & managed by the data provider.

aqd:EUStationCode	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.5
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 7 characters
XPath to schema location:	/aqd:AQD_Station/aqd:EUStationCode
Voidable:	No

Example**aqd:EUStationCode**

XML example `<aqd:EUStationCode>CC0001A</aqd:EUStationCode>`
 UK example `<aqd:EUStationCode>GB0842A</aqd:EUStationCode>`

Operational activity period <ef:operationalActivityPeriod>

A description of the time envelope over which the station was active. Time stamps shall use the extended ISO 8601 extended format. A station start date shall always be provided. Where the station continues to be operation i.e. has not stopped monitoring . gml:endPosition may receive an *indeterminatePosition="unknown"* to indicate the stations as operational.

ef:operationalActivityPeriod

Minimum occurrence:	1 (mandatory for e-Reporting, voluntary within INSPIRE)
Maximum occurrence:	1
IPR data spec. found:	D.5.2.6, D.5.2.6.1, D.5.2.6.2
XPath to schema location:	/aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod /aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod/ef:activityTime/gml:TimePeriod/ /aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod/ef:activityTime/gml:TimePeriod/gml:beginPosition /aqd:AQD_Station/ef:operationalActivityPeriod/ef:OperationalActivityPeriod/ef:activityTime/gml:TimePeriod/gml:endPosition
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
Voidable:	No

Example**ef:operationalActivityPeriod**

```
<ef:operationalActivityPeriod>
  <ef:OperationalActivityPeriod gml:id="[StationActivityPeriod_ID]">
    <ef:activityTime>
      <gml:TimePeriod gml:id="[StationTimePeriod_ID]">
        <gml:beginPosition> [YYYY-MM-DDThh:mm:ss+01:00]</gml:beginPosition>[D.5.2.6.1]
        <gml:endPosition> [YYYY-MM-DDThh:mm:ss+01:00]</gml:endPosition>[D.5.2.6.2]
      </gml:TimePeriod>
    </ef:activityTime>
  </ef:OperationalActivityPeriod>
```

UK example

```

</ef:operationalActivityPeriod>

<ef:operationalActivityPeriod>
  <ef:OperationalActivityPeriod gml:id="StationActivity_66">
    <ef:activityTime>
      <gml:TimePeriod gml:id="TimePeriod_66">
        <gml:beginPosition>1986-04-23T12:00:00Z</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown" />
      </gml:TimePeriod>
    </ef:activityTime>
  </ef:OperationalActivityPeriod>
</ef:operationalActivityPeriod>

```

Station geographical coordinates <ef:geometry>

Allows for reporting of the geographical coordinates (geographical longitude and latitude) of the monitoring station. For e-Reporting the schema for geometry of the stations is optimised for reporting as a point centred of the station in decimal degrees notation to 5 decimal places at a minimum.

ef:geometry	
Minimum occurrence:	1 (mandatory for e-Reporting, voluntary within INSPIRE)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.7, D.5.2.7.1, D.5.2.7.2 & D.5.2.7.4
Code list constraints:	None
XPath to schema location:	/aqd:AQD_Station/ef:geometry/gml:Point/gml:pos
Voidable:	No

Example

ef:geometry

```

<ef:geometry>
  <gml:Point srsName="[D.5.2.7.4][Coordinate System]" gml:id="[StationLatLong_ID]">
    <gml:pos srsDimension="2"> [LATITUDE] [LONGTITUDE][53712450 -1.863240]</gml:pos>
  </gml:Point>

```

```

    </ef:geometry>

UK example

    <ef:geometry>
      <gml:Point srsName="urn:ogc:def:crs:EPSG::4326" gml:id="Point_62">
        <gml:pos srsDimension="2">53.484810 -2.334139</gml:pos>
      </gml:Point>
    </ef:geometry>

```

The coordinate reference system to be used shall be ETRS 1989 (or WGS 1984 in a transitional period to 2020). The coordinate reference system is declared as an attribute of the **gml:Point** element in the example above; **<gml:Point srsName="urn:ogc:def:crs:EPSG::4258">**. **The latitude and longitude coordinates for the centre of the monitoring station are provided by the **gml:pos** element. Latitude being the first item in the **gml:pos** list, longitude the second.**

As an interim measure until 2020, WGS84 may also be used (urn:ogc:def:crs:EPSG::4326). Where Member States are unable to convert National coordinated reference system to ETRS89 or WGS84 (and for an interim period only to end of 2015), Member States must at a minimum report a valid srsName attribute for the National coordinated reference system.

In order to adopt the INSPIRE mandated systems for View Services, the following coordinated reference systems are to be used:

- Geographical coordinate system based on ETRS89 in continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4258>
- Geographical coordinate system based on ITRS outside of continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4326> (WGS 84 2d)

Focus

AQD_Station

EPSSG:4326 is WGS84 geographic coordinates
EPSSG:4258 is ETRS89 geographic coordinates

Focus**Geographical coordinate system**

Geographical coordinate system based on ETRS89 in continental Europe - <http://www.opengis.net/def/crs/EPSSG/0/4258>

`srsName="urn:ogc:def:crs:EPSSG::4258"`

Geographical coordinate system based on ITRS outside of continental Europe -

<http://www.opengis.net/def/crs/EPSSG/0/4326>

`srsName="urn:ogc:def:crs:EPSSG::4326"`

Focus**Geographical coordinate system**

When providing geographical coordinates using the following srsName
(`srsName="urn:ogc:def:crs:EPSSG::4258"` or `srsName="urn:ogc:def:crs:EPSSG::4326"`) please
note that the order of the elements must be **Latitud & Longitud**.

Station altitude <aqd:altitude>

Allows for reporting of the altitude of the monitoring station above sea level. For e-Reporting the schema for altitude of the stations is optimised for reporting as a point centred of the station in meters.

aqd:altitude	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.7.3 (A.11.1 + A.11.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/length/m
XPath to schema location:	/aqd:AQD_Station/aqd:altitude
Voidable:	No

Example**aqd:altitude**

Generic example

`< aqd:altitude uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">[Altitude in meters]</aqd:altitude>`

UK example

`< aqd:altitude uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">20</aqd:altitude>`**Meteorological parameters measured <aqd:meteoParameters>**

Allows for meteorological parameters measured at the station to be listed.

aqd:meteoParameters	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded, (multiple parameters allowed)
IPR data specifications found:	D.5.2.8
Code list constraints:	http://vocab.nerc.ac.uk/collection/I01/current/ or http://vocab.nerc.ac.uk/collection/P07/current/ Alternatively, http://dd.eionet.europa.eu/vocabulary/aq/meteoparameter/view
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_Station/aqd:meteoParams
Voidable:	Yes

Example**aqd:meteoParams**`<aqd:meteoParams xlink:href="http://vocab.nerc.ac.uk/collection/I01/current/0.1.1/">`**Focus****Example codes for some meteorological**

Pressure reduced to MSL or **air_pressure_at_sea_level** - <http://vocab.nerc.ac.uk/collection/I01/current/0.3.1/>
(Same as: <http://vocab.nerc.ac.uk/collection/P07/current/CFSN0022/>)

Relative humidity - <http://vocab.nerc.ac.uk/collection/I01/current/0.1.1/>
(same as: <http://vocab.nerc.ac.uk/collection/P07/current/CFSN0413/>)

Temperature - <http://vocab.nerc.ac.uk/collection/I01/current/0.0.0/>
(same as: <http://vocab.nerc.ac.uk/collection/P07/current/CFSN0023/>)

Total cloud cover - <http://vocab.nerc.ac.uk/collection/I01/current/0.6.1/>

(same as: <http://vocab.nerc.ac.uk/collection/P07/current/CFSN0745/>)

Wind speed - <http://vocab.nerc.ac.uk/collection/I01/current/0.2.1/>

(same as: <http://vocab.nerc.ac.uk/collection/P07/current/CFSN0038/>)

Wind direction (from which blowing) - <http://vocab.nerc.ac.uk/collection/I01/current/0.2.0/>

(same as: <http://vocab.nerc.ac.uk/collection/P07/current/CFSN0036/>)

PLEASE NOTE that the following codelist can also be used for meteoParameters:

<http://dd.eionet.europa.eu/vocabulary/aq/meteorparameter/view>

Additional station information <aqd:stationInfo>

Allows for the documentation of additional station information via an external link using a single URL to online maps and photographs of the station which are hosted by the data provider. Only one URL may be provided per station.

aqd:stationInfo	
Minimum occurrence:	0 (voluntary, mandatory for AQD if available)
Maximum occurrence:	1, (multiple parameters allowed)
IPR data specifications found:	D.5.2.9
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 255 characters
XPath to schema location:	/aqd:AQD_Station/aqd:stationInfo
Voidable:	No

Example

aqd:stationInfo

Generic example

<aqd:stationInfo>url to station information</aqd:stationInfo>

UK example

<aqd:stationInfo><http://uk-air.defra.gov.uk/networks/find-sites></aqd:stationInfo>

Fixed & Indicative - AQD_Station

D – Assessment Methods

Classification of local area <aqd:areaClassification>

Allows for the classification of the local area based on a codelist provided. The IPR Guidance provides supporting advice on how this classification shall be made.

aqd:areaClassification	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.10
Code list constraints:	http://dd.eionet.europa.eu/vocabularies/aq/areaclassification/
Formats Allowed:	Code list
XPath to schema location:	/aqd:AQD_Station/aqd:areaClassification/@xlink:href
Voidable:	No

Example**aqd:areaClassification**

Generic example

```
<aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/[code]"/>
```

UK example

```
<aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
```

Local and regional dispersion situation <aqd:dispersionSituation>

Allows for a description of the dispersion situation and properties of the surrounding environs immediately adjacent to the monitoring station (within 10 metres or so). This information is relevant for the interpretation of the measured data, and to assess the location with respect to the siting criteria laid down in Annex III of Dir. 2008/0/EC and Annex III.II of Dir. 2004/107EC.

aqd:DispersionSituation	
Minimum occurrence:	0 (Conditional, Mandatory if D.5.1.5.1 in related AQD_SamplingPoint is a traffic station, D.5.2.11.2, D.5.2.11.3, D.5.2.11.4, D.5.2.11.5, D.5.2.11.6, D.5.2.11.7 are then mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11, D.5.2.11.1, D.5.2.11.2, D.5.2.11.3, D.5.2.11.4, D.5.2.11.5, D.5.2.11.6, D.5.2.11.7, D.5.2.11.8
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/dispersionlocal/ http://dd.eionet.europa.eu/vocabulary/aq/dispersionregional/
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:dispersionLocal/@xlink:href /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:distanceJunction /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:trafficVolume /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:heavy-dutyFraction /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:trafficSpeed /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:streetWidth /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:heightFacades /aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:dispersionRegional/@xlink:href
Voidable:	No

Example**aqd:dispersionSituation**

Generic example

```

<aqd:dispersionSituation>
  <aqd:DispersionSituation>
    <aqd:dispersionLocal xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/dispersionlocal/[code]"/> [D.5.2.11.1]
    <aqd:distanceJunction uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">[D.5.2.11.2]</aqd:distanceJunction>
    <aqd:trafficVolume>[D.5.2.11.3]</aqd:trafficVolume>
    <aqd:heavy-dutyFraction>[D.5.2.11.4]</aqd:heavy-dutyFraction>
    <aqd:trafficSpeed uom="http://dd.eionet.europa.eu/vocabulary/uom/velocity/km.h-1">[D.5.2.11.5]</aqd:trafficSpeed>
    <aqd:streetWidth uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">[D.5.2.11.6]</aqd:streetWidth>
    <aqd:heightFacades uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">[D.5.2.11.7]</aqd:heightFacades>
    <aqd:dispersionRegional xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/dispersionregional/[code]"/> [D.5.2.11.8]
  </aqd:DispersionSituation>
</aqd:dispersionSituation>

```

UK example

```

<aqd:dispersionSituation>
  <aqd:DispersionSituation>
    <aqd:dispersionLocal xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/dispersionlocal/canyon"/>
    <aqd:distanceJunction uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">5</aqd:distanceJunction>
    <aqd:trafficVolume>345</aqd:trafficVolume>
    <aqd:heavy-dutyFraction>0.25</aqd:heavy-dutyFraction>
    <aqd:trafficSpeed uom="http://dd.eionet.europa.eu/vocabulary/uom/velocity/km.h-1">50</aqd:trafficSpeed>
    <aqd:streetWidth uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">8</aqd:streetWidth>
    <aqd:heightFacades uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">6</aqd:heightFacades>
    <aqd:dispersionRegional xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/dispersionregional/hilly"/>
  </aqd:DispersionSituation>
</aqd:dispersionSituation>

```

Local dispersion situation <aqd:dispersionLocal>

Describes the location of the station in relation to nearby buildings & trees using a controlled vocabulary. Further guidance on defining the local dispersion situation is provided in chapter 19 of the IPR Guidance.

aqd:dispersionLocal	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/dispersionlocal/view
Allowed formats:	Code list
XPath to schema location:	aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:dispersionLocal/@xlink:href
Voidable:	No

Example**aqd:dispersionLocal**

```
<aqd:dispersionLocal xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/dispersionlocal/canyon/" />
```

Distance to major junction <aqd:distanceJunction>

Allows for the description of the distance from the station to a major junction in metres. Distance to major junction is mandatory for traffic sites (see D.5.1.5.1) and refers to the microscale siting criteria. A “major junction” to be considered here is any junction which interrupts the traffic flow and causes significantly different emissions (stop / go) from the rest of the road.

aqd:distanceJunction	
Minimum occurrence:	0 (Conditional, mandatory where in AQD_SamplingPoint the aqd:stationClassification = “traffic”)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.2
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:distanceJunction
Voidable:	No

Example**aqd:distanceJunction**

```
<aqd:distanceJunction uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">5</aqd:distanceJunction>
```

Assessed traffic volume <aqd:trafficVolume>

Allows for the declaration of the total traffic volume (as an annual average daily traffic) on the adjacent road.

aqd:trafficVolume	
Minimum occurrence:	0 (Conditional, mandatory where in AQD_SamplingPoint the aqd:stationClassification = "traffic")
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.3
Code list constraints:	None
Allowed formats:	Numeric integer value,
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:trafficVolume
Voidable:	No

Example**aqd:trafficVolume**

```
<aqd:trafficVolume>345</aqd:trafficVolume>
```

Heavy duty fraction <aqd:heavydutyFraction>

Allows for the declaration of the fraction of the total traffic volume (assessed as AADT, see D.5.2.11.3) that is composed of HGVs on the adjacent road.

aqd:heavy-dutyFraction	
Minimum occurrence:	0 (Conditional, mandatory where in AQD_SamplingPoint the aqd:stationClassification = "traffic")
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.4
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Numeric fractional value of 1.00 to 2.d.p. e.g. 0.25 resolves to 25%
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:heavy-dutyFraction
Further information @	
Voidable:	No

Example**aqd:trafficVolume**

```
<aqd:heavy-dutyFraction>0.25</aqd:heavy-dutyFraction>
```

Traffic speed <aqd:trafficSpeed>

Allows for the declaration of the average speed of vehicles in km/h traffic speed on the adjacent road.

aqd:trafficSpeed

Minimum occurrence:	0 (Conditional, mandatory where in AQD_SamplingPoint the aqd:stationClassification = "traffic")
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.5
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/velocity/km.h-1
QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = km/h
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:trafficSpeed
Voidable:	No

Example**aqd:trafficSpeed**

```
<aqd:trafficSpeed uom="http://dd.eionet.europa.eu/vocabulary/uom/velocity/km.h-1">50</aqd:trafficSpeed>
```

Street width <aqd:streetWidth>

Allows for the declaration of the width of the street (in metres) at the location of the station. Mandatory where in AQD_SamplingPoint the aqd:stationClassification = “traffic” and aqd:dispersionLocal = “Street canyon” type.

aqd:streetWidth	
Minimum occurrence:	0 (Conditional, mandatory where in AQD_SamplingPoint the aqd:stationClassification = “traffic” and aqd:dispersionLocal = “Street canyon” type.)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.6
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/length/m
QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:streetWidth
Voidable:	No

Example**aqd:streetWidth**

```
<aqd:streetWidth uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">8</aqd:streetWidth>
```

Height of building facades <aqd:heightFacades>

Allows for the declaration of the average height of the building facades adjacent to the station (in metres) at the location of the station. Mandatory where in AQD_SamplingPoint the aqd:stationClassification = “traffic” and aqd:dispersionLocal = “Street canyon” type.

aqd:heightFacades	
Minimum occurrence:	0 (Conditional, mandatory where in AQD_SamplingPoint the aqd:stationClassification = “traffic” and aqd:dispersionLocal = “Street canyon” type.)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.7
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/length/m

QA/QC constraints:	In preparation
Allowed formats:	Numeric integer value, units of measure = metres
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:heightFacades
Voidable:	No

Example**aqd:heightFacades**

```
<aqd:heightFacades uom="http://dd.eionet.europa.eu/vocabulary/uom/length/m">6</aqd:heightFacades>
```

Regional dispersion situation <aqd:dispersionRegional>

Allows for the declaration of the regional dispersion characteristics or topographic situation on a scale of several kilometres affecting the station from a controlled vocabulary.

aqd:dispersionRegional	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications found:	D.5.2.11.8
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/dispersionregional/
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Station/aqd:dispersionSituation/aqd:DispersionSituation/aqd:dispersionRegional/@xlink:href
Voidable:	No

Example**aqd:dispersionRegional**

```
<aqd:dispersionRegional xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/dispersionregional/hilly/"/>
```

Media monitored <ef:mediaMonitored>

An INSPIRE information requirement which provides a code list constrained description of the environmental media being monitored, measured, sampled or observed.

ef:mediaMonitored	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.12
Code list constraints:	http://inspire.ec.europa.eu/codeList/MediaValue/air
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Station/ef:mediaMonitored/@xlink:href
Voidable:	No

Example**ef:mediaMonitored****FIXED BY INSPIRE****UPDATE**

```
<ef:mediaMonitored xlink:href="http://inspire.ec.europa.eu/codeList/MediaValue/air"/>
```

Measurement regime <ef:measurementRegime>

An INSPIRE information requirement which provides a code list constrained description of the type of measurement regime in operation.

ef:measurementRegime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.13
Code list constraints:	http://inspire.ec.europa.eu/codeList/MeasurementRegimeValue/continuousDataCollection
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Station/ef:measurementRegime/@xlink:href
Voidable:	No

Example**ef:measurementRegime****FIXED BY INSPIRE**

```
<ef:measurementRegime xlink:href="http://inspire.ec.europa.eu/codeList/MeasurementRegimeValue/continuousDataCollection"/>
```

Station mobility <ef:mobile>

An INSPIRE information requirement which declares whether the stations is mobile or not via a true/false boolean statement. For compliance monitoring ef:mobile will normally be expected to evaluate to “false”.

ef:mobile

Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.2.14
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	A yes/no boolean statement
XPath to schema location:	/aqd:AQD_Station/ef:mobile
Voidable:	No

Example**ef:mobile**

```
<ef:mobile>false</ef:mobile>
```

ef:belongsTo

An INSPIRE element which allows for the declaration of the network to which the station is associated.

ef:belongsTo	
Minimum occurrence:	0
Maximum occurrence:	Unbounded
IPR data specifications found:	INSPIRE data element not specified in IPR data
Code list constraints:	
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	/aqd:AQD_Station/ef:belongsTo/@xlink:href
Voidable:	Yes

Example**ef:belongsTo**

Generic example

```
<ef:belongsTo xlink:href="[xlink to Network ID]"/>
```

UK example

```
<ef:belongsTo xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Network_1"/>
```

Network information - <aqd:AQD_Network>

Information on network is to be provided for each network operating. According to Article 2 (2) of the IPR, a 'network' means an organisational structure performing assessment of ambient air quality by measuring at one or more stations.

aqd:AQD_Station	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications found at:	D5.3
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_Network
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Network.html

Example**aqd:AQD_Network**

Generic example

```

<aqd:AQD_Network gml:id="NET_CCZZZZ">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>

```

Example

```

<aqd:AQD_Network gml:id="GB_Network_1">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId> GB_Network_1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </aqd:inspireId>

```

Example**aqd:AQD_Network**

AT Example

```

<aqd:AQD_Network gml:id="NET.AT001A">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>NET.Austria</base:localId>
      <base:namespace>AT.0008.20.AQ</base:namespace>
    </base:Identifier>
  </ef:inspireId>
  <ef:name>Austria</ef:name>
  <ef:mediaMonitored xlink:href="http://inspire.ec.europa.eu/codeList/MediaValue/air"/>
  <ef:responsibleParty>
    <base2:RelatedParty>
      <base2:individualName>
        <gmd:LocalisedCharacterString>ManfredRitter</gmd:LocalisedCharacterString>
      </base2:individualName>
      <base2:organisationName>
        <gmd:LocalisedCharacterString>Umweltbundesamt &#47; Federal Environment Agency
Austria</gmd:LocalisedCharacterString>
      </base2:organisationName>
      <base2:contact>
        <base2:Contact>
          <base2:address>
            <ad:AddressRepresentation>
              <ad:adminUnit>
                <gn:GeographicalName>
                  <gn:language>deu</gn:language>
                  <gn:nativeness nilReason="missing" xsi:nil="true"/>
                  <gn:nameStatus nilReason="missing" xsi:nil="true"/>
                  <gn:sourceOfName nilReason="missing" xsi:nil="true"/>
                  <gn:pronunciation nilReason="missing" xsi:nil="true"/>
                  <gn:spelling>
                    <gn:SpellingOfName>
                      <gn:text>Spittelauer L&#228;nnde 5 A-1090
Wien Austria</gn:text>

```



```

                                <gn:script>Latn</gn:script>
                                </gn:SpellingOfName>
                                </gn:spelling>
                                </gn:GeographicalName>
                                </ad:adminUnit>
                                <ad:locatorDesignator>WIEN</ad:locatorDesignator>
                                </ad:AddressRepresentation>
                                </base2:address>

                                <base2:electronicMailAddress>manfred.ritter@umweltbundesamt.at</base2:electronicMailAddress>
                                <base2:telephoneVoice>+43 1 31304 5861</base2:telephoneVoice>
                                <base2:website>http://www.umweltbundesamt.at</base2:website>
                                </base2:Contact>
                                </base2:contact>
                                <base2:role/>
                                </base2:RelatedParty>
                                </ef:responsibleParty>
                                <ef:organisationLevel xsi:nil="false" xlink:href="http://inspire.ec.europa.eu/codeList/LegislationLevelValue/national"/>
                                <aqd:networkType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/networktype/national"/>
                                <aqd:operationActivityPeriod>
                                    <gml:TimePeriod gml:id="NET.TP.AT001A">
                                        <gml:beginPosition>1973-01-01T00:00:00+01:00</gml:beginPosition>
                                        <gml:endPosition indeterminatePosition="unknown"/>
                                    </gml:TimePeriod>
                                </aqd:operationActivityPeriod>
                                <aqd:aggregationTimeZone xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/timezone/UTC+01"/>
                                </aqd:AQD_Network>

```

Focus**AQD_Network**

HTML based documentation for the element:

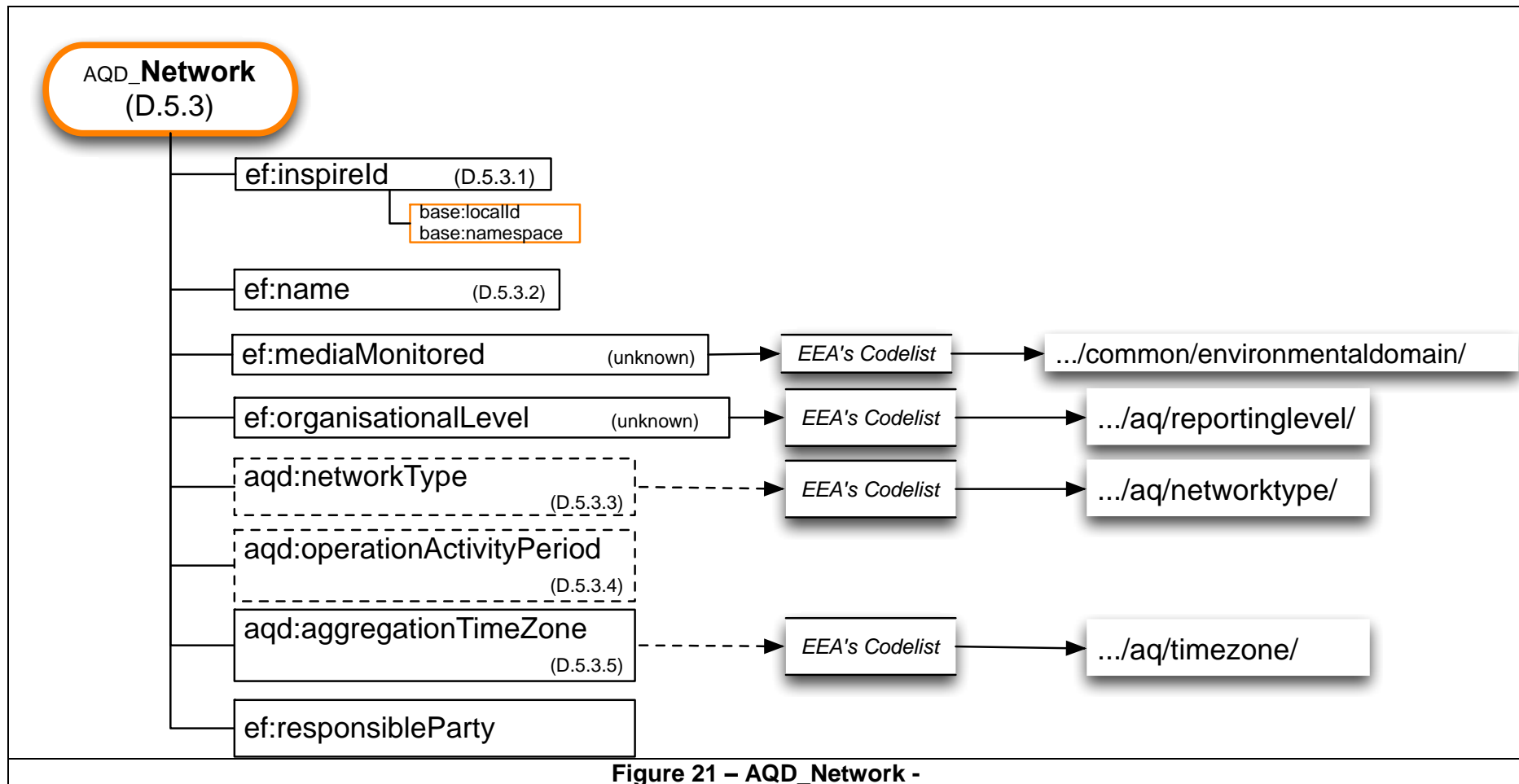
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Network.html

Latest UML is at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Network.png

AQD network is parent to the following child information elements which hold information on both the physical properties & attributes of network & abstract information for the management of data within XML. The following elements need “declaring” in the XML

- | | |
|---------------------------------|-------------------------------------|
| • ef:inspireId | Mandatory (D.5.3.1) |
| • ef:name | Mandatory for e-Reporting (D.5.3.2) |
| • aqd:networkType | Voluntary (D.5.3.3) |
| • aqd:operationalActivityPeriod | Mandatory (D.5.3.4) |
| • aqd:aggregationTimeZone | Mandatory (D.5.3.5) |
| • ef:responsibleParty | Mandatory (D.5.3.6) |
| • ef:mediaMonitored | Mandatory (D.5.3.7) |
| • ef:organisationalLevel | Mandatory (D.5.3.8) |



AQD network identifier <ef:inspireId>

The AQ network identifier provides for the unique identification of the AQ network and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. This information is published by the responsible data provider with the intention that they may be used by third parties to reference the spatial object within INSPIRE. An explanation of the identifier class can be found at “The INSPIRE identifier”.

ef:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML AQD_Network object)
IPR data specifications found at:	D.5.3.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_Network/ef:inspireId/base:Identifier /aqd:AQD_Network /ef:inspireId/base:Identifier/base:localId /aqd:AQD_Network /ef:inspireId/base:Identifier/base:namespace /aqd:AQD_Network /ef:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_Station**

```

<aqd:AQD_Network gml:id="NET.CCZZZZ">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>NET.CCZZZZ</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>

```

Station name (ef:name)

A plain text denotation of the name of the network.

ef:name	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.3.2
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Network/ef:name
Voidable:	No

Example**ef:name**

Generic example

```
<ef:name>[Network name]</ef:name>
```

UK example

```
<ef:name>UK Air Quality e-Reporting monitoring network for compliance & informative reporting</ef:name>
```

Network type <aqd:networkType>

Allows for the declaration of the network type from a controlled vocabulary.

aqd:networkType	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications found:	D.5.3.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/networktype/
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Network/aqd:networkType/@xlink:href
Voidable:	No

Example**aqd:networkType**

Generic example

```
<aqd:networkType xlink:href="[codelist]"/>
```

UK example

```
<aqd:networkType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/networktype/national"/>
```

Media monitored <ef:mediaMonitored>

An INSPIRE information requirement which provides a code list constrained description of the environmental media being monitored, measured, sampled or observed.

ef:mediaMonitored	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.3.7
Code list constraints:	http://inspire.ec.europa.eu/codeList/MediaValue/air
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Network/ef:mediaMonitored/@xlink:href
Voidable:	No

Example

ef:mediaMonitored

FIXED BY INSPIRE

UPDATE

```
<ef:mediaMonitored xlink:href="http://inspire.ec.europa.eu/codeList/MediaValue/air"/>
```

Organisational level <ef:organisationalLevel>

An INSPIRE information requirement which provides information on the level of the organisation the network is affiliated with.

ef:organisationalLevel	
Minimum occurrence:	1
Maximum occurrence:	1

IPR data specifications found:	D.5.3.8
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/view
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Network/ef:organisationalLevel/@xlink:href
Voidable:	No

Example**ef:organisationalLevel**

```
<ef:organisationLevel xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/national" />
```

Operational activity period <aqd:operationalActivityPeriod>

A description of the time envelope over which the network was active. Time stamps shall use the extended ISO 8601 extended format. A network start date shall always be provided. Where the station continues to be operation i.e. has not stopped monitoring . gml:endPosition may receive an *indeterminatePosition="unknown"* to indicate the stations as operational.

ef:operationalActivityPeriod	
Minimum occurrence:	1 (mandatory for e-Reporting, voluntary within INSPIRE)
Maximum occurrence:	1
IPR data spec. found:	D.5.3.4, D.5.3.4.1, D.5.3.4.2
XPath to schema location:	/aqd:AQD_Network/aqd:operationalActivityPeriod /aqd:AQD_Network /aqd:operationalActivityPeriod/gml:TimePeriod/ /aqd:AQD_Network /aqd:operationalActivityPeriod/gml:TimePeriod/gml:beginPosition /aqd:AQD_Network /aqd:operationalActivityPeriod/gml:TimePeriod/gml:endPosition
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
Voidable:	No

Example**aqd:operationalActivityPeriod**

Generic example

```
<ef:operationalActivityPeriod>
```

```

    <gml:TimePeriod gml:id="[NetworkTimePeriod_ID]">
      <gml:beginPosition> [YYYY-MM-DDThh:mm:ss+01:00]</gml:beginPosition>[D.5.3.4.1]
      <gml:endPosition> [YYYY-MM-DDThh:mm:ss+01:00]</gml:endPosition>[D.5.3.4.2]
    </gml:TimePeriod>
  </ef:operationalActivityPeriod>

```

UK example

```

    <aqd:operationActivityPeriod>
      <gml:TimePeriod gml:id="TimePeriod_1">
        <gml:beginPosition>1973-01-01T00:00:00+01:00</gml:beginPosition>
        <gml:endPosition indeterminatePosition="unknown" />
      </gml:TimePeriod>
    </aqd:operationActivityPeriod>

```

Aggregation Time Zone <aqd:aggregationTimeZone>

Allows for reporting of the time zone at which the observations obtained within the network must be used when aggregating data. Use this code list ([../aq/timezone](#)) reference to declare the time zone used for aggregated data and statistics derived from observations made by sampling points and stations belonging to this network..

aqd:aggregationTimeZone	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.3.5
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/timezone/view
XPath to schema location:	/aqd:AQD_Network/aqd:aggregationTimeZone
Voidable:	No

Example

aqd:aggregationTimeZone

```

<aqd:aggregationTimeZone xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/timezone/CET"/>

```


ef:ResponsibleParty

Information on the body responsible for network management, An explanation of the base2:RelatedParty class can be found in the section “Contact Details <base2:RelatedParty>”.

ef:ResponsibleParty	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.5.3.6
XPath to schema location:	/aqd:AQD_Network/ef:ResponsibleParty
Voidable:	No

Models and objective estimation (Metadata for air quality assessment)

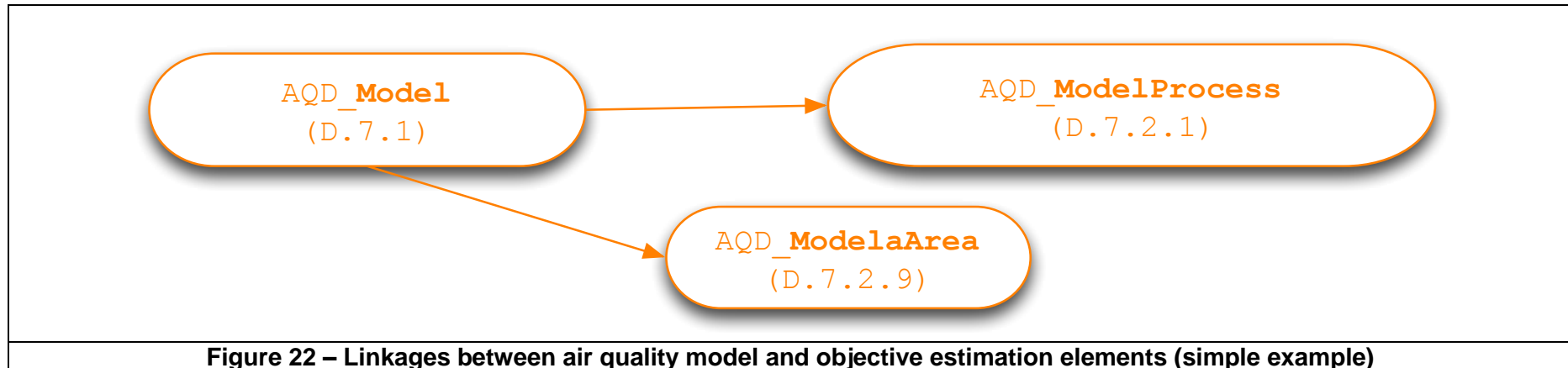
Assessment method metadata for models and objective estimation are composed of information elements grouped in a similar way to that for fixed and indicative measurements. The top-level groups of information (classes) are listed below. Each class is composed of several child-elements which describe, in detail, the attributes of each class. Some elements are linked to others and these relationships are important for reporting metadata correctly.

The main information classes used to describe models and objective estimation are presented below. The classes borrow heavily from the data model for fixed and indicative measurements but have been adjusted to better fit the particular needs of models and objective estimation.

- AQD_Model (link to [D.7.1](#) mapping excel, [html](#) based doc and UML [png](#)).
- AQD_ModelArea (link to [D.7.2.9](#) mapping excel, [html](#) based doc and UML [png](#)).
- AQD_ModelProcess (link to [D.7.2.1](#) mapping excel, [html](#) based doc and UML [png](#)).

The data model for describing objective estimation utilises a subset of the data model for air quality models. A detail specification of the data requirements is provided by a series of links (URLs) to supporting document.

Implementing the data model for air quality models and objective estimation techniques in this way is the simplest way of describing and structuring the metadata needed to describe your model / objective estimation results. Figure 22 shows the relationships between components of the model and objective estimation data model based on this implementation (one metadata record per pollutant / environmental objective combination). In this example, AQD_Model is linked to AQD_ModelProcess and AQD_ModelArea instance.



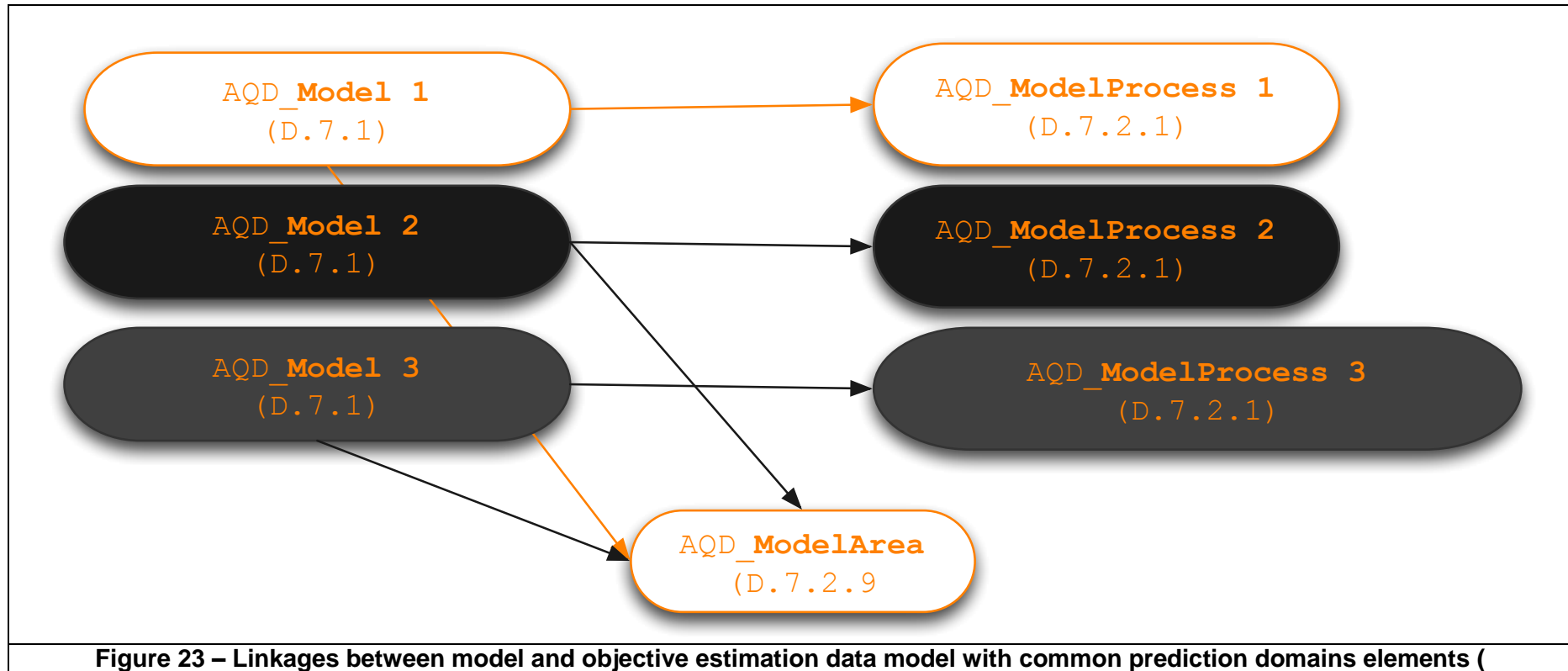
It is recommended that, where a Member State has multiple modelling and / or objective estimation techniques with the same model domain (i.e. the same modelling extent, receptor locations, road network etc.), cross referencing via xlink:href to a single instance of AQD_ModelArea is the most efficient way of reporting data. This will reduce the overall file size of a delivery by reusing common features where possible. This is frequently the case where a model for a region or Member State is predicting air quality concentrations for the same model area (domain) for multiple pollutants and environmental objectives. In this situation, metadata instance should be implemented as follows;

Metadata record 1 [AQD_Model-1, AQD_ModelArea-1 and AQD_ModelProcess-1] refers to the annual mean based NO₂ LV

Metadata record 2 [AQD_Model-2, AQD_ModelArea-1 and AQD_ModelProcess-2] refers to the hourly mean based NO₂ LV

Metadata record 3 [AQD_Model-3, AQD_ModelArea-1 and AQD_ModelProcess-3] refers to the annual mean based PM₁₀ LV

Figure 23 shows the relationships in such an example, where multiple AQD_Model and AQD_ModelProcess instance are linked to a single AQD_ModelArea instance.



The following sections address the metadata information requirements for models and objective estimation techniques separately. The level of information required by each assessment type varies slightly; models requiring more extensive information than objective estimation.

Air quality model configuration - <aqd:AQD_Model>

Information on the configuration of each air quality modelling technique on a pollutant by pollutant basis shall be provided.

According to [Article 2 \(5\)](#) of Decision 2011/850/EU, a ‘modelling data’ means information on the concentration or deposition rate of a specific pollutant obtained through numerical simulation of physical reality.

aqd:AQD_Model	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications found at:	D.7.1
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_Model
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Model.html

Example

aqd:AQD_Model

```
<aqd:AQD_Model gml:id="MOD_CC0001A_001">
```

```
<aqd:AQD_Model gml:id="GB_Model_34">
```

Focus

AQD_SamplingPoint

HTML based documentation for the element AQD_Model:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Model.html

Latest UML for AQD_SamplingPoint at:

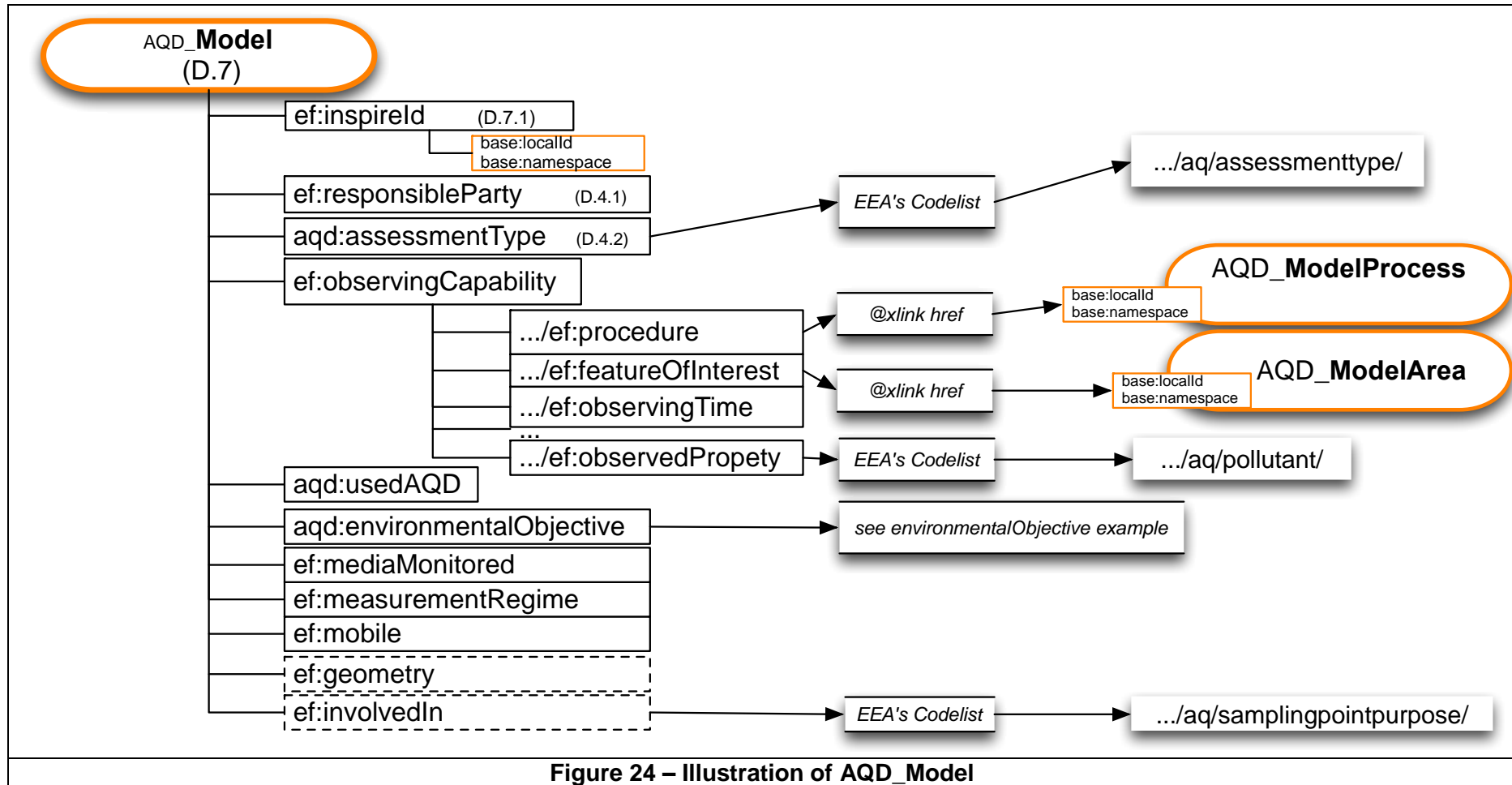
http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Model.bmp

AQD Model is parent to the child information elements below, which contain information on both the conceptual properties and attributes of the air quality model and abstract information for the management of data within XML. The following elements are

required by the e-Reporting schema as of summer 2016. A number of in frequently used elements have been flagged for deprecation in 2017, i.e. from September 2017 we strongly discourage their continued use. These elements are flagged.

aqd:AQD_Model includes:

• ef:inspireId		Mandatory (D.7.1)
• ef:name		Voluntary
• ef:ResponsibleParty		Conditional, mandatory (D.4.1)
• aqd:assessmentType		Mandatory (D.4.2)
• aqd:zone		Mandatory if used for AQD (D.4.3)
• ef:observingCapability	Essential	Mandatory (D7.2)
• ef:observedProperty	Essential	Mandatory (D4.4)
• ef:procedure	Essential	Mandatory (D.7.2.1) – see aqd:AQD_ModelProcess
• ef:featureOfInterest	Essential	Mandatory (D.7.2.9) – see aqd:AQD_ModelArea
• ef:observingTime	Essential	Mandatory (D.7.3)
• ef:processType		Mandatory (D7.9)
• ef:resultNature		Mandatory (D7.10)
• aqd:usedAQD		Mandatory
• aqd:environmentalObjective		Mandatory (D.7.2.8) – deprecation candidate in 2017
• aqd:reportingDB		Voluntary (D.7.6.1) – deprecation candidate in 2017
• aqd:reportingDBOther		Voluntary (D.7.6.2) – deprecation candidate in 2017
• ef:organisationalLevel		Mandatory (D7.7)
• ef:mediaMonitored		Mandatory (D.7.8)
• aqd:assessmentMethodWSS		Mandatory if Art.21 applies (D.5.5.1) – deprecation candidate in 2017
• aqd:assessmentMethodNS		Mandatory if Art.20 applies (D.5.5.2) – deprecation candidate in 2017



AQD Model identifier - <ef:inspireId>

The AQ Model identifier provides for the unique identification of the AQ Model and its attributes within the XML delivery and namespace. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at “The INSPIRE identifier”.

ef:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	D.7.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_Model/ef:inspireId/base:Identifier /aqd:AQD_Model/ef:inspireId/base:Identifier/base:localId /aqd:AQD_Model /ef:inspireId/base:Identifier/base:namespace /aqd:AQD_Model/ef:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_Model**

Generic

```
<aqd:AQD_Model gml:id="MOD_CC0001A_ZZZZ_100">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>MOD_CC0001A_ZZZZ_100</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>
```

UK example

```
<aqd:AQD_Model gml:id="GB_Model_34">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>GB_Model_34</base:localId>
```



```

<base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
<base:versionId>2014-05-29</base:versionId>
</base:Identifier>
</ef:inspireId>

```

Model name <ef:name>

The ef:name element is a voluntary requirement which allows for a user defined name for the model to be declared by the reporter. The element provides scope for including a contextual local description / name for the model e.g. the software product name, version or local name.

ef:name	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications found:	None (voluntary within AQD_Model)
XPath to schema location:	/aqd:AQD_Model/ef:name
Voidable:	No

Example

ef:name

```

<ef:name>Pollution Climate Mapping (PCM) model for background NO2 concentrations</ef:name>

```

Responsible party <ef:responsibleParty>

The ef:responsibleParty information class within AQD_Model is a voluntary requirement which provides scope for describing the contact point and organisation / body that is responsible for the overall model e.g. the developer, vendor or user. The class derives its attributes from the INSPIRE base2:RelatedParty information class, an explanation of this information class can be found in the AQ reporting section [ReportingHeader](#).

ef:ResponsibleParty	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications found:	D4.1
XPath to schema location:	/aqd:AQD_Model/ef:ResponsibleParty
Voidable:	No

Air quality assessment type <aqd:assessmentType>

The air quality assessment type mandatory element allows for the classification (grouping) of assessment methods into common types e.g. fixed measurement, modelling, indicative measurement, objective estimation. The types are controlled by a code list. Model assessment types should be assigned the “model” code list value as shown in the example below.

aqd:assessmentType	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.4.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_Model/aqd:assessmentType/@xlink:href
Voidable:	No

Example

aqd:assessmentType

```
<aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model"/>
```

Air quality zone <aqd:zone>

Air quality zone element links the model with the coinciding AQ zone(s) already defined in data flow B. The linkage is maintained via an xlink:href attribute. If the model covers more than one zone, either each component zone may be listed as a separate

aqd:zone element, or if the model covers many zones e.g. all zones in the Member State, the aqd:zone element may be voided. See example for details.

aqd:zone	
Minimum occurrence:	0 (mandatory if Sampling Point is used for AQD assessment)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.4.3
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 12 characters
XPath to schema location:	/aqd:AQD_Model/aqd:zone/@xlink:href
Voidable:	Yes

Example**aqd:zone**

XML example for models covering 1 or more zones

```
< aqd:zone xlink:href="[xlink to zone 1]"/>
< aqd:zone xlink:href="[xlink to zone 2]"/>
< aqd:zone xlink:href="[xlink to zone 3]"/>
```

UK example where the UK models cover all UK zones

```
<aqd:zone xsi:nil="true" nilReason="inapplicable"/>
```

Model observing capability <ef:observingCapability>

This information class is a mandatory INSPIRE requirement which defines the observed property (air quality pollutant), provides a reference to the definition of the procedure used (model configuration technique), to details on the model domain (physical extent of the model) and period of time that the model results relate to.

From within the child elements of ef:observingCapability, xlink:href attributes are used extensively to describe the observing capability of the model using code lists and via references to other data flow D metadata records stored elsewhere in the XML document e.g. AQD_ModelArea and AQD_ModelProcess instances. The child elements include:

- ef:observedProperty Essential Mandatory (D4.4)

- | | | |
|------------------------|-----------|--|
| • ef:procedure | Essential | Mandatory (D.7.2.1) – see aqd:AQD_ModelProcess |
| • ef:featureOfInterest | Essential | Mandatory (D.7.2.9) – see aqd:AQD_ModelArea |
| • ef:observingTime | Essential | Mandatory (D.7.3.2) |
| • ef:processType | | INSPIRE Mandatory |
| • ef:resultNature | | INSPIRE Mandatory |

ef:observingCapability	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.1 D.7.2.9, D.7.3.2, D4.4 & several INSPIRE requirements unreferenced elements within IPR
Code list constraints:	
Formats Allowed:	Alphanumeric
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:procedure /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest/@xlink:href /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:processType /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:resultNature /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observedProperty/@xlink:href
Voidable:	No
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ObservingCapability.html	

Example**ef:observingCapability**

Generic example

```

<ef:observingCapability>
  <ef:ObservingCapability gml:id="Capability_1">
    <ef:procedure xlink:href=" [xlink to AQD_ModelProcess]" /> [D.7.2.1]
    <ef:featureOfInterest xlink:href=" [xlink to AQD_ModelArea]" /> [D.7.2.9]
    <ef:observingTime>
      <gml:TimePeriod gml:id="TimePeriod_3"> [D.7.3.2]
        <gml:beginPosition>[StartTime of Observation]</gml:beginPosition>
        <gml:endPosition>[EndTime of Observation]</gml:endPosition>
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="[fixed URL for AQ][http://inspire.ec.europa.eu/code list/ProcessTypeValue/process]" />
  </ef:ObservingCapability>
</ef:observingCapability>

```

```

        <ef:resultNature xlink:href="[fixed URL for AQ][http://inspire.ec.europa.eu/code list/ResultNatureValue/primary]"/>
        <ef:observedProperty xlink:href="[D.4.4]http://dd.eionet.europa.eu/vocabulary/aq/pollutant/[code]"/>
    </ef:ObservingCapability>
</ef:observingCapability>

UK example
    <ef:observingCapability>
        <ef:ObservingCapability gml:id="GB_ModelObservingCapability_34">
            <ef:observingTime>
                <gml:TimePeriod gml:id="GB_TimePeriod_34">
                    <gml:beginPosition>2013-01-01T00:00:00Z</gml:beginPosition>
                    <gml:endPosition>2013-12-31T00:00:00Z</gml:endPosition>
                </gml:TimePeriod>
            </ef:observingTime>
            <ef:processType xlink:href="http://inspire.ec.europa.eu/code list/ProcessTypeValue/process"/>
            <ef:resultNature xlink:href="http://inspire.ec.europa.eu/code list/ResultNatureValue/simulated"/>
            <ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_ModelProcess_34"/>
            <ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_ModelArea_1"/>
            <ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/9"/>
        </ef:ObservingCapability>
    </ef:observingCapability>

```

It is recommended that for each instance of AQD_Model many ef:observingCapability should be maintained i.e. if the detailed information on the configuration of the model with the AQD_ModelProcess element is changed or modified significantly then a new ef:observingCapability instance shall be generated. An example of this practice would be a change in emissions data, meteorology or calibration stations would trigger the generation of a new ef:observingCapability instance within same AQD_Model.

Model procedure or configuration <ef:procedure>

The ef:procedure element provides an xlink:href attribute which references the detailed description of the model configuration within AQD_ModelProcess D.7.2.1.

ef:procedure	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.1
Code list constraints:	
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:procedure/@xlink:href
Voidable:	No

Example

ef:procedure

Generic example

```
<ef:procedure xlink:href=" [xlink to AQD_ModelProcess]"/> [D.7.2.1]
```

UK example

```
<ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_ModelProcess_34"/>
```

Modelled feature of interest <ef:featureOfInterest>

The ef:featureOfInterest element provides an xlink:href attribute which references the detailed description of the modelled feature(s) e.g. the model domain, model extent, receptor point locations, model grid or road network for which model predictions are being made. The xlink:href references are made to an AQD_ModelArea instance, see D.7.2.9.

ef:featureOfInterest	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1

IPR data specifications found:	D.5.1.7
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest/@xlink:href
Voidable:	No

Example**ef:featureOfInterest**

Generic example

```
<ef:featureOfInterest xlink:href=[xlink to AQD_ModelArea]"/> [D.7.2.9]
```

UK example

```
<ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_ModelArea_1"/>
```

Observing / prediction time <ef:observingTime>

The ef:observingTime element describes the time period over which model predictions have been made using the configuration (process) cited by ef:procedure.

ef:observingTime	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.3.2
Code list constraints:	
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime/gml:beginPosition /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime/ gml:endPosition
Voidable:	No

Process type <ef:processType>

The ef:processType element is an INSPIRE information requirement which describes the type of object used to describe the model configuration. For AQ e-Reporting purposes, this element will always reference an INSPIRE code list value -

<http://inspire.ec.europa.eu/code list/ProcessTypeValue/process>

From the INSPIRE data specifications ([INSPIRE DataSpecification EF v3.0](#)), the “process” code list value indicates that the class used for the description of methodological information of the observations is of the Process class defined in the INSPIRE GCM.

ef:processType	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	unreferenced elements within IPR
Code list constraints:	http://inspire.ec.europa.eu/code list/ProcessTypeValue/process
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:processType
Voidable:	No

Example

ef:processType

FIXED BY INSPIRE

```
<ef:processType xlink:href="http://inspire.ec.europa.eu/code list/ProcessTypeValue/process"/>
```

Nature of the result <ef:resultNature>

The ef:resultNature element is an INSPIRE information requirement which describes the status of the observations being described by the ef:observingCapability instance. For AQ e-Reporting purposes, model and objective estimation observations, the value domain of this element will be constrained to an INSPIRE code list <http://inspire.ec.europa.eu/code list/ResultNatureValue/simulated>.

From the INSPIRE data specifications ([INSPIRE DataSpecification EF v3.0](#)), the “simulated” code list value indicates that “The result provided, while usually based on primary measurements, is based on an interpretation model, and provides a simulation of past or future states of the media being analysed. In this case, the existing values are usually extrapolated into the past or future.”

ef:resultNature	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	unreferenced elements within IPR
Code list constraints:	http://inspire.ec.europa.eu/code list/ResultNatureValue/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:resultNature
Voidable:	No

Example**ef:resultNature****FIXED BY INSPIRE**

```
<ef:resultNature xlink:href="http://inspire.ec.europa.eu/code list/ResultNatureValue/simulated"/>
```

Observed property <ef:observedProperty>

The ef:observedProperty element is an IPR and INSPIRE information requirement which describes the property (pollutant) being predicted by the AQD_Model. The value of this element is constrained to via an xlink:href attribute referencing EEA's pollutant code list at <http://dd.eionet.europa.eu/vocabulary/aq/pollutant/>

ef:observedProperty	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D4.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observedProperty/@xlink:href
Voidable:	No
	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ObservingCapability.html

Example**ef:observedProperty**

```
<ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8" />
```

Predicted environmental objectives <aqd:environmentalObjective>

See section on data types for a detailed description of [aqd:environmentalObjective](#). Within the context of an AQD_Model instance this information class is used to declare the environmental objectives that the model is capable of predicting. It was identified as a candidate for deprecation as the relationship between a model and environmental objective may be one to many. From September 2017, countries are encouraged to not use the aqd:environmentalObjective within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules. Alternatively the aqd:environmentalObjective shall be declared from the model observation data delivery, data flow E1b.

UPDATE

aqd:environmentalObjective	
Minimum occurrence:	0 (Mandatory if Sampling Point used for AQD Assessment)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.7.2.8
Code list constraints:	Yes. 3 code list listed in environmentalObjective section
Formats Allowed:	Alphanumeric, max. length 7 characters
XPath to schema location:	/aqd:AQD_Model/aqd:environmentalObjective /aqd:AQD_Model/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:objectiveType/@xlink:href /aqd:AQD_Model/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:reportingMetric/@xlink:href /aqd:AQD_Model/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:protectionTarget/@xlink:href

Example

aqd:environmentalObjective

```
<aqd:environmentalObjective>
  <aqd:EnvironmentalObjective>
    <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>
    <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean"/>
    <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
  </aqd:EnvironmentalObjective>
</aqd:environmentalObjective>
```

Data reported to <aqd:reportingDB> & <aqd:reportingDBOther>

These elements are voluntary IPR requirements to provide further context on the geographical level at which the model predictions are collated, reported or shared. This xlinks to EEA's code list at <http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/>. It is a candidate for deprecation as it is infrequently reported by any Member States. From September 2017, countries will be encouraged to not to report this information within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules.

UPDATE

aqd:reportingDB	
Minimum occurrence:	0 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.6
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/aqd:reportingDB/@xlink:href /aqd:AQD_Model/aqd:reportingDBOther
Voidable:	No

Example**ef:reportingDB**

XML example `<aqd:reportingDB xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/[code]"/>`

or

```
<aqd:reportingDB xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/other"/>
  <aqd:reportingDBOther>[other]</aqd:reportingDBOther>
```

Organisational level <ef:organisationalLevel>

This element is a mandatory IPR and INSPIRE information requirement which provides information on the level of the organisation the assessment method is affiliated to.

ef:organisationalLevel	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.7.7
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/view
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Network/ef:organisationalLevel/@xlink:href
Voidable:	No

Example**ef:organisationalLevel**

```
<ef:organisationLevel xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/national" />
```

Media monitored / predicted <ef:mediaMonitored>

The ef:mediaMonitored element is an IPR and INSPIRE information requirement which provides a code list constrained description of the environmental media being predicted.

ef:mediaMonitored	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.7.8
Code list constraints:	http://inspire.ec.europa.eu/code list/MediaValue/air
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Model/ef:mediaMonitored/@xlink:href
Voidable:	No

Example

ef:mediaMonitored

FIXED BY INSPIRE**UPDATE**

```
<ef:mediaMonitored xlink:href="http://inspire.ec.europa.eu/code list/MediaValue/air"/>
```

Flagging a technique for AEI, NS / WSS assessment <ef:involvedIn>

The ef:involvedIn element is a voluntary INSPIRE information requirement which provides a code list constrained description of the type of measurement regime in operation. Within AQ e-Reporting it is used to indicate where a model is involved in predicting winter-sanding, salting and nature sources contributions.

ef:involvedIn

Minimum occurrence:	Voluntary, mandatory if sampling point is used for AEI
Maximum occurrence:	Unbounded
IPR data specifications found:	INSPIRE data element not specified in IPR data
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmentpurpose
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	/aqd:AQD_Model/ef:involvedIn/@xlink:href
Voidable:	Yes

Example**ef:involveIn** – for AEI, WSS or NS

```
<ef:involveIn xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/samplingpointpurpose/AEI"/>
```

aqd:assessmentMethodWSS

Reported via ef:involveIn. This element is a candidate for deprecation as it is infrequently reported by any Member States and often used incorrectly. From September 2017, countries will be encouraged to not to report this information within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules.

UPDATE

aqd:assessmentMethodNS

Reported via ef:involveIn. This element is a candidate for deprecation as it is infrequently reported by any Member States and often used incorrectly. From September 2017, countries will be encouraged to not to report this information within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules.

A black-outlined button with a white background and a right-pointing arrow shape. The word "UPDATE" is written in bold, black, uppercase letters inside the button.

Model configuration - <AQD_ModelProcess>

This information class stores metadata or provides references to the detailed configuration of the model or objective estimation procedure. The aqd:AQD_ModelProcess is referenced directly by AQD_Model using an xlink:href attribute within ef:procedure (D.7.2.) and from the predicted model observational data in data flow E1b.

AQD_ModelProcess	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	D.7.2
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_ModelProcess
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelProcess.html

Example

aqd:AQD_ModelProcess

Generic XML example

```
<aqd:AQD_ModelProcess gml:id="MP_ZZZZ">
  <ef:inspireId>
    <base:Identifier>
      <base:localId> MP_ZZZZ_</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>
```

UK example

```
<aqd:AQD_ModelProcess gml:id="GB_ModelProcess_1">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>GB_ModelProcess_1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </ef:inspireId>
```

Focus**AQD_ModelProcess**

HTML based documentation for the element AQD_ModelProcess:

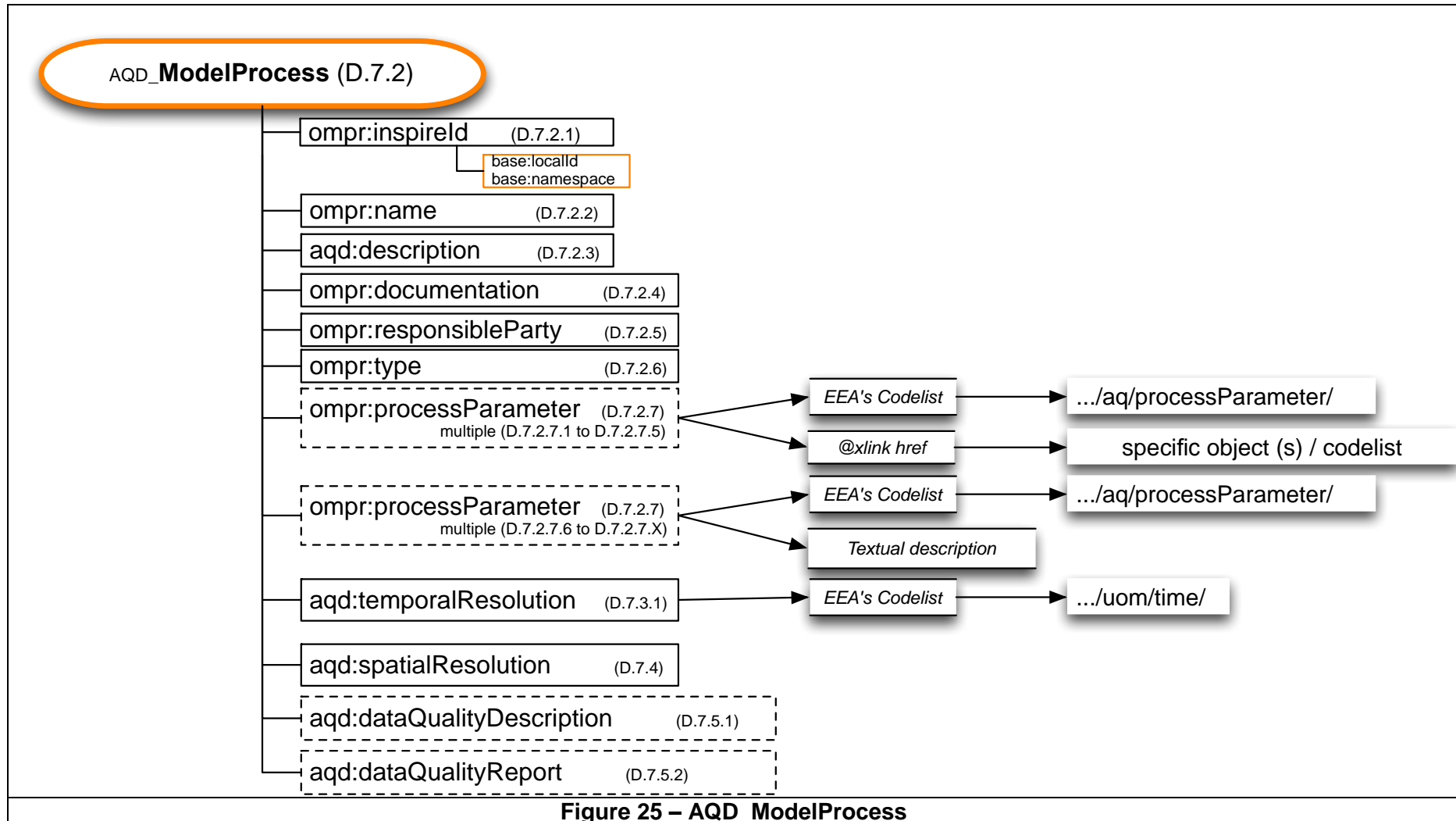
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelProcess.html

Latest UML for AQD_ModelProcess at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_ModelProcess.bmp

AQD_ModelProcess is parent to the following child information elements, which hold information on attributes of the measurement/sampling technique. The following elements shall be declared within AQD_ModelProcess ;

- | | |
|------------------------------|-----------------------|
| • ompr:inspireId | Mandatory (D.7.2.1) |
| • ompr:name | Mandatory (D.7.2.2) |
| • aqd:description | Mandatory (D.7.2.3) |
| • ompr:documentation | Mandatory (D.7.2.4) |
| • ompr:responsibleParty | Mandatory (D.7.2.5) |
| • ompr:type | Mandatory (D.7.2.6) |
| • ompr:processParameter | Conditional (D.7.2.7) |
| • aqd:temporalResolution | Voluntary (D.7.3.1) |
| • aqd:spatialResolution | Mandatory (D.7.4) |
| • aqd:dataQualityDescription | Voluntary (D.7.5.1) |
| • aqd:dataQualityReport | Conditional (D.7.5.2) |



Model configuration identifier <ompr:inspireId>

The model configuration identifier provides a unique identification of each AQD_ModelProcess instance and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique both within each XML document it is declared and, within the scope of its associated namespace. An explanation of this identifier class can be found in the “The INSPIRE identifier” section of this document.

ompr:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document and associate namespace)
IPR data specifications found at:	D.7.2.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier /aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier/base:localId /aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier/base:namespace /aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_ModelProcess**

Generic XML example

```

    <aqd:AQD_ModelProcess gml:id=" MOP_ZZZZ_1 ">
      <ompr:inspireId xsi:nil="false">
        <base:Identifier>
          <base:localId>CC0001A</base:localId>
          <base:namespace>CC.CCCC.AQD</base:namespace>
          <base:versionId>YY</base:versionId>
        </base:Identifier>
      </ompr:inspireId>
    </aqd:AQD_ModelProcess>

```

Model configuration name <ompr:name>

The ompr:name element provides scope for a plain text encoding of a local name for model configuration and allows it to be easily differentiated from other sets of model configuration parameters.

ef:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.2
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:name
Voidable:	No

Example**ompr:name**

UK example

```
<ompr:name xsi:nil="false">UK_NOx_background process</ompr:name>
```

Model configuration description <aqd:description>

The ompr:description element provides scope for a plain text encoding of a brief description of the model configuration parameters. This element provides a high-level summary or abstract for the model configuration which may be found in ompr:documentation.

ef:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.3
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:description
Voidable:	No

Example**aqd:description**

UK example

<aqd:description>GIS-based dispersion kernel approach for 1x1km background concentrations from area source emissions, calibrated with monitoring. The contribution from point sources is estimated using a separate dispersion model and then included in the total. A bi-linear interpolation of corrected rural measurement data has been used to map regional background NOx concentrations throughout the UK.**</aqd:description>**

Model configuration documentation **<ompr:documentation>**

The ompr:documentation complex element provides scope for encoding a citation to a technical report , specification or user manual / technical specification containing information on the model configuration parameters. The document referenced by this element maybe summarised in aqd:description (above). As a minimum, this complex element shall include a valid gml:id for the document citation, a name (title) for the cited document, the documents publication date and a valid URL to an online resource providing access to the report.

ef:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.4
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:documentation
Voidable:	No

Example**ompr:documentation**

UK example

```

<ompr:documentation>
  <base2:DocumentCitation gml:id="Document_34">
    <base2:name>Technical report on UK supplementary assessment under the Air Quality Directive
(2008/50/EC), the Air Quality Framework Directive (96/62/EC) and Fourth Daughter Directive (2004/107/EC) for 2013</base2:name>
    <base2:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco:Date>2014-12-31</gco:Date>
        </gmd:date>
        <gmd:dateType/>
      </gmd:CI_Date>
    </base2:date>
    <base2:link>http://uk-air.defra.gov.uk/library/reports?report_id=797</base2:link>
  </base2:DocumentCitation>
</ompr:documentation>

```

Responsible party for the model configuration <ompr:ResponsibleParty>

This complex element provides scope for encoding information on the organisation responsible for the configuration of the model. The contact point and organisation may be the same as that declared with /AQD_Model/ef:responsibleParty (if this is provided) or different e.g. may be the lead model developer or product vendor for the model or the individual and organisation that configured the model for the assessment application.

ompr:responsibleParty	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.7.2.5
Formats Allowed:	
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:responsibleParty
Voidable:	No

Example**ompr:responsibleParty**

UK example

```

<ompr:responsibleParty>
  <base2:RelatedParty>
    <base2:individualName>
      <gco:CharacterString>Emily Connolly</gco:CharacterString>
    </base2:individualName>
    <base2:organisationName>
      <gco:CharacterString>The Department for Environment, Food and Rural Affairs, The Scottish
Government, The Welsh Government and The Department of Environment - Northern Ireland</gco:CharacterString>
    </base2:organisationName>
    <base2:contact>
      <base2:Contact>
        <base2:address>
          <ad:AddressRepresentation>
            <ad:adminUnit>
              <gn:GeographicalName>
                <gn:language>eng</gn:language>
                <gn:nativeness xsi:nil="true" nilReason="missing"/>
                <gn:nameStatus xsi:nil="true" nilReason="missing"/>
                <gn:sourceOfName xsi:nil="true" nilReason="missing"/>
                <gn:pronunciation xsi:nil="true" nilReason="missing"/>
                <gn:spelling>
                  <gn:SpellingOfName>
                    <gn:text>Atmosphere and Local Environment
(ALE) Programme, Area 2C Nobel House, 17 Smith Square, London SW1P 3JR</gn:text>
                    <gn:script xsi:nil="true" nilReason="missing"/>
                    </gn:SpellingOfName>
                  </gn:spelling>
                </gn:GeographicalName>
              </ad:adminUnit>
              <ad:locatorDesignator>London</ad:locatorDesignator>
              <ad:postCode xsi:nil="false">SW1P 3JR</ad:postCode>
            </ad:AddressRepresentation>
          </base2:address>
          <base2:electronicMailAddress>emily.connolly@defra.gsi.gov.uk</base2:electronicMailAddress>
          <base2:telephoneVoice>+44 (0) 207 238 6476</base2:telephoneVoice>
        </base2:Contact>
      </base2:contact>
    </base2:organisationName>
  </base2:RelatedParty>
</ompr:responsibleParty>

```

```

<base2:website>https://www.gov.uk/defra</base2:website>
</base2:Contact>
</base2:contact>
</base2:RelatedParty>
</ompr:responsibleParty>

```

Process type <ompr:Type>

The ompr:type element is a mandatory INSPIRE requirement which provides a the textual description of model process configuration. For AQ e-Reporting the value for this element shall be “Ambient air quality model configuration”.

ompr:Type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.6
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:type/@xsi:nil
Voidable:	No

Example

ompr:type

```
<ompr:type xsi:nil="false">Ambient air quality model configuration</ompr:type>
```

Model configuration parameters <ompr:processParameter>

The ompr:processParameter element is a complex element which allows for the definition of a range of parameters to satisfy both INSPIRE requirements and provide expert advice on the configuration of the model.

For the modelling community typical examples of `ompr:processParameter` usage will include description of the emission inventory used, meteorology assumptions, chemical schemes applied etc. It is expected that the level of information available on these types of model “parameters” will vary from model to model. As a result, for AQ e-Reporting, their inclusion in a `AQD_ModelProcess` instance is conditional on their availability. Member States are expected to provide this information where it is available. For the types of model used for compliance assessments, at a minimum information on the emissions inventory, meteorology and surface roughness will be readily available and should be included.

The correct usage of `ompr:processParameter` elements have been under review within e-Reporting from an INSPIRE perspective. Instructions prior to this version of this document have been updated. By way of explanation, syntactically within the INSPIRE, the `ompr:processParameter` is intended to be used to describe the name of a model attribute within `AQD_ModelProcess` e.g. emissions attributes etc. as above. However, full details of the attribute are not provided within `AQD_ModelProcess`, these are included in the E1b data flow alongside the observation data, i.e. `ompr:processParameter` acts as a place holder for important information which will be provided with the observational data. In a similar way the assessment type and sampling points associated with a group of observations are described in observation `AQD_SamplingPointProcess`.



From 2017, previous guidance will be deprecated to align e-Reporting with the INSPIRE data model(s).

ompr:processParameter	
Minimum occurrence:	1 (INSPIRE requirements mandatory, modelling parameters conditional on availability)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.7.2.7
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter
Voidable:	No

The following generic process parameters may be encoded in separate `ompr:processParameter` elements based on the information availability of your modelling method(s).

Process Parameter:	AssessmentType
---------------------------	-----------------------

This complex element provides scope to describe the assessment type associated with the observational data alongside the observational data itself in data flow E1b. It consists of two elements;

- `ompr:name` specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled by a code list, in this case
<http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType>

`ompr:description` provides a description of the process parameter in plain text

ompr:processParameter - Assessment type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.7.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/ http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Assessment type**

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType" />
    <ompr:description>The assessment method type associated with the observations provided in the E1b data
  flow</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Process Parameter: Model Identifier

This complex element provides scope to identify the model used to predict the observational data supplied in the E1b data flow i.e. a citation of the relevant aqd:AQD_Model localId and associated namespace. It consists of two elements;

- ompr:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/processparameter/modelidentifier>,
- ompr:description provides a description of the process parameter in plain text. The namespace and localId of the model used to predict the observations in E1b

ompr:processParameter - Model identifier	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.7.6
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Model identifier**

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/modelidentifier"/>
    <ompr:description>The localId of the model used to generate the predicted observations in data flow
E1b</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Process Parameter: Emissions inventory applied

This voluntary complex element provides scope to describe the emissions inventory used to configure the model. It consists of two elements;

- ompr:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/emissions>, indicating that version of an emissions inventory will be described
- ompr:description provides a description of the process parameter in plain text i.e. the title, year and version of the emissions inventory used

ompr:processParameter - Emissions inventory applied	
Minimum occurrence:	0 (Voluntary)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Emissions**

```

<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/emissions"/>
    <ompr:description>The emissions inventory used to configure the model including as appropriate the year, version and
summary of post processing required</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>

```

Process Parameter: Meteorology applied

This voluntary complex element provides scope to describe the meteorological data used to configure the model. It consists of two elements;

- `ompr:name` specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/meteorology> , indicating that meteorological data will be declared as part of the E1b observational dataset
- `ompr:description` provides a description of the process parameter in plain text including as appropriate the name of the product, year, version and citation to the meteorological dataset used

ompr:processParameter - Meteorology applied	
Minimum occurrence:	0 (Voluntary)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aq:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aq:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Meteorology applied**

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/modelparameter/meteorology"/>
    <ompr:description>A description of the meteorological dataset used to configure the model including name, year, version
and citation (as appropriate)</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Process Parameter: Chemical schemes applied

This voluntary complex element that provides scope to describe the chemical scheme(s) used to configure the model. It consists of two elements;

- `ompr:name` specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/chemistry>, indicating that a chemical scheme will be describe in data flow E1b alongside the observational data
- `ompr:description` provides a description of the process parameter in simple plain text i

ompr:processParameter - Chemical scheme applied	
Minimum occurrence:	0 (Voluntary)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Chemical scheme applied**

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/chemistry"/>
    <ompr:description>A high level description or citation of the chemical scheme applied to within the
model</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Process Parameter: Result location

This is important complex element that provides scope to describe the location of the results. It is mandatory for e-Reporting, as it provides the EEA with important information on how they should harvest the results. It consists of two elements;

- `ompr:name` specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultlocation>, which indicates that the location of the predicted results will be describe in data flow E1b. The observational data itself may within the E1b delivery itself i.e. an inline encoding or as a separate file i.e. an external encoding
- `ompr:description` provides a description of the process parameter in simple plain text

ompr:processParameter – Result location	
Minimum occurrence:	0 (Voluntary, mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aq:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aq:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example

ompr:processParameter – Result location

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultlocation"/>
    <ompr:description>A description of the generic encoding type for the results</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Process Parameter: Result format

This is important complex element that provides scope to describe the format of the results. It is mandatory for e-Reporting, as it provides the EEA with important information on how to harvest the results. It consists of two elements;

- `ompr:name` specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat>, which indicates that the file format, web standard or inline encoding method of the predicted results will be describe in data flow E1b.
- `ompr:description` provides a description of the process parameter in simple plain text

ompr:processParameter - Result format	
Minimum occurrence:	0 (Voluntary, mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	<code>/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name</code> <code>/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description</code>

Example**ompr:processParameter - Result format**

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/>
    <ompr:description>A description of the detailed encoding format for the results</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Model time resolution < aqd:temporalResolution>

This complex element specifies the temporal resolution of the predictions output by the model. A combination of a time unit and the number of the selected time units is required.

aqd:temporalResolution	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.3.1 (D.7.3.1.1 & D.7.3.1.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/time/
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:temporalResolution /aqd:AQD_ModelProcess/aqd:temporalResolution/aqd:TimeReferences /aqd:AQD_ModelProcess/aqd:temporalResolution/aqd:TimeReferences/aqd:unit/@xlink:href /aqd:AQD_ModelProcess/aqd:temporalResolution/aqd:TimeReferences/aqd:numUnits
Voidable:	No

Example**aqd:temporalResolution - Model time resolution**

Example for a model predicting the annual mean

```
<aqd:temporalResolution>
  <aqd:TimeReferences>
    <aqd:unit xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/time/year"/>
    <aqd:numUnits>1</aqd:numUnits>
  </aqd:TimeReferences>
</aqd:temporalResolution>
```

Example for a model predicting the hourly mean

```
<aqd:temporalResolution>
  <aqd:TimeReferences>
    <aqd:unit xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/time/hour"/>
    <aqd:numUnits>1</aqd:numUnits>
  </aqd:TimeReferences>
</aqd:temporalResolution>
```


Spatial resolution < aqd:spatialResolution>

This simple element specifies the spatial resolution of the predictions output by the model in simple plain text. The content of this element may be a brief description of the regular grid or receptor spacing. If the grid or receptor spacing are irregular a range may be provided. If the model predicts concentrations within a specified distance from a source the distance should be specified.

aqd:spatialResolution	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.4
Code list constraints:	
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:spatialResolution
Voidable:	No

Example

```
<aqd:spatialResolution>1x1km regular grid of background concentrations</aqd:spatialResolution>
```

Model data quality uncertainty evaluation description < aqd:dataQualityDescription>

This simple element provides scope for encoding a description of the methods used to evaluate the modelled data quality in terms of uncertainty. It is a free text string, recognising that there are no agreed rules for evaluating model uncertainty according to Annex I.A of Dir. 2008/50EC and Annex IV.I of Dir. 2004/107EC and as relevant using the methodologies described in the appropriate CEN standards. Member States are encouraged to summarise their methods to evaluate the modelled data quality in terms of uncertainty which may be based on preliminary FAIRMODE recommendations or independent of these.

aqd:dataQualityDescription	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1

IPR data specifications found:	D.7.5.1
Code list constraints:	
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:dataQualityDescription
Voidable:	No

Example

`<aqd:dataQualityDescription>`The AQD sets data quality objectives (DQOs) for modelling uncertainty, within supplementary assessment under the AQD. AQDD4 sets DQOs in terms of ncertainty....`</aqd:dataQualityDescription>`

Model data quality uncertainty evaluation URL <aqd:dataQualityReport>

This is simple element provides scope for encoding a URL to a detailed report that describes the method(s) used to evaluate the modelled data quality in terms of uncertainty and results of this evaluation. The value domain for this element is a valid URL to an online resource publishing the report.

aqd:dataQualityReport	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.5.2
Code list constraints:	
XPath to schema location:	/aqd:AQD_ModelProcess/ aqd:dataQualityReport
Voidable:	No

Example

```
<aqd:dataQualityReport>http://uk-air.defra.gov.uk/library/reports?report_id=797</aqd:dataQualityReport>
```

Model domain - <AQD_ModelArea>

The AQD_ModelArea information class provides information the geographic extent of the modelling domain. The aqd:AQD_ModelArea InspireId is referenced directly by AQD_Model using an xlink:href attribute within /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest (D.7.2.9).

aqd:AQD_ModelArea	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	D.7.2.9.1
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_ModelArea
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelArea.html

Example

aqd:AQD_ModelArea

Generic example

```
<aqd:AQD_ModelArea gml:id="MA_ZZZZ">
  aqd:inspireId>
    <base:Identifier>
      <base:localId>MA_ZZZZ_</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </aqd:inspireId>
```

UK example

```
<aqd:AQD_ModelArea gml:id="GB_ModelArea_1">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>GB_ModelArea_1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </aqd:inspireId>
```

Focus

AQD_ModelArea

HTML based documentation for the element AQD_ModelArea:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelArea.html

Latest UML for AQD_ModelArea at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel.bmp/AQD_ModelArea.bmp

AQD_ModelArea is parent to the following child information elements, which hold information on attributes of the model domain. The following elements shall be in the XML;

- aqd:inspireId Mandatory (D.7.2.9.1)
- sams:shape M (D.7.2.9.2)
- sam:sampledFeature Voluntary (D.7.2.9.3)

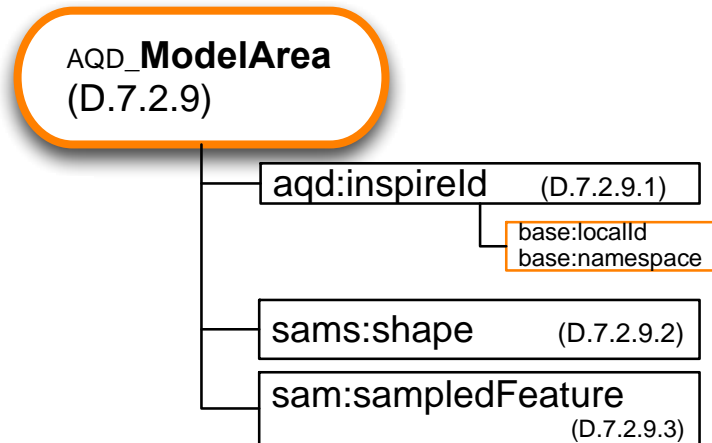


Figure 26 – AQD_ModelArea

Model domain identifier <aqd:inspireId>

The air quality model domain identifier provides for the unique identification of the model domain and its attributes within the XML delivery and associated namespace. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at [“The INSPIRE identifier”](#).

aqd:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	D.7.2.9.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_ModelArea/aqd:inspireId/base:Identifier /aqd:AQD_ModelArea/aqd:inspireId/base:Identifier/base:localId /aqd:AQD_ModelArea/aqd:inspireId/base:Identifier/base:namespace /aqd:AQD_ModelArea/aqd:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_ModelArea**

```

<aqd:AQD_ModelArea gml:id="MOA_CC0001A_YYYY">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </aqd:inspireId>

```

Geographical extent of the model domain <sams:shape>

The <sams:shape> INSPIRE element provides scope for encoding the geographical coordinates (of the extent of the model domain). In order to simplify e-Reporting obligations and bearing in mind that for models the detailed spatial information on the model domain is provided in model results themselves, we recommend that countries report a bounding box or generalised polygon to represent the extent of the model domain. In order to do this the gml:Polygon spatial property type maybe used. We further recommend that interior rings are not included.

sams:shape	
Minimum occurrence:	1 (mandatory for under INSPIRE)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.9.2
Code list constraints:	None
XPath to schema location:	/aqd:AQD_ModelArea/sams:shape
Voidable:	No

Example

sams:shape

UK example

```
<aqd:AQD_ModelArea gml:id="GB_ModelArea_1">
  <gml:name>The extent of the UK PCM background model area</gml:name>
  <sam:sampledFeature nilReason="inapplicable" xsi:nil="true"/>
  <sams:shape>
    <gml:MultiSurface srsName="urn:ogc:def:crs:EPSG::4258" gml:id="UK">
      <gml:surfaceMember>
        <gml:Polygon gml:id="UK_1">
          <gml:exterior>
            <gml:LinearRing>
              <gml:posList srsDimension="2">60.705039 -0.829384
60.714015 -0.829058 60.713854 -0.810738 60.704878 -0.811069 60.705039 -0.829384</gml:posList>
            </gml:LinearRing>
          </gml:exterior>
        </gml:Polygon>
      </gml:surfaceMember>
    </gml:MultiSurface>
  </sams:shape>
</aqd:AQD_ModelArea>
```

```

</sams:shape>
</aqd:AQD_ModelArea>

```

The coordinate reference system (CRS) to be used shall be ETRS 1989 (or WGS 1984 in a transitional period to 2020). The CRS must be declared as an attribute of a GML geometry type e.g. `<gml:Polygon srsName="urn:ogc:def:crs:EPSG::4258" gml:id="UK">` in the example above. The coordinates of the vertices of the model domain are provided by the `gml:posList` element.

Countries are encouraged to use ETRS89-LAEA Europe, also known in the EPSG Geodetic Parameter Dataset under the identifier: EPSG:3035. The Geodetic Datum is the European Terrestrial Reference System 1989 (EPSG:6258). The Lambert Azimuthal Equal Area (LAEA) projection is centred at 10°E, 52°N. Coordinates are based on a false Easting of 4321000 meters, and a false Northing of 3210000 meters. As an interim measure until 2020, WGS84 may also be used (urn:ogc:def:crs:EPSG::4326). Where Member States are unable to convert National coordinated reference system to ETRS89 or WGS84 (and for an interim period only to end of 2015), Member States must at a minimum report a valid srsName attribute for the National coordinated reference system.

Sampled feature `<sam:sampledFeature>`

A sampling feature e.g. AQD_ModelArea is established in order to make observations / predictions concerning the model domain feature. The `sam:sampledFeature` complex element is an INSPIRE requirement for linking the sampling feature (model domain) with the real world feature for which it was designed to sample e.g. the atmosphere at ground level (typically). In some instance this feature contains further geometry information on the spatial extent or area of representivity for the observation / prediction obtained. For the purpose of e-Reporting it is possible to adopt a simplified approach as rules for estimating area of representivity do not exist. Therefore, in order to return a schema valid XML document the `sam:sampledFeature` is included with a valid `xlink:href` attribute to an online resource providing information on the atmosphere. Two alternative methods are provided in the example below. The first references a NASA entry in a ontology of concepts (dictionary of things) for the Planetary Boundary Layer. Because, at least in ambient air quality terms, this is quite a broad definition – ambient air quality modelling activities are often interested in characterising the first 10 - 30 metres of the boundary layer or a small part close to a busy road junction etc. not the entire boundary layer – the second example shows how to void this element if this is viewed as preferable.

sam:sampledFeature	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.9.3
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	
XPath to schema location:	/aqd:AQD_ModelArea/sam:sampledFeature/@xlink:href
Voidable:	Yes

Example**sams:sampledFeature**

Reference NASA's SWEET ontology

```
<sam:sampledFeature xlink:href="
http://sweet.jpl.nasa.gov/2.2/realmAtmoBoundaryLayer.owl#PlanetaryBoundaryLayer"/>
```

Syntax for voiding the element

```
<sam:sampledFeature nilReason="unknown" xsi:nil="true"/>
```

Air quality objective estimation - <aqd:AQD_Model>

Information on the methods and configuration of objective estimation techniques shall be provided using a subset of the AQD_Model, AQD_ModelProcess and AQD_ModelArea data model and metadata profile. According to [Article 2 \(6\)](#) of Decision 2011/850/EU, 'objective estimation data' means information on the concentration or deposition level of a specific pollutant obtained through expert analysis and may include use of statistical tools. As for models, at the present time we recommend that a separate objective estimation metadata record is prepared for each pollutant and environmental objective combination. Therefore, in the case for NO₂ where there is an hourly an annual mean environmental objective, Member States are recommended to manage their model / objective estimation metadata record as follows had to modelling methods e.g. models predicting the exceedance (or otherwise) of limit values for nitrogen dioxide;

Metadata record 1 [AQD_Model-1, AQD_ModelArea-1 and AQD_ModelProcess-1] refers to the annual mean based NO₂ LV

Metadata record 2 [AQD_Model-2, AQD_ModelArea-2 and AQD_ModelProcess-2] refers to the hourly mean based NO₂ LV

As for models, where possible common AQD_ModelArea features shall be reused to save disk space. Hence the following is also recommended;

Metadata record 1 [AQD_Model-1, AQD_ModelArea-1 and AQD_ModelProcess-1] refers to the annual mean based NO₂ LV

Metadata record 2 [AQD_Model-2, AQD_ModelArea-1 and AQD_ModelProcess-2] refers to the hourly mean based NO₂ LV

Metadata record 3 [AQD_Model-3, AQD_ModelArea-1 and AQD_ModelProcess-3] refers to the annual mean based PM₁₀ LV

aqd:AQD_Model	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications found at:	D.8.1
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_Model
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Model.html

Example**aqd:AQD_Model**

```
<aqd:AQD_Model gml:id="OBE_CC0001A_001">
```

```
<aqd:AQD_Model gml:id="GB_Model_34">
```

Focus**AQD_Model**

HTML based documentation for the element AQD_Model:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Model.html

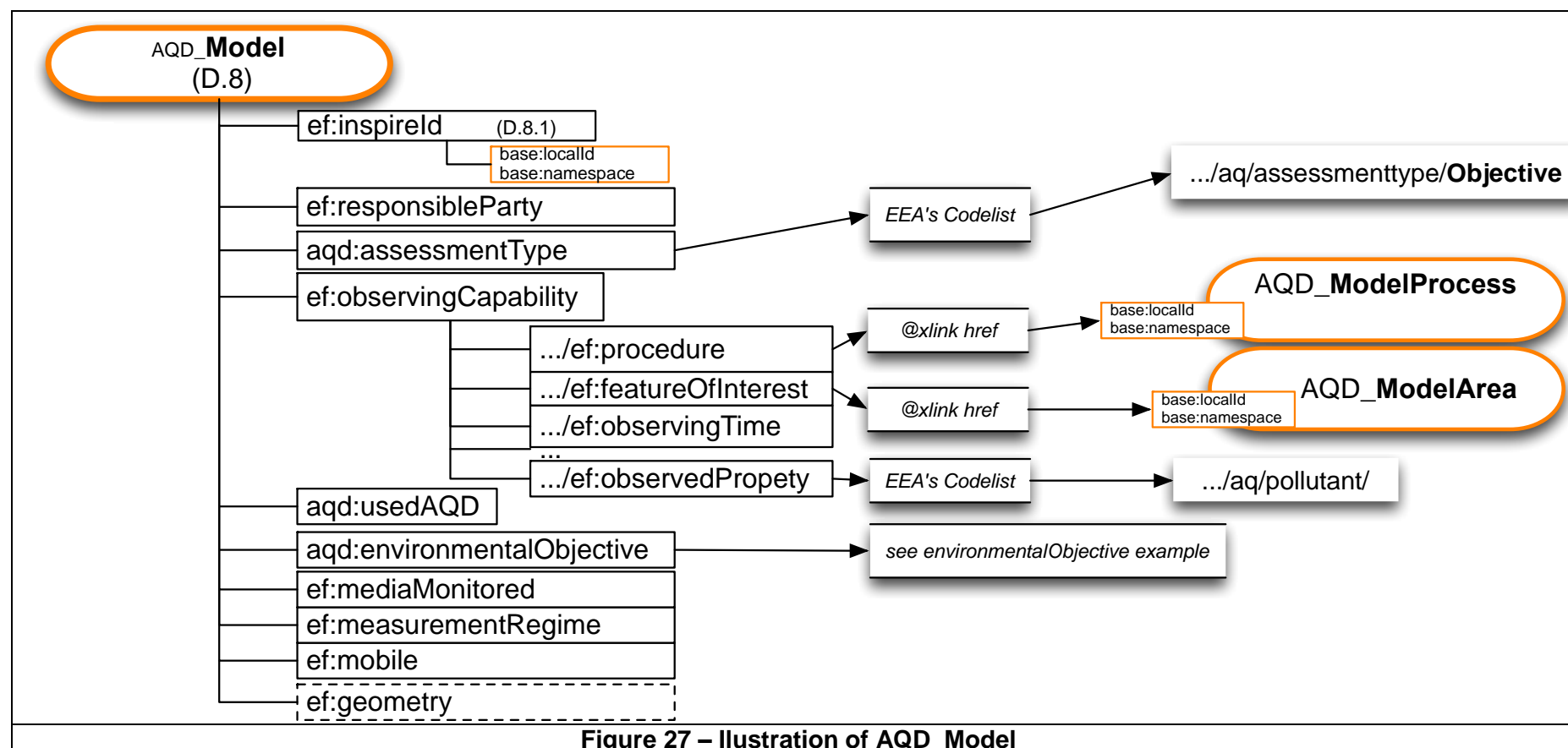
Latest UML for AQD_SamplingPoint at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel bmp/AQD_Model.bmp

The AQD_Model complex element is parent information class to child elements for objective estimation. As for models these contain information on both the conceptual properties and attributes of the air quality objective estimation techniques and abstract information for the management of data within XML.

The following elements are included in the metadata profile for objective estimation.

• ef:inspireId		Mandatory (D.8.1)
• ef:name		Voluntary
• ef:ResponsibleParty		Conditional, mandatory (D.4.1)
• aqd:assessmentType		Mandatory (D.4.2)
• aqd:zone		Mandatory if used for AQD (D.4.3)
• ef:ObservingCapability	Essential	Mandatory (D8.3)
• ef:observedProperty	Essential	Mandatory (D4.4)
• ef:procedure	Essential	Mandatory (D.8.6.1) – see aqd:AQD_ModelProcess
• ef:featureOfInterest	Essential	Mandatory (D.8.3.1) – see aqd:AQD_ModelArea
• ef:observingTime	Essential	Voluntary
• ef:processType		Mandatory for INSPIRE
• ef:resultNature		Mandatory for INSPIRE
• aqd:usedAQD		Mandatory
• aqd:environmentalObjective		Mandatory (D.8.5)
• ef:organisationalLevel		Mandatory (D.8.12)
• ef:mediaMonitored		Mandatory for INSPIRE
• aqd:assessmentMethodWSS		Mandatory if Art.21 applies (D.5.5.1)
• aqd:assessmentMethodNS		Mandatory if Art.20 applies (D.5.5.2)



Objective estimation identifier - <ef:inspireId>

The air quality objective estimation identifier provides for the unique identification of the methods and its attributes within the XML delivery and namespace. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at "[The INSPIRE identifier](#)The INSPIRE identifier".

ef:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	D.8.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_Model/ef:inspireId/base:Identifier /aqd:AQD_Model/ef:inspireId/base:Identifier/base:localId /aqd:AQD_Model /ef:inspireId/base:Identifier/base:namespace /aqd:AQD_Model/ef:inspireId/base:Identifier/base:versionId
Further information found @	

Example

aqd:AQD_Model

Generic example

```
<aqd:AQD_Model gml:id="OBE_CC0001A_ZZZZ_100">
  <ef:inspireId>
    <base:Identifier>
      <base:localId> OBE_CC0001A_ZZZZ_100</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>
</aqd:AQD_Model>
```

UK example

```
<aqd:AQD_Model gml:id="GB_OBE_34">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>GB_OBE_34</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </ef:inspireId>
</aqd:AQD_Model>
```

```

<base:versionId>2014-05-29</base:versionId>
</base:Identifier>
</ef:inspireId>

```

Objective estimation name <ef:name>

The ef:name element is a voluntary requirement which allows for the user defined name of the objective estimation to be declared by the reporter. The element provides scope for including a contextual local description / name for the objective estimation.

ef:name	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications found:	None (voluntary within AQD_Model)
XPath to schema location:	/aqd:AQD_Model/ef:name
Voidable:	No

Example

ef:name

```

<ef:name> Pollution Climate Mapping (PCM) model - CO objective estimation</ef:name>

```

Responsible party <ef:responsibleParty>

The ef:responsibleParty information class within AQD_Model is a voluntary requirement which provides scope for describing the contact point and organisation / body that is responsible for the overall objective estimation technique e.g. the developer. The class derives its attributes from the INSPIRE base2:RelatedParty information class, an explanation of this information class can be found in the AQ reporting section [ReportingHeader](#).

ef:ResponsibleParty	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1

IPR data specifications found:	D4.1
XPath to schema location:	/aqd:AQD_Model/ef:ResponsibleParty
Voidable:	No

Air quality assessment type <aqd:assessmentType>

The air quality assessment type mandatory element allows for the classification (grouping) of assessment methods into common types e.g. fixed measurement, modelling, indicative measurement, objective estimation. The types are controlled by a code list. Objective estimation assessment types should be assigned the “objective” code list value as shown in the example below.

aqd:assessmentType	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.4.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_Model/aqd:assessmentType/@xlink:href
Voidable:	No

Example

aqd:assessmentType

```
<aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/Objective"/>
```

Air quality zone <aqd:zone>

Air quality zone element links the objective estimation method with the coinciding AQ zone(s) already defined in Data flow B. The linkage is maintained via an xlink:href attribute. If the objective estimation method covers more than one zone, either each component zone may be listed as a separate aqd:zone element, or if the objective estimation covers many zones e.g. all zones in the Member State, the aqd:zone element may be voided. See example for details.

aqd:zone	
Minimum occurrence:	0 (mandatory if Sampling Point is used for AQD assessment)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.4.3
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 12 characters
XPath to schema location:	/aqd:AQD_Model/aqd:zone/@xlink:href
Voidable:	Yes

Example**aqd:zone**

Generic example for models covering 1 or more zones

```
< aqd:zone xlink:href="[xlink to zone 1]"/>
< aqd:zone xlink:href="[xlink to zone 2]"/>
< aqd:zone xlink:href="[xlink to zone 3]"/>
```

UK example where the UK models cover all UK zones

```
<aqd:zone xsi:nil="true" nilReason="inapplicable"/>
```

Model observing capability <ef:observingCapability>

This information class is an INSPIRE information requirement which defines the observed property (air quality pollutant), provides a reference to the definition of the procedure used (objective estimation description) as well as the details on the spatial extent of the objective estimation method and period of time that the method results relate to.

From within the child elements of ef:observingCapability, xlink:href attributes are used extensively to describe the observing capability of the objective estimation using code lists and via references to other data flow D metadata records stored elsewhere in the XML document e.g AQD_ModelArea and AQD_ModelProcess instances. The child elements include:

- ef:observedProperty Essential Mandatory (D4.4)
- ef:procedure Essential Mandatory (D.8.6) – see aqd:AQD_ModelProcess
- ef:featureOfInterest Essential Mandatory (D.8.3) – see aqd:AQD_ModelArea
- ef:observingTime Essential Mandatory
- ef:processType INSPIRE Mandatory
- ef:resultNature INSPIRE Mandatory

ef:observingCapability	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.4.4, D.8.6, D.8.3, D4.4 & several INSPIRE requirements unreferenced elements within IPR
Code list constraints:	
Formats Allowed:	Alphanumeric
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:procedure /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest/@xlink:href /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:processType /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:resultNature /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observedProperty/@xlink:href
Voidable:	No
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ObservingCapability.html	

Example**ef:observingCapability**

Generic example

```

<ef:observingCapability>
  <ef:ObservingCapability gml:id="Capability_1">
    <ef:procedure xlink:href=" [xlink to AQD_ModelProcess]"/> [D.7.2.1]
    <ef:featureOfInterest xlink:href=" [xlink to AQD_ModelArea]"/> [D.7.2.9]
    <ef:observingTime>
      <gml:TimePeriod gml:id="TimePeriod_3"> [D.7.3.2]
        <gml:beginPosition>[StartTime of Observation]</gml:beginPosition>
        <gml:endPosition>[EndTime of Observation]</gml:endPosition>
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="[fixed URL for AQ][http://inspire.ec.europa.eu/code list/ProcessTypeValue/process]"/>
    <ef:resultNature xlink:href="[fixed URL for AQ][http://inspire.ec.europa.eu/code list/ResultNatureValue/primary]"/>
    <ef:observedProperty xlink:href="[D.4.4]http://dd.eionet.europa.eu/vocabulary/aq/pollutant/[code]"/>
  </ef:ObservingCapability>
</ef:observingCapability>

```

UK example

```

<ef:observingCapability>
  <ef:ObservingCapability gml:id="OEC_34">
    <ef:observingTime>
      <gml:TimePeriod gml:id="GB_TimePeriod_34">
        <gml:beginPosition>2013-01-01T00:00:00Z</gml:beginPosition>
        <gml:endPosition>2013-12-31T00:00:00Z</gml:endPosition>
      </gml:TimePeriod>
    </ef:observingTime>
    <ef:processType xlink:href="http://inspire.ec.europa.eu/code list/ProcessTypeValue/process"/>
    <ef:resultNature xlink:href="http://inspire.ec.europa.eu/code list/ResultNatureValue/simulated"/>
    <ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_OEP_34"/>
    <ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_OEA_1"/>
    <ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/9"/>
  </ef:ObservingCapability>
</ef:observingCapability>

```

Objective estimation procedure or configuration <ef:procedure>

The ef:procedure element provides an xlink:href attribute which references a detailed description of the objective estimation configuration within AQD_ModelProcess D.8.6.1.

ef:procedure	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.8.6.1
Code list constraints:	
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:procedure/@xlink:href
Voidable:	No

Example

ef:procedure

Generic example	<ef:procedure xlink:href=" [xlink to AQD_ModelProcess]" /> [D.8.6.1]
UK example	<ef:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/OBP_34" />

Objective estimation feature of interest <ef:featureOfInterest>

The ef:featureOfInterest element provides an xlink:href attribute which references the detailed description of the objective estimation feature(s) e.g. the domain, extent, receptor point locations, grid or road network for which predictions are being made. The xlink:href references are made to an AQD_ModelArea instance, see D.8.3.1.

ef:featureOfInterest	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.8.3.1
Code list constraints:	
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest/@xlink:href
Voidable:	No

Example**ef:featureOfInterest**

Generic example

`<ef:featureOfInterest xlink:href=[xlink to AQD_ModelArea]"/>` [D.7.2.9]

UK example

`<ef:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_ModelArea_1"/>`**Observing / prediction time <ef:observingTime>**

The ef:observingTime element describes the time period over which objective estimation predictions have been made using the configuration (process) cited by ef:procedure.

ef:observingTime	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	-
Code list constraints:	
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime/gml:beginPosition /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observingTime/ gml:endPosition
Voidable:	No

Process type <ef:processType>

The ef:processType element is an INSPIRE information requirement which describes the type of object used to describe the objective estimation configuration. For AQ e-Reporting purposes, this element will always reference an INSPIRE code list - <http://inspire.ec.europa.eu/code list/ProcessTypeValue/process>

From the INSPIRE data specifications ([INSPIRE DataSpecification EF v3.0](#)), the “process” code list value indicates that the class used for the description of methodological information of the observations is of the Process class defined in the INSPIRE GCM.

ef:processType	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	unreferenced elements within IPR
Code list constraints:	http://inspire.ec.europa.eu/code list/ProcessTypeValue/process
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:processType
Voidable:	No

Example

ef:processType

FIXED BY INSPIRE

```
<ef:processType xlink:href="http://inspire.ec.europa.eu/code list/ProcessTypeValue/process"/>
```

Nature of the result <ef:resultNature>

The ef:resultNature is an INSPIRE information requirement which describes the status of the observations (predictions) being described by the ef:observingCapability instance. For AQ e-Reporting purposes objective estimation predictions, the value domain of this element will be constrained to an INSPIRE code list which is <http://inspire.ec.europa.eu/code list/ResultNatureValue/simulated>. From [INSPIRE DataSpecification EF v3.0](#), the “simulated” code list entry indicates that “The result provided, while usually based on primary measurements, is based on an interpretation model, and provides a simulation of past or future states of the media being analysed. In this case, the existing values are usually extrapolated into the past or future.”

ef:resultNature	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	unreferenced elements within IPR
Code list constraints:	http://inspire.ec.europa.eu/code list/ResultNatureValue/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:resultNature
Voidable:	No

Example**ef:resultNature****FIXED BY INSPIRE**

```
<ef:resultNature xlink:href="http://inspire.ec.europa.eu/code list/ResultNatureValue/simulated"/>
```

Observed property <ef:observedProperty>

The ef:observedProperty element is an IPR and INSPIRE information requirement which describes the property (pollutant) being predicted by the AQD_Model. The value of this element is constrained to via an xlink:href attribute to EEA's pollutant code list at <http://dd.eionet.europa.eu/vocabulary/aq/pollutant/>

ef:observedProperty	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D4.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:observedProperty/@xlink:href
Voidable:	No
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ObservingCapability.html	

Example**ef:observedProperty**

```
<ef:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8" />
```

Predicted environmental objectives <aqd:environmentalObjective>

See section on data types for a detailed description of [aqd:environmentalObjective](#). Within the context of an AQD_Model instance this information class is used to declare the environmental objectives that the objective estimation technique is capable of predicting. It is a candidate for deprecation as the relationship between a model and environmental objective may be one to many. From September 2017, countries are encouraged to not use the aqd:environmentalObjective within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules. Alternatively the aqd:environmentalObjective shall be declared from the objective estimation observation data delivery, data flow E1b.

UPDATE

aqd:environmentalObjective	
Minimum occurrence:	0 (Mandatory if Sampling Point used for AQD Assessment)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.8.5.
Code list constraints:	Yes. 3 code list listed in environmentalObjective section
Formats Allowed:	Alphanumeric, max. length 7 characters
XPath to schema location:	/aqd:AQD_Model/aqd:environmentalObjective /aqd:AQD_Model/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:objectiveType/@xlink:href /aqd:AQD_Model/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:reportingMetric/@xlink:href /aqd:AQD_Model/aqd:environmentalObjective/aqd:EnvironmentalObjective/aqd:protectionTarget/@xlink:href

Example**aqd:environmentalObjective**

```

<aqd:environmentalObjective>
  <aqd:EnvironmentalObjective>
    <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>
    <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean"/>
    <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
  </aqd:EnvironmentalObjective>
</aqd:environmentalObjective>

```


Organisational level <ef:organisationalLevel>

This element is a mandatory IPR and INSPIRE information requirement which provides information on the level of the organisation the objective estimation is affiliated to.

ef:organisationalLevel	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.8.12
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/view
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Model/ef:organisationalLevel/@xlink:href
Voidable:	No

Example**ef:organisationalLevel**

```
<ef:organisationLevel xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportinglevel/national" />
```

Media monitored / predicted <ef:mediaMonitored>

The ef:mediaMonitored element is an IPR and INSPIRE information requirement which provides a code list constrained description of the environmental media being predicted.

ef:mediaMonitored	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	D.8.3.3
Code list constraints:	http://inspire.ec.europa.eu/code list/MediaValue/air
QA/QC constraints:	In preparation
Allowed formats:	Code list
XPath to schema location:	/aqd:AQD_Model/ef:mediaMonitored/@xlink:href
Voidable:	No

Example

ef:mediaMonitored

FIXED BY INSPIRE**UPDATE**

```
<ef:mediaMonitored xlink:href="http://inspire.ec.europa.eu/code list/MediaValue/air"/>
```

Flagging a technique for AEI, NS / WSS assessment <ef:involvedIn>

The ef:involvedIn element is a voluntary INSPIRE information requirement which provides a code list constrained description of the type of measurement regime in operation. Within AQ e-Reporting it is used to indicate where an objective estimation method is involved in predicting winter-sanding, salting and nature sources contributions.

ef:involvedIn

Minimum occurrence:	Voluntary, mandatory if sampling point is used for AEI
Maximum occurrence:	Unbounded
IPR data specifications found:	INSPIRE data element not specified in IPR data
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmentpurpose
QA/QC constraints:	In preparation
Allowed formats:	URL
XPath to schema location:	/aqd:AQD_Model/ef:involvedIn/@xlink:href
Voidable:	Yes

Example**ef:involveIn** – for AEI, WSS or NS

```
<ef:involveIn xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/samplingpointpurpose/AEI"/>
```

aqd:assessmentMethodWSS

Reported via ef:involveIn. This element is a candidate for deprecation as it is infrequently reported by any Member States and often used incorrectly. From September 2017, countries will be encouraged to not to report this information within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules.

UPDATE

aqd:assessmentMethodNS

Reported via ef:involveIn. This element is a candidate for deprecation as it is infrequently reported by any Member States and often used incorrectly. From September 2017, countries will be encouraged to not to report this information within the AQD_Model instance - continued reporting may result in invalid XML documents which will not pass CDR QA rules.

UPDATE

Objective estimation configuration - <AQD_ModelProcess>

This information class stores metadata concerning the configuration of the objective estimation procedure. The aqd:AQD_ModelProcess is referenced directly by AQD_Model using an xlink:href attribute within ef:procedure (D.7.2.).

AQD_ModelProcess	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	D.8.6.1
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_ModelProcess
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelProcess.html

Example

aqd:AQD_ModelProcess

Generic XML example

```
<aqd:AQD_ModelProcess gml:id="OEP_ZZZZ">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>OEP_ZZZZ_</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ef:inspireId>
```

UK example

```
<aqd:AQD_ModelProcess gml:id="GB_OEP_1">
  <ef:inspireId>
    <base:Identifier>
      <base:localId>GB_OEP_1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </ef:inspireId>
```

Focus**AQD_ModelProcess**

HTML based documentation for the element AQD_ModelProcess:

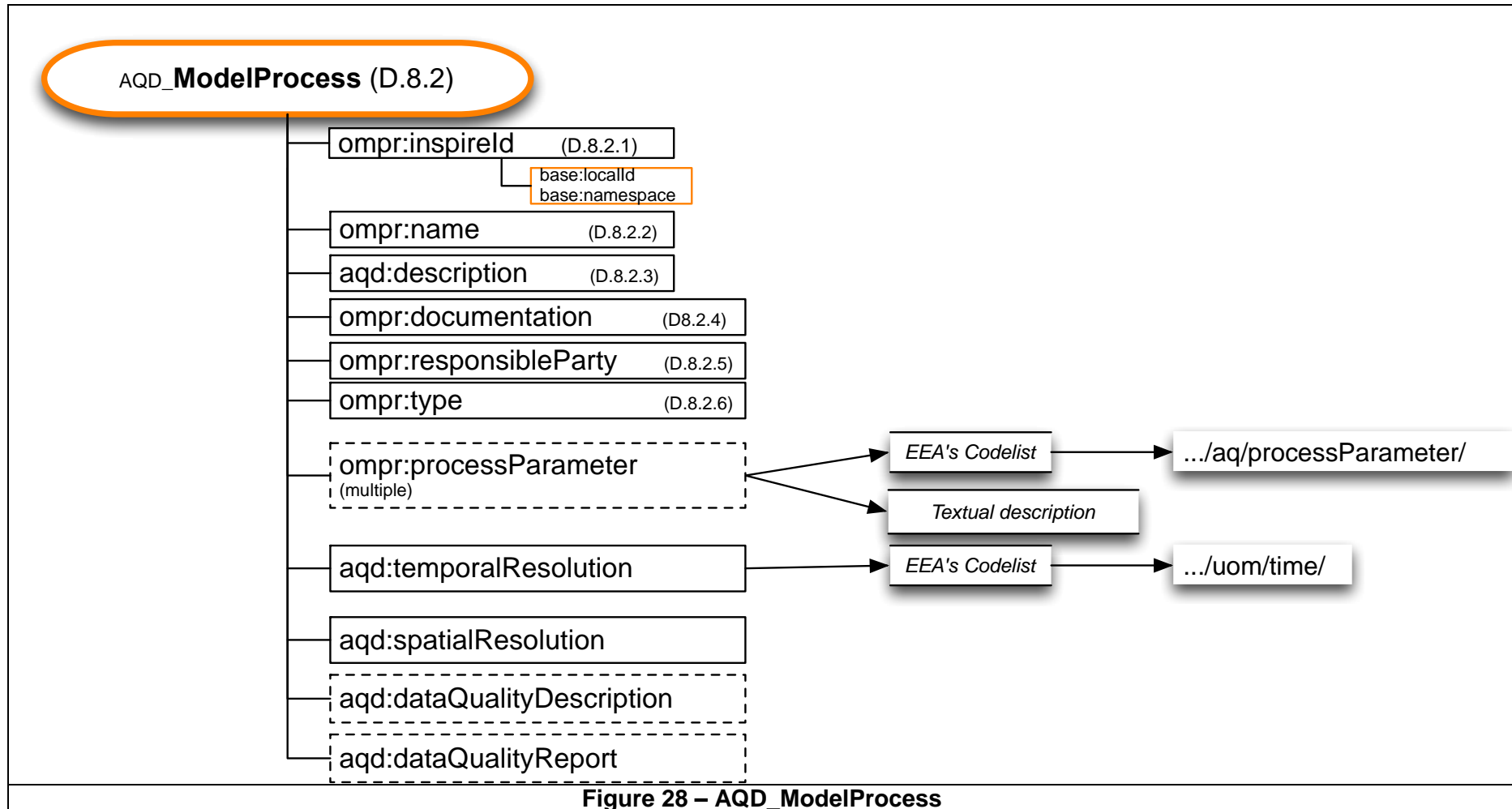
http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelProcess.html

Latest UML for AQD_ModelProcess at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_ModelProcess.bmp

AQD_ModelProcess is parent to the following child information elements, which hold information on attributes of the measurement/sampling technique. The following elements shall be declared within AQD_ModelProcess ;

- | | |
|------------------------------|-----------------------|
| • ompr:inspireId | Mandatory (D.8.6..1) |
| • ompr:name | Voluntary |
| • aqd:description | Mandatory (D.8.2) |
| • ompr:documentation | Voluntary |
| • ompr:responsibleParty | Mandatory (D.8.6.2) |
| • ompr:type | Mandatory (D.8.6.3) |
| • aqd:processParameter | Conditional (D.8.6.4) |
| • aqd:temporalResolution | Voluntary |
| • aqd:spatialResolution | Mandatory (D.7.4) |
| • aqd:dataQualityDescription | Voluntary (D.8.4.1) |
| • aqd:dataQualityReport | Conditional (D.8.4.2) |



Objective estimation configuration identifier <ompr:inspireId>

The objective estimation configuration identifier provides a unique identification of each AQD_ModelProcess instance (record) and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique within the XML document it is declared, within the scope of its associated namespace. An explanation of this identifier class can be found in the “The INSPIRE identifier” section of this document.

ompr:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document and associate namespace)
IPR data specifications found at:	D.8.6.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier /aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier/base:localId /aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier/base:namespace /aqd:AQD_ModelProcess/ompr:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_ModelProcess**

Generic XML example

```

<aqd:AQD_ModelProcess gml:id=" OEP_ZZZZ_1 ">
  <ompr:inspireId xsi:nil="false">
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </ompr:inspireId>

```

Objective estimation configuration name <ompr:name>

The ompr:name element provides scope for a plain text encoding of a local name for objective estimation configuration and allows it to be easily differentiated from other sets of configuration parameters.

ef:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.2
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:name
Voidable:	No

Example**ompr:name**

UK example

```
<ompr:name xsi:nil="false">UK CO objective estimation process</ompr:name>
```

Objective estimation configuration description <aqd:description>

The ompr:description element provides scope for a plain text encoding of a brief description of the objective estimation configuration parameters. This element provides a high-level summary or abstract for the configuration which may be found in ompr:documentation.

ef:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.3
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:description
Voidable:	No

Example**aqd:description**

UK example

<aqd:description> Objective estimation is applied for assessment against the CO limit value. This assessment has been made using evidence from long-term measured concentrations (below the Lower Assessment Threshold) and the anticipated continuing decline in CO emissions indicated by current emissions inventories (UK's National Atmospheric Emissions Inventory, NAEI)</aqd:description>

Objective estimation configuration documentation <ompr:documentation>

The ompr:documentation complex element provides scope for encoding a citation to a technical or summary report containing information on how the objective estimation method was developed. It is recommended that this report will present the evidence (historical measurements, emission inventory information, indicative measurement campaigns etc.) that underpin the method. The document referenced by this element may be summarised in aqd:description (above). As a minimum, this complex element shall include a valid gml:id for the document citation, a name (title) for the cited document, the document's publication date and a valid URL to an online resource providing access to the report.

ef:name	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.4
Formats Allowed:	Alphanumeric, max. length 70 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:documentation
Voidable:	No

Example**ompr:documentation**

UK example

```

<ompr:documentation>
  <base2:DocumentCitation gml:id="Document_34">
    <base2:name>Technical report on UK supplementary assessment under the Air Quality Directive
(2008/50/EC), the Air Quality Framework Directive (96/62/EC) and Fourth Daughter Directive (2004/107/EC) for 2013</base2:name>
    <base2:date>
      <gmd:CI_Date>
        <gmd:date>
          <gco:Date>2014-12-31</gco:Date>
        </gmd:date>
        <gmd:dateType/>
      </gmd:CI_Date>
    </base2:date>
    <base2:link>http://uk-air.defra.gov.uk/library/reports?report_id=797</base2:link>
  </base2:DocumentCitation>
</ompr:documentation>

```

Responsible party for the objective estimation configuration <ompr:ResponsibleParty>

This complex element provides scope for encoding information on the organisation responsible for the configuration of the objective estimation method. The contact point and organisation may be the same as that declared with /AQD_Model/ef:responsibleParty (if this is provided) or different e.g. may be the lead developer or the individual and organisation that configured the method for the assessment application.

ompr:responsibleParty	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.8.6.2
Formats Allowed:	
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:responsibleParty
Voidable:	No

Example**ompr:responsibleParty**

UK example

```

<ompr:responsibleParty>
  <base2:RelatedParty>
    <base2:individualName>
      <gco:CharacterString>Emily Connolly</gco:CharacterString>
    </base2:individualName>
    <base2:organisationName>
      <gco:CharacterString>The Department for Environment, Food and Rural Affairs, The Scottish
Government, The Welsh Government and The Department of Environment - Northern Ireland</gco:CharacterString>
    </base2:organisationName>
    <base2:contact>
      <base2:Contact>
        <base2:address>
          <ad:AddressRepresentation>
            <ad:adminUnit>
              <gn:GeographicalName>
                <gn:language>eng</gn:language>
                <gn:nativeness xsi:nil="true" nilReason="missing"/>
                <gn:nameStatus xsi:nil="true" nilReason="missing"/>
                <gn:sourceOfName xsi:nil="true" nilReason="missing"/>
                <gn:pronunciation xsi:nil="true" nilReason="missing"/>
                <gn:spelling>
                  <gn:SpellingOfName>
                    <gn:text>Atmosphere and Local Environment
(ALE) Programme, Area 2C Nobel House, 17 Smith Square, London SW1P 3JR</gn:text>
                    <gn:script xsi:nil="true" nilReason="missing"/>
                    </gn:SpellingOfName>
                  </gn:spelling>
                </gn:GeographicalName>
              </ad:adminUnit>
              <ad:locatorDesignator>London</ad:locatorDesignator>
              <ad:postCode xsi:nil="false">SW1P 3JR</ad:postCode>
            </ad:AddressRepresentation>
          </base2:address>
        <base2:electronicMailAddress>emily.connolly@defra.gsi.gov.uk</base2:electronicMailAddress>
      </base2:Contact>
    </base2:contact>
  </base2:RelatedParty>
</ompr:responsibleParty>

```

```

<base2:telephoneVoice>+44 (0) 207 238 6476</base2:telephoneVoice>
<base2:website>https://www.gov.uk/defra</base2:website>
</base2:Contact>
</base2:contact>
</base2:RelatedParty>
</ompr:responsibleParty>

```

Process type <ompr:Type>

The ompr:type element is a mandatory INSPIRE requirement which provides a the textual description of objective estimation process configuration. For AQ e-Reporting the value for this element shall be “Ambient air quality objective estimation configuration”.

ompr:Type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.6
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:type/@xsi:nil
Voidable:	No

Example

ompr:type

```
<ompr:type xsi:nil="false">Ambient air quality objective estimation configuration</ompr:type>
```

Objective estimation configuration parameters <ompr:processParameter>

The ompr:processParameter element is a complex element which allows for the definition of a range of parameters to satisfy both INSPIRE requirements and provide expert advice on the configuration of the objective estimation technique. In contrast to modelling techniques the number of parameters is likely to be small but the concept is the same. Member States are expected to provide this information where it is available but inclusion is conditional on their availability.

See the section on “model configuration parameters” for correct usage of ompr:processParameter and further explanation. From 2017, previous guidance will be deprecated to align e-Reporting with the INSPIRE data model(s).

ompr:processParameter	
Minimum occurrence:	1 (INSPIRE requirements mandatory, objective estimation parameters conditional on availability)
Maximum occurrence:	Unbounded
IPR data specifications found:	D.7.2.7
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter
Voidable:	No

The following generic process parameters may be encoded in separate ompr:processParameter elements based on the information availability of your method(s).

Process Parameter: AssessmentType

This complex element provides scope to describe the assessment type associated with the observational data alongside the observational data itself in data flow E1b. It consists of two elements;

- ompr:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled by a code list, in this case
<http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType>

- ompr:description provides a description of the process parameter in plain text

ompr:processParameter - Assessment type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	D.7.2.7.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/ http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Assessment type**

```

<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType" />
    <ompr:description>The assessment method type associated with the observations provided in the E1b data
  flow</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>

```

Process Parameter: Result location

This is important complex element that provides scope to describe the location of the results. It is mandatory for e-Reporting, as it provides the EEA with important information on how they should harvest the results. It consists of two elements;

- ompr:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultlocation>, which indicates that the location of the predicted

results will be describe in data flow E1b. The observational data itself may within the E1b delivery itself i.e. an inline encoding or as a separate file i.e. an external encoding

- ompr:description provides a description of the process parameter in simple plain text

ompr:processParameter - Result location	
Minimum occurrence:	0 (Voluntary, mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter – Result location**

```
<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultlocation"/>
    <ompr:description>A description of the generic encoding type for the results</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>
```

Process Parameter: Result format

This is important complex element that provides scope to describe the format of the results. It is mandatory for e-Reporting, as it provides the EEA with important information on how to harvest the results. It consists of two elements;

- ompr:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultlformat>, which indicates that the file format, web standard or inline encoding method of the predicted results will be describe in data flow E1b.
- ompr:description provides a description of the process parameter in simple plain text

ompr:processParameter - Assessment type	
Minimum occurrence:	0 (Voluntary, mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Result format**

```

<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/>
    <ompr:description>A description of the detailed encoding format for the model results</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>

```

Process Parameter: Result format

This is important complex element that provides scope to describe the format of the model results. It is mandatory for e-Reporting, as it provides the EEA with important information on how to harvest the objective estimation results. It consists of two elements;

- ompr:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat>, which indicates that the file format, web standard or inline encoding method of the predicted results will be describe in data flow E1b.
- ompr:description provides a description of the process parameter in simple plain text

ompr:processParameter - Assessment type	
Minimum occurrence:	0 (Voluntary, mandatory for e-Reporting)
Maximum occurrence:	1

IPR data specifications found:	None
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:name /aqd:AQD_ModelProcess/ompr:processParameter/ompr:ProcessParameter/ompr:description

Example**ompr:processParameter - Result format**

```

<ompr:processParameter>
  <ompr:ProcessParameter>
    <ompr:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/>
    <ompr:description>A description of the detailed encoding format for the objective estimation results</ompr:description>
  </ompr:ProcessParameter>
</ompr:processParameter>

```

Objective estimation time resolution < aqd:temporalResolution>

This complex element specifies the temporal resolution of the predictions output by the objective estimation. A combination of a time unit and the number of the selected time units is required.

aqd:duration	
Minimum occurrence:	0 (Voluntary for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	-
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/time/
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:temporalResolution /aqd:AQD_ModelProcess/aqd:temporalResolution/aqd:TimeReferences /aqd:AQD_ModelProcess/aqd:temporalResolution/aqd:TimeReferences/aqd:unit/@xlink:href /aqd:AQD_ModelProcess/aqd:temporalResolution/aqd:TimeReferences/aqd:numUnits
Voidable:	No

Example

```

    <aqd:temporalResolution>
      <aqd:TimeReferences>
        <aqd:unit xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/time/year"/>
        <aqd:numUnits>1</aqd:numUnits>
      </aqd:TimeReferences>
    </aqd:temporalResolution>

```

Spatial resolution < aqd:temporalResolution>

This simple element specifies the spatial resolution of the predictions output by the objective estimation method in simple plain text.

aqd:spatialResolution	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.7.4
Code list constraints:	
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:spatialResolution
Voidable:	No
aqd:spatialResolution	
Minimum occurrence:	0 (voluntary for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	-
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/time/
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:spatialResolution
Voidable:	No

Example

```

<aqd:spatialResolution>Objective estimation representing the whole zone</aqd:spatialResolution>

```

Objective estimation data quality uncertainty evaluation description <aqd:dataQualityDescription>

This is simple element provides scope for encoding a description of the methods used to evaluate the objective estimation data quality in terms of uncertainty. It is a free text string, recognising that there are no agreed rules for evaluating objective estimation uncertainty according to Annex I.A of Dir. 2008/50EC and Annex IV.I of Dir. 2004/107EC and as relevant using the methodologies described in the appropriate CEN standards.

Member States are encouraged to summarise their methods to evaluate the objective estimation data quality in terms of uncertainty which may be based on preliminary FAIRMODE recommendations or independent of these.

aqd:dataQualityDescription	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.8.4.1
Code list constraints:	
XPath to schema location:	/aqd:AQD_ModelProcess/aqd:dataQualityDescription
Voidable:	No

Example

```
<aqd:dataQualityDescription>Indicative methods used have been collocated with high quality fixed measurements to assess bias and performance against a reference method. Full details provided in the documentation cited under the data quality report element. </aqd:dataQualityDescription>
```

Objective estimation data quality uncertainty evaluation URL <aqd:dataQualityReport>

This is simple element provides scope for encoding a URL to a detailed report that describes the method(s) used to evaluate the objective estimation data quality in terms of uncertainty and results of this evaluation. The value domain for this element is a valid URL to an online resource publishing the report.

aqd:dataQualityReport	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	D.8.4.2
Code list constraints:	
XPath to schema location:	/aqd:AQD_ModelProcess/ aqd:dataQualityReport
Voidable:	No

Example

```
<aqd:dataQualityReport>http://uk-air.defra.gov.uk/library/reports?report_id=797</aqd:dataQualityReport>
```

Objective estimation domain - <AQD_ModelArea>

The AQD_ModelArea information class provides information the geographic extent of the objective estimation domain. The aqd:AQD_ModelArea InspireId is referenced directly by AQD_Model using an xlink:href attribute within /aqd:AQD_Model/ef:observingCapability/ef:ObservingCapability/ef:featureOfInterest (D.8.3.1).

aqd:AQD_ModelArea	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	D.8.3.1
Code list constraints:	None
QA/QC constraints:	In preparation, to be provided
XPath to schema location:	/aqd:AQD_ModelArea
Link to XSD html viewer	http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelArea.html

Example

aqd:AQD_ModelArea

Generic

```
<aqd:AQD_ModelArea gml:id="MA_ZZZZ">
  [...]
  aqd:inspireId>
    <base:Identifier>
      <base:localId>MA_ZZZZ_</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </aqd:inspireId>
```

UK example

```
<aqd:AQD_ModelArea gml:id="Sample_1">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>Sample_1</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </aqd:inspireId>
```

Focus**AQD_ModelArea**

HTML based documentation for the element AQD_ModelArea:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_ModelArea.html

Latest UML for AQD_ModelArea at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_ModelArea.bmp

AQD_ModelArea is parent to the following child information elements, which hold information on attributes of the model domain. The following elements shall be in in the XML

- | | |
|----------------------|---------------------|
| • aqd:inspireId | Mandatory (D.8.3.1) |
| • sams:shape | M (D.8.3.2) |
| • sam:sampledFeature | Voluntary |

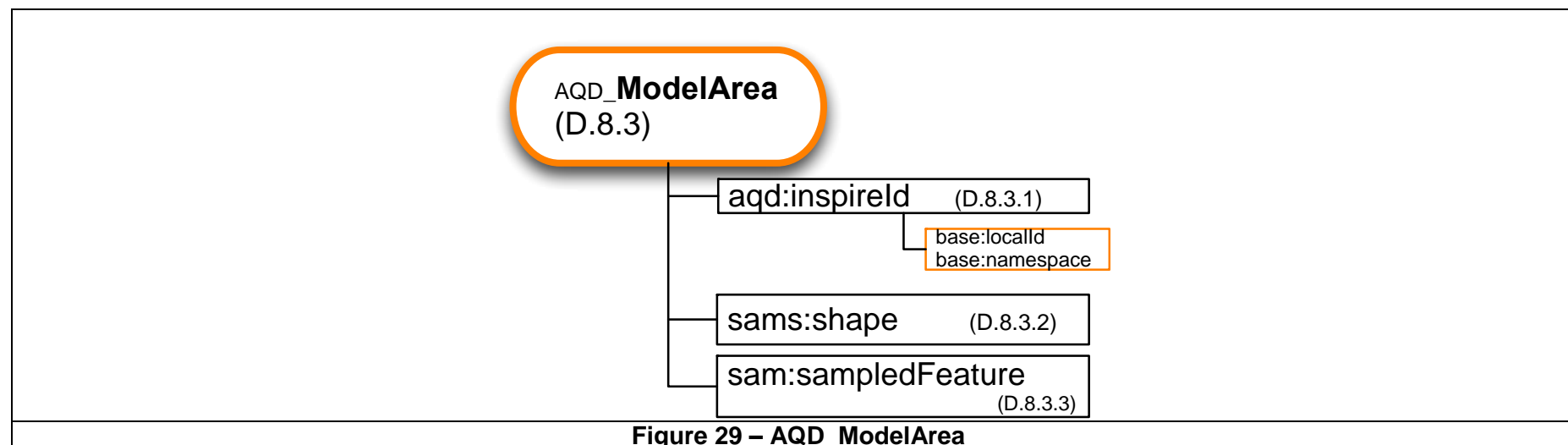


Figure 29 – AQD_ModelArea

Objective estimation domain identifier <aqd:inspireId>

The air quality domain identifier provides for the unique identification of the model domain and its attributes within the XML delivery and associated namespace. The data provider is responsible for ensuring the identifier is unique and managing its lifecycle. An explanation of the identifier class can be found at [“The INSPIRE identifier”](#).

aqd:inspireId	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per XML document)
IPR data specifications found at:	D.8.3.1 (A.8.1, A.8.2, A.8.3)
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_ModelArea/aqd:inspireId/base:Identifier /aqd:AQD_ModelArea/aqd:inspireId/base:Identifier/base:localId /aqd:AQD_ModelArea/aqd:inspireId/base:Identifier/base:namespace /aqd:AQD_ModelArea/aqd:inspireId/base:Identifier/base:versionId
Further information found @	

Example**aqd:AQD_ModelArea**

```

<aqd:AQD_ModelArea gml:id="Sample_CC0001A_YYYY">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>CC0001A</base:localId>
      <base:namespace>CC.CCCC.AQD</base:namespace>
      <base:versionId>YY</base:versionId>
    </base:Identifier>
  </aqd:inspireId>

```

Geographical extent of the objective estimation domain <sams:shape>

The <sams:shape> INSPIRE element provides scope for encoding the geographical coordinates (of the extent of the model domain). In order to simplify e-Reporting obligations and bearing in mind that for models the detailed spatial information on the model domain is provided in model results themselves, we recommend that countries report a bounding box or generalised polygon to represent the extent of the model domain. In order to do this the gml:Polygon spatial property type maybe used. We further recommend that interior rings are not included.

sams:shape

Minimum occurrence:	1 (mandatory for under INSPIRE)
Maximum occurrence:	1
IPR data specifications found:	D.8.3.2
Code list constraints:	None
XPath to schema location:	/aqd:AQD_ModelArea/sams:shape
Voidable:	No

Example**sams:shape**

Generic example

```

<sams:shape>
  <gml:Point srsName="Coordinate System]" gml:id="[INLETatLong_ID]">
    <gml:pos srsDimension="2"> [LATITUDE] [LONGITUDE][53.712450 -1.863240]</gml:pos>
  </gml:Point>
</sams:shape>

```

UK example

```

<aqd:AQD_ModelArea gml:id="GB_ModelArea_1">
  <gml:name>The extent of the UK PCM background model area</gml:name>

```



```

<sam:sampledFeature nilReason="inapplicable" xsi:nil="true"/>
<sams:shape>
  <gml:MultiSurface srsName="urn:ogc:def:crs:EPSG::4258" gml:id="UK">
    <gml:surfaceMember>
      <gml:Polygon gml:id="UK_1">
        <gml:exterior>
          <gml:LinearRing>
            <gml:posList srsDimension="2">60.705039 -0.829384
60.714015 -0.829058 60.713854 -0.810738 60.704878 -0.811069 60.705039 -0.829384</gml:posList>
          </gml:LinearRing>
        </gml:exterior>
      </gml:Polygon>
    </gml:surfaceMember>
  </gml:MultiSurface>
</sams:shape>
</aqd:AQD_ModelArea>

```

Note: Please note that srsDimension is allowed both within gml:Point element and within gml:pos

The coordinate reference system (CRS) to be used shall be ETRS 1989 (or WGS 1984 in a transitional period to 2020). The CRS must be declared as an attribute of a GML geometry type e.g. `<gml:Polygon srsName="urn:ogc:def:crs:EPSG::4258" gml:id="UK">` in the example above. The coordinates of the vertices of the model domain are provided by the `gml:posList` element.

Countries are encouraged to use ETRS89-LAEA Europe, also known in the EPSG Geodetic Parameter Dataset under the identifier: EPSG:3035. The Geodetic Datum is the European Terrestrial Reference System 1989 (EPSG:6258). The Lambert Azimuthal Equal Area (LAEA) projection is centred at 10°E, 52°N. Coordinates are based on a false Easting of 4321000 meters, and a false Northing of 3210000 meters. As an interim measure until 2020, WGS84 may also be used (urn:ogc:def:crs:EPSG::4326). Where Member States are unable to convert National coordinated reference system to ETRS89 or WGS84 (and for an interim period only to end of 2015), Member States must at a minimum report a valid srsName attribute for the National coordinated reference system.

Sampled feature `<sam:sampledFeature>`

A sampling feature e.g. AQD_ModelArea is established in order to make observations / predictions concerning the objective estimation domain feature. The sam:sampledFeature complex element is an INSPIRE requirement for linking the sampling feature (model domain) with the real world feature for which it was designed to sample e.g. the atmosphere at ground level (typically). In some instance this xlink contains further geometry information on the spatial extent or area of representivity for the observation / prediction obtained. For the purpose of e-Reporting it is possible to adopt a simplified approach as rules for estimating area of representivity do not exist. Therefore, in order to return a schema valid XML document the sam:sampledFeature is included with a valid xlink:href attribute to an online resource providing information on the atmosphere. Two alternative methods are provided in the example below. The first references a NASA entry in a ontology of concepts (dictionary of things) for the Planetary Boundary Layer. Because, at least in ambient air quality terms, this is quite a broad definition – ambient air quality modelling activities are often interested in characterising the first 10 - 30 metres of the boundary layer or a small part close to a busy road junction etc. not the entire boundary layer – the second example shows how to void this element if this is viewed as preferable.

sam:sampledFeature	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	-
Code list constraints:	None
QA/QC constraints:	In preparation
Allowed formats:	
XPath to schema location:	/aqd:AQD_ModelArea/sam:sampledFeature/@xlink:href
Voidable:	Yes

Example**sams:sampledFeature**

Reference NASA's SWEET ontology

```
<sam:sampledFeature xlink:href="
http://sweet.jpl.nasa.gov/2.2/realAtmoBoundaryLayer.owl#PlanetaryBoundaryLayer"/>
```

Syntax for voiding the element

```
<sam:sampledFeature nilReason="unknown" xsi:nil="true"/>
```

E - Information on Assessment data

(AQD IPR [Article 10](#)) – link to [e-Reporting logic](#)

Under the IPR Decision Member States shall make available information on assessment data from Assessment Methods declared at data flow D. The legal obligations for reporting are set out in Article 10 and Part E of Annex II of the 2011/850/EC Decision.

For assessment data stemming from fixed measurement, data flow E shall be reported in two forms;

- Primary validated assessment data (**E1a**) and
- Primary up-to-date assessment data (**E2a**).

Data flow E1a (Primary validated assessment data) shall be made available for a full calendar year as complete time series by 30 September.

Data flow E2a (Primary up-to-date assessment data) shall be made available on a provisional basis with the frequency appropriate to each pollutant assessment method and within a reasonable timeframe:

- For automatic methods, the data should be provided to EEA via ftp on an hourly basis.
- For non-automatic methods, the data should be provided within a reasonable timeframe.
- For both, incremental updates should be provided following further quality controls.

The structure of the reported XML for both E1a and E2 are the same. The reporting XML contains both the AQ reporting header information class and the Assessment data class (om:OM_Observation).

For assessment data stemming from models or objective estimation, data flow E1b shall be made available as an assessment for a full calendar year by 30 September. The structure of the reported XML for E1b is similar to E1a/E2a. The reporting XML contains both the AQ reporting header information class and the Assessment data class (om:OM_Observation). A detailed description of the requirements for data flow E1b is given later on in this chapter.

Reporting header - <aqd:AQD_ReportingHeader>

An explanation of the AQ reporting header information class can be found here [ReportingHeader](#). This is mandatory for all reporting data flows and includes common data types elements (E1, E2 and E3 from IPR excel mapping). Please note that while the other data flows use [the INSPIRE identifier](#) of the classes being reported to build the xlink reference within the <aqd:content> tags, for data flow E the gml:id is to be utilized for this purpose. For further information on referencing with xlink and gml:id, please see section “Referencing gml:id (ONLY for observations)”

E1a/E2a Assessment data from fixed measurement - <om:OM_Observation>

OM_Observation is the parent to the following child information classes which hold information on the observed assessment data . Elements that are specific to Air Quality e-Reporting appear with an aqd: prefix, elements specific to INSPIRE (and its adopted standards) receive other prefixes e.g. om: refers to the INSPIRE Observations & Measurements' data specification. The AQ and INSPIRE information classes that make up the Assessment Measurement data flow are listed below. An indication of their cardinality is provided and references the location of the relevant data specification in the Commission's IPR guidance documentation for air quality classes.

om:OM_Observation includes:

- | | |
|---|--|
| • @ gml:id | Mandatory (E.4.1) |
| • om:phenomenonTime | Mandatory (E.4.5) |
| • om:resultTime | Mandatory for INSPIRE (E.11) |
| • om:procedure | Mandatory for INSPIRE (E.10) |
| • om:parameter (Assessment Type) | Mandatory (E.4.3) |
| • om:parameter (Assessment Method) | Mandatory (E.4.4) |
| • om:observedProperty | Mandatory (E.4.2) |
| • om:featureOfInterest | Mandatory for INSPIRE (E.9) |
| • om:resultQuality (Time coverage) | Conditional, mandatory if yearly reporting (E.7.1) |
| • om:resultQuality (Data capture) | Conditional, mandatory if yearly reporting (E.7.2) |
| • om:resultQuality (Uncertainty estimation) | Conditional, mandatory if yearly reporting (E.7.3) |
| • om:result | |
| ○ swe:DataArray | |
| ▪ swe:elementCount | |
| ▪ swe:elementType | |
| ▪ swe:encoding | |
| ▪ swe:values | Mandatory (E.5 & E.6.1 and E.6.2, E.6.4, E.6.5) |

Detailed information on the constraints and content for these e-Reporting classes is provided below. Figure 30 illustrates the majority of information classes that constitute OM_Observation.

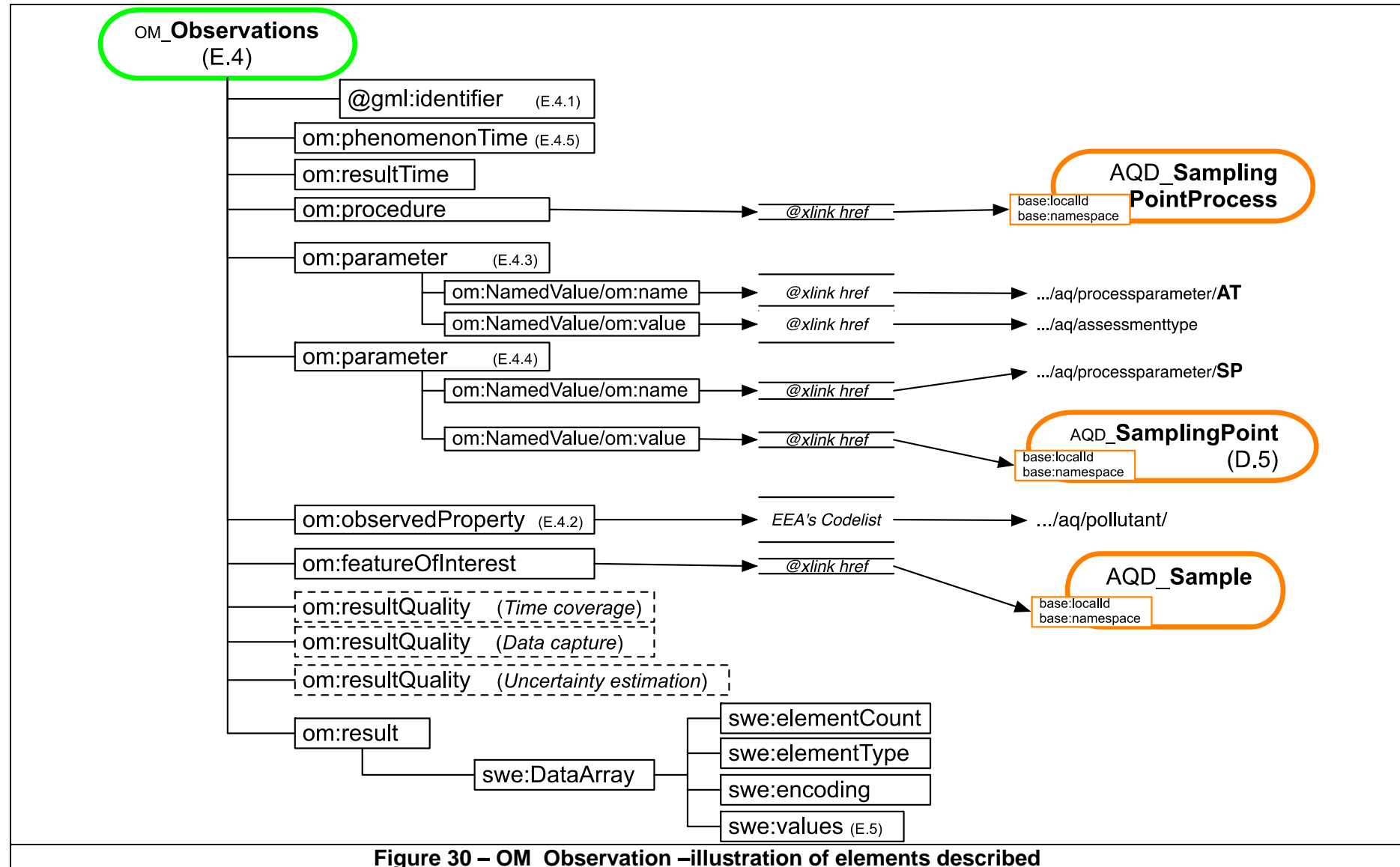
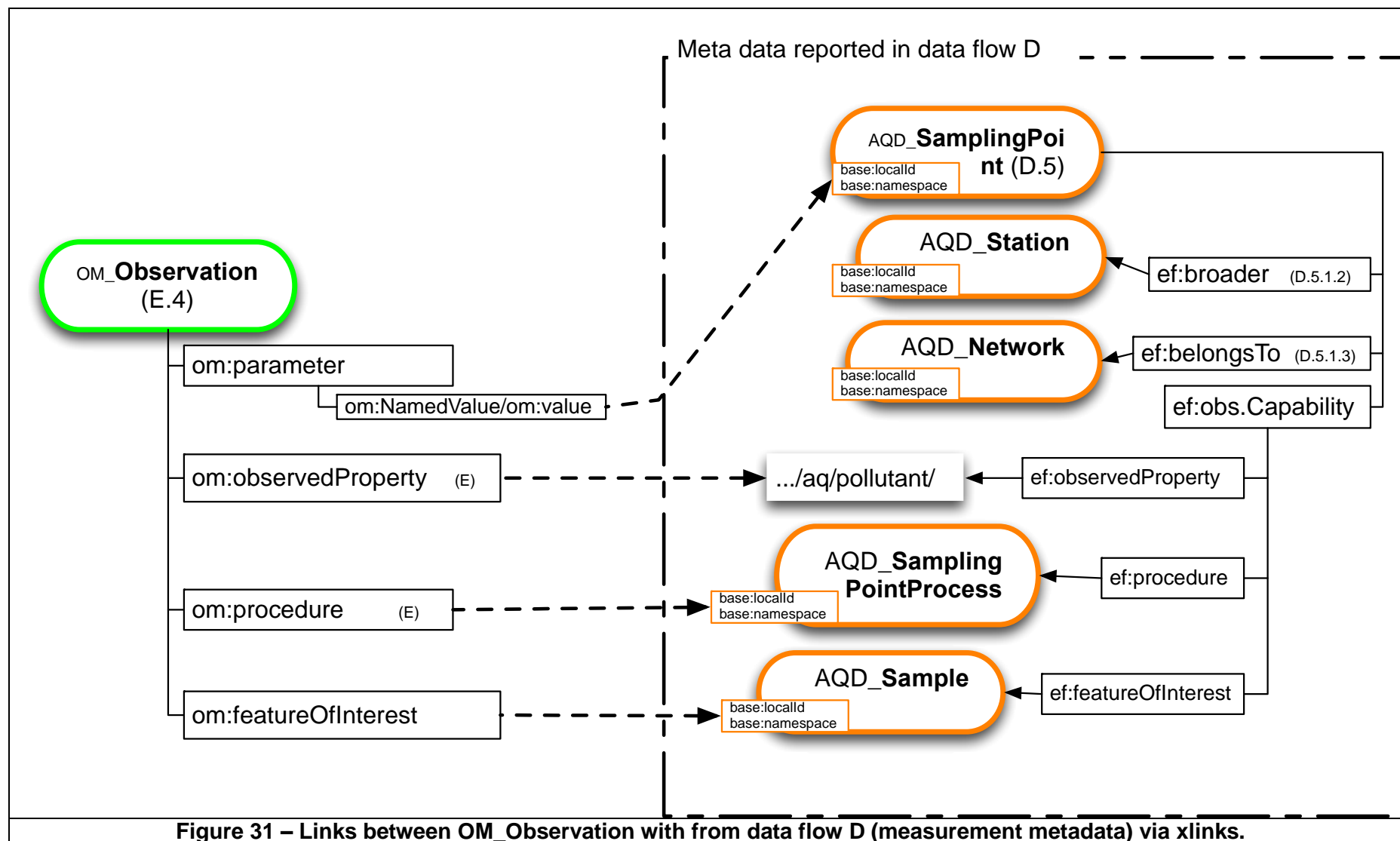


Figure 30 – OM_Observation –illustration of elements described



Focus**INSPIRE classes with OM_Observation use namespaces "om" or "swe"**

Within OM_Observation, those elements from INSPIRE start with the namespaces "**om**" or/and "**swe**". These namespaces stem from the underlying OGC and ISO standards (foremost ISO 19156), and follow the recommendations from the [Guidelines for the use of Observations & Measurements and Sensor Web Enablement](#).

For example, the result block providing information on the structure of the result values is placed in the tag <om:results>; the actual measurement value are nested within the result block under the <swe:values> tag

Primary data identifier - @gml

The gml identifier provides for the unique identification of the primary data. An explanation of the gml identifier can be found in the section "The GML identifier attribute".

@gml:id

Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	E.4.1
Code list constraints:	None
QA/QC constraints:	
Allowed formats:	Alphanumeric
XPath to schema location:	/om:OM_Observation/@gml:id
Further information found @	

Example**aqd:AQD_Station**

Generic example

```
<om:OM_Observation gml:id="Observation_YYYY">
```

AT example

```
<om:OM_Observation gml:id=" OBS.AT30407.1.0236fbac-1a9d-4ca4-a674-0543f01a72bf">
```


Time period of dataset - <om:phenomenonTime>

This element specifies the start / end timestamp of values covered by the dataset provided for the pollutant and assessment type.

om:phenomenonTime

Minimum occurrence: 1 (Mandatory)

Maximum occurrence: 1

IPR data specifications found: E.4.5 (E.4.5.1 & E.4.5.2)

Code list constraints: n/a

Formats Allowed: ISO 8601 extended format using local standard with time offset relative to UTC

XPath to schema location:
 /om:OM_Observation/om:phenomenonTime/
 /om:OM_Observation/om:phenomenonTime/gml:TimePeriod/gml:beginPosition
 /om:OM_Observation/om:phenomenonTime/gml:TimePeriod/gml:endPosition

Example**om:phenomenonTime**

```
<om:phenomenonTime>
  <gml:TimePeriod gml:id="OBS.TP.AT30407.1.0236fbac-1a9d-4ca4-a674-0543f01a72bf.">
    <gml:beginPosition>2013-10-23T00:00:00+00:00</gml:beginPosition>
    <gml:endPosition>2013-12-11T24:00:00+00:00</gml:endPosition>
  </gml:TimePeriod>
</om:phenomenonTime>
```

Time period of dataset - <om:resultTime>

This element specifies a TimeInstant when the measurement result was made available. For continuous measurements provided in UTD data, this should be the same time as reported above under <om:phenomenonTime>. For measurements stemming from laboratory analysis, the time when the result was made available should be used.

om:resultTime

Minimum occurrence: 1 (Mandatory)

Maximum occurrence: 1

IPR data specifications found: E.11

Code list constraints: n/a

Formats Allowed: ISO 8601 extended format using local standard with time offset relative to UTC

XPath to schema location:
 /om:OM_Observation/om:resultTime/gml:TimeInstant/
 /om:OM_Observation/om:resultTime/gml:TimeInstant/gml:timePosition

Example

om:resultTime

```
<om:resultTime>
  <gml:TimeInstant gml:id="OBS.TP.AT30407.2.0236fbac-1a9d-4ca4-a674-0543f01a72bf.">
    <gml:timePosition>2013-12-13T14:46:00+00:00</gml:timePosition>
  </gml:TimeInstant>
</om:resultTime>
```

Focus

om:phenomenonTime & om:resultTime

ISO definition of **phenomenonTime**: “The attribute *phenomenonTime* shall describe the time that the result applies to the property of the feature – of - interest. This may be the time when a specimen was collected or the observation procedure was performed on a real - world feature [...]”

ISO definition of **resultTime**: “The attribute *resultTime* describes the time when the result became available, typically when the procedure associated with the observation was completed. For some observations this is identical to the *phenomenonTime*. However, there are important cases where they differ;

Example 1 Where a measurement is made on a specimen in a laboratory, the *phenomenonTime* is the time the specimen was retrieved from its host, while the *resultTime* is the time the laboratory procedure was applied.

Example 2 The *resultTime* also supports disambiguation of repeat measurements made of the same property of a feature using the same procedure.

Example 3 Where sensor observation results are post-processed, the *resultTime* is the post-processing time, while the *phenomenonTime* is the time of initial interaction with the world.

Example 4 Simulations may be used to estimate the values for phenomena in the future or past. The *phenomenonTime* is the time that the result applies to, while the *resultTime* is the time that the simulation was executed.

Assessment Method Process - <om:procedure>

This element specifies the assessment method process used and provides a reference to the measurement process provided under data flow D together with the SamplingPoint information via an xlink href attribute to AQD_SamplingPointProcess. The specified measurement process must reconcile (be the same as) that specified by the sampling point referenced under Assessment method under the XPath /aqd:AQD_SamplingPoint/ef:ObservingCapability/ef:procedure.

om:procedure	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.10
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:procedure/@xlink:href

Example

om:procedure – Assessment method process

Generic example

<om:procedure xlink:href="[xlink to AQD_SamplingPointProcess]"/>

ES example

<om:procedure xlink:href="ES.BDCA.AQD/SPP.28005002.10.49.1" />

Assessment type

This complex element generic element is used to specify the assessment type the data belongs to. It consists of two elements, the first one specifies what process parameter is described (in this case AssessmentType) thile the second element provides the assessment type itself (i.e. fixed for Fixed measurements). Both values must be selected from the relevant codelists, and provided via the xlink:href attribute of the elements.

E – Primary data

om:parameter – Assessment type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/ http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

Example

om:parameter – Assessment type

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType" />
    <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed" />
  </om:NamedValue>
</om:parameter>
```

Assessment method

This complex generic element is used to specify the assessment method used and provides a xlink to the specific AQD_SamplingPoint the observational data originates from. It consists of two elements, the first one specifies what process parameter is described (in this case SamplingPoint for data measured at a Sampling Point, model for modelled data) while the second provides a reference to the sampling point providing the data; this reference is encoded via an xlink:href attribute to linked to AQD_SamplingPoint.

om:parameter – Assessment method	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/ Error! Hyperlink reference not valid.

Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

Example**om:parameter** – Assessment method

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/SamplingPoint" />
    <om:value xlink:href="ES.BDCA.AQD/SPO.28005002.10.49" />
  </om:NamedValue>
</om:parameter>
```

Pollutant assessed - <om:observedProperty>

This element specifies the pollutant to which the observations relate. The specified pollutant must reconcile (be the same as) that specified by the sampling point referenced under Assessment method under the XPath /aq:AQD_SamplingPoint/ef:ObservingCapability/ef:observedProperty.

om:observedProperty	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/view
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:observedProperty/@xlink:href

Example**om:observedProperty**

```
<om:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
```

E – Primary data

Sample inlet - <om:featureOfInterest>

This element specifies the sample inlet used and provides citation to the measurement process via an xlink href attribute to AQD_Sample the data belongs to. The specified sample inlet must reconcile (be the same as) that specified by the sampling point referenced under Assessment method under the XPath /aqd:AQD_SamplingPoint/ef:ObservingCapability/ef:featureOfInterest.

om:featureOfInterest	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	(E.9)
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:featureOfInterest/@xlink:href

Example

om:featureOfInterest

Generic example

```
<om:featureOfInterest xlink:href="[xlink to AQD_Sample]"/>
```

ES example

```
<om:featureOfInterest xlink:href="ES.BDCA.AQD/SAM.28005002.10.49" />
```

Result data quality

In addition to the data flags provided with individual primary data, when yearly reported data is provided the following information is necessary:

- om:resultQuality (Time coverage) Conditional, mandatory if yearly reporting (E.7.1)
- om:resultQuality (Data capture) Conditional, mandatory if yearly reporting (E.7.2)
 - om:resultQuality (Uncertainty estimation) Conditional, mandatory if yearly reporting (E.7.3)

om:resultQuality

Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	E.7.1, E.7.2 and E.7.3
Code list constraints:	n/a
Formats Allowed:	
XPath to schema location:	/om:OM_Observation/om:resultQuality /om:OM_Observation/om:resultQuality/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:pass/ gco:Boolean /om:OM_Observation/om:resultQuality[3]/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_QuantitativeResult/gmd:value /gco:Record

For the provision of this data, information on the data quality objective being described must be provided. The following table shows the values that must be provided within the <gmd:DQ_ConformanceResult > element for the description of Time Coverage and Data Capture:

XPath	Time Coverage	Data Capture
/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:title/gco:CharacterString	EC/50/2008	EC/50/2008
/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:date/gmd:CI_Date/gmd:date/ gco:Date	2008	2008
/gmd:DQ_ConformanceResult/gmd:specification/gmd:CI_Citation/gmd:date/gmd:CI_Date/gmd:date Type/gmd:CI_DateTypeCode	publication	publication
/gmd:DQ_ConformanceResult/gmd:explanation/gco:CharacterString	Time Coverage	Data Capture
/gmd:DQ_ConformanceResult/gmd:pass/gco:Boolean	True or false as applicable	True or false as applicable

For the provision of the uncertainty estimation, we utilize the <gmd:DQ_QuantitativeResult> element with the following predefined values:

XPath	uncertainty estimation
/gmd:DQ_QuantitativeResult/gmd:valueUnit/gml:BaseUnit/gml:identifier/@codeSpace	uncertaintyestimation
/gmd:DQ_QuantitativeResult/gmd:valueUnit/gml:BaseUnit/gml:catalogSymbol	%
/gmd:DQ_QuantitativeResult/gmd:valueUnit/gml:BaseUnit/gml:unitsSystem	http://www.opengis.net/def/uom/UCUM
/gmd:DQ_QuantitativeResult/gmd:value/gco:Record	Uncertainty estimation value, i.e. 5 = 5%

Example**om:resultQuality – Time Coverage**

```

<om:resultQuality>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>EC/50/2008</gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:Date>2008</gco:Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="publication" codeList="eng">publication</gmd:CI_DateTypeCode>
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
          </gmd:CI_Citation>
        </gmd:specification>
        <gmd:explanation>
          <gco:CharacterString>Time Coverage</gco:CharacterString>
        </gmd:explanation>
        <gmd:pass>
          <gco:Boolean>true</gco:Boolean>
        </gmd:pass>
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</om:resultQuality>

```

Example**om:resultQuality – Data capture**


```

<om:resultQuality>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:DQ_ConformanceResult>
        <gmd:specification>
          <gmd:CI_Citation>
            <gmd:title>
              <gco:CharacterString>EC/50/2008</gco:CharacterString>
            </gmd:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco:Date>2008</gco:Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="publication" codeList="eng">publication</gmd:CI_DateTypeCode>
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
          </gmd:CI_Citation>
        </gmd:specification>
        <gmd:explanation>
          <gco:CharacterString>Data Capture</gco:CharacterString>
        </gmd:explanation>
        <gmd:pass>
          <gco:Boolean>true</gco:Boolean>
        </gmd:pass>
      </gmd:DQ_ConformanceResult>
    </gmd:result>
  </gmd:DQ_DomainConsistency>
</om:resultQuality>

```

Example**om:resultQuality** – Uncertainty estimation

E – Primary data

```
<om:resultQuality>
  <gmd:DQ_QuantitativeAttributeAccuracy>
    <gmd:result>
      <gmd:DQ_QuantitativeResult>
        <gmd:valueUnit>
          <gml:BaseUnit gml:id="UncertaintyEstimationPercentageUnit69137">
            <gml:identifier codeSpace="http://dd.eionet.europa.eu/vocabulary/aq/resultquality/uncertaintyestimation"/>
            <gml:catalogSymbol codeSpace="http://dd.eionet.europa.eu/vocabulary/uom/statistics">percentage</gml:catalogSymbol>
            <gml:unitsSystem xlink:href="http://www.opengis.net/def/uom/UCUM"/>
          </gml:BaseUnit>
        </gmd:valueUnit>
        <gmd:value>
          <gco:Record>12</gco:Record>
        </gmd:value>
      </gmd:DQ_QuantitativeResult>
    </gmd:result>
  </gmd:DQ_QuantitativeAttributeAccuracy>
</om:resultQuality>
```

Results - <om:result>

The measurements results (observations) are provided within this complex element. Due to the amount of data to be provided (either primary up-to-date or validated), the measurement results are provided via a <swe:DataArray> *element*. Om:result provides information on the size, definition, encoding of the data array and the data array itself.

Example**om:result – for automatic data (hourly & daily values)**

```

<om:result>
  <swe:DataArray>
    <swe:elementCount>
      <swe:Count>
        <swe:value>2</swe:value>
      </swe:Count>
    </swe:elementCount>
    <swe:elementType name="FixedObservations">
      <swe:DataRecord>
        <swe:field name="StartTime">
          <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
            <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
          </swe:Time>
        </swe:field>
        <swe:field name="EndTime">
          <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
            <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
          </swe:Time>
        </swe:field>
        <swe:field name="Verification">
          <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationverification" />
        </swe:field>
        <swe:field name="Validity">
          <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationvalidity" />
        </swe:field>
        <swe:field name="Value">
          <swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/primaryObservation/hour">
            <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3" />
          </swe:Quantity>
        </swe:field>
      </swe:DataRecord>
    </swe:elementType>
    <swe:encoding>
      <swe:TextEncoding blockSeparator="@@" decimalSeparator="." tokenSeparator="," />
    </swe:encoding>
    <swe:values>2013-10-23T00:00:00+00:00,2013-10-23T01:00:00+00:00,3,1,15@@2013-10-23T01:00:00+00:00,2013-10-23T02:00:00+00:00,3,1,9</swe:values>
  </swe:DataArray>
</om:result>

```

Number of values provided <swe:Count>

This element is a simple count of the number of observations provided within the <swe:values> element of the Data Array (i.e. <swe:value>24</swe:value>, the Data Array must include 24 observations in the <swe:values> element.).

Swe:Count	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	n/a
Formats Allowed:	Numerical number
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementCount/swe:Count/swe:value

Example

om:result

```
<om:result>
  <swe:DataArray>
    <swe:elementCount>
      <swe:Count>
        <swe:value>2</swe:value>
      </swe:Count>
    </swe:elementCount>
  </swe:DataArray>
</om:result>
```

Definition of Data Array <swe:elementType>

The individual measurements comprising the assessment data are provided together with metadata describing the individual measurement. The <swe:elementType> is used to define the 5 elements being provided for easier interpretation of the values provided. All assessment data must include the following information for each value:

- StartTime
- EndTime
- Verification flag
- Validation flag

- Measurement value

Of these descriptive elements, the ones pertaining to StartTime, EndTime, Verification flag and Validation flag are the same for all data flows. Only the element provided for the Measurement value must be adjusted in accordance with the type of measurement being provided in dependency of the observation time and unit of measurement of that measurement. The element types as used to describe primary measurements are specified as the example below:

Example**swe:elementType** – definition of components

```

<swe:elementType name="FixedObservations">
  <swe:DataRecord>
    <swe:field name="StartTime">
      <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
        <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
      </swe:Time>
    </swe:field>
    <swe:field name="EndTime">
      <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
        <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
      </swe:Time>
    </swe:field>
    <swe:field name="Verification">
      <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationverification" />
    </swe:field>
    <swe:field name="Validity">
      <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationvalidity" />
    </swe:field>
    <swe:field name="Value">
      <swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/primaryObservation/hour">
        <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3" />
      </swe:Quantity>
    </swe:field>
  </swe:DataRecord>
</swe:elementType>

```

E – Primary data

StartTime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.5.1
Code list constraints:	
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="StartTime"
EndTime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.5.2
Code list constraints:	
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="EndTime"

Focus

StartTime & EndTime of measurements

IPR Guidance:

"To avoid any confusion or misinterpretation, additional criteria have been set in Decision 2011/850/EC. This is why the extended format, which includes the information on the difference with UTC, will be used as the default for any value originating from measurement or modelling results. For all measurement and modelling data types the timestamp of the start time and end time of the observation shall be given in the ISO extended time format.

YYYY-MM-DDThh:mm:ss±hh

where :

YYYY represents the year

MM represents the month

DD represent the day

hh represents the hour

mm represents the minute

ss represents the second

+hh represents the shift to UTC, so for CET it is +01".

Verification	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.6.5
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/observationverification/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="Verification"
Validation	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.6.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="Validation"

Focus**Verification & Validation flags**

IPR Guidance: "Validity and verification flags shall be used for the primary validated assessment data and primary up – to –date assessment data, reported with dataset E."

Key codelist links for status flags:

<http://dd.eionet.europa.eu/vocabulary/aq/observationverification/>

<http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/>

Measurement value & unit	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.6.1 & E.6.2
Code list constraints:	Primary observation resolution: http://dd.eionet.europa.eu/vocabulary/aq/primaryObservation/view Observation unit: http://dd.eionet.europa.eu/vocabulary/uom/concentration/view
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="Pollutant"

Encoding of values within Data Array <swe:encoding>

The 5 elements defined above and provided within <swe:values> are separated by the characters specified within <swe:encoding>. In the example below, the individual data elements comprising one measurement block (measurement value plus timestamps and flags) are separated by a comma (i.e. tokenSeparator=","), the decimal separator used in the encoding of the measurement value is defined as a full stop (i.e. decimalSeparator=".") and each measurement block of 5 elements are separated by "@@" (i.e. blockSeparator="@@").

swe:encoding	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	n/a
Formats Allowed:	
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementCount/swe:Count/swe:value

Example

swe:encoding

```
<swe:encoding>
  <swe:TextEncoding blockSeparator="@" decimalSeparator="." tokenSeparator="," />
</swe:encoding>
```

Assessment data – swe:values

Having defined the elements that are to be provided and the encoding used, the <swe:values> includes the observational data including the necessary elements that characterise the observation (StartTime, EndTime, Verification and Validation flag & value).

swe:values	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.5, E.6.2, E.6.4, E.6.5
Formats Allowed:	As specified within swe:elementType
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:values

Example**swe:values**

Data array with 2 observations

```

<om:result>
  <swe:DataArray>
    <swe:elementCount>
      <swe:Count>
        <swe:value>2</swe:value>
      </swe:Count>
    </swe:elementCount>      [...]
    <swe:values>
      2013-10-23T00:00:00+00:00,2013-10-23T01:00:00+00:00,3,1,15@@
      2013-10-23T01:00:00+00:00,2013-10-23T02:00:00+00:00,3,1,9</swe:values>
    </swe:DataArray>
  </om:result>

```

Data array with 12 observations

```

<om:result>
  <swe:DataArray>
    <swe:elementCount>
      <swe:Count>
        <swe:value>12</swe:value>
      </swe:Count>
    </swe:elementCount>      [...]
    <swe:values>
      2013-10-23T00:00:00+00:00,2013-10-23T01:00:00+00:00,3,1,15@@
      2013-10-23T01:00:00+00:00,2013-10-23T02:00:00+00:00,3,1,9@@
      2013-10-23T00:00:00+00:00,2013-10-23T01:00:00+00:00,3,1,15@@
      2013-10-23T01:00:00+00:00,2013-10-23T02:00:00+00:00,3,1,9@@
      2013-10-23T02:00:00+00:00,2013-10-23T03:00:00+00:00,3,1,11@@
      2013-10-23T03:00:00+00:00,2013-10-23T04:00:00+00:00,3,1,17@@
      2013-10-23T04:00:00+00:00,2013-10-23T05:00:00+00:00,3,1,15@@
      2013-10-23T05:00:00+00:00,2013-10-23T06:00:00+00:00,3,1,11@@
      2013-10-23T06:00:00+00:00,2013-10-23T07:00:00+00:00,3,1,16@@
      2013-10-23T07:00:00+00:00,2013-10-23T08:00:00+00:00,3,1,15@@
      2013-10-23T08:00:00+00:00,2013-10-23T09:00:00+00:00,3,1,25@@
      2013-10-23T09:00:00+00:00,2013-10-23T10:00:00+00:00,3,1,19</swe:values>
    </swe:DataArray>
  </om:result>

```

E – Primary data

Results - <om:result> - for *Sample based multiday measurement*

The measurements results for sample based multiday measurement (observations) are to be provided within the same complex element as other results. However, due to the nature of this observations, the Data Array is configured slightly differently to include:

- The percentarge of valid data in the sampling period

. Om:result provides information on the size, definition, encoding of the data array and the data array itself.

Number of values provided

This element is the same as other observations

Definition of Data Array

Assessment data is provided along with other information and data flags in order to comply with the requirements.

<swe:elementType> is used to define the 6 elements needed. All assessment data must include:

- StartTime
- EndTime
- Verification flag
- Validation flag
- Value
- Data capture

The element types are specified as the example below:

Example**swe:elementType** – definition of components for **sample based multiday measurement**

```

<swe:elementType name="FixedMultiDayObservations">
  <swe:DataRecord>
    <swe:field name="StartTime">
      <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
        <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
      </swe:Time>
    </swe:field>
    <swe:field name="EndTime">
      <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
        <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
      </swe:Time>
    </swe:field>
    <swe:field name="Verification">
      <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationverification" />
    </swe:field>
    <swe:field>
      <swe:field name="Validity">
        <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationvalidity" />
      </swe:field>
    </swe:field>
    <swe:field name="Value">
      <swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/primaryObservation/var">
        <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3" />
      </swe:Quantity>
    </swe:field>
    <swe:field name="DataCapture">
      <swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/primaryObservation/dc">
        <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/statistics/percentage"/>
      </swe:Quantity>
    </swe:field>
  </swe:DataRecord>
</swe:elementType>

```

E1b Modelled and Objective Estimation Observations - <om:OM_Observation>

OM_Observation is the parent information class to the following child elements and classes which store information on the observational data. Elements that are specific to Air Quality e-Reporting appear with an aqd: prefix, elements specific to INSPIRE (and its adopted standards) have other prefixes e.g. om: refers to the INSPIRE Observations & Measurements’ data specification. The AQ and INSPIRE information classes that make up the measurements and observations data flow are listed below. An indication of their cardinality is provided in addition to references to the relevant data specifications in the Commission’s IPR guidance documentation.

om:OM_Observation includes:

• @ gml:id	Mandatory for OM
• om:phenomenonTime	Mandatory (E.4.5 and E.5)
• om:resultTime	Mandatory for INSPIRE
• om:procedure	Mandatory for INSPIRE
• om:parameter (Assessment Type)	Mandatory (E.4.3)
• om:parameter (Assessment Method)	Mandatory (E.4.4)
• om:parameter (Result Encoding/Location)	Mandatory (new)
• om:parameter (Result Format)	Mandatory (new)
• om:parameter (extra model parameters)	Conditional (new)
• om:observedProperty	Mandatory (E.4.2)
• om:featureOfInterest	Mandatory for INSPIRE
• om:resultQuality (Uncertainty estimation)	Conditional, mandatory if yearly reporting (E.7.3)
• om:result	Mandatory (E.6.1 and E.6.3)

Detailed information on the constraints and content for these e-Reporting classes is provided below. Figure 30 illustrates the majority of information classes that constitute OM_Observation. The E1b data flow is used to report the results of high quality complex models and objective estimation techniques (empirical relationships, interpolations, expert judgement). **Within the context of the following section complex models and objective estimation methods are referred to as “models” and their datasets as “modelled” data.**

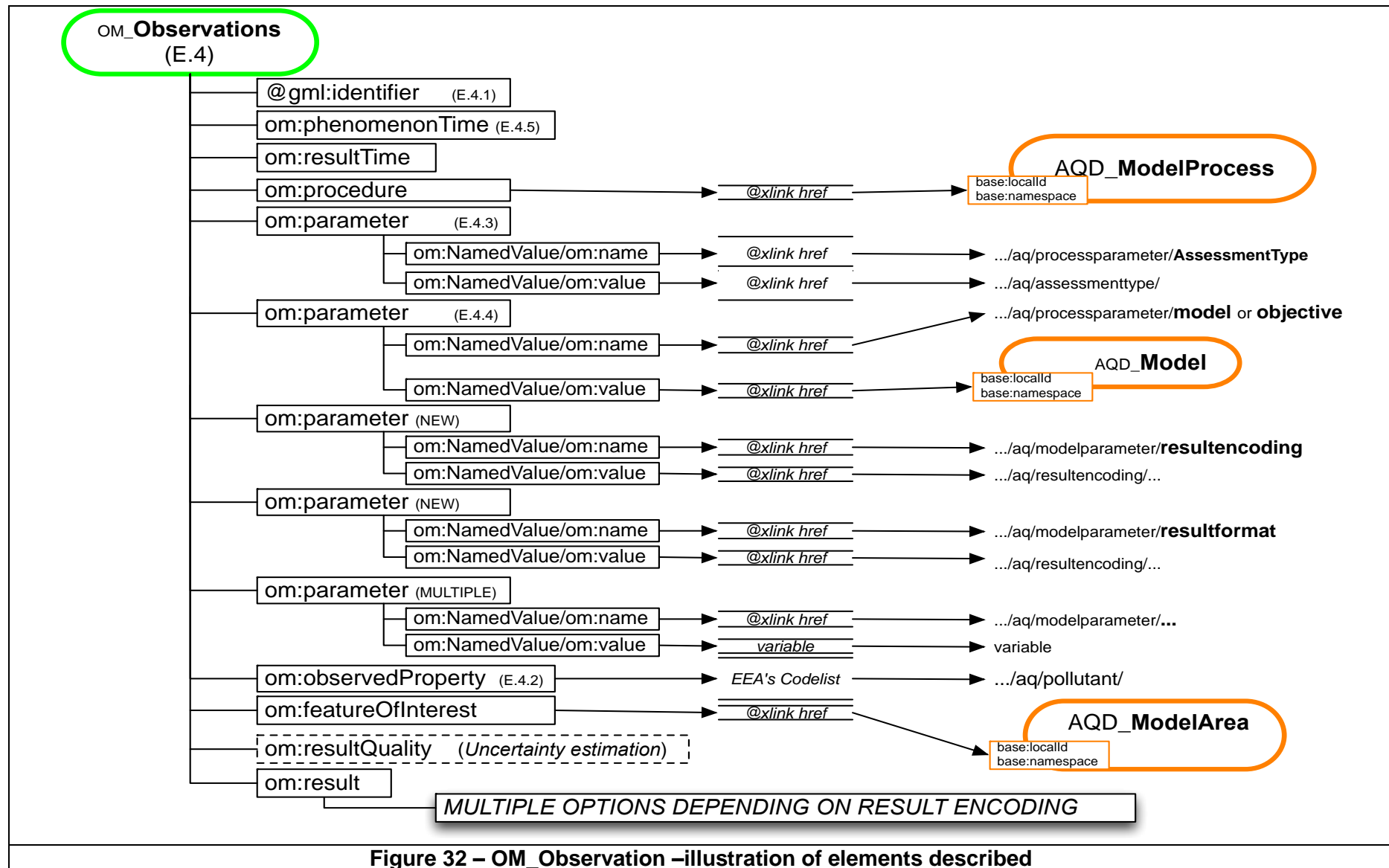
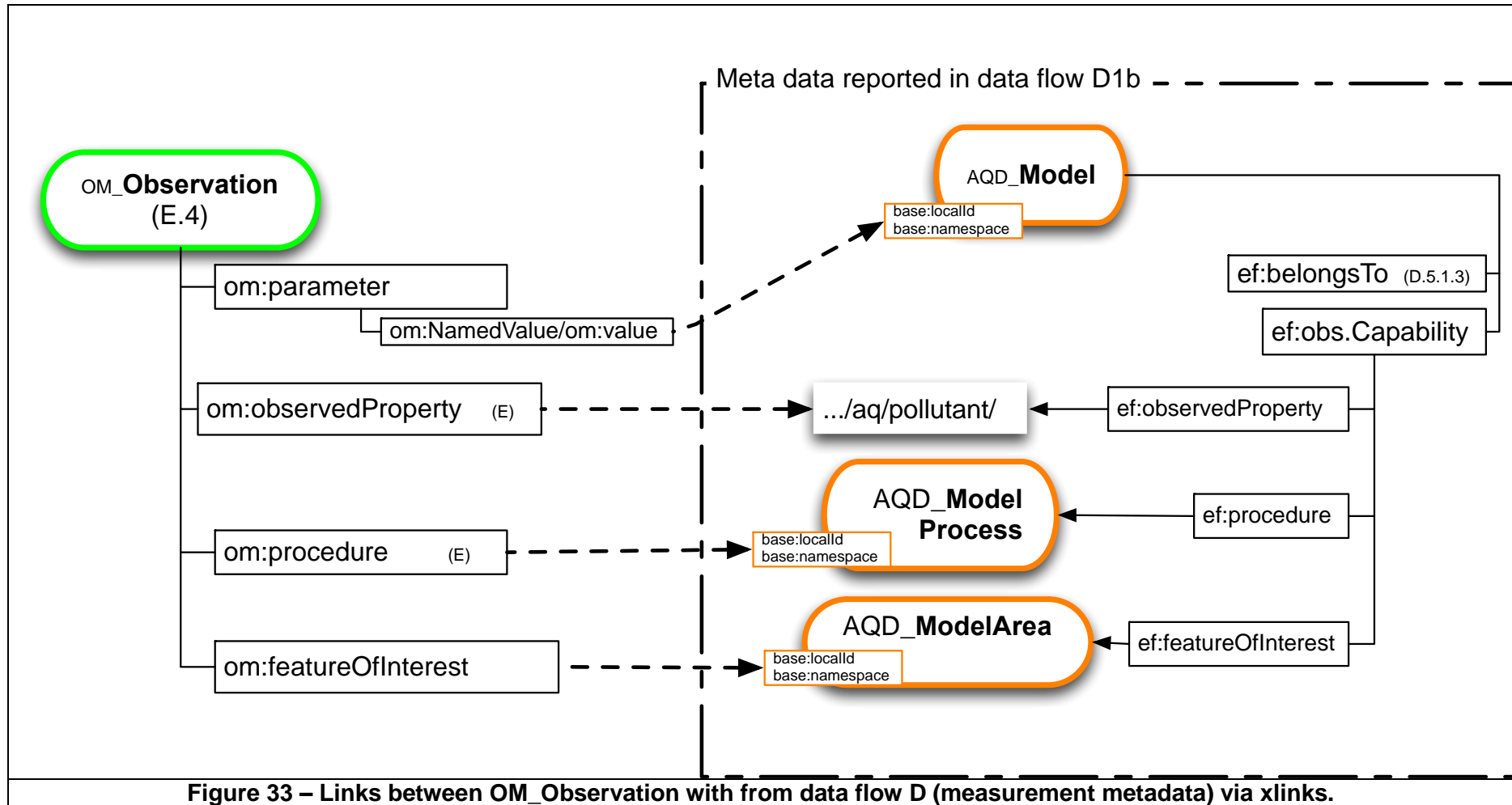


Figure 32 – OM_Observation –illustration of elements described



Focus**INSPIRE classes with OM_Observation use acronyms “om” or “swe”**

Within the e-Reporting OM_Observation application schemas, those elements from INSPIRE start with the acronyms “**om**” or/and “**swe**”. These follow the Data specifications on the Draft Guidelines for the use of Observations & Measurements and Sensor Web Enablement.

For example, results is found as <om:results> and measurement value <swe:values> is used

Modelled dataset identifier - @gml

The gml identifier provides for the unique identification of the modelled dataset and its associated attributes. An explanation of the gml identifier can be found [The GML identifier](#) section of this document.

@gml:id

Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1
IPR data specifications found at:	E.4.1
Code list constraints:	None
QA/QC constraints:	
Allowed formats:	Alphanumeric
XPath to schema location:	/om:OM_Observation/@gml:id
Further information found @	

Example**om:OM_Observation**

```
<om:OM_Observation gml:id="GB_ModellingObservation_26 ">
```

Time period for the modelled dataset - <om:phenomenonTime>

This element specifies the start and end of the time period covered by the dataset i.e. the period for which observations are provided.

om:phenomenonTime	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.5 (E.4.5.1 & E.4.5.2)
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/om:OM_Observation/om:phenomenonTime/ /om:OM_Observation/om:phenomenonTime/gml:TimePeriod/gml:beginPosition /om:OM_Observation/om:phenomenonTime/gml:TimePeriod/gml:endPosition

Example**om:phenomenonTime**

```
<om:phenomenonTime>
  <gml:TimePeriod gml:id="ObservationTimePeriod_8a629e82-0ebc-46bb-8987-c084a7217abf">
    <gml:beginPosition>2015-01-01T00:00:00+01:00</gml:beginPosition>
    <gml:endPosition>2015-12-31T24:00:00+01:00</gml:endPosition>
  </gml:TimePeriod>
</om:phenomenonTime>
```

Result time for the modelled dataset - <om:resultTime>

This element specifies a TimeInstant for the generation of the model results e.g. the date of the most recent model run.

om:resultTime	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/om:OM_Observation/om:resultTime/gml:TimeInstant/ /om:OM_Observation/om:resultTime/gml:TimeInstant/gml:timePosition

Example**om:resultTime**

```

<om:resultTime>
  <gml:TimeInstant gml:id="ModellingResultInstant_e0e8e2e5-cd4d-4bdd-8e40-d6ee8c72ab37">
    <gml:timePosition>2016-07-13T14:46:00+00:00</gml:timePosition>
  </gml:TimeInstant>
</om:resultTime>

```

Focus**om:phenomenonTime & om:resultTime**

ISO definition of **phenomenonTime**: “The attribute *phenomenonTime* shall describe the time that the result applies to the property of the feature – of - interest. This may be the time when a specimen was collected or the observation procedure was performed on a real - world feature [...]”

ISO definition of **resultTime**: “The attribute *resultTime* describes the time when the result became available, typically when the procedure associated with the observation was completed. For some observations this is identical to the *phenomenonTime*. However, there are important cases where they differ;

Example 1 Where a measurement is made on a specimen in a laboratory, the *phenomenonTime* is the time the specimen was retrieved from its host, while the *resultTime* is the time the laboratory procedure was applied.

Example 2 The *resultTime* also supports disambiguation of repeat measurements made of the same property of a feature using the same procedure.

Example 3 Where sensor observation results are post-processed, the *resultTime* is the post-processing time, while the *phenomenonTime* is the time of initial interaction with the world.

Example 4 Simulations may be used to estimate the values for phenomena in the future or past. The *phenomenonTime* is the time that the result applies to, while the *resultTime* is the time that the simulation was executed.

Assessment Method Process - <om:procedure>

This element specifies the model process used to generate the result and provides a citation to the modelling process via an xlink:href attribute to AQD_ModelProcess.

om:procedure	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	Not specified in IPR excel
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:procedure/@xlink:href

Example

om:procedure – modelling process

```
<om:procedure xlink:href="http://environment.data.gov.uk/air-quality/so/GB_ModelProcess_56" />
```

Model configuration parameters <om: parameter>

The om:parameter element is a complex element which allows for the declaration of a range of parameters to satisfy both INSPIRE requirements and provide expert advice on the configuration of the model. It is closely paired to ompr:processParameter in data flow D, but whereas ompr:processParameter usage is to indicate what level and type information on the model configuration can be found in data flow E1b, om:parameter elements actually provide this information. **So for every ompr:processParameter element found in data flow D there shall be an om:parameter element in E1b which holds the content. Neither element may exist without the other.**

For the modelling community typical examples of om:parameter content will include a description of the emission inventory used, meteorology assumptions, chemical schemes applied etc. The ompr:processParameter in data flow D declares which of these will be made available and om:parameter provides the content alongside the observational data in E1b.

As indicated previously the correct usage of om:parameter (and ompr:processParameter) elements have been under review within e-Reporting from an INSPIRE perspective. Instructions prior to this version of this document have been updated. **Correct syntax and usage is describe in the following sections. From 2017, previous guidance will be deprecated to align e-Reporting with the INSPIRE data model(s).**



om:parameter – Assessment type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

The following generic model parameters may be encoded in separate om:parameter elements based on the information availability of your modelling method(s).

O&M parameter – assessment type

The om:parameter complex element provides scope to describe the assessment type associated with the modelled data to closely link it to the observational data itself in data flow E1b. It consists of two elements with the om:parameter information class;

- om:name specifies that the assessment type of the dataset is being declared using the code list vocabulary <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType>
- om:value specifies the type of assessment type applicable to the modelled data set again using a controlled vocabulary i.e. “model” for modelling “objective” for objective estimation.

om:parameter – Assessment type	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

Example**om:parameter – Assessment type**

```

<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType" />
    <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model" />
  </om:NamedValue>
</om:parameter>

<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/AssessmentType" />
    <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/objective" />
  </om:NamedValue>
</om:parameter>

```

O&M parameter – Model identifier

This complex element provides scope to identify the model used to predict the observational data supplied in the E1b data flow i.e. a citation of the relevant aqd:AQD_Model localId and associated namespace. It consists of two elements;

- om:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/processparameter/modelidentifier>,
- om:value provides a reference to the associated AQD_Model identifier using and xlink:href citation of the namespace and localId of the model used to predict the observations in E1b

om:parameter – Model identifier	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

Example**om:parameter – Model identifier**

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/model" />
    <om:value xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Model_56" />
  </om:NamedValue>
</om:parameter>
```

O&M parameter - Result encoding

This is important complex element that provides specifies the encoding (**location**) of the results. It is mandatory for e-Reporting, as it provides the EEA with important information on how they should harvest the results. It consists of two elements;

- om:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultencoding>, which indicates that the location of the predicted results will be describe in data flow E1b. The observational data itself may within the E1b delivery itself i.e. an inline encoding or as a separate file i.e. an external encoding
- om:value specifies the location type via an xlink:href reference to a code list

om:parameter – Result encoding	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultencoding http://dd.eionet.europa.eu/vocabulary/aq/resultencoding
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

Example**om:parameter – Result encoding**

When model results are provided within same XML:

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultencoding"/>
    <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/resultencoding/inline"/>
  </om:NamedValue>
</om:parameter>
```

When model results are provided externally in another file (i.e. shapefile, ascii...):

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultencoding"/>
    <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/resultencoding/external"/>
  </om:NamedValue>
</om:parameter>
```

O&M parameter - Result format

This is important complex element that provides scope to identify the format of the results. It is mandatory for e-Reporting, as it provides the EEA with important information on how to harvest the results. It consists of two elements;

- om:name specifies a common thematic name for process parameter that will be described in E1b. For e-Reporting the process parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat>, which indicates that the file format, web standard or inline encoding method of the predicted results will be describe in data flow E1b.
- om:value specifies the format type via an xlink:href reference to a code list

om:parameter – Result format	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat http://dd.eionet.europa.eu/vocabulary/aq/resultformat
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/@xlink:href

E1b – Modelling data – “NEW SECTION”

The encoding formats supported include;

- GeoTiff (external)
- ASCII grid (external)
- ESRI shapefile (external)
- SWE array (inline)

Example

om:parameter – Result format

GeoTiff example	<pre><om:parameter> <om:NamedValue> <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/> <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/resultformat/geotiff"/> </om:NamedValue> </om:parameter></pre>
ASCII grid example	<pre><om:parameter> <om:NamedValue> <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/> <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/resultformat/ascii-grid"/> </om:NamedValue> </om:parameter></pre>
ESRI shapefile example	<pre><om:parameter> <om:NamedValue> <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/> <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/resultformat/esri-shp"/> </om:NamedValue> </om:parameter></pre>
SWE array example	<pre><om:parameter> <om:NamedValue> <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/processparameter/resultformat"/> <om:value xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/resultformat/swe-array"/> </om:NamedValue> </om:parameter></pre>

O&M parameter – model parameters (generic)

The om:parameter element is a complex element which allows for the declaration of a range of parameters. Depending on model configuration, different parameters are required. In this section includes generic description on how to provide different parameters. For the modelling community typical examples of om:parameter content will include a description of:

- emission inventory used,
- meteorology database
- chemical schemes applied
- ...

The ompr:processParameter in data flow D declares which of these will be made available and om:parameter provides the content alongside the observational data in E1b. This is important complex element that provides specifies certain parameters of the results. It consists of two elements:

- om:name specifies a common thematic name for model parameter that will be described in E1b. For e-Reporting the model parameter names are controlled via a code list, in this case <http://dd.eionet.europa.eu/vocabulary/aq/modelparameter>, which indicates the parameter described in data flow E1b.
- om:value describes the parameter via an xlink:href, free text, list of elements...

om:parameter – Result encoding	
Minimum occurrence:	1 (Mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/modelparameter/ Various codelist
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:parameter/om:NamedValue/om:name/@xlink:href /om:OM_Observation/om:parameter/om:NamedValue/om:value/(@xlink:href; gco:CharacterString ...)

Focus**Adding new model parameters in the vocabulary**

If model parameter which are important to better describe model results are missing at EEA’s vocabulary (<http://dd.eionet.europa.eu/vocabulary/aq/modelparameter/>) please contact helpdesk at aqipr.helpdesk@eionet.europa.eu

Example**om:parameter – model parameter**

Example of provision of Emissions information:

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/modelparameter/emissions"/>
    <om:value><gco:CharacterString>NAEI2011 data, scaled forward to 2012 by linear interpolation between 2011
and projected (UEP45) 2012 data.</gco:CharacterString> "/></om:value>
  </om:NamedValue>
</om:parameter>
```

Example of provision of meteorology information:

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/modelparameter/meteorology"/>
    <om:value><gco:CharacterString> Waddington met station for 2012 (data acquired from the Met Office). Other
met sites may be used for more detailed modelling studies where the national scale modelling/monitoring highlights potential
problems.</gco:CharacterString> "/></om:value>
  </om:NamedValue>
</om:parameter>
```

Example of provision of meteorology information:

```
<om:parameter>
  <om:NamedValue>
    <om:name xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/modelparameter/chemistry"/>
    <om:value><gco:CharacterString>STOCHEM</gco:CharacterString> "/></om:value>
  </om:NamedValue>
</om:parameter>
```

Pollutant assessed - <om:observedProperty>

This element specifies the pollutant to which the observations relate. The specified pollutant must be the same as that specified by the relevant model metadata record /aqd:AQD_Model/ef:ObservingCapability/ef:observedProperty.

om:observedProperty	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	E.4.2
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/view
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:observedProperty/@xlink:href

Example**om:observedProperty**

```
<om:observedProperty xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
```

Mode Area - <om:featureOfInterest>

This element specifies the geographical area e.g. zone(s) to which the model / objective estimation predictions relate and provides reference via an xlink:href attribute to the relevant AQD_ModelArea record.

om:featureOfInterest	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	Not specified in IPR excel
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:featureOfInterest/@xlink:href

Example**om:featureOfInterest**

```
<om:featureOfInterest xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Area_1" />
```

Results quality Updated

As for fixed and indicative observations information on the quality of results is required, however, the level of information that is applicable to models and objective estimation and therefore required is different:

- | | |
|---|--|
| • om:resultQuality (Time coverage) | Not required by definition it is expected to be 100% |
| • om:resultQuality (Data capture) | Not required by definition it is expected to be 100% |
| • om:resultQuality (Uncertainty estimation) | Conditional, mandatory if yearly reporting (E.7.3) |

EEA/ETC-ACM and FAIRMODE are working together to find best solutions for e-Reporting of data from air quality models. A decision has been adopted to recommend a harmonised methodology based on [FAIRMODE's Delta Tool](#) for e-Reporting on data quality objectives for AQ models ([data flow E1b](#)).

The FAIRMODE's Delta Tool generates the following files as an output:

- ASCII and/or csv file with data quality check results summarized per measurement location, pdf (or PNG) files with graphic representation of the results (summary diagram) including
- the overall quality score called 'Modelling Quality Indicator' (MQI, <1 for modelling results of good quality).

More details on the outputs of the Delta Tool can be found in “[Delta User Guide](#)”.

EEA/ETC-ACM and FAIRMODE agreed that the optimal solution in the case of Delta Tool output(s) would be a combination of encoding and xlink such as:

- Encoding MQI value in the XML, which delivers the final and most important information about data quality to the AQ e-Reporting system (even in absence of additional, linked files),
- Linking in the XML report to external file(s) generated by the Delta Tool, using relative path, which gives more detailed information about data quality and allows generating summary diagram.

The proposed XML structure consists of two main parts:

- *gmd:DQ_DomainConsistency*: static, descriptive part with basic information about e.g.: Delta Tool version, methodology, etc.
- *gmd:DQ_QuantitativeAttributeAccuracy*: where the actual MQI value is reported as well as where the relative path to external files (other Delta Tool outputs) is given; it also includes modelling time resolution for which the MQI has been calculated (concept from extended [resultquality](#) code list):

Note: No agreed methods for defining modelling uncertainty have been set at this time DG Environment and Fairmode. Until such time that methods are agreed and adopted by the IPR, uncertainty estimation (om:resultQuality) is voluntary.

om:resultQuality	
Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	E.7.3
Code list constraints:	n/a
Formats Allowed:	
XPath to schema location:	/om:OM_Observation/om:resultQuality /om:OM_Observation/om:resultQuality/gmd:DQ_DomainConsistency/gmd:result/gmd:DQ_ConformanceResult/gmd:pass/ gco:Boolean

Example**om:resultQuality – DomainConsistency****UPDATE**

```

<om:resultQuality>
  <gmd:DQ_DomainConsistency>
    <gmd:result>
      <gmd:ConformanceResult>
        <gmd:specification>
          <gml:CI_Citation>
            <gml:title>
              <gco:CharacterString>FAIRMODE Model Quality Objective (MQO) - annual
            </gml:title>
            <gmd:date>
              <gmd:CI_Date>
                <gmd:date>
                  <gco>Date>2018</gco>Date>
                </gmd:date>
                <gmd:dateType>
                  <gmd:CI_DateTypeCode codeListValue="revision" codeList="eng">revision
                </gmd:dateType>
              </gmd:CI_Date>
            </gmd:date>
            <gmd:edition>
              <gco:CharacterString>FAIRMODE Delta Tool version 5.4</gco:CharacterString>
            </gmd:edition>
          </gmd:CI_Citation>
        </gmd:specification>
        <gmd:explanation>
          <gco:CharacterString>Estimate of model quality based on the model quality indicator (MQI) derived from the
          FAIRMODE Delta Tool for hourly model observations. For e-Reporting, the MQI-hourly shall be less than 1.
        </gco:CharacterString>
      </gmd:explanation>
      <gmd:pass><gco:Boolean>true</gco:Boolean>
    </gmd:pass>
  </gmd:DQ_ConformanceResult>
</gmd:result>
</gmd:DQ_DomainConsistency>
</om:resultQuality>

```

Example**om:resultQuality** – *QuantitativeAttributeAccuracy* - Model Quality Indicator result**UPDATE**

```

<om:resultQuality>
  <gmd:DQ_DomainConsistency>
    <gmd:result xlink:href="/myDeltaToolOutputs.csv" xlink:title=" FAIRMODE Delta Tool outputs on modelling
uncertainty - location is relative to that of the XML instance document)." >
      <gmd:DQ_QuantitativeResult>
        <gmd:valueUnit>
          <gml:BaseUnit gml:id="BaseUnit_1">
            <gml:identifier codeSpace="http://dd.eionet.europa.eu/vocabularies/aq/resultquality">
MQI-annual </gml:identifier>
              <gml:catalogSymbol
codeSpace="http://dd.eionet.europa.eu/vocabulary/uom/statistics ">none</gml:catalogSymbol>
              <gml:unitsSystem xlink:href=" http://dd.eionet.europa.eu/vocabularies"/>
                </gml:BaseUnit>
              </gmd:valueUnit>
            <gmd:value>
              <gco:Record>1</gco:Record>
            </gmd:value>
          </gmd:DQ_QuantitativeResult>
        </gmd:result>
      </gmd:DQ_DomainConsistency>
    </om:resultQuality>
  
```

Results - <om:result>

The model predictions or objective estimation results are provided within this complex element. The om:result element is a mandatory requirement.

om:result	
Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Formats Allowed:	As specified within swe:elementType
XPath to schema location:	/om:OM_Observation/om:result

Due to the varied nature of model and objective estimation techniques, the om:result element encoding can be configured in a number of ways. For simplicity and until standardised encodings can be agreed via the FAIRMODE community, we recommend that the following formats be used to encode model and objective estimation outputs;

- i. ASCII grid format for predictions on a regular grid or raster dataset
- ii. GeoTiff grid format for predictions on a regular grid or raster dataset
- iii. ESRI Shapefile for predictions along a vector e.g. road network, waterway / river, rail track etc.
- iv. ESRI Shapefile for predictions along a collection of receptor locations (points) or irregular grid etc.
- v. As a SWE data array for simple predictions (observations) of the likely maximum levels in a zone e.g objective estimation / expert judgement and when GIS capability is not available or does not add value

The om:result XML block provides information on the size, definition, encoding of the model predictions or objective estimation results. Formats i-iv should be encoded as an external file, format v may be encoded in line.

1 Assessment result data encoding – for model results encoded in an external file

For encoding of model / objective estimation results in an external file the following information items must be provided to accurately identify the location, format, content, data compression algorithm (if any) and units of measure of the external file.

- A definition for the aggregation (statistics) reported for the model / objective estimation
- A human readable label of the statistic reported
- A human readable description of the results presented
- Units of measure applicable to the prediction / observation
- A global reference (URL) to the external file on the EIONET CDR
- An identifier for the attribute, column heading or variable name that contains the predicted / observed values within the external file using URL fragment identifier notation
- A description of the file structure (currently reported as “not known”)
- A simple description of the compression algorithm applied to the file according to codelist

An example of the encoding of model / objective estimation results in an external file is provided below. Where the external file is a proprietary GIS file e.g. Shapefile or open alternative of a GIS file e.g. ASCII grid it is mandatory to include information on the spatial reference system applicable as part of a projection file (.prj), world file (.twf) or similar.

Example

om:result – for model results encoded in an external file

```
<om:result>
<gml:File>
  <gml:rangeParameters>
    <swe:Quantity definition=" http://dd.eionet.europa.eu/vocabulary/aq/aggregationprocess/P1Y"/>
      <swe:label>Annual mean</swe:label>
      <swe:description>Annual mean at background locations</swe:description>
      <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3"/>
    </swe:Quantity>
  </gml:rangeParameters>
  <gml:fileReference>"http://cdr.eionet.europa.eu/gb/eu/aqd/e1b/envvfbcq/no2_ameanbk_osgb.tgz#VALUE"</gml:fileReference>
  <gml:fileStructure>not known</gml:fileStructure>
  <gml:compression>http://dd.eionet.europa.eu/vocabulary/common/filecompression/lz77</gml:compression>
```

E1b – Modelling data – “NEW SECTION”

```
</gml:File>
```

swe:Quantity definition – aggregation/statistics reported for model / objective estimation

The swe:Quantity definition element provides specific statistic/aggregation reported according to codelist.

Example

swe:Quantity definition – aggregation/statistic reported

```
<swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/aggregationprocess/P1Y"/>
```

swe: Quantity definition

Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/aggregationprocess/
Formats Allowed:	URL
XPath to schema location:	/om:OM_Observation/om:result/swe:Quantity@definition

swe:description – textual description of averaging period of the model / objective estimation

The swe:description element provides facility for a textual description of the averaging period for additional context.

Example

swe:description – textual description of averaging period of the model / objective estimation

```
<swe:description>AOT40 vegetation protection based on 1-year of observation uncorrected for time coverage</swe:description>
```

swe: description

Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	None
Formats Allowed:	Free text
XPath to schema location:	/om:OM_Observation/om:result/ swe:Quantity/swe:description

swe:uom – units of measure

The swe:uom element defines the units of measure for the model/objective estimation via xlink:href reference to the uom code list.

swe:uom	
Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/concentration/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/ swe:Quantity/swe:uom

Example

swe:uom – textual description of averaging period of the model / objective estimation

```
<swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3"/>
```

gml:fileReference – global reference to the external file location

The gml:fileReference element references the location of the external file by way of a URL. For IPR applications the location of the external file will normally be on the EIONET CDR and accessible to the public. An identifier for the attribute, column heading or variable name that contains the predicted / observed values within the external file is provided using URL fragment identifier notation e.g. <http://someURL/someExtrenalFilename#variable>.

gml:fileReference	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/gml:File/gml:fileReference

Example

gml:fileReference – global reference to the external file location

```
<gml:fileReference>http://cdr.eionet.europa.eu/gb.../a/no22012rds_etr89.zip#VALUE</gml:fileReference>
```

gml:fileStructure –

The gml:fileStructure property is defined by the gml:FileValueType. This is simple enumerated type restriction on string.

gml:fileStructure	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	Free text
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/gml:File/ gml:fileStructure

Example**gml:fileStructure –**

```
<gml:fileStructure>not known</gml:fileStructure>
```

gml:compression – an identifier for the compression algorithm applied to the external file

The gml:compression element provides for a simple identifier / descriptor for the type of compression algorithm applied to the external file (if any). This will assist the EEA and third parties in loading and/or converting the external file.

gml:compression	
Minimum occurrence:	0
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/common/filecompression/
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/gml:File/gml:compression

Example**gml:compression – an identifier for the compression algorithm applied**

```
<gml:compression>http://dd.eionet.europa.eu/vocabulary/common/filecompression/lz77</gml:compression>
```

Assessment result data encoding – for objective estimation results as an inline data array

For encoding of objective estimation results as an inline data array the recommended format is analogous to that for primary up-to-date (E2a) or validated measurement data (E1a). The om:result element provides information on the size, definition, encoding of the data array and the data array itself.

Example**Swe:DataArray**– for objective estimation results as an inline data array

```

<om:result>
  <swe:DataArray>
    <swe:elementCount>
      <swe:Count>
        <swe:value>1</swe:value>
      </swe:Count>
    </swe:elementCount>
    <swe:elementType name="ObjectiveEstimationPrediction">
      <swe:DataRecord>
        <swe:field name="StartTime">
          <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
            <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
          </swe:Time>
        </swe:field>
        <swe:field name="EndTime">
          <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
            <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
          </swe:Time>
        </swe:field>
        <swe:field name="Verification">
          <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationverification" />
        </swe:field>
        <swe:field name="Validity">
          <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationvalidity"/>
        </swe:field>
        <swe:field name="Value">
          <swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/aggregationprocess/P1Y">
            <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3" />
          </swe:Quantity>
        </swe:field>
      </swe:DataRecord>
    </swe:elementType>
    <swe:encoding>
      <swe:TextEncoding decimalSeparator="." tokenSeparator="," blockSeparator="@ @"/>
    </swe:encoding>
  </swe:DataArray>
</om:result>

```

E1b – Modelling data – “NEW SECTION”

```
<swe:values>2015-01-01T01:00:00+01:00,2015-12-31T24:00:00+01:00,1,1,&lt;10</swe:values>
</swe:DataArray>
</om:result>
```

Number of values provided

This element is a count of the number of observations provided within the Data Array and will be equal to the number of zones for which objective estimation predictions are being made.

Swe:Count	
Minimum occurrence:	1 (Mandatory if yearly reporting)
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	n/a
Formats Allowed:	Numerical number
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementCount/swe:Count/swe:value

Example

swe:elementCount

```
<swe:elementCount>
  <swe:Count>
    <swe:value>1</swe:value>
  </swe:Count>
</swe:elementCount>
```

Definition of Data Array

The individual model / objective estimation predictions comprising the assessment are provided together with metadata describing them. The <swe:elementType> class is used to define the 5 components of the data array;

- StartTime & EndTime
- Verification & Validation flag
- Measurement value

Of these descriptive elements, the ones pertaining to StartTime, EndTime and the value components are configured in the same way as E1a and E2a data flows. The verification flag shall be set to “1” (not verified) and validation flag to “1” (valid).

Example

swe:elementType – definition of components

```
<swe:elementType name="ObjectiveEstimationPrediction">
  <swe:DataRecord>
    <swe:field name="StartTime">
      <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
        <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
      </swe:Time>
    </swe:field>
    <swe:field name="EndTime">
      <swe:Time definition="http://www.opengis.net/def/property/OGC/0/SamplingTime">
        <swe:uom xlink:href="http://www.opengis.net/def/uom/ISO-8601/0/Gregorian" />
      </swe:Time>
    </swe:field>
    <swe:field name="Verification">
      <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationverification" />
    </swe:field>
    <swe:field name="Validity">
      <swe:Category definition="http://dd.eionet.europa.eu/vocabularies/aq/observationvalidity" />
    </swe:field>
    <swe:field name="Value">
      <swe:Quantity definition="http://dd.eionet.europa.eu/vocabulary/aq/aggregationprocess/P1Y">
        <swe:uom xlink:href="http://dd.eionet.europa.eu/vocabulary/uom/concentration/ug.m-3"/>
      </swe:Quantity>
    </swe:field>
  </swe:DataRecord>
</swe:elementType>
```

E1b – Modelling data – “NEW SECTION”

StartTime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	none
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="StartTime"

EndTime	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
Code list constraints:	none
Formats Allowed:	ISO 8601 extended format using local standard with time offset relative to UTC
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="EndTime"

Focus

StartTime & EndTime of measurements

IPR Guidance:

"To avoid any confusion or misinterpretation, additional criteria have been set in Decision 2011/850/EC. This is why the extended format, which includes the information on the difference with UTC, will be used as the default for any value originating from measurement or modelling results. For all measurement and modelling data types the timestamp of the start time and end time of the observation shall be given in the ISO extended time format.

YYYY-MM-DDThh:mm:ss±hh

where :

YYYY represents the year

MM represents the month

DD represent the day

hh represents the hour

mm represents the minute

ss represents the second

+hh represents the shift to UTC, so for CET it is +01".

Verification	
Minimum occurrence:	1

Maximum occurrence:	1
IPR data specifications found:	E.6.5
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/observationverification/
Formats Allowed:	3
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="Verification"
Validation	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.6.4
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/
Formats Allowed:	1
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="Validation"

Focus**Verification & Validation flags for E1b datasets encoded as a swe array**

The vVerification flag shall be set to “3” (not verified) and Vvalidation flag to “1” (valid).

Key codelist links for status flags:

<http://dd.eionet.europa.eu/vocabulary/aq/observationverification/>

<http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/>

Measurement value & unit	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.6.1 & E.6.2
Code list constraints:	Aggregation/Statistic resolution: http://dd.eionet.europa.eu/vocabulary/aq/aggregationprocess/ Observation unit: http://dd.eionet.europa.eu/vocabulary/uom/concentration/view
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementType/swe:DataRecord/swe:field name="Pollutant"

Encoding of values within Data Array <swe:encoding>

E1b – Modelling data – “NEW SECTION”

The 5 elements defined above and provided within <swe:values> are separated by the characters specified within <swe:encoding>. All elements are separated by a comma (i.e. tokenSeparator=“,”), the decimal separator used in the encoding of the measurement value is defined as a full stop (i.e. decimalSeparator=“.”).

swe:encoding	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	Not in IPR excel
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:elementCount/swe:Count/swe:value

Example

swe:encoding

```
<swe:encoding>  
  <swe:TextEncoding blockSeparator="@@" decimalSeparator="." tokenSeparator="," />  
</swe:encoding>
```

Assessment data – swe:values

Having defined the elements that are to be provided and the encoding used, the <swe:values> includes the observational data including the necessary elements that characterise the observation (StartTime, EndTime, Verification and Validation flag & value).

swe:values	
Minimum occurrence:	1
Maximum occurrence:	1
IPR data specifications found:	E.5, E.6.2, E.6.4, E.6.5
Formats Allowed:	As specified within swe:elementType
XPath to schema location:	/om:OM_Observation/om:result/swe:DataArray/swe:values

Example

swe:values

```
<swe:values>2015-01-01T00:00:00+01:00,2015-12-31T24:00:00+01:00,3,1,&lt;10</swe:values>
```

G - Information on Attainment of Environmental Objectives

(AQD IPR [Article 12](#)) - link to [e-Reporting logic](#)

Under the IPR Decision Member States shall make available information on the attainment (or otherwise) of the environmental objectives set by Directives 2004/107/EC and 2008/50/EC. This data flow allows for comprehensive description of;

- The declaration of attainment for all environmental objectives in each zone or agglomeration, including information on the exceedance of any applicable margin of tolerance; EN L 335/90 Official Journal of the European Union 17.12.2011
- Where relevant, a declaration that the exceedance in the zone is attributable to natural sources;
- Where relevant, a declaration that the exceedance of a PM₁₀ and PM_{2.5} environmental objective in the zone or agglomeration is due to the re-suspension of particulate matter following the winter- sanding or -salting of roads;
- Information on the attainment of the PM_{2.5} exposure concentration obligation.

Where an exceedance occurs, the information made available shall also include information on the overall area exceeding and the number of people exposed in the exceedance area(s). In all cases, the information made available shall be consistent with (i) the zone delimitation made available in [data flow B for AQ zones](#) (pursuant to Article 6) for the same calendar year, (ii) the assessment regimes (assessment methods) declared within data flow C (pursuant to Article 7) for the same zone and calendar year and (iii) the aggregated validated assessment data derived from the primary validated data (data flow E) for the assessment methods set out by (ii) and pursuant to the agreed aggregation rules set (<http://www.eionet.europa.eu/aqportal/aggregation>).. Aggregated validated assessment data is calculated by EEA, data flow F (pursuant to Article 11).

The AQ attainment data flow is a mandatory data flow for pollutants with environmental objectives covered by Directive 2004/107/EC and Directive 2008/50/EC. Confirmation of exceedances of the Information and Alert thresholds based on valid measurements for pollutants that have these thresholds is excluded from the Attainment data flow.

The e-Reporting data model and schema breaks the data flow into the information classes outlined below. Information on attainment must be provided for the pollutants and the corresponding environmental objectives listed (see diagram below).

Focus**Expected combinations of aqd:environmentalObjective dependant on pollutant**

Pollutant*	objectiveType**	reportingMetric***	protectionTarget****
1	LV	hrsAbove	H
1	LV	daysAbove	H
1	ALT	3hAbove	H
1	CL	aMean	V
1	CL	wMean	V
7	TV	daysAbove-3yr	H
7	LTO	daysAbove	H
7	INT / ALT	hrsAbove	H
7	TV	AOT40c-5yr	V
7	LTO	AOT40c	V
8	LV	hrsAbove	H
8	LV	aMean	H
8	LVmaxMOT	hrsAbove	H
8	LVmaxMOT	aMean	H
8	ALT	3hAbove	H
9	CL	aMean	V
5	LV	daysAbove	H
5	LV	aMean	H
6001	ECO	AEI	H
6001	ERT	AEI	H
6001	LV	aMean	H
6001	LVMOT	aMean	H
6001	TV	aMean	H
10	LV	daysAbove	H
5012	LV	aMean	H
20	LV	aMean	H
20	LVmaxMOT	aMean	H
5014	TV	aMean	H
5018	TV	aMean	H
5015	TV	aMean	H
5029	TV	aMean	H
Pollutants with	MO	NA	NA

(if timeExtension up to 2014)
(if timeExtension up to 2014)

(if timeExtension up to 2014)

UPDATE

* <http://dd.eionet.europa.eu/vocabulary/aq/pollutant/>

*** <http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/>

** <http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/>

**** <http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/>

A valid CDR delivery must include the AQ Attainment class (aqd:AQD_Attainment) and a corresponding AQ reporting header information class.

Reporting header - <aqd:AQD_ReportingHeader>

An explanation of the AQ reporting header information class can be found in the “Reporting header <aqd:AQD_ReportingHeader>” section of this document. **This is mandatory and includes common data types elements (G1, G2, G3 and G4 from IPR excel mapping table).**

AQ attainment status - <aqd:AQD_Attainment>

The AQD_Attainment class is the parent to all child information classes listed in the following sections. It stores information on the attainment (or otherwise) of environmental objectives. As for other data flows, information classes that are specific to Air Quality e-Reporting appear with an aqd: prefix. Classes specific to INSPIRE (and its adopted standards) have other prefixes e.g. gml: refers to the OGC Geographic Mark-up Language data specification. The AQ and INSPIRE information classes that make up the AQ attainment data flow are listed below. An indication of their cardinality is provided alongside references to the location of the relevant data specification in the Commission’s IPR guidance documentation for air quality classes. The following elements need to be declared in the XML deliveries. **aqd:AQD_Attainment** (G.5) includes:

- | | |
|---------------------------------------|--|
| • aqd:inspireId | Mandatory (G.5.1) |
| • aqd:zone | Mandatory (G.5.2) |
| • aqd:pollutant | Mandatory (G.5.3) |
| • aqd:assessment | Mandatory (G.5.4) |
| • aqd:environmentalObjective | Mandatory (G.5.5) |
| • aqd:exceedanceDescriptionBase | Conditional (G.5.6) – only used if adjustments applied |
| • aqd:exceedanceDescriptionAdjustment | Conditional (G.5.7) – only used if adjustments applied |
| • aqd:exceedanceDescriptionFinal | Mandatory (G.5.8) |
| • aqd:comment | Voluntary (G.5.9) |

Detailed information on the constraints and content requirements for these e-Reporting classes is provided below. Figure 34 provides a high-level illustration of the core information classes that constitute AQD_Attainment.

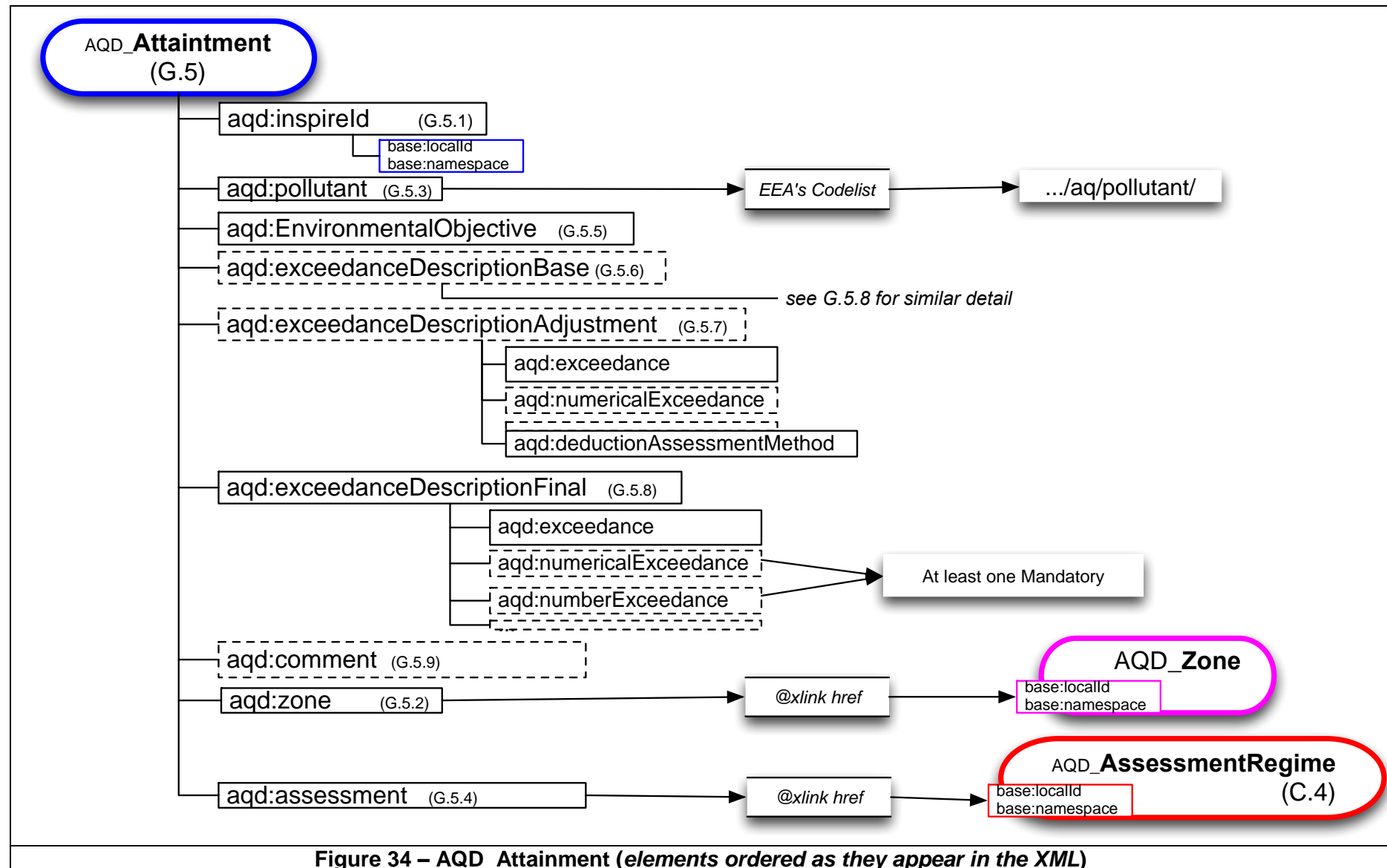


Figure 34 – AQD_Attainment (elements ordered as they appear in the XML)

Focus**AQD_Attainment – external links**

HTML based documentation for the element AQD_Attainment:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AQD_Attainment.html

Latest UML for AQD_Attainment at:

http://www.eionet.europa.eu/aqportal/datamodel/UML_AQDmodel_bmp/AQD_Attainment.png

AQD Attainment identifier - <aqd:inspireId>

The AQD attainment identifier provides a handle for the unique identification of each attainment statement declaration (record) and its attributes within the XML delivery. The data provider is responsible for ensuring the identifier is unique and for managing its lifecycle within the scope of the XML instance document and the INSPIRE namespace. An explanation of the identifier class can be found in “[The INSPIRE identifier](#)” section of this document.

aqd:inspireId

Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per <aqd:AQD_Attainment> element)
IPR data specifications found at:	G.5.1 (A.8.1, A.8.2, A.8.3)
QA/QC constraints:	In preparation
Allowed formats:	Alphanumeric
XPath to schema location:	/aqd:AQD_Attainment/aqd:inspireId/base:Identifier /aqd:AQD_Attainment /aqd:inspireId/base:Identifier/base:localId /aqd:AQD_Attainment /aqd inspireId/base:Identifier/base:namespace /aqd:AQD_Attainment /aqd:inspireId/base:Identifier/base:versionId
Further information found @	http://inspire.jrc.ec.europa.eu/documents/Data_Specifications/D2.5_v3.4.pdf

Example**aqd:AQD_Attainment**

```

<aqd:AQD_Attainment gml:id="GB_Attainment_978">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>GB_Attainment_978</base:localId>
    </base:Identifier>
  </aqd:inspireId>
</aqd:AQD_Attainment>

```

```

        <base:namespace> http://environment.data.gov.uk/air-quality/so </base:namespace>
      </base:Identifier>
    </aqd:inspireId>
OR
    <aqd:AQD_Attainment gml:id="ATT_ES1204_1_LV_H_daysAbove_2014">
      <aqd:inspireId>
        <base:Identifier>
          <base:localId>ATT_ES1204_1_LV_H_daysAbove_2014</base:localId>
          <base:namespace>ES.BDCA.AQD</base:namespace>
        </base:Identifier>
      </aqd:inspireId>
    </aqd:AQD_Attainment>
  </gml:FeatureCollection>
</gml:RootElement>

```

Air Quality zone - <aqd:zone>

This element links each attainment statement to an AQ zone already defined in [Data flow B](#). The link is performed via the xlink:href attribute which references the AQ zone namespace and localID (concatenating the INSPIRE namespace and the INSPIRE localId). As air quality zones may be set up for different pollutants, different Attainment statements may be linked to the same zone. For the ECO and ERT, which are based on an annual mean concentrations from a pre-defined subset of PM_{2.5} monitoring stations (AEI stations) and aggregated at a Member State level the aqd:zone element must be voided as shown in the table and example below. This reflects that the Attainment statement for ECO and ERT is not link to an individual zone but all zones in the Member State.

<aqd:zone>	
Minimum occurrence:	1 (mandatory for e-Reporting)
Maximum occurrence:	1
IPR data specifications found:	G5.2
Code list constraints:	None
Formats Allowed:	Alphanumeric, max. length 100 characters, a valid reference to the namespace & INSPIRE ID of the applicable AQ zone defined in data flow B
XPath to schema location:	/aqd:AQD_Attainment/aqd:zone/@xlink:href
Voidable:	Yes for the ECO attainment statement void using <aqd:zone nilReason="inapplicable"/>

Example**aqd:zone**

```
<aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0043"/>
```

```
<aqd:zone nilReason="inapplicable"/> for the ECO attainment statement, where the attainment is declare at a Member State level
```

AQ pollutants - <aqd:pollutant>

This element specifies the pollutant to which the attainment declaration statement applies. The pollutants allowed are restricted to those with human health and vegetation protection objectives - SO₂, PM₁₀, PM_{2.5}, O₃, NO₂, NO_x, CO, Benzene, Pb in PM₁₀, BaP in PM₁₀, As in PM₁₀, Cd in PM₁₀ and Ni in PM₁₀. Where a pollutant has more than one reporting metric, separate attainment declaration statements are required for each pollutant / reporting metric combination. The pollutants to which more than one reporting metric applies include: SO₂, PM₁₀, PM_{2.5}, O₃, and NO₂. For a full list of allowed aqd:environmentalObjective aqd:pollutant combinations, please see the “Environmental objective type <aqd:environmentalObjective>” section of this document.

<aqd:pollutant>	
Minimum occurrence:	1 per attainment status declaration
Maximum occurrence:	1 per attainment status declaration
IPR data specifications:	G.5.3
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/view
Formats Allowed:	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/view
XPath to schema location:	/aqd:AQD_Attainment/aqd:pollutant/@xlink:href
Voidable:	No

Example**aqd:pollutant**

```
<aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/10"/>
```

Assessment Regime - <aqd:assessment>

This element links the attainment record to a corresponding Assessment Regime record (in dataflow C). The Assessment Regime record specifies the assessment methods used to determine the declared attainment status. The relationship between associated records in Attainment and Assessment Regimes data flows is always 1:1.

<aqd:assessment>	
Minimum occurrence:	1 per <aqd:AQD_Attainment> element
Maximum occurrence:	1 per <aqd:AQD_Attainment> element
IPR data specifications found:	G.5.4
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, max. length 100 characters, a valid reference to the namespace & INSPIRE ID of the applicable Assessment Regime (in dataflow C) used to determine the declared attainment status.
XPath to schema location:	/aqd:AQD_Attainment/aqd:assessment/@xlink:href
Voidable:	No

Example**aqd:assessment**

```
<aqd:assessment xlink:href="http://environment.data.gov.uk/air-quality/so/GB_AssessmentRegime_447"/>
```

Environmental Objective - <aqd:EnvironmentalObjective>

This class sets out the objective type, reporting metric and protection target combination applicable to the attainment statement. General constraints applicable to the [<aqd:environmentalObjective>](#) data type are summarised in the common data types section ["Environmental objective type <aqd:environmentalObjective>"](#). The content of this information class is controlled by the three code lists indicated below. Where a Margin of Tolerance is applicable to a pollutant and zone combination, declarations of exceedance situation relative to both the limit value (LV) and limit value plus maximum margin of tolerance (LVmaxMOT) are recommended to support declaration of the compliance statement against the relevant legal threshold and the preparation of AQ Plans. Whether a

margin of tolerance is applicable will depend upon the year, pollutant and the time extension derogations granted to the Member State by the Commission. It is expected that from 2013 TENs will only apply for benzene and nitrogen dioxide. From 2014, there will be no time extensions derogations in place for any pollutants. From 2014, Member States shall not declare exceedance situations relative to the limit value plus maximum margin of tolerance (LVmaxMOT).

<aqd:environmentalObjective>	
Minimum occurrence:	
Maximum occurrence:	
IPR data specifications found:	
Code list constraints:	
Formats Allowed:	
XPath to schema location:	

Further information on exceedance - <aqd:comment>

Allows for the Member State (data provider) to include a free text note of clarification, if needed, for each individual exceedance description.

aqd:comment	
Minimum occurrence:	
Maximum occurrence:	
IPR data specifications found:	
Code list constraints:	
Formats Allowed:	
XPath to schema location:	

Exceedance situation descriptions <aqd:ExceedanceDescription>

The core function of the <aqd:ExceedanceDescription> class is to provide information on whether the environmental objective has been exceeded based on the observed (or predicted) maximum levels for the specified pollutant. The class also allows the maximum levels to be quantified.

Owing to the complex nature of some exceedance situations for some pollutants, which may have adjustments applicable e.g. for natural sources (NS) and / or Winter Sanding and Salting (WSS), when adjustments are applicable it is necessary to provide an <aqd:ExceedanceDescription> class describing each adjustment. The following sections describe and provide guidance on their correct usage.

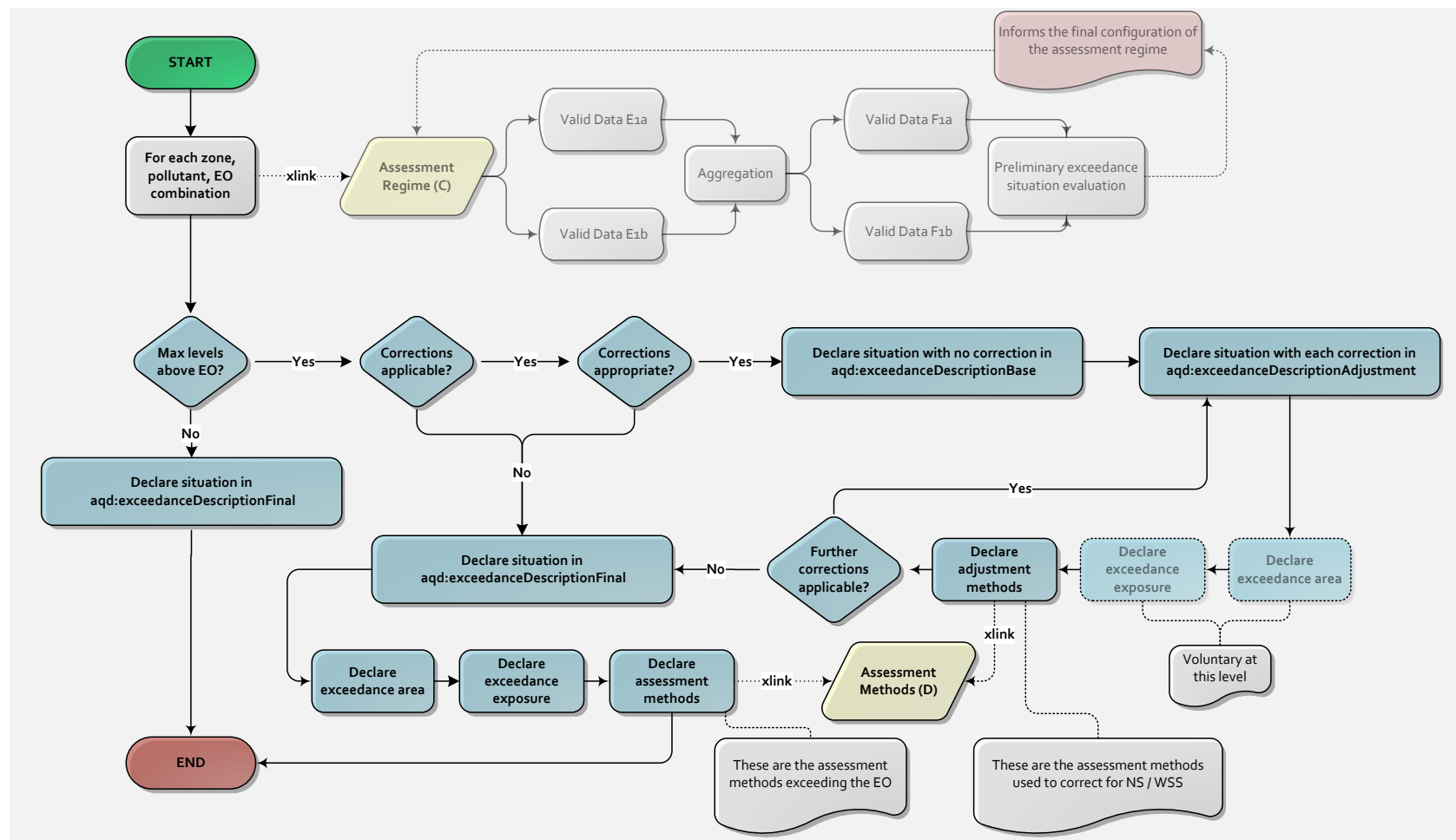
The options for declaring exceedance description will depend on whether Member States are applying adjustments for NS or WSS are applicable and being applied. In the data model, instances of the <aqd:ExceedanceDescription> class can be provided in three locations, with a different meaning applied to the description based on the location it is provided at:

- | | |
|---------------------------------------|---------------------|
| • aqd:exceedanceDescriptionBase | Conditional (G.5.6) |
| • aqd:exceedanceDescriptionAdjustment | Conditional (G.5.7) |
| • aqd:exceedanceDescriptionFinal | Mandatory (G.5.8) |

In all cases, the description of the final exceedance situation, either with no adjustments claimed or with all adjustments applied, is mandatory and must be provided in the element aqd:exceedanceDescriptionFinal within the AQD attainment record. If adjustments are applied, then the aqd:exceedanceDescriptionBase and aqd:exceedanceDescriptionAdjustment elements must also be provided, with an <aqd:ExceedanceDescription> instance describing both the base exceedance without adjustments (aqd:exceedanceDescriptionBase) as well as the exceedance situation taking into account each individual adjustment (aqd:exceedanceDescriptionAdjustment).

For the majority of pollutants and exceedance situations where no adjustments are applicable or appropriate, the exceedance situation description will be provided with the mandatory element aqd:exceedanceDescriptionFinal.

A decision tree is provided below to support the correct usage (declaration) of exceedance situations.

Focus**Decision tree for the construction of a valid exceedance description**

Exceedance description base - <aqd:exceedanceDescriptionBase>

In the <aqd:exceedanceDescriptionBase>element we provide an instance of the aqd:ExceedanceDescription class describing the base exceedance for situations where adjustments for contributions from natural sources and/or winter sanding and salting are being claimed by the MS. The information class describes the situation prior to taking into account any adjustments for contributions from natural sources and/or winter sanding and salting. This information class is only required in situations where there is an adjustment. Adjustments are only expected for the following pollutant: PM₁₀, PM_{2,5}, SO₂, and CO. For other pollutants like nitrogen dioxide (NO₂), benzene and lead these are either not influenced by natural contributions, or the influence, at the current state of knowledge, cannot be measured, assessed and quantified. As a result adjustment for these pollutants as well as pollutants with target values, adjustments are not expected to be applied.

Exceedance description taking into account adjustment(s) - <aqd:exceedanceDescriptionAdjustment>

In the <aqd:exceedanceDescriptionAdjustment> element we provide an instance of the aqd:ExceedanceDescription class describing the effect of each adjustment upon the exceedance situation. The effect of each adjustment must be declared individually. The combined effect of the adjustment(s) is declared within the <aqd:exceedanceDescriptionFinal> information class. The <aqd:exceedanceDescriptionAdjustment> element is only required in situations where there is an adjustment.

Exceedance description final - <aqd:exceedanceDescriptionFinal>

In the - <aqd:exceedanceDescriptionFinal>element we provide an instance of the aqd:ExceedanceDescription class describing the final exceedance situation for all cases, i.e. when

- (i) there is no exceedance,
- (ii) there are no adjustment(s) applicable,
- (iii) adjustment are not appropriate i.e. they do not (will not) reduce levels below the LV (LV+MOT) (iv) to describe the combined effect of all adjustments,
- (iv) when all adjustments have been applied

This information class is mandatory. In this document, we provide two descriptions for aqd:exceedanceDescriptionFinal, once without claiming adjustments (cases i to iii) and once for the situation where adjustments have been applied (case iv). For the cases above (i to iii) see pages 378 to 395. For case (iv), when adjustments are applied see pages 442 to 458.

The content requirements of `<aqd:exceedanceDescriptionBase>`, `<aqd:exceedanceDescriptionAdjustment>` and `<aqd:exceedanceDescriptionFinal>` always contain an instance of the aqd:ExceedanceDescription class. Depending on the type of attainment (with or without adjustment), the child elements within the aqd:ExceedanceDescription class are mandatory or voluntary.

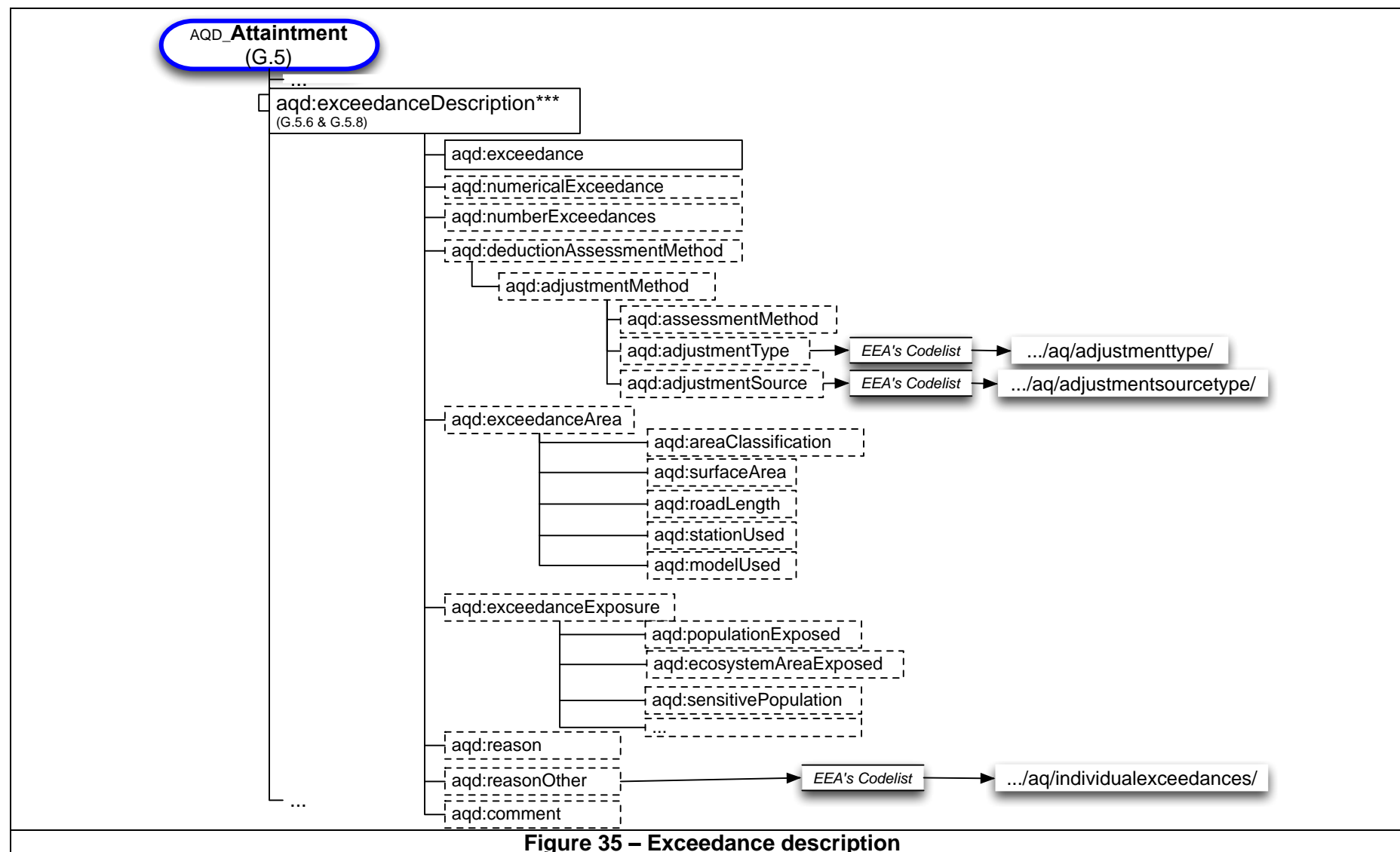


Figure 35 – Exceedance description

aqd:ExceedanceDescription**** which is used for (G.5.6 or G.5.7) include:

- aqd:exceedance Mandatory
- aqd:numericalExceedance Conditional (M if environmental objective is an average, percentile or AOT)
- aqd:numberExceedances Conditional (M if environmental objective is an average, percentile or AOT)
- aqd:deductionAssessmentMethod Mandatory (required to clearly declare whether adjustments apply or not)
- aqd:exceedanceArea Conditional
- aqd:exceedanceExposure Conditional
- aqd:reason Voluntary
- aqd:reasonOther Voluntary
- aqd:comment Voluntary

Detailed information on the constraints and content for this complex class is provided below.

Focus

AQD_Attainment – external links

HTML based documentation for the element ExceedanceDescription:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ExceedanceDescription.html

The following sections describe description of the content constrained for for two generic exceedance situation types:

- Simple attainment description without adjustments (see pages 378 to 395)
- Complex attainment description with adjustments (for SO₂ and PM₁₀ only if applicable & appropriate)
 1. STEP 1 – Base exceedance description without any adjustment (see pages 402 to 417)
 2. STEP 2 – Exceedance description taking into account individual adjustments (see pages 418 to 442 **Error! Bookmark not defined.**)
 3. STEP 3 – Final exceedance description taking into account all adjustments (see pages 442 to 458)

Simple attainment description without adjustment

As noted above, for the majority of pollutants, adjustments attributable to natural sources or to winter- sanding or salting are not allowed . For CO, SO₂, PM₁₀ and PM_{2.5}, adjustments may not be applicable or appropriate. When declaring attainment without any adjustment, the element <aqd:exceedanceDescriptionFinal> is used. The elements <aqd:exceedanceDescriptionBase> and <aqd:exceedanceDescriptionAdjustment> may be omitted.

Focus

AQD_Attainment – without adjustment

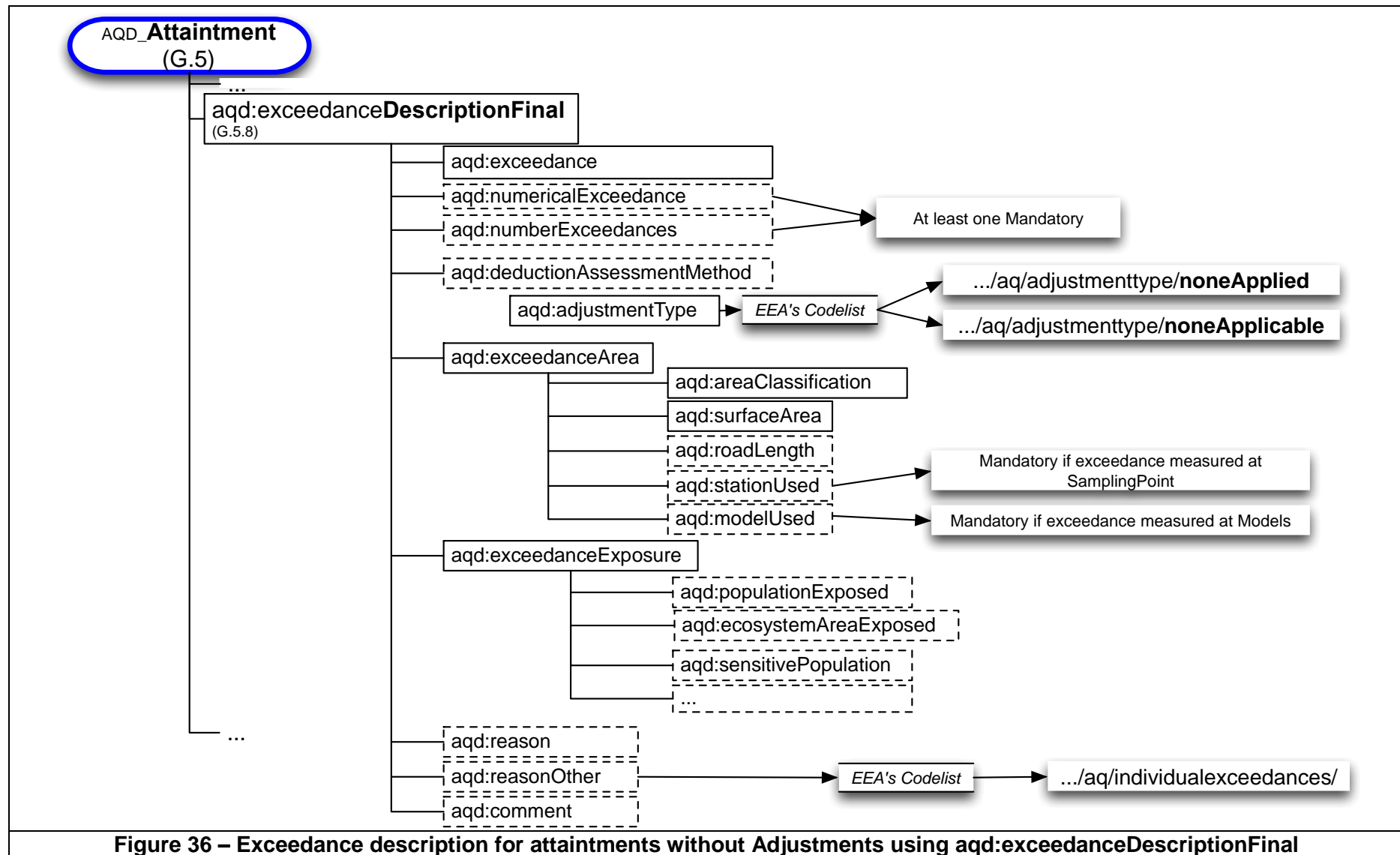
For declaring attainment without any adjustment, all necessary information is to be provided under
<aqd:exceedanceDescriptionFinal>

Exceedance description final - <aqd:exceedanceDescriptionFinal> WITHOUT adjusment

aqd:exceedanceDescriptionFinal (G.5.6 or G.5.7) include:

- | | |
|---------------------------------|---|
| • aqd:exceedance | Mandatory |
| • aqd:numericalExceedance | Conditional (M if environmental objective is an average, percentile or AOT) |
| • aqd:numberExceedances | Conditional (M if environmental objective threshold is given as a number of exceedances per year) |
| • aqd:deductionAssessmentMethod | Mandatory (required to clearly declare that adjustments have not been applied) |
| • aqd:exceedanceArea | Conditional (M if environmental objective is exceeded) |
| • aqd:exceedanceExposure | Conditional (M if environmental objective is exceeded) |
| • aqd:reason | Voluntary |
| • aqd:reasonOther | Voluntary |
| • aqd:comment | Voluntary |

Detailed information on the constraints and content for this complex class is provided below. Figure 36 illustrates the core information classes that constitute aqd:exceedanceDescriptionFinal when no adjustments are applied.



AQD exceedance statement - <aqd:exceedance> - DescriptionFinal (simple)

AQD exceedance allows for a boolean statement to be declared in relation to whether levels are above or below the environmental objective.

<aqd:exceedances>	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications found at:	G.5.8 (A.2.1)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	True / false
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedance

Example**aqd:exceedance**

If levels are above the Environmental Objective:

```
<aqd:exceedance>true</aqd:exceedance>
```

If levels are below the Environmental Objective:

```
<aqd:exceedance>>false</aqd:exceedance>
```

Numerical exceedances - <aqd:numericalExceedance> - DescriptionFinal (simple)

AQD numerical exceedance allows for the description of the highest concentration value observed or predicted in the zone for the pollutant and environmental objective specified. Irrespective of whether levels are above the environmental objective, insert the numerical concentration value in units as appropriate to the environmental objective and reporting metric. The AQD numerical exceedance class is applicable to environmental objectives using average, percentile or AOT reporting metrics. For other short term reporting metrics use <aqd:numberExceedance>. The rounding rules stipulated by the Commissions guidance apply.

<aqd:numericalExceedance

>

Minimum occurrence:	0 (conditional, mandatory if environmental objective is an average, percentile or AOT)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications found at:	G.5.8 (A.2.2)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:numericalExceedance

Example

aqd:numericalExceedance

```
<aqd:numericalExceedance>59.0</aqd:numericalExceedance>
```

Example**aqd:AQD_Attainment – when exceedance is BELOW the objective (i.e. false)**

```

<aqd:AQD_Attainment gml:id="GB_Attainment_978">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>GB_Attainment_978</base:localId>
      <base:namespace>http://environment.data.gov.uk/air-quality/so</base:namespace>
    </base:Identifier>
  </aqd:inspireId>
  <aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8"/>
  <aqd:environmentalObjective>
    <aqd:EnvironmentalObjective>
      <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>
      <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean"/>
      <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
    </aqd:EnvironmentalObjective>
  </aqd:environmentalObjective>
  <aqd:exceedanceDescriptionFinal>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>false</aqd:exceedance>
      <aqd:numericalExceedance>35.0</aqd:numericalExceedance>
      <aqd:deductionAssessmentMethod>
        <aqd:AdjustmentMethod>
          <aqd:adjustmentType
xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplicable"/>
        </aqd:AdjustmentMethod>
      </aqd:deductionAssessmentMethod>
    </aqd:ExceedanceDescription>
  </aqd:exceedanceDescriptionFinal>
  <aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001"/>
  <aqd:assessment xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001"/>
</aqd:AQD_Attainment>

```

Number of short term exceedances - <aqd:numberExceedances> - DescriptionFinal (simple)

The number of short term exceedances element allows for the description of the highest number of exceedances of short term reporting metrics observed or predicted in the zone for the pollutant and environmental objective specified. Irrespective of whether levels are above the environmental objective, insert the value of the number of exceedance in the units appropriate to the environmental objective and reporting metric. The number of exceedances element is applicable to environmental objectives based on the number of daily or hourly exceedances.

<aqd:numberExceedance>	
Minimum occurrence:	C (conditional, mandatory if environmental objective threshold is given as a number of exceedances per year)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications found at:	G.5.8 (A.2.3 1)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:numberExceedances

Example

aqd:numberExceedance

```
<aqd:numberExceedances>37</aqd:numberExceedances>
```

Adjustment Assessment Method - <aqd:deductionAssessmentMethod> - DescriptionFinal (simple)

AQD adjustment assessment methods element allows for linking the Adjustment Description to an adjustment methods used to adjust for Natural Sources or Winter-sanding or –salting. However, for the simple attainment without adjustment, this complex element is only used to re-assure that adjustment is not applicable or has been applied. Declaration of adjustment applicable are made within child elements of <aqd:AdjustmentMethod>. However, for a simple attainment only one element is to be used

- **<aqd:adjustmentType>** providing an xlink reference to a codelist describing that either adjustment has not been applied (/noneApplied) or adjustment is not applicable (/noneApplicable)

<aqd:deductionAssessmentMethod>	
Minimum occurrence:	Mandatory
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications :	G.5.8 (A.2.4.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/
QA/QC constraints:	None
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:numberExceedances

Example

aqd:adjustmentMethod – example for simple attainment without any adjustments

```

None applicable
<aqd:deductionAssessmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplicable/" />
  </aqd:AdjustmentMethod>
</aqd:deductionAssessmentMethod>

None applied
<aqd:deductionAssessmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied/" />
  </aqd:AdjustmentMethod>
</aqd:deductionAssessmentMethod>

```


Area of the exceedance situation - <aqd:exceedanceArea>- DescriptionFinal (simple)

The exceedance area complex information class allows for declaration of the area exceeding the environmental objective specified. It is a child element of aqd:exceedanceDescriptionFinal.

The area of exceedance situation class contains the child elements listed below.:

- | | |
|--------------------------|---|
| • aqd:areaClassification | Mandatory |
| • aqd:spatialExtent | Conditional (M, if adminstrationUnit not provided) |
| • aqd:surfaceArea | Mandatory (Conditional if exceedance is on a road link only) |
| • aqd:roadLength | Conditional (M if exceedance on a road link) |
| • aqd:stationUsed | Conditional (M if exceedance measured at SamplingPoint) |
| • aqd:administrativeUnit | Voluntary |
| • aqd:modelUsed | Conditional (M if exceedance modeled using Model or ExpertJudgment) |

It is a child element of aqd:exceedanceDescription (and therefore aqd:exceedanceDescriptionBase, aqd:exceedanceDescriptionAdjustment and aqd:exceedanceDescriptionFinal). The class is not required if levels are below the environmental objective, i.e. if aqd:exceedance has been set to false. If levels are above the environmental objective, the class is mandatory within aqd:exceedanceDescriptionFinal. If Member States have the information calculated for the aqd:exceedanceDescriptionBase and aqd:exceedanceDescriptionAdjustment classes, these data may be provided on a voluntary basis.

Example

aqd:exceedanceArea

```
<aqd:exceedanceArea>
  <aqd:ExceedanceArea>
    <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
    <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
    <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/rural"/>
    <aqd:spatialExtent>
      <gml:Surface srsName="urn:ogc:def:crs:EPSG::4258" gml:id="UK0030">
        <gml:patches>
```

```

        <gml:PolygonPatch>
          <gml:exterior>
            <gml:LinearRing>
              <gml:posList srsDimension="2">50.691955 -4.493191 50.691651 -
4.507335 50.700636 -4.507814 50.700939 -4.493668 50.691955 -4.493191</gml:posList>
            </gml:LinearRing>
          </gml:exterior>
        </gml:PolygonPatch>
      </gml:patches>
    </gml:Surface>
  </aqd:spatialExtent>
  <aqd:surfaceArea uom="http://dd.eionet.europa.eu/vocabularyconcept/uom/area/km2">5008.0
</aqd:surfaceArea>
  </aqd:ExceedanceArea>
</aqd:exceedanceArea>

```

Area classification - <aqd:areaClassification>

The area classification element allows for the description of type of area covered by the exceedance situation. Area classification is mandatory when an exceedance situation has been observed. Multiple area classification types are allowable where the extent of the exceedance situation is large e.g. urban, suburban and rural area classifications are valid descriptions of widespread exceedance problem. The content of area classification is constrained by the code list indicated

aqd:areaClassification	
Minimum occurrence:	M (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.8 (A.2.5.1)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/view code
Formats Allowed:	codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedanceArea/aqd:ExceedanceArea/aqd:areaClassification

Spatial extent of exceedance situation - <aqd:spatialExtent> - DescriptionFinal (simple)

The spatial extent of exceedance situation element should be used to provide a geometry description of the extent of the exceedance area. The element may be generated by EEA central resources or if the Member State possesses the information as (i) a valid gml:polygon encoding of the extent of the exceedance situation if this is known, (ii) a gml:point encoding if exceedance situation is known as a point (e.g. sampling point or multiple sampling points) or (iii) a valid gml:linestring encoding if exceedance situation is known as a vector object (e.g. road centre line). Alternatively the Member State may encode this information as a list of administrative units coincident with the exceedance situation area, see <aqd:administrativeUnit>. One or other of <aqd:spatialExtent> and <aqd:administrativeUnit> must be provided, not both.

aqd:spatialExtent	
Minimum occurrence:	C (conditional, mandatory if aqd:administrativeUnit not supplied)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.5.2)
Code list constraints:	None
Formats Allowed:	Valid gml:polygon, gml:point, gml:linestring
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:spatialExtent

Area of exceedance situation - <aqd:surfaceArea> - DescriptionFinal (simple)

The area of exceedance situation element allows for the reporting of a numerical estimate of the area of the exceedance situation above the environmental objective. It is identified as a mandatory requirement in the IPR guidance although it is noted that the area of exceedance may not be known if the exceedance is only associated with a road link. In this event the aqd:surfaceArea should be omitted and aqd:roadLength provided. It is recommended to keep the number of decimal places to one.

aqd:surfaceArea	
Minimum occurrence:	C (conditional, mandatory if exceedance estimated to be background / non-roadside)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.5.3)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/area/
Formats Allowed:	Numeric value in square kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:surfaceArea

Length of road exceeding - <aqd:roadLength> - DescriptionFinal (simple)

The length of road exceeding element allows for the reporting of a numerical estimate of the length of road where the level was above the environmental objective in kilometers. It is mandatory when there is an exceedance situation linked to a road. It is recommended to keep the number of decimal places to one.

aqd:roadLength	
Minimum occurrence:	C (conditional, mandatory if exceedance estimated on a road link)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.5.4)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/length/
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:roadLength

Administrative units covered by exceedance area - <aqd:administrativeUnit> - DescriptionFinal (simple)

The administrative units element should be used to provide an estimate of the geometry description for the extent of the exceedance area. It is an alternative method to providing detailed geographic information via the aqd:spatialExtent element. The element may be generated by EEA central resources or if the Member State, if the Member State possesses the information as list of LAU / NUTS administrative codes which coincide with the estimate are of exceedance. The list of codes to be used shall be constrained to EEA's codelist described below.

aqd:administrativeUnit	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.8 (A.2.5.5)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/lau2 http://dd.eionet.europa.eu/vocabulary/lau1 http://dd.eionet.europa.eu/vocabulary/common/nuts/
Formats Allowed:	Codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/ aqd:administrativeUnit

Example**aqd:administrativeUnit**

Use of a single LAU code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> or <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/es/17079"/></code>
Use of several LAU codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>
Use of single NUTS code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of several NUTS codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ13"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of an entire AQ zone	<code><aqd:administrativeUnit xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0036"/></code>

Sampling points observing the exceedance - <aqd:stationUsed> - DescriptionFinal (simple)

The <aqd:stationUsed> element allows for the reporting of a list of the sampling points observing the exceedance situation. The list of sampling points are provided by a xlink href reference to the sampling point declared in data flow D.

aqd:stationUsed	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by sampling point)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:stationUsed

Focus**aqd:stationUsed – provide link to all exceeding SamplingPoints**

This element is key to provide a link to ALL the SamplingPoints within each zone that have exceeded the Environmental Objective

Models / objective estimation methods predicting exceedance - <aqd:modelUsed> - DescriptionFinal without adjustments

The models / objective estimation methods predicting exceedance allows for the reporting of a list of the models / objective estimation methods predicting the exceedance situation. The list of models / objective estimation methods are provided by a xlink href reference to the assessment methods declared in data flow D.

aqd:modelUsed	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by model / objective estimation)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:modelUsed

Exceedance exposure information - <aqd:exceedanceExposure> - DescriptionFinal (simple)

The exceedance exposure complex information class allows for the declaration of an estimate of the population and vegetation areas exposed to levels above the environmental objective specified. It is a child element of aqd:exceedanceDescription (and therefore aqd:exceedanceDescriptionBase, aqd:exceedanceDescriptionAdjustment and aqd:exceedanceDescriptionFinal). If Member State have the information calculated for the aqd:exceedanceDescription, these data may be provided on a voluntary basis; if they are not provided, they may be generated by the EEA

The exceedance exposure information class contains the child elements listed below:

- aqd:populationExposed Voluntary (or generated by EEA)
- aqd:ecosystemAreaExposed Voluntary (or generated by EEA)
- aqd:sensitivePopulation Voluntary (or generated by EEA)
- aqd:infrastructureServices Voluntary (or generated by EEA)
- aqd:referenceYear Voluntary

Example

aqd:exceedanceExposure

```

<aqd:exceedanceExposure>
  <aqd:ExceedanceExposure>
    <aqd:populationExposed>2640</aqd:populationExposed>
    <aqd:referenceYear>
      <gml:TimeInstant gml:id="ReferenceYear_9505">
        <gml:timePosition>2011</gml:timePosition>
      </gml:TimeInstant>
    </aqd:referenceYear>
  </aqd:ExceedanceExposure>
</aqd:exceedanceExposure>

```

Population exposure - <aqd:populationExposed> - DescriptionFinal (simple)

The population exposure element provides an estimate of the total resident population exposed to levels above the environmental objective. The element is mandatory for health related protection targets when there is an exceedance. The EEA may generate population statistics based on central data sources. Member State Member States are encouraged to provide detailed information if they have this available. Population is to be reported in integer format.

aqd:populationExposed	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.6.1)
Code list constraints:	<u>None</u>
Formats Allowed:	Integer
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:populationExposed

Area of ecosystem / vegetation area exposed - <aqd:ecosystemAreaExposed> - DescriptionFinal (simple)

The area of ecosystem/vegetation area exposed element provides an estimate of the area of this sensitive receptor type to levels above the environmental objective. The element is mandatory for vegetation related protection targets when there is an exceedance. The EEA may generate the estimates based on central data sources. Member State Member States are encouraged to provide detailed information if they have this available. Area exposed is to be reported in integer format in square kilometers.

aqd:ecosystemAreaExposed	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications found:	G.5.8 (A.2.6.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/uom/area/
Formats Allowed:	Area in square kilometres to 1 decimal place maximum
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:ecosystemAreaExposed /aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:ecosystemAreaExposed/text() /aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:ecosystemAreaExposed/@uom

Sensitive population exposure <aqd:sensitivePopulation> - DescriptionFinal (simple)

The sensitive population exposure element provides an estimate of the percentage of sensitive population in the exceedance area, defined as sum of percentage under 18 and over 60 years of age. This information is voluntary. The EEA may generate the estimates based on central data sources. Member State Member States are encouraged to provide detailed information if they have this available.

<aqd:sensitivePopulation>	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.6.3)
Code list constraints:	<u>None</u>
Formats Allowed:	Percentage (%) of total population exposed
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:sensitivePopulation

Sensitive infrastructure services exposed <aqd:infrastructureServices> - DescriptionFinal (simple)

The Sensitive infrastructure services exposed provides an estimate of the total number of infrastructure services for sensitive population groups in the exceedance area (hospitals, kindergardens, schools etc.). This information is voluntary. The EEA may generate the estimates based on central data sources. Member States are encouraged to provide detailed information if they have this available.

<aqd:infrastructureServices>	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications found:	G.5.8 (A.2.6.4)
Code list constraints:	<u>None</u>
Formats Allowed:	Integer
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:infrastructureServices

Reference year <aqd:referenceYear> - DescriptionFinal (simple)

The reference year element provides a time position for the year in which the population estimates declared in aqd:populationExposed were collected. If the Member States has generated the estimates in aqd:populationExposed they are responsible for providing the reference year. If the EEA have generated the estimates in aqd:populationExposed, the EEA shall generate the reference year information.

<aqd:referenceYear>	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.6.5)
Formats Allowed:	YYYY format
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:refenceYear

Exceedance reason - <aqd:reason> & <aqd:reasonOther>

Allows for the declaration of the reason for exceedance using the 461-Air Quality Questionnaire reason codes. The content of this element is constrained by a code list as indicated below. The code list includes all reason codes previously used for declaring reason of exceedance within the 461-Air Quality Questionnaire. Multiple reason codes are allowed where more than one sector is responsible. In such a case multiple elements and xlink:href citations are allowed.

aqd:reason	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.7 & A.2.8)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:reason /aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:reasonOther

Example

aqd:reason

```
<aqd:reason xlink:href=" http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/S8"/>
```

Complex attainment description with adjustment

For SO₂, PM₁₀ and CO adjustments may be applicable or appropriate when the Environmental Objective have been exceeded. For declaring attainment with one or more adjustment, the following complex elements must be used:

- STEP 1 aqd:exceedanceDescriptionBase Mandatory if adjustments applied (G.5.6)
- STEP 2 aqd:exceedanceDescriptionAdjustment Mandatory if adjustments applied (G.5.7)
- STEP 3 aqd:exceedanceDescriptionFinal Mandatory (G.5.8)

All three elements re-use a subset of the aqd:ExceedanceDescription class. Not all elements included in aqd:ExceedanceDescription need to be provided (see Figure 37).

Focus

AQD_Attainment – with adjustment

For declaring attainment with an adjustment, the information classes below have a specific role;

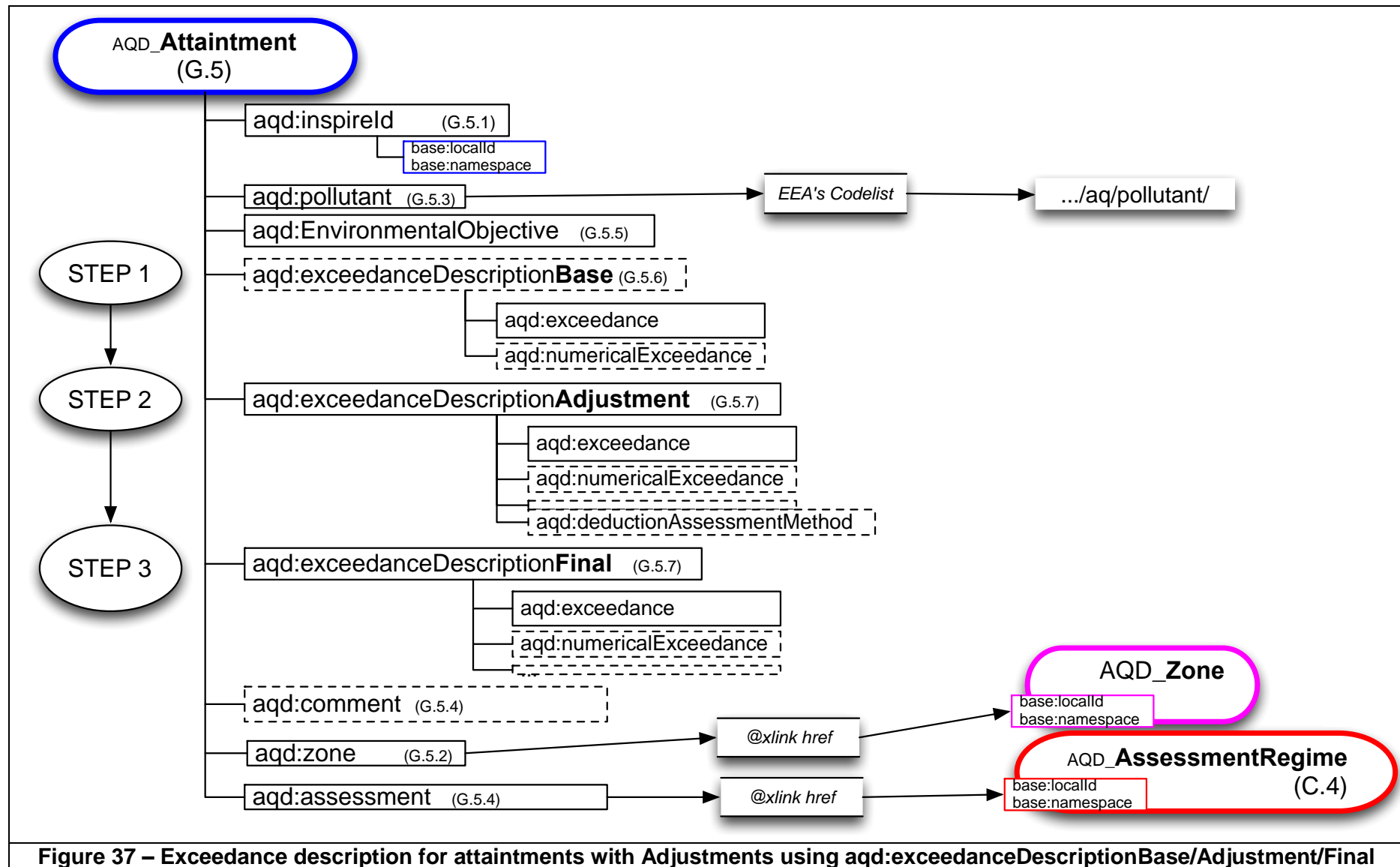
- | | |
|--------------|--|
| STEP1 | <aqd:exceedanceDescriptionBase>
Provides exceedance information prior to any adjustment being applied |
| STEP2 | <aqd:exceedanceDescriptionAdjustment> (multiple if more than one adjustment)
Provides the results taking into account each individual adjustment |
| STEP3 | <aqd:exceedanceDescriptionFinal>
Provides exceedance information taking into account all applicable adjustments |

Focus

AQD_Attainment – external links

HTML based documentation for the element ExceedanceDescription:

http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_ExceedanceDescription.html



The example below shows a complex attainment for PM₁₀ for the days in exceedance in a calendar year. As a complex attainment, it follows 3 step process described in this section:

- STEP 1 aqd:exceedanceDescriptionBase adjustment noneApplied 39 daily exceedances
- STEP 2 aqd:exceedanceDescriptionAdjustment adjustment nsCorrection 34 daily exceedances
- STEP 3 aqd:exceedanceDescriptionFinal adjustment fullyCorrected 34 daily exceedances

Example**aqd:AQD_Attainment with adjustments – FULL EXAMPLE**

Generic example

```
<aqd:AQD_Attainment gml:id="ATT_ES0906_5_LV_H_daysAbove_2013_4cd9d579-d549-43cf-96ce-4ea49a47b257">
  <aqd:inspireId>
    <base:Identifier>
      <base:localId>ATT_ES0906_5_LV_H_daysAbove_2013</base:localId>
      <base:namespace>ES.BDCA.AQD</base:namespace>
      <base:versionId>First version 2013</base:versionId>
    </base:Identifier>
  </aqd:inspireId>
  <aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
  <aqd:environmentalObjective>
    <aqd:EnvironmentalObjective>
      <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>
      <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/daysAbove"/>
      <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
    </aqd:EnvironmentalObjective>
  </aqd:environmentalObjective>
  [STEP 1]
  <aqd:exceedanceDescriptionBase>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>true</aqd:exceedance>
      <aqd:numberExceedances>39</aqd:numberExceedances>
      <aqd:deductionAssessmentMethod>
        <aqd:AdjustmentMethod>
          <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied"/>
        </aqd:AdjustmentMethod>
      </aqd:deductionAssessmentMethod>
    </aqd:ExceedanceDescription>
  </aqd:exceedanceDescriptionBase>
</aqd:AQD_Attainment>
```

```

</aqd:deductionAssessmentMethod>
<aqd:exceedanceArea>
  <aqd:ExceedanceArea>
    <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
    <aqd:areaClassification
xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
    <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/rural"/>
    <aqd:surfaceArea uom="km2">801</aqd:surfaceArea>
    <aqd:stationUsed xlink:href="ES.BDCA.AQD/SP_08112003_10_M"/>
  </aqd:ExceedanceArea>
</aqd:exceedanceArea>
<aqd:exceedanceExposure>
  <aqd:ExceedanceExposure>
    <aqd:populationExposed>146822</aqd:populationExposed>
    <aqd:referenceYear>
      <gml:TimeInstant gml:id="TimeInstant_6045f927-cd11-4654-abfa-be83a8817500">
        <gml:timePosition>2013-01-01</gml:timePosition>
      </gml:TimeInstant>
    </aqd:referenceYear>
  </aqd:ExceedanceExposure>
</aqd:exceedanceExposure>
<aqd:reason/>
<aqd:comment>ES.BDCA.AQD/SP_08112003_10_M daysAbove = 26</aqd:comment>
</aqd:ExceedanceDescription>
</aqd:exceedanceDescriptionBase>
[STEP 2]
<aqd:exceedanceDescriptionAdjustment>
<aqd:ExceedanceDescription>
  <aqd:exceedance>false</aqd:exceedance>
  <aqd:numberExceedances>34</aqd:numberExceedances>
  <aqd:deductionAssessmentMethod>
    <aqd:AdjustmentMethod>
      <aqd:assessmentMethod>
        <aqd:AssessmentMethods>
          <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/objective"/>
          <aqd:assessmentTypeDescription>Spain through Centro Superior Investigaciones científicas (CSIC) has
created a methodology for subtraction of natural contribution of Saharan dust in particles, this methodology was approved by the
Commission (http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/atmosfera-y-calidad-del-
aire/Directrices\_Comisi%C3%B3n-SEC\_208\_final-en\_tcm7-152574.pdf) and it is public in the following document

```

```

(http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/atmosfera-y-calidad-del-
aire/Metodolog%C3%ADa_para_episodios_naturales_2012_tcm7-281402.pdf ): The Methodology quantifies the fraction of the PM10
which is due to natural sources</aqd:assessmentTypeDescription>
  <aqd:modelAssessmentMetadata xlink:href="ES.BDCA.AQD/MOD_ES_Modelling_CSIC_NS_PM10_H_LV_daysAbove_2013"/>
    </aqd:AssessmentMethods>
    </aqd:assessmentMethod>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection"/>
    <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/G2"/>
    </aqd:AdjustmentMethod>
    </aqd:deductionAssessmentMethod>
    <aqd:exceedanceArea>
      <aqd:ExceedanceArea>
        <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
        <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
        <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/rural"/>
        <aqd:surfaceArea uom="km2">801</aqd:surfaceArea>
        <aqd:stationUsed xlink:href="ES.BDCA.AQD/SP_08112003_10_M"/>
      </aqd:ExceedanceArea>
    </aqd:exceedanceArea>
    <aqd:exceedanceExposure>
      <aqd:ExceedanceExposure>
        <aqd:populationExposed>146822</aqd:populationExposed>
        <aqd:referenceYear>
          <gml:TimeInstant gml:id="TimeInstant_3d58fc50-fb88-4107-9202-bf19934e7ea8">
            <gml:timePosition>2013-01-01</gml:timePosition>
          </gml:TimeInstant>
        </aqd:referenceYear>
      </aqd:ExceedanceExposure>
    </aqd:exceedanceExposure>
    <aqd:reason/>
    <aqd:comment>ES.BDCA.AQD/SP_08112003_10_M daysAbove = 26</aqd:comment>
  </aqd:ExceedanceDescription>
  </aqd:exceedanceDescriptionAdjustment>
[STEP 3]
  <aqd:exceedanceDescriptionFinal>
  <aqd:ExceedanceDescription>
    <aqd:exceedance>false</aqd:exceedance>
    <aqd:numberExceedances>34</aqd:numberExceedances>
  </aqd:deductionAssessmentMethod>

```



```

    <aqd:AdjustmentMethod>
      <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/fullyCorrected"/>
    </aqd:AdjustmentMethod>
  </aqd:deductionAssessmentMethod>
  <aqd:exceedanceArea>
    <aqd:ExceedanceArea>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/rural"/>
      <aqd:surfaceArea uom="km2">801</aqd:surfaceArea>
      <aqd:stationUsed xlink:href="ES.BDCA.AQD/SP_08112003_10_M"/>
    </aqd:ExceedanceArea>
  </aqd:exceedanceArea>
  <aqd:exceedanceExposure>
    <aqd:ExceedanceExposure>
      <aqd:populationExposed>146822</aqd:populationExposed>
      <aqd:referenceYear>
        <gml:TimeInstant gml:id="TimeInstant_c6614c68-e3ad-46da-921c-cac2728277a9">
          <gml:timePosition>2013-01-01</gml:timePosition>
        </gml:TimeInstant>
      </aqd:referenceYear>
    </aqd:ExceedanceExposure>
  </aqd:exceedanceExposure>
  <aqd:reason/>
  <aqd:comment>ES.BDCA.AQD/SP_08112003_10_M daysAbove = 26</aqd:comment>
</aqd:ExceedanceDescription>
</aqd:exceedanceDescriptionFinal>
<aqd:comment>Exceedance of Percentil 90.4: 55,6</aqd:comment>
[GENERAL]
  <aqd:zone xlink:href="ES.BDCA.AQD/ZON_ES0906"/>
  <aqd:assessment xlink:href="ARE_ES0906_5_LV_H_daysAbove_2013"/>
</aqd:AQD_Attainment>

```

STEP 1 - Exceedance description base - <aqd:exceedanceDescriptionBase>

Exceedance description base is a complex information class designed to describe the exceedance statement for situations where adjustments from contributions like natural sources and/or winter sanding and salting are being claimed by the Member State. The information class describes the situation prior to taking into account any adjustments for contributions from natural sources and/or winter sanding and salting. This information class is only required in situations where there is an adjustment.

aqd:exceedanceDescriptionBase (G.5.6 or G.5.7) include:

- aqd:exceedance Mandatory
- aqd:numericalExceedance Conditional
- aqd:numberExceedances Conditional
- aqd:deductionAssessmentMethod Mandatory (required to clearly declare whether adjustments apply or not)
- aqd:exceedanceArea Mandatory, (must be provided in the Final description, in base to describe the sample points & models exceeding)
- aqd:exceedanceExposure Conditional, (must be provided in the Final description)
- aqd:reason
- aqd:reasonOther
- aqd:comment

Detailed information on the constraints and content for this complex class is provided below. Figure 38 illustrates the majority of information classes that constitute aqd:exceedanceDescriptionBase needed when adjustments are applied.

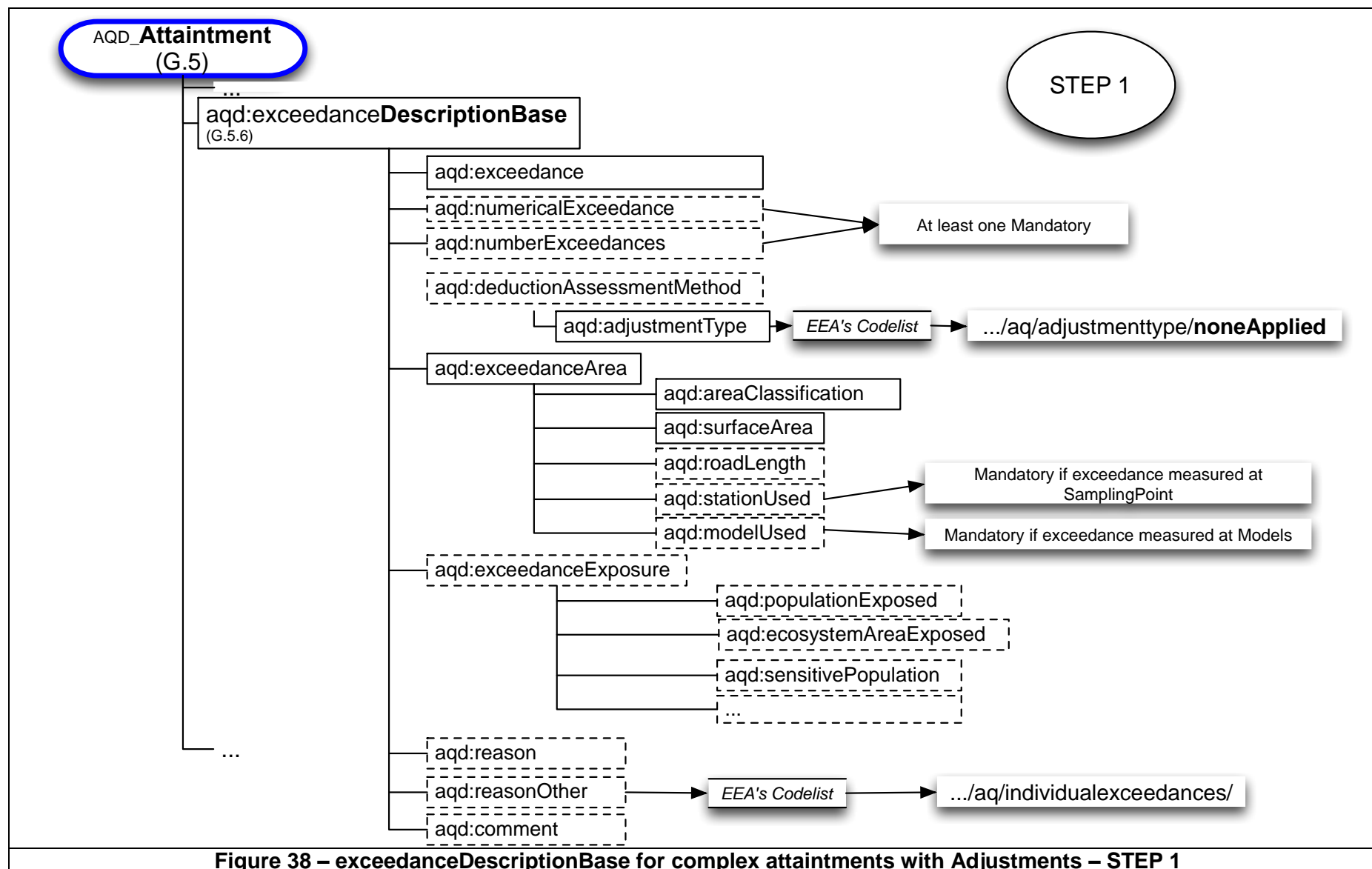


Figure 38 – exceedanceDescriptionBase for complex attainments with Adjustments – STEP 1

The example below details the information to be provided within exceedanceDescriptionBase. This example shows how to provide information for the original exceeding stations (aqd:stationUsed). This identifies the sampling points exceeding and models / objective estimation techniques exceeding, prior to adjustments being applied.

Example**aqd:AQD_Attainment with adjustments – exceedandDescriptionBase – STEP 1**

```

<aqd:AQD_Attainment gml:id="GB_AttssessmentRegime_203">
  <aqd:inspireId>
    [...]
  </aqd:inspireId>
  <aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
  <aqd:environmentalObjective>
    <aqd:EnvironmentalObjective>
      <aqd:objectiveType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/objectivetype/LV"/>
      <aqd:reportingMetric xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/reportingmetric/aMean"/>
      <aqd:protectionTarget xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/protectiontarget/H"/>
    </aqd:EnvironmentalObjective>
  </aqd:environmentalObjective>
[STEP 1]
  <aqd:exceedanceDescriptionBase>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>false</aqd:exceedance>
      <aqd:numericalExceedance>59.0</aqd:numericalExceedance>
      <aqd:deductionAssessmentMethod>
        <aqd:AdjustmentMethod>
          <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplicable"/>
        </aqd:AdjustmentMethod>
      </aqd:deductionAssessmentMethod>
      <aqd:exceedanceArea>
        <aqd:ExceedanceArea>
          <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
          <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
          <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_338"/>
          <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_217"/>
          <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_214"/>
        </aqd:ExceedanceArea>
      </aqd:exceedanceArea>
    </aqd:ExceedanceDescription>
  </aqd:exceedanceDescriptionBase>
</aqd:AQD_Attainment>

```

```
    [...]  
        </aqd:ExceedanceArea>  
    </aqd:exceedanceArea>  
    </aqd:ExceedanceDescription>  
    </aqd:exceedanceDescriptionBase>  
[STEP 2]  
    <aqd:exceedanceDescriptionAdjustment>  
        <aqd:ExceedanceDescription>  
            [...]  
        </aqd:ExceedanceDescription>  
    </aqd:exceedanceDescriptionAdjustment>  
[STEP 3]  
    <aqd:exceedanceDescriptionFinal>  
        <aqd:ExceedanceDescription>  
            [...]  
        </aqd:ExceedanceDescription>  
    </aqd:exceedanceDescriptionFinal>  
    <aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001"/>  
    <aqd:assessment xlink:href="http://environment.data.gov.uk/air-quality/so/GB_AssessmentRegime_203"/>  
</aqd:AQD_Attainment>
```

AQD exceedance statement - <aqd:exceedance> - DescriptionBase – STEP 1

AQD exceedance allows for a boolean statement to be declared in relation to whether levels are above or below the environmental objective prior to taking into account any adjustments for contributions from natural sources and/or winter sanding and salting. . It is expected that for situations where adjustments are being applied, levels will be above the Environmental Objective, (i.e. aqd:exceedance = true).

<aqd:exceedances>	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionBase>)
IPR data specifications at:	G.5.6 (A.2.1)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	True / false
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:exceedance

Example**aqd:exceedance**

If levels are above the Environmental Objective:

```
<aqd:exceedance>true</aqd:exceedance>
```

If levels are below the Environmental Objective:

```
<aqd:exceedance>>false</aqd:exceedance>
```

Numerical exceedances - <aqd:numericalExceedance> - DescriptionBase – STEP 1

AQD numerical exceedance allows for the description of the highest concentration value observed or predicted in the zone for the pollutant and environmental objective specified. Insert the numerical concentration value in units as appropriate to the environmental objective and reporting metric. The AQD numerical exceedance class is applicable to environmental objectives using average, percentile or AOT reporting metrics. For other short term reporting metrics use <aqd:numberExceedance>. The rounding rules stipulated by the Commissions guidance apply.

<aqd:numericalExceedance**>**

Minimum occurrence:	C (conditional, mandatory if environmental objective is an average, percentile or AOT)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionBase>)
IPR data specifications:	G.5.6 (A.2.2)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:numericalExceedance

Example**aqd:numericalExceedance**

```
<aqd:numericalExceedance>59.0</aqd:numericalExceedance>
```

Number of short term exceedances - <aqd:numberExceedances> - DescriptionBase – STEP 1

The number of short term exceedances element allows for the description of the highest number of exceedances of short term reporting metrics in the zone for the pollutant and environmental objective specified. The value shall be in the same units and of the same reporting metric as the environmental objective. The number of exceedances element is applicable to environmental objectives based on the number of daily or hourly exceedances.

<aqd:numberExceedance>	
Minimum occurrence:	C (conditional, mandatory if environmental objective threshold is given as a number of exceedances per year)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionBase>)
IPR data specifications found at:	G.5.6 (A.2.3)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:numberExceedances

Example

aqd:numberExceedance

```
<aqd:numberExceedances>37</aqd:numberExceedances>
```


Adjustment Assessment Method - <aqd:deductionAssessmentMethod> - DescriptionBase (Step 1)

AQD adjustment assessment methods element allows for linking the Adjustment Description to an adjustment methods used to adjust for Natural Sources or Winter-sanding or –salting. However, for step 1 (DescriptionBase), this complex element is only used to re-assure that adjustment has not been applied to the base description. Declaration of adjustment applicable are made within child elements of <aqd:AdjustmentMethod>. However, for the DescriptionBase for a complex attainment only one element is to be used

- **<aqd:adjustmentType>** providing an xlink reference to a codelist describing that either adjustment has not been applied (/noneApplied) (yet).

<aqd:numberExceedance>

Minimum occurrence:	Mandatory
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications :	G.5.6 (A.2.4.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied
QA/QC constraints:	None
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:numberExceedances

Example

aqd:adjustmentMethod – example for simple attainment without any adjustments

```
None applied (yet)
<aqd:deductionAssessmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied/" />
  </aqd:AdjustmentMethod>
</aqd: deductionAssessmentMethod>
```

Area of the exceedance situation - <aqd:exceedanceArea> - DescriptionBase – STEP 1

The exceedance area complex information class allows for declaration of information on the area exceeding the environmental objective specified. It is a child element of aqd:exceedanceDescriptionBase. The class is required in the aqd:exceedanceDescriptionBase class to identify the sampling points exceeding and models / objective estimation techniques exceeding, prior to adjustments being applied.

The area of exceedance situation class contains the child elements listed below. **aqd:exceedanceArea** include:

- aqd:areaClassification Mandatory
- aqd:spatialExtent Conditional (M in exceedanceDescriptionFinal)
- aqd:surfaceArea Mandatory
- aqd:roadLength Conditional (M in exceedanceDescriptionFinal)
- aqd:administrativeUnit Voluntary
- aqd:stationUsed Conditional (M if exceedance measured at SamplingPoint prior to any adjustment)
- aqd:modelUsed Conditional (M if exceedance modeled using Model/ExpertJudgment prior to adjustment)

Example

aqd:exceedanceArea – DescriptionBase – STEP 1

```
<aqd:exceedanceDescriptionBase>
  <aqd:exceedanceArea>
    <aqd:ExceedanceArea>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
      <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_338"/>
      <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_217"/>
      [...]
    </aqd:ExceedanceArea>
  </aqd:exceedanceArea>
</aqd:ExceedanceDescription>
</aqd:exceedanceDescriptionBase>
```

Area classification - <aqd:areaClassification> - DescriptionBase with adjustments

The area classification element allows for the description of type of area covered by the exceedance situation. Area classification is mandatory when an exceedance situation has been observed. Multiple area classification types are allowable where the extent of the exceedance situation is large e.g. urban, suburban and rural area classifications are valid descriptions of widespread exceedance problem. The content of area classification is constrained by the code list indicated.

aqd:areaClassification	
Minimum occurrence:	M (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.6 (A.2.5.1)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/view code
Formats Allowed:	codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:exceedanceArea/aqd:ExceedanceArea/aqd:areaClassification

Spatial extent of exceedance situation - <aqd:spatialExtent> - DescriptionBase with adjustments

The spatial extent of exceedance situation element should be used to provide a geometry description of the extent of the exceedance area. The element may be generated by EEA central resources or if the Member State possesses the information as (i) a valid gml:polygon encoding of the extent of the exceedance situation if this is known, (ii) a gml:point encoding if exceedance situation is known as a point (e.g. sampling point or multiple sampling points) or (iii) a valid gml:linestring encoding if exceedance situation is known as a vector object (e.g. road centre line). Alternatively the Member State may encode this information as a list of administrative units coincident with the exceedance situation area, see <aqd:administrativeUnit>. One or other of <aqd:spatialExtent> and <aqd:administrativeUnit> must be provided, not both.

aqd:spatialExtent	
Minimum occurrence:	C (conditional, not mandatory within exceedanceDescriptionBase)
Maximum occurrence:	1
IPR data specifications:	G.5.6 (A.2.5.2)
Code list constraints:	None

Formats Allowed:	Valid gml:polygon, gml:point, gml:linestring
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:spatialExtent

Area of exceedance situation - <aqd:surfaceArea> - DescriptionBase with adjustments

The area of exceedance situation element allows for the reporting of a numerical estimate of the area of the exceedance situation above the environmental objective. Length of affected roads in kilometers. It is identified as a mandatory requirement in the IPR guidance although it is noted that the area of exceedance may not be known if the exceedance is only associated with a road link. In this event the aqd:surfaceArea should be omitted and aqd:roadLength provided. It is recommended to keep the number of decimal places to one.

aqd:surfaceArea	
Minimum occurrence:	C (conditional, voluntary for ExceedanceDescriptionBase if exceedance estimated to be background / non- roadside)
Maximum occurrence:	1
IPR data specifications:	G.5.6 (A.2.5.3)
Code list constraints:	None
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:surfaceArea

Length of road exceeding - <aqd:roadLength> - DescriptionBase with adjustments

The length of road exceeding element allows for the reporting of a numerical estimate of the length of road where the level was above the environmental objective in kilometers. It is mandatory when there is an exceedance situation linked to a road. It is recommended to keep the number of decimal places to one.

aqd:roadLength	
Minimum occurrence:	C (conditional, voluntary for ExceedanceDescriptionBase if exceedance estimated on a road link)
Maximum occurrence:	1
IPR data specifications:	G.5.6 (A.2.5.4)
Code list constraints:	None
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:roadLength

Administrative units covered by exceedance area - <aqd:administrativeUnit> - DescriptionFinal without adjustments

The administrative units element should be used to provide an estimate of the geometry description for the extent of the exceedance area. It is an alternative method to providing detailed information via the aqd:spatialExtent element. The element may be generated by EEA central resources or if the Member State Member States possesses the information as list of LAU / NUTS administrative codes which coincide with the estimate are of exceedance. The list of codes to be used shall be constrained to EEA's codelist described below.

aqd:administrativeUnit	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.6 (A.2.5.5)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/lau2 http://dd.eionet.europa.eu/vocabulary/lau1 http://dd.eionet.europa.eu/vocabulary/common/nuts/
Formats Allowed:	Codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/ aqd:administrativeUnit

Example**aqd:administrativeUnit**

Use of a single LAU code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> or <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/es/17079"/></code>
Use of several LAU codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>
Use of single NUTS code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of several NUTS codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ13"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of an entire AQ zone	<code><aqd:administrativeUnit xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0036"/></code>

Sampling points observing the exceedance - <aqd:stationUsed> - DescriptionBase with adjustments

The sampling points observing the exceedance element allows for the reporting of a list of the sampling points observing the exceedance situation. The list of sampling points are provided by a xlink href reference to the sampling point declared in data flow D (the list will correspond to the exceeding sampling points prior to any correction being applied)

aqd:stationUsed	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by sampling point prior to any adjustment applied)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.6 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:stationUsed

Focus**aqd:stationUsed – provide link to all exceeding SamplingPoints prior to adjustment**

This element is key to provide a link to ALL the SamplingPoints within each zone that have exceeded the Environmental Objective prior to any adjustment(s) being applied.

Models / objective estimation methods predicting exceedance - <aqd:modelUsed> - DescriptionBase with adjustments

The models / objective estimation methods predicting exceedance allows for the reporting of a list of the models / objective estimation methods predicting the exceedance situation. The list of models / objective estimation methods are provided by a xlink href reference to the assessment methods declared in data flow D.

aqd:modelUsed	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by model / objective estimation prior to adjustment applied)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.6 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:modelUsed

Example**aqd:stationUsed / aqd:modelUsed**

```
<aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_338"/>
<aqd:modelUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Model_30"/>
```

Exceedance exposure information - <aqd:exceedanceExposure> - DescriptionBase – STEP 1

The exceedance exposure complex information class allows for declaration of the population and vegetation areas exposure to levels above the environmental objective specified.. If Member States have the information calculated for the aqd:exceedanceDescriptionBase, these data may be provided on a voluntary basis. **See description within ExceedanceDescriptionFinal.**

Exceedance reason - <aqd:reason> & <aqd:reasonOther> - DescriptionBase – STEP 1

Allows for the declaration of the reason for exceedance using the 461-Air Quality Questionnaire reason codes. The content of this element is constrained by a code list as indicated below. The code list includes all reason codes previously used for declaring reason of exceedance within the 461-Air Quality Questionnaire. Multiple reason codes are allowed where more than one sector is responsible. In such a case multiple elements and xlink:href citations are allowed. Exceedance reason is voluntary.

aqd:reason	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.6 (A.2.7 & A.2.8)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/view
Formats Allowed:	n/a
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:reason /aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:reasonOther

Example

aqd:reason

```
<aqd:reason xlink:href=" http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/S8"/>
```


Comment for clarification - <aqd:comment> - DescriptionBase – STEP 1

Allows for the Member State to include a free text note of clarification, if needed, for each individual exceedance description

aqd:comment	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.6 (A.2.9)
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, 255 characters
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:comment

STEP 2 Exceedance description - <aqd:exceedanceDescriptionAdjustment>

This exceedance description class is used to describe the individual effect of any adjustment due to natural sources and/or winter sanding and salting upon the exceedance situation (Step 2). The combined effect on maximum levels is then declared in the <aqd:exceedanceDescriptionFinal> information class (Step 3).

aqd:exceedanceDescriptionAdjustment (G.5.7) include:

- aqd:exceedance Mandatory
- aqd:numericalExceedance Conditional
- aqd:numberExceedances Conditional
- aqd:deductionAssessmentMethod Mandatory (required to clearly declare the type of adjustments applied in Step 2)
- aqd:exceedanceArea Voluntary under exceedanceDescriptionAdjustment
- aqd:exceedanceExposure Voluntary under exceedanceDescriptionAdjustment
- aqd:reason
- aqd:reasonOther
- aqd:comment

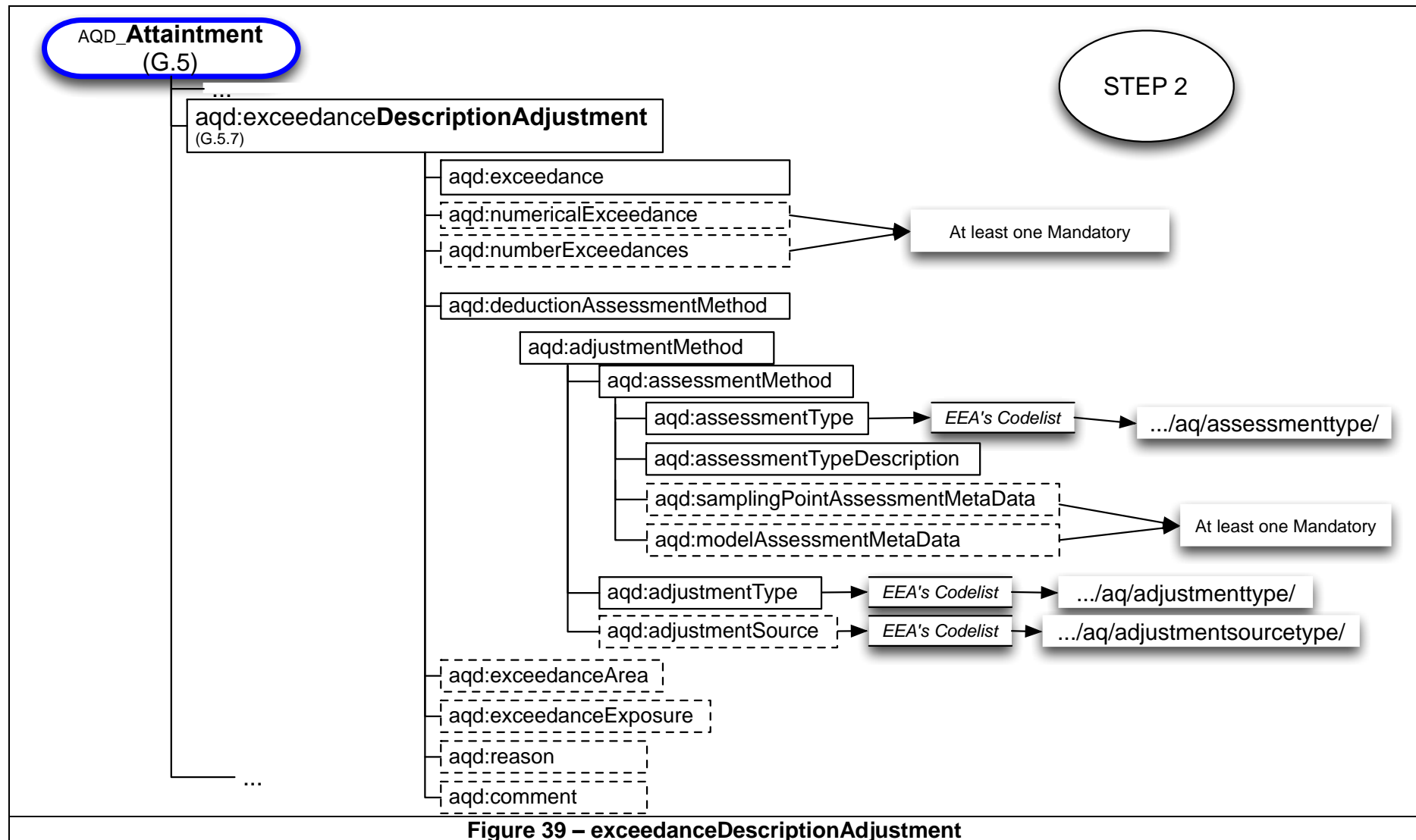
Detailed information on the constraints and content for this complex class is provided below. Figure 39 illustrates the core of information classes that constitute aqd:exceedanceDescriptionAdjustment.

Focus

AQD_Attainment – aqd:exceedanceDescriptionAdjustment

Exceedance description class to describe the combined effect of all individual adjustments. The effect of each adjustment will have been previously declared individually within aqd:exceedanceDescriptionAdjustment.

<aqd:deductionAssessmentMethod> is KEY ELEMENT within aqd:exceedanceDescriptionAdjustment



The examples below details the information to be provided within exceedanceDescriptionAdjustment. These example shows how to provide information for the adjustment (Step 2). The first example shows how to provide information when only one adjustment is taken into consideration. The second example shows how to provide individual adjustments (for two different sources) in individual exceedanceDescriptionAdjustment (Step 2) and how these are provided combined to provide a fully corrected attainment via exceedanceDescriptionFinal (Step 3)

Example**aqd:AQD Attainment with one adjustments applied – STEP 2**

```

<aqd:AQD_Attainment gml:id="GB_Attainment_1232">
  <aqd:inspireId>
    [...]
  </aqd:inspireId>
  <aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
  <aqd:environmentalObjective>
    [...]
  </aqd:environmentalObjective>
  [STEP 1]
  <aqd:exceedanceDescriptionBase>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>true</aqd:exceedance>
      <aqd:numericalExceedance>59.0</aqd:numericalExceedance>
      <aqd:deductionAssessmentMethod>
        <aqd:AdjustmentMethod>
          <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied"/>
          </aqd:AdjustmentMethod>
        </aqd:deductionAssessmentMethod>
      </aqd:ExceedanceDescription>
    </aqd:exceedanceDescriptionBase>
  [STEP 2]
  <aqd:exceedanceDescriptionAdjustment>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>true</aqd:exceedance>
      <aqd:numericalExceedance>55.0</aqd:numericalExceedance>
    </aqd:ExceedanceDescription>
  </aqd:exceedanceDescriptionAdjustment>
</aqd:AQD_Attainment>

```

```

    <aqd:environmentalObjective>
    [...]
    <aqd:deductionAssessmentMethod>
      <aqd:AdjustmentMethod>
        <aqd:assessmentMethods>
        <aqd:AssessmentMethods>
          <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model/">
          <aqd:assessmentTypeDescription>Model used for NAT</aqd:assessmentTypeDescription>
          <aqd:modelAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-
quality/so/GB_Model_30"/>
        </aqd:AssessmentMethods>
        <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection/">
        <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/G2/">
        </aqd:AdjustmentMethod>
      </aqd: deductionAssessmentMethod >
    </aqd:ExceedanceDescription>
    </aqd:exceedanceDescriptionAdjustment>
[STEP 3]
    <aqd:exceedanceDescriptionFinal>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>true</aqd:exceedance>
      <aqd:numericalExceedance>55.0</aqd:numericalExceedance>
    <aqd:deductionAssessmentMethod>
      <aqd:AdjustmentMethod>
        <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/fullyCorrected/">
        </aqd:AdjustmentMethod>
      </aqd: deductionAssessmentMethod>
    [...]
    </aqd:ExceedanceDescription>
    [...]
    </aqd:exceedanceDescriptionFinal>
    <aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001"/>
    <aqd:assessment xlink:href="http://environment.data.gov.uk/air-quality/so/GB_AssessmentRegime_203"/>
  </aqd:AQD_Attainment>

```

Example**aqd:AQD_Attainment with two adjustment – STEP 2**

```

<aqd:AQD_Attainment gml:id="GB_Attainment_33333">
  <aqd:inspireId>
    [...]
  </aqd:inspireId>
  <aqd:pollutant xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5"/>
  <aqd:environmentalObjective>
    [...]
  </aqd:environmentalObjective>
  [STEP 1]
  <aqd:exceedanceDescriptionBase>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>true</aqd:exceedance>
      <aqd:numericalExceedance>50.0</aqd:numericalExceedance>
      <aqd:deductionAssessmentMethod>
        <aqd:AdjustmentMethod>
          <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/noneApplied"/>
          </aqd:AdjustmentMethod>
        </aqd:deductionAssessmentMethod>
      </aqd:ExceedanceDescription>
    </aqd:exceedanceDescriptionBase>

  [STEP 2 – 1st adjustment]
  <aqd:exceedanceDescriptionAdjustment>
    <aqd:ExceedanceDescription>
      <aqd:exceedance>true</aqd:exceedance>
      <aqd:numericalExceedance>46.0</aqd:numericalExceedance>
      <aqd:environmentalObjective>
      [...]
      <aqd:deductionAssessmentMethod>
        <aqd:AdjustmentMethod>
          <aqd:assessmentMethods>
            <aqd:AssessmentMethods>
              <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model"/>
              <aqd:assessmentTypeDescription>Objective Estimation for Saharan dust
            contribution</aqd:assessmentTypeDescription>

```

```

quality/so/GB_Model_30"/>
    <aqd:modelAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-
    </aqd:AssessmentMethods>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection/">
    <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/G2/">
    </aqd:AdjustmentMethod>
    </aqd: deductionAssessmentMethod >
    </aqd:ExceedanceDescription>
    </aqd:exceedanceDescriptionAdjustment>
[STEP 2 – 2nd adjustment]
    <aqd:exceedanceDescriptionAdjustment>
    <aqd:ExceedanceDescription>
    <aqd:exceedance>true</aqd:exceedance>
    <aqd:numericalExceedance>45.0</aqd:numericalExceedance>
    <aqd:environmentalObjective>
    [...]
    <aqd:deductionAssessmentMethod>
    <aqd:AdjustmentMethod>
    <aqd:assessmentMethods>
    <aqd:AssessmentMethods>
    <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixe/">
    <aqd:assessmentTypeDescription>NaCl measurements for the quantification of Sea Spray
    </aqd:assessmentTypeDescription>
    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-
quality/so/GB_SamplingPoint_33333"/>
    </aqd:AssessmentMethods>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection/">
    <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/H/">
    </aqd:AdjustmentMethod>
    </aqd: deductionAssessmentMethod >
    </aqd:ExceedanceDescription>
    </aqd:exceedanceDescriptionAdjustment>
[STEP 3]
    <aqd:exceedanceDescriptionFinal>
    <aqd:ExceedanceDescription>
    <aqd:exceedance>true</aqd:exceedance>
    <aqd:numericalExceedance>41.0</aqd:numericalExceedance>
    <aqd:deductionAssessmentMethod>
    <aqd:AdjustmentMethod>

```

```

        <aqd:adjustmentType
xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/fullyCorrected/"/>
        </aqd:AdjustmentMethod>
        </aqd:deductionAssessmentMethod>
        [...]
    </aqd:ExceedanceDescription>
    [...]
</aqd:exceedanceDescriptionFinal>
<aqd:zone xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0001"/>
<aqd:assessment xlink:href="http://environment.data.gov.uk/air-quality/so/GB_AssessmentRegime_203"/>
</aqd:AQD_Attainment>

```

AQD exceedance statement - <aqd:exceedance> - DescriptionAdjustment – STEP 2

AQD exceedance allows for a boolean statement to be declared in relation to whether levels are above or below the environmental objective after applying the specific adjustment being described. **If below**, (i.e aqd:exceedance = false), information on the adjustment must be provided and a final statement to be done with the complex element (aqd:exceedanceDescriptionFinal).

<aqd:exceedances>	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionAdjustment>)
IPR data specifications at:	G.5.7 (A.2.1)
QA/QC constraints:	None
Allowed formats:	True / false
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:exceedance

Example

aqd:exceedance

If levels are above the Environmental Objective: <aqd:exceedance>true</aqd:exceedance>
 If levels are below the Environmental Objective: <aqd:exceedance>>false</aqd:exceedance>

Numerical exceedances - <aqd:numericalExceedance> - DescriptionAdjustment – STEP 2

AQD numerical exceedance allows for the description of the highest concentration value observed or predicted in the zone for the pollutant and environmental objective specified taking into account the particular adjustment described. Irrespective of whether levels are above the environmental objective, insert the numerical concentration value after the particular adjustments have been applied in units as appropriate to the environmental objective and reporting metric. The AQD numerical exceedance class is applicable to environmental objectives using average, percentile or AOT reporting metrics. For other short term reporting metrics use <aqd:numberExceedance>. The rounding rules stipulated by the Commissions guidance apply. If more than one adjustments, the effect of each adjustment must be declared individually.

<aqd:numericalExceedance

>

Minimum occurrence:	C (conditional, mandatory if environmental objective is an average, percentile or AOT)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionAdjustment>)
IPR data specifications at:	G.5.7 (A.2.2)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:numericalExceedance

Example

aqd:numericalExceedance

```
<aqd:numericalExceedance>59</aqd:numericalExceedance>
```

Number of short term exceedances - <aqd:numberExceedances> - DescriptionAdjustment – STEP 2

The number of short term exceedances element allows for the description of the highest number of exceedances of short term reporting metrics observed or predicted in the zone for the pollutant and environmental objective specified **taking into account the particular adjustment described**. Irrespective of whether levels are above the environmental objective, insert the value of the number of exceedance in the units appropriate to the environmental objective and reporting metric. The number of exceedances element is applicable to environmental objectives based on the number of daily or hourly exceedances.

<aqd:numberExceedance>	
Minimum occurrence:	C (conditional, mandatory if environmental objective threshold is given as a number of exceedances per year)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionAdjustment>)
IPR data specifications at:	G.5.7 (A.2.32)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:numberExceedances

Example

aqd:numberExceedance

```
<aqd:numberExceedances>37</aqd:numberExceedances>
```

Adjustment Assessment Method - <aqd:deductionAssessmentMethod> - within DescriptionAdjustment – STEP 2

AQD adjustment assessment methods element allow the description of the individual adjustment and the methods used to adjust for Natural Sources or Winter-sanding or –salting. This information class is a complex element which should be provided if adjustments are applied in order to link the established methodology for the demonstration and substration of exceedances attributable to natural sources or to winter-sanding or –salting. Declaration of adjustment applicable are made within child elements of <aqd:AdjustmentMethod>:

1. **<aqd:assessmentMethod>** provides an xlink reference to the assessment method in D that is used to assess the levels of natural source / winter salting and sanding contribution. It is mandatory when in all cases where a correction is applied.
2. **<aqd:adjustmentType>** provides an xlink reference to a codelist describing the type of correction /adjustment applied. It is mandatory in all case to declare what type of corrections is applied (i.e. nsCorrection or wssCorrection)
3. **<aqd:adjustmentSource>** provides an xlink reference to a codelist detailed description of the source being adjusted e.g. sea spray or volcanic activity with the country.

The adjustment methods class contains the child elements listed below. **aqd:AdjustmentMethod** including:

- | | |
|--|---|
| • aqd:assessmentMethod | Mandatory in exceedanceDescriptionAdjustment |
| • aqd:assessmentType | Mandatory |
| • aqd:assessmentTypeDescription | Mandatory |
| • aqd:samplingPointAssessmentMetadata | Conditional (M if adjustment measured using SamplingPoint) |
| • aqd:modelAssessmentMetadata
estimation) | Conditional (M if adjustment measured using model/objective |
| • aqd:adjustmentType | Mandatory |
| • aqd:adjustmentSource | Voluntary |

Example**aqd:adjustmentMethod** – example for Sea Spray contribution using SamplingPoints

```

<aqd:deductionAssessmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:assessmentMethods>
      <aqd:AssessmentMethods>
        <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed/">
          <aqd:assessmentTypeDescription>SamplinPoints used for quantification of Sea
spray</aqd:assessmentTypeDescription>
        <aqd:samplingPointAssessmentMetadata xlink:href="AT.UBA.AQD/SamplingPoint_11"/>
        <aqd:samplingPointAssessmentMetadata xlink:href="AT.UBA.AQD/SamplingPoint_12"/>
        <aqd:samplingPointAssessmentMetadata xlink:href="AT.UBA.AQD/SamplingPoint_13"/>
      </aqd:AssessmentMethods>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection/">
    <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/H/">
  </aqd:AdjustmentMethod>
</aqd: deductionAssessmentMethod>

```

Example**aqd:adjustmentMethod** – example for Natural Source contribution using Models

```

<aqd:deductionAssessmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:assessmentMethods>
      <aqd:AssessmentMethods>
        <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model/">
          <aqd:assessmentTypeDescription>Model used for NAT</aqd:assessmentTypeDescription>
        <aqd:modelAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Model_30"/>
      </aqd:AssessmentMethods>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/nsCorrection/">
    <aqd:adjustmentSource xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmentsourcetype/G2/">
  </aqd:AdjustmentMethod>
</aqd: deductionAssessmentMethod>

```


AQ assessment methods <aqd:assessmentMethods>

This is a complex group of elements that allows for the characteristics of the assessment methods used in the classification of pollution levels within the zone identified in relation to the assessment thresholds applicable to the pollutant(s). The parent child relationship of XML elements that make up the <aqd:assessmentMethods> is shown here Figure 10 and schema documentation¹⁰.

The constraints and child elements associated with <aqd:assessmentMethods> are listed below.

aqd:assessmentMethods	
Minimum occurrence:	0 (Mandatory within aqd:deductionAssessmentMethod/aqd:AdjustmentMethod/)
Maximum occurrence:	Unbounded (1 for each aqd:AdjustmentMethod)
IPR data specifications:	
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/view
XPath to schema location:	/aqd:AdjustmentMethod/aqd:assessmentMethods /aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentType/@xlink:href /aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentTypeDescription /aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:samplingPointAssessmentMetadata/@xlink:href /aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:modelAssessmentMetadata/@xlink:href
Voidable:	No

¹⁰ http://www.eionet.europa.eu/aqportal/datamodel/xsd/AirQualityReporting_AssessmentMethods.html

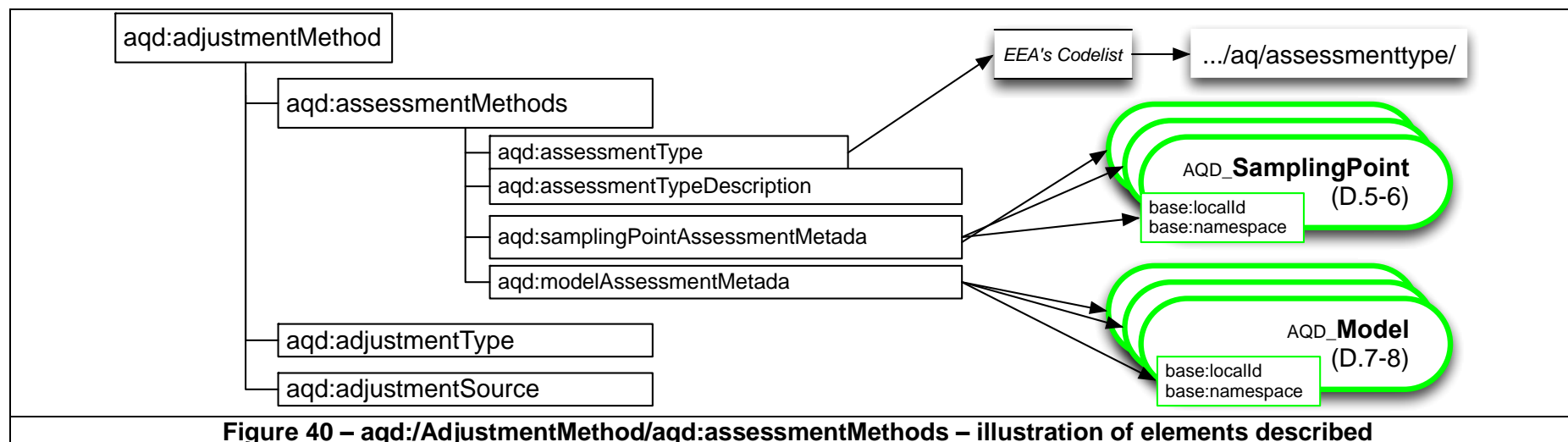


Figure 40 – `aqd:/AdjustmentMethod/aqd:assessmentMethods` – illustration of elements described

AQ assessment type `<aqd:assessmentType>`

The AQ assessment type elements allows for the classification (grouping) of assessment methods into common types. The types of assessment are those management by data flow D on assessment methods e.g. fixed measurement, modelling, indicative measurement, objective estimation. The types are controlled by a code list.

aqd:assessmentType	
Minimum occurrence:	1 (Mandatory on first reporting or if change = "true")
Maximum occurrence:	1
IPR data specifications:	C.4.5.1
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/view
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	<code>/aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentType/@xlink:href</code>
Voidable:	No

Example**aqd:assessmentType**

```
<aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed"/>
```

AQ assessment type description

Makes provision for a short textual description of the adjustment assessment type and how it is applied. Here for example data provides may also make reference to a short description of the adjustment methodology.

aqd:assessmentTypeDescription	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	1
IPR data specifications found:	C.4.5.2
Code list constraints:	None
Formats Allowed:	Alphanumeric
XPath to schema location:	/aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:assessmentTypeDescription
Voidable:	No

Example**aqd:assessmentTypeDescription**

```
<aqd:assessmentTypeDescription> SamplinPoints used for quantification of Sea spray </aqd:assessmentTypeDescription>
```

```
<aqd:assessmentTypeDescription>Spain through Centro Superior Investigaciones científicas (CSIC) has created a methodology for subtraction of natural contribution of Saharan dust in particles, this methodology was approved by the Commission (http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/atmosfera-y-calidad-del-aire/Directrices_Comisi%C3%B3n-SEC_208_final-en_tcm7-152574.pdf) and it is public in the following document (http://www.magrama.gob.es/es/calidad-y-evaluacion-ambiental/temas/atmosfera-y-calidad-del-aire/Metodolog%C3%ADa_para_episodios_naturales_2012_tcm7-281402.pdf ): The Methodology quantifies the fraction of the PM10 which is due to natural sources </aqd:assessmentTypeDescription>
```


Link to assessment method metadata <aqd:modelAssessmentMetadata> or <aqd:samplingPointAssessmentMetadata>

Makes provision for referencing of the assessment method metadata records for sampling points (fixed and indicative) and/or modelling methods (models and objective estimations) to be employed or commissioned as part of the assessment regime. The metadata records must pre-exist or be generated in within data flow D to enable referencing of these records via an xlink:href attribute.

aqd:samplingPointAssessmentMetadata & aqd:modelAssessmentMetadata	
Minimum occurrence:	1 (Mandatory)
Maximum occurrence:	Unbounded
IPR data specifications found:	C.4.5.3 and C.4.5.4
Formats Allowed:	Alphanumeric, max. length 100 characters
XPath to schema location:	/aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:samplingPointAssessmentMetadata/@xlink:href /aqd:AdjustmentMethod/aqd:assessmentMethods/aqd:AssessmentMethods/aqd:modelAssessmentMetadata/@xlink:href
Voidable:	No

Example**aqd:samplingPointAssessmentMetadata**

```

<aqd:assessmentMethods>
  <aqd:AssessmentMethods>
    <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/model" />
    <aqd:assessmentTypeDescription>Model used for the quantification of Sea Spray </aqd:assessmentTypeDescription>
    <aqd:modelAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Model_19" />
  </aqd:AssessmentMethods>
</aqd:assessmentMethods>

<aqd:assessmentMethods>
<aqd:AssessmentMethods>
  <aqd:assessmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/assessmenttype/fixed" />
<aqd:assessmentTypeDescription>SamplingPoints used for the quantification of Sea Spray </aqd:assessmentTypeDescription>
  <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_16"/>
  <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_98"/>

```

```

    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_33"/>
    <aqd:samplingPointAssessmentMetadata xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_26"/>
  </aqd:AssessmentMethods>
    </aqd:assessmentMethods>

```

Area of the exceedance situation - <aqd:exceedanceArea> - DescriptionAdjustment – STEP 2

The exceedance area complex information class allows for declaration of information on the area exceeding the environmental objective specified. It is a child element of aqd:exceedanceDescriptionAdjustment. The class is required in the aqd:exceedanceDescriptionBase and aqd:exceedanceDescriptionFinal. However, within aqd:exceedanceDescriptionAdjustment this information is voluntary.

This complex element provides spatial information taking into account the individual adjustment described within Step 2. Information on the remaining exceeding area (surface, road length...) or stations/models still exceeding is to be provided.

The area of exceedance situation class contains the child elements listed below. aqd:exceedanceArea include:

- | | |
|--------------------------|--|
| • aqd:areaClassification | Mandatory in exceedanceDescriptionAdjustment |
| • aqd:spatialExtent | Voluntary in exceedanceDescriptionAdjustment |
| • aqd:surfaceArea | Mandatory in exceedanceDescriptionAdjustment |
| • aqd:roadLength | Conditional in exceedanceDescriptionAdjustment |
| • aqd:administrativeUnit | Voluntary |
| • aqd:stationUsed | Conditional (M if exceedance measured at SamplingPoint taking into account the individual adjustment) |
| • aqd:modelUsed | Conditional (M if exceedance modeled using Model/ExpertJudgment taking into account the individual adjustment) |

Example**aqd:exceedanceArea – DescriptionAdjustment – Step 2**

```

<aqd:exceedanceDescriptionBase>
  <aqd:exceedanceArea>
    <aqd:ExceedanceArea>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
      <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_338"/>
      <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_217"/>
      [...]
    </aqd:ExceedanceArea>
  </aqd:exceedanceArea>
</aqd:ExceedanceDescription>
</aqd:exceedanceDescriptionBase>

```

Area classification - <aqd:areaClassification> - DescriptionAdjustment – Step 2

The area classification element allows for the description of type of area covered by the exceedance situation taking into account individual adjustments. Area classification is mandatory when an exceedance situation has been observed. Multiple area classification types are allowable where the extent of the exceedance situation is large e.g. urban, suburban and rural area classifications are valid descriptions of widespread exceedance problem. The content of area classification is constrained by the code list indicated.

aqd:areaClassification	
Minimum occurrence:	M (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.7 (A.2.5.1)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/view code
Formats Allowed:	codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:exceedanceArea/aqd:ExceedanceArea/aqd:areaClassification

Spatial extent of exceedance situation - <aqd:spatialExtent> - DescriptionAdjustment – Step 2

The spatial extent of exceedance situation element should be used to provide a geometry description of the extent of the exceedance area taking into account the individual adjustment. The element may be generated by EEA central resources or if the Member State possesses the information as (i) a valid gml:polygon encoding of the extent of the exceedance situation if this is known, (ii) a gml:point encoding if exceedance situation is known as a point (e.g. sampling point or multiple sampling points) or (iii) a valid gml:linestring encoding if exceedance situation is known as a vector object (e.g. road centre line). Alternatively the Member State may encode this information as a list of administrative units coincident with the exceedance situation area, see <aqd:administrativeUnit>. One or other of <aqd:spatialExtent> and <aqd:administrativeUnit> must be provided, not both.

aqd:spatialExtent	
Minimum occurrence:	C (conditional, not mandatory within exceedanceDescriptionAdjustment)
Maximum occurrence:	1
IPR data specifications:	G.5.7 (A.2.5.2)
Code list constraints:	None
Formats Allowed:	Valid gml:polygon, gml:point, gml:linestring
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:spatialExtent

Area of exceedance situation - <aqd:surfaceArea> - DescriptionAdjustment – Step 2

The area of exceedance situation element allows for the reporting of a numerical estimate of the area of the exceedance situation above the environmental objective taking into account the individual adjustment. Length of affected roads in kilometers. It is identified as a mandatory requirement in the IPR guidance although it is noted that the area of exceedance may not be known if the exceedance is only associated with a road link. In this event the aqd:surfaceArea should be omitted and aqd:roadLength provided. It is recommended to keep the number of decimal places to one.

aqd:surfaceArea	
Minimum occurrence:	C (conditional, voluntary for ExceedanceDescriptionAdjustment if exceedance estimated to be background / non-roadside)
Maximum occurrence:	1
IPR data specifications:	G.5.7 (A.2.5.3)
Code list constraints:	None
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:surfaceArea

Length of road exceeding - <aqd:roadLength> - DescriptionAdjustment – Step 2

The length of road exceeding element allows for the reporting of a numerical estimate of the length of road where the level was above the environmental objective in kilometers. Within the description of the adjustment (Step 2), it is voluntary when there is an exceedance situation linked to a road. It is recommended to keep the number of decimal places to one.

aqd:roadLength	
Minimum occurrence:	C (conditional, voluntary for ExceedanceDescriptionAdjustment if exceedance estimated on a road link)
Maximum occurrence:	1
IPR data specifications:	G.5.7 (A.2.5.4)
Code list constraints:	None
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:roadLength

Administrative units covered by exceedance area - <aqd:administrativeUnit> - DescriptionAdjustment – Step 2

The administrative units element should be used to provide an estimate of the geometry description for the extent of the exceedance area taking into account individual adjustments. It is an alternative method to providing detailed information via the aqd:spatialExtent element. The element may be generated by EEA central resources or if the Member State Member States

possesses the information as list of LAU / NUTS administrative codes which coincide with the estimate are of exceedance. The list of codes to be used shall be constrained to EEA's codelist described below.

aqd:administrativeUnit	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.7 (A.2.5.5)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/lau2 http://dd.eionet.europa.eu/vocabulary/lau1 http://dd.eionet.europa.eu/vocabulary/common/nuts/
Formats Allowed:	Codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustments/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/ aqd:administrativeUnit

Example**aqd:administrativeUnit**

Use of a single LAU code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> or <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/es/17079"/></code>
Use of several LAU codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>
Use of single NUTS code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of several NUTS codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ13"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of an entire AQ zone	<code><aqd:administrativeUnit xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0036"/></code>

Sampling points observing the exceedance - <aqd:stationUsed> - DescriptionAdjustment – Step 2

The sampling points observing the exceedance element allows for the reporting of a list of the sampling points observing the exceedance situation taking into account the individual adjustment. The list of sampling points are provided by a xlink href reference to the sampling point declared in data flow D (the list will correspond to the exceeding sampling points prior to any correction being applied)

aqd:stationUsed	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by sampling point remain after individual adjustment applied)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.7 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:stationUsed

Focus**aqd:stationUsed – provide link to all exceeding SamplingPoints after adjustment**

This element is key to provide a link to ALL the SamplingPoints within each zone that have exceeded the Environmental Objective after the individual adjustment has been applied.

Models / objective estimation methods predicting exceedance - <aqd:modelUsed> - DescriptionAdjustment – Step 2

The models / objective estimation methods predicting exceedance allows for the reporting of a list of the models / objective estimation methods predicting the exceedance situation. The list of models / objective estimation methods are provided by a xlink href reference to the assessment methods declared in data flow D.

aqd:modelUsed

Minimum occurrence:	C (conditional, mandatory if exceedance predicted by model / objective estimation after individual adjustment applied)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.6 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:modelUsed

Example**aqd:stationUsed / aqd:modelUsed**

```
<aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_338"/>
```

```
<aqd:modelUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_Model_30"/>
```

Exceedance exposure information - <aqd:exceedanceExposure> - DescriptionAdjustment – Step 2

The exceedance exposure complex information class allows for declaration of the population and vegetation areas exposure to levels above the environmental objective specified taking into account the individual adjustment. It is a child element of aqd:exceedanceDescription). If Member States have the information calculated for the aqd:exceedanceDescriptionAdjustment, these data may be provided on a voluntary basis. See description within ExceedanceDescriptionFinal.

Exceedance reason - <aqd:reason> & <aqd:reasonOther> - DescriptionAdjustment – Step 2

Allows for the declaration of the reason for exceedance using the 461-Air Quality Questionnaire reason codes. The content of this element is constrained by a code list as indicated below. The code list includes all reason codes previously used for declaring

reason of exceedance within the 461-Air Quality Questionnaire. Multiple reason codes are allowed where more than one sector is responsible. In such a case multiple elements and xlink:href citations are allowed.

aqd:reason	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.7 & A.2.8)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/view
Formats Allowed:	n/a
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:reason /aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:reasonOther

Example**aqd:reason**

```
<aqd:reason xlink:href=" http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/S8"/>
```

Comment for clarification - <aqd:comment> - DescriptionAdjustment – Step 2

Allows for the Member State Member State to include a free text note of clarification, if needed, for each individual exceedance description.

aqd:comment	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.7 (A.2.9)
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, 255 characters
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionAdjustment/aqd:ExceedanceDescription/aqd:comment

STEP 3 - Exceedance description final - <aqd:exceedanceDescriptionFinal> AFTER adjustment

This exceedance description class is used to describe the combined effect of any adjustments due to natural sources and/or winter sanding and salting upon the exceedance situation. The effect of each adjustment will have been previously declared individually within aqd:exceedanceDescriptionAdjustment. The combined effect on maximum levels is then declared in the <aqd:exceedanceDescriptionFinal> information class.

This exceedance description class is used to describe the combined effect of all adjustments should this be appropriate. This information class is always required.

aqd:exceedanceDescriptionFinal include:

- | | |
|--|--|
| • aqd:exceedance | Mandatory |
| • aqd:numericalExceedance
AOT) | Conditional (M if environmental objective is an average, percentile or |
| • aqd:numberExceedances
number of exceedances per year) | Conditional (M if environmental objective threshold is given as a |
| • aqd:exceedanceArea | Conditional |
| • aqd:exceedanceExposure | Conditional |
| • aqd:reason | |
| • aqd:reasonOther | |
| • aqd:comment | |

Detailed information on the constraints and content for this complex class is provided below. Figure 41 illustrates the majority of information classes that constitute aqd:exceedanceDescriptionBase needed when adjustments are applied.

Focus**AQD_Attainment – exceedanceDescriptionFinal after adjustment**

For declaring attainment without any adjustment, all necessary information is to be provided under
<aqd:exceedanceDescriptionFinal>

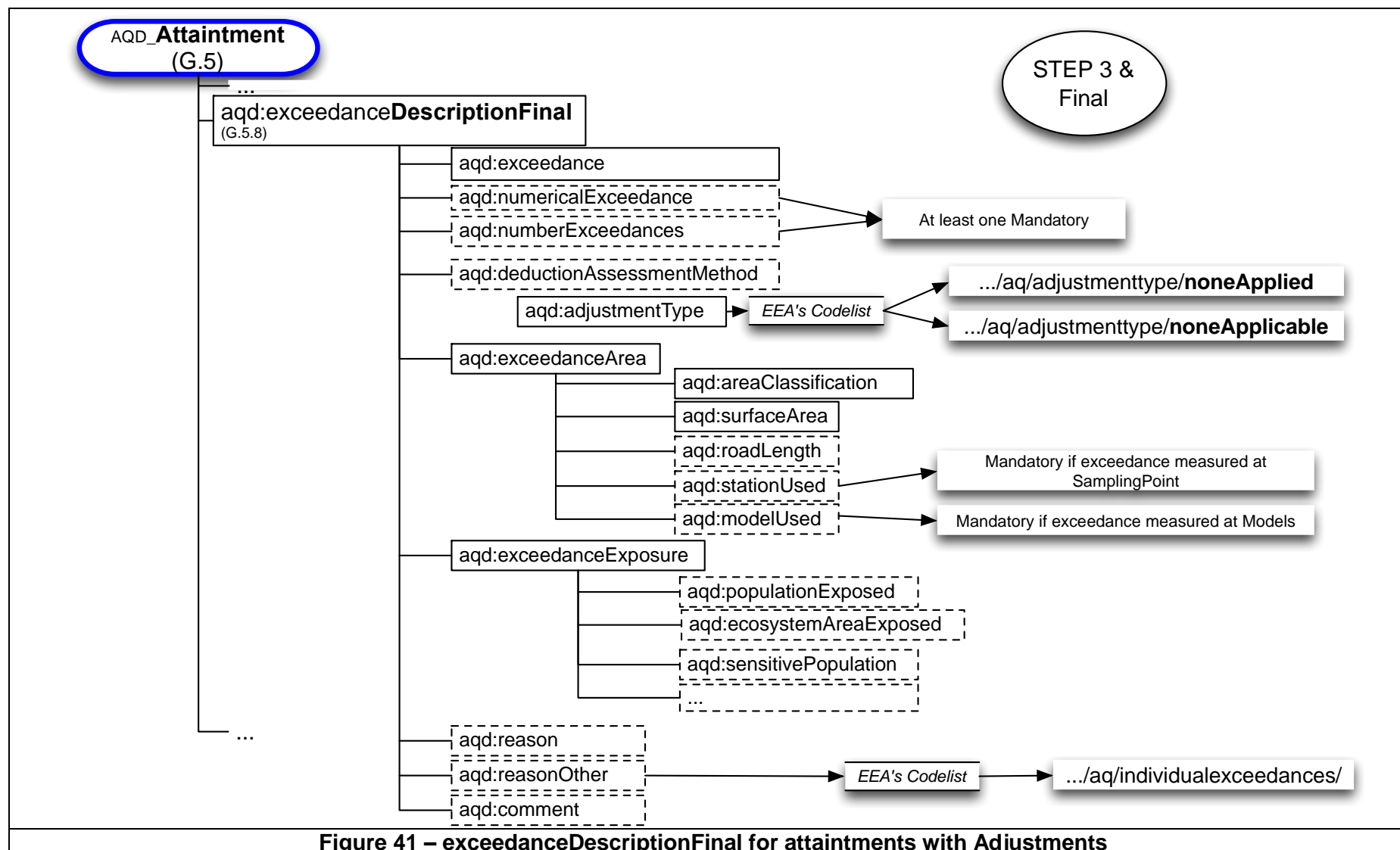


Figure 41 – exceedanceDescriptionFinal for attainments with Adjustments

AQD exceedance statement - <aqd:exceedance> - DescriptionFinal – STEP 3

AQD exceedance allows for a boolean statement to be declared in relation to whether levels are above or below the environmental objective taking into account the combined effect of all the adjustments described in Step 2. If below, (i.e aqd:exceedance = false), the numericalExceedance or numberExceedance must be provided (see below).

<aqd:exceedances>	
Minimum occurrence:	1 (mandatory)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications found:	G.5.8 (A.2.1)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	True / false
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedance

Example**aqd:exceedance**

If levels are above the Environmental Objective:

```
<aqd:exceedance>true</aqd:exceedance>
```

If levels are below the Environmental Objective:

```
<aqd:exceedance>>false</aqd:exceedance>
```

Numerical exceedances - <aqd:numericalExceedance> - DescriptionFinal after adjustments

AQD numerical exceedance allows for the description of the highest concentration value observed or predicted in the zone for the pollutant and environmental objective specified taking into account the combined effect of all the adjustments described in Step 2. Irrespective of whether levels are above the environmental objective, insert the numerical concentration value after all adjustments have been applied in units as appropriate to the environmental objective and reporting metric. The AQD numerical exceedance

class is applicable to environmental objectives using average, percentile or AOT reporting metrics. For other short term reporting metrics use <aqd:numberExceedance>. The rounding rules stipulated by the Commissions guidance apply.

<aqd:numberExceedance>	
>	
Minimum occurrence:	C (conditional, mandatory if environmental objective is an average, percentile or AOT)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications at:	G.5.8 (A.2.2)
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:numberExceedance

Example**aqd:numberExceedance**

```
<aqd:numberExceedance>55</aqd:numberExceedance>
```

Number of short term exceedances - <aqd:numberExceedances> - DescriptionFinal – STEP 3

The number of short term exceedances element allows for the description of the highest number of exceedances of short term reporting metrics observed or predicted in the zone for the pollutant and environmental objective specified taking into account the **combined effect of all the adjustments described in Step 2**. Irrespective of whether levels are above the environmental objective, insert the value of the number of exceedance in the units appropriate to the environmental objective and reporting metric. The number of exceedances element is applicable to environmental objectives based on the number of daily or hourly exceedances.

<aqd:numberExceedance>	
Minimum occurrence:	C (conditional, mandatory if environmental objective threshold is given as a number of exceedances per year)
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications found at:	G.5.6.3
Code list constraints:	None
QA/QC constraints:	None
Allowed formats:	Numerical value
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:numberExceedances

Example**aqd:numberExceedance**

```
<aqd:numberExceedances>37</aqd:numberExceedances>
```

Adjustment Assessment Method - <aqd:deductionAssessmentMethod> - DescriptionFinal (Step 3)

AQD adjustment assessment methods element allows for linking the Adjustment Description to an adjustment methods used to adjust for Natural Sources or Winter-sanding or –salting. However, for step 3 (DescriptionFinal), this complex element is only used to re-assure that the exceedance description is provided as fully corrected taking into account all adjustments described in step 2.. Declaration of adjustment applicable are made within child elements of <aqd:AdjustmentMethod>. However, for the DescriptionFinal for a complex attainment only one element is to be used

- **<aqd:adjustmentType>** providing an xlink reference to a codelist describing that the final description takes into account all adjustment declared during step 2. (/fullyCorrected).

<aqd:numberExceedance>

Minimum occurrence:	Mandatory
Maximum occurrence:	1 (1 occurrence per <aqd:exceedanceDescriptionFinal>)
IPR data specifications :	G.5.8 (A.2.4.2)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/fullyCorrected
QA/QC constraints:	None
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionBase/aqd:ExceedanceDescription/aqd:numberExceedances

Example**aqd:adjustmentMethod** – example for an exceedance situation which is fully corrected

```

<aqd:deductionAssessmentMethod>
  <aqd:AdjustmentMethod>
    <aqd:adjustmentType xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/adjustmenttype/fullyCorrected/"/>

    </aqd:AdjustmentMethod>
  </aqd:deductionAssessmentMethod>

```

AQ assessment methods <aqd:assessmentMethods>

Not required within aqd:exceedanceDescriptionFinal when all adjustments have been previously applied within aqd:exceedanceDescriptionAdjustment. All child elements of aqd:assessmentMethods may be omitted i.e. aqd:assessmentType and aqd:assessmentTypeDescription.

Area of the exceedance situation - <aqd:exceedanceArea>- DescriptionFinal – Step 3

The exceedance area complex information class allows for declaration of the area exceeding the environmental objective specified. It is a child element of aqd:exceedanceDescriptionFinal.

The area of exceedance situation class contains the child elements listed below.:

- | | |
|--------------------------|---|
| • aqd:areaClassification | Mandatory |
| • aqd:spatialExtent | Conditional (M, if adminstrationUnit not provided) |
| • aqd:surfaceArea | Mandatory (Conditional if exceedance is on a road link only) |
| • aqd:roadLength | Conditional (M if exceedance on a road link) |
| • aqd:stationUsed | Conditional (M if exceedance measured at SamplingPoint) |
| • aqd:administrativeUnit | Voluntary |
| • aqd:modelUsed | Conditional (M if exceedance modeled using Model or ExpertJudgment) |

Example

aqd:exceedanceArea – DescriptionAdjustment – Step 2

```
<aqd:exceedanceDescriptionBase>
  <aqd:exceedanceArea>
    <aqd:ExceedanceArea>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/suburban"/>
      <aqd:areaClassification xlink:href="http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/urban"/>
      <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_338"/>
      <aqd:stationUsed xlink:href="http://environment.data.gov.uk/air-quality/so/GB_SamplingPoint_217"/>
      [...]
    </aqd:ExceedanceArea>
  </aqd:exceedanceArea>
</aqd:ExceedanceDescription>
</aqd:exceedanceDescriptionBase>
```


Area classification - <aqd:areaClassification> - DescriptionFinal – Step 3

The area classification element allows for the description of type of area covered by the exceedance situation. Area classification is mandatory when an exceedance situation has been observed. Multiple area classification types are allowable where the extent of the exceedance situation is large e.g. urban, suburban and rural area classifications are valid descriptions of widespread exceedance problem. The content of area classification is constrained by the code list indicated.

aqd:areaClassification	
Minimum occurrence:	M (mandatory)
Maximum occurrence:	Unbounded
IPR data specifications:	G.5.8 (A.2.5.1)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/areaclassification/view code
Formats Allowed:	codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:exceedanceArea/aqd:ExceedanceArea/aqd:areaClassification

Spatial extent of exceedance situation - <aqd:spatialExtent> - DescriptionFinal – Step 3

The spatial extent of exceedance situation element should be used to provide a geometry description of the extent of the exceedance area. The element may be generated by EEA central resources or if the Member State possesses the information as a valid gml:polygon encoding of the extent of the exceedance situation if this is known or a gml:point encoding if exceedance situation is known as a point (e.g. sampling point or multiple sampling points) or a valid gml:linestring encoding if exceedance situation is known as a vector object (e.g. road centre line). Alternatively the Member State may encode this information as a list of administrative units coincident with the exceedance situation area, see <aqd:administrativeUnit>. One or other of <aqd:spatialExtent> and <aqd:administrativeUnit> must be provided, not both.

aqd:spatialExtent

Minimum occurrence:	C (conditional, not mandatory within exceedanceDescriptionFinal)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.5.2)
Code list constraints:	None
Formats Allowed:	Valid gml:polygon, gml:point, gml:linestring
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:spatialExtent

Area of exceedance situation - <aqd:surfaceArea> - DescriptionFinal – Step 3

The area of exceedance situation element allows for the reporting of a numerical estimate of the area of the exceedance situation above the environmental objective. Length of affected roads in kilometers. It is identified as a mandatory requirement in the IPR guidance although it is noted that the area of exceedance may not be known if the exceedance is only associated with a road link. In this event the aqd:surfaceArea should be omitted and aqd:roadLength provided. It is recommended to keep the number of decimal places to one.

aqd:surfaceArea	
Minimum occurrence:	C (conditional, mandatory if exceedance estimated to be background / non-roadside)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.5.3)
Code list constraints:	None
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:surfaceArea

Length of road exceeding - <aqd:roadLength> - DescriptionFinal – Step 3

The length of road exceeding elemnt allows for the reporting of a numerical estimate of the length of road where the level was above the environmental objective in kilometers. It is mandatory when there is an exceedance situation linked to a road. It is recommended to keep the number of decimal places to one.

aqd:roadLength	
Minimum occurrence:	C (conditional, mandatory if exceedance estimated on a road link)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.5.4)
Code list constraints:	None
Formats Allowed:	Numeric value in kilometres to 1 decimal place
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:roadLength

Sampling points observing the exceedance - <aqd:stationUsed> - DescriptionFinal – Step 3

The sampling points observing the exceedance element allows for the reporting of a list of the sampling points observing the exceedance situation after taking into account all adjustment(s) combined. The list of sampling points are provided by a xlink reference to the sampling point declared in data flow D.

aqd:stationUsed	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by sampling point)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:stationUsed

Focus**aqd:stationUsed – provide link to all exceeding SamplingPoints – Step 3**

This element is key to provide a link to ALL the SamplingPoints within each zone that have exceeded the Environmental Objective taking into account the combined effect of all adjustments.

Administrative units covered by exceedance area - <aqd:administrativeUnit> - DescriptionFinal – Step 3

The administrative units element should be used to provide an estimate of the geometry description for the extent of the exceedance area. It is an alternative method to providing detailed information via the aqd:spatialExtent element. The element may be generated by EEA central resources or if the Member State Member States possesses the information as list of LAU / NUTS administrative codes which coincide with the estimate are of exceedance. The list of codes to be used shall be constrained to EEA's codelist described below.

aqd:administrativeUnit	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	Unbounded
G.5.7 (A.2.5.5)	G.5.7 (A.2.5.5)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/lau2 http://dd.eionet.europa.eu/vocabulary/lau1 http://dd.eionet.europa.eu/vocabulary/common/nuts/
Formats Allowed:	Codelist
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/ aqd:administrativeUnit

Example**aqd:administrativeUnit**

Use of a single LAU code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code> or <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/es/17079"/></code>
Use of several LAU codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>

	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/lau2/uk/38UDGW"/></code>
Use of single NUTS code	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of several NUTS codes	<code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ13"/></code> <code><aqd:administrativeUnit xlink:href="http://dd.eionet.europa.eu/vocabulary/common/nuts/UKJ14"/></code>
Use of an entire AQ zone	<code><aqd:administrativeUnit xlink:href="http://environment.data.gov.uk/air-quality/so/Zone_UK0036"/></code>

Models / objective estimation methods predicting exceedance - `<aqd:modelUsed>`- DescriptionFinal – Step 3

The models / objective estimation methods predicting exceedance allows for the reporting of a list of the models / objective estimation methods predicting the exceedance situation. The list of models / objective estimation methods are provided by a xlink reference to the assessment methods declared in data flow D.

<code>aqd:modelUsed</code>	
Minimum occurrence:	C (conditional, mandatory if exceedance predicted by model / objective estimation)
Maximum occurrence:	unbounded
IPR data specifications found:	G.5.8 (A.2.5.6)
Code list constraints:	None
Formats Allowed:	Valid xlink href to method in data flow D
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceArea/aqd:ExceedanceArea/aqd:modelUsed

Exceedance exposure information - `<aqd:exceedanceExposure>` - DescriptionFinal – Step 3

The exceedance exposure complex information class allows for the declaration of an estimate of the population and vegetation areas exposure to levels above the environmental objective specified. It is a child element of `aqd:exceedanceDescription` (and therefore `aqd:exceedanceDescriptionBase`, `aqd:exceedanceDescriptionAdjustment` and `aqd:exceedanceDescriptionFinal`). The

class is not required if levels are below the environmental objective. If levels are above the environmental objective, the class is mandatory within aqd:exceedanceDescriptionFinal. If Member State Member States have the information calculated for the aqd:exceedanceDescriptionBase and aqd:exceedanceDescriptionAdjustment classes, these data may be provided on a voluntary basis.

The exceedance exposure information class contains the child elements listed below:

- aqd:populationExposed Voluntary (or generated by EEA)
- aqd:ecosystemAreaExposed Voluntary (or generated by EEA)
- aqd:sensitivePopulation Voluntary (or generated by EEA)
- aqd:infrastructureServices Voluntary (or generated by EEA)
- aqd:referenceYear Voluntary

Example

aqd:exceedanceExposure

```
<aqd:exceedanceExposure>
  <aqd:ExceedanceExposure>
    <aqd:populationExposed>2640</aqd:populationExposed>
    <aqd:referenceYear>
      <gml:TimeInstant gml:id="ReferenceYear_9505">
        <gml:timePosition>2011</gml:timePosition>
      </gml:TimeInstant>
    </aqd:referenceYear>
  </aqd:ExceedanceExposure>
</aqd:exceedanceExposure>
```

Population exposure - <aqd:populationExposed> - DescriptionFinal – Step 3

The population exposure element provides an estimate of the total resident population exposed to levels above the environmental objective. The element is mandatory for health related protection targets when there is an exceedance. The EEA may generate population statistics based on central data sources. Member State Member States are encouraged to provide detailed information if they have this available. Population is to be reported in integer format.

aqd:populationExposed	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.6.1)
Code list constraints:	<u>None</u>
Formats Allowed:	Integer
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:populationExposed

Area of ecosystem / vegetation area exposed - <aqd:ecosystemAreaExposed> - DescriptionFinal – Step 3

The area of ecosystem/vegetation area exposed element provides an estimate of the area of this sensitive receptor type to levels above the environmental objective. The element is mandatory for vegetation related protection targets when there is an exceedance. The EEA may generate the estimates based on central data sources. Member State Member States are encouraged to provide detailed information if they have this available. Area exposed is to be reported in integer format in square kilometers.

aqd:ecosystemAreaExposed	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1

IPR data specifications found:	G.5.8 (A.2.6.2)
Code list constraints:	<u>None</u>
Formats Allowed:	Area in square kilometres to 1 decimal place maximum
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:ecosystemAreaExposed

Sensitive population exposure <aqd:sensitivePopulation> - DescriptionFinal – Step 3

The sensitive population exposure element provides an estimate of the percentage of sensitive population in the exceedance area, defined as sum of percentage under 18 and over 60 years of age. This information is voluntary. The EEA may generate the estimates based on central data sources. Member State Member States are encouraged to provide detailed information if they have this available.

<aqd:sensitivePopulation>	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.6.3)
Code list constraints:	<u>None</u>
Formats Allowed:	Percentage (%) of total population exposed
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:sensitivePopulation

Sensitive infrastructure services exposed <aqd:infrastructureServices> - DescriptionFinal – Step 3

The Sensitive infrastructure services exposed provides an estimate of the total number of infrastructure services for sensitive population groups in the exceedance area (hospitals, kindergardens, schools etc.). This information is voluntary. The EEA may generate the estimates based on central data sources. Member States are encouraged to provide detailed information if they have this available.

<aqd:infrastructureServices>	
Minimum occurrence:	X (EEA generated), 0 (voluntary),
Maximum occurrence:	1
IPR data specifications found:	G.5.8 (A.2.6.4)
Code list constraints:	<u>None</u>
Formats Allowed:	Integer
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:infrastructureServices

Reference year <aqd:referenceYear> - DescriptionFinal after adjustments

The reference year element provides a time position for the year in which the population estimates in declared in aqd:populationExposed were collected. If the Member State has generated the estimates in aqd:populationExposed they are responsible for providing the reference year. If the EEA have generated the estimates in aqd:populationExposed, the EEA shall generate the reference year information.

<aqd:referenceYear>	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	1
IPR data specifications:	G.5.8 (A.2.6.5)
Code list constraints:	<u>None</u>
Formats Allowed:	YYYY format
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/ aqd:exceedanceExposure/aqd:ExceedanceExposure/aqd:refenceYear

Exceedance reason - <aqd:reason> & <aqd:reasonOther>

Allows for the declaration of the reason for exceedance using the 461-Air Quality Questionnaire reason codes. The content of this element is constrained by a code list as indicated below. The code list includes all reason codes previously used for declaring reason of exceedance within the 461-Air Quality Questionnaire. Multiple reason codes are allowed where more than one sector is responsible. In such a case multiple elements and xlink:href citations are allowed.

aqd:reason	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.7 & A.2.8)
Code list constraints:	http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/view
Formats Allowed:	n/a
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:reason /aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:reasonOther

Example**aqd:reason**

```
<aqd:reason xlink:href=" http://dd.eionet.europa.eu/vocabulary/aq/exceedancereason/S8"/>
```

Comment for clarification - <aqd:comment>

Allows for the Member State (data provider) to include a free text note of clarification, if needed, for each individual exceedance description.

aqd:comment	
Minimum occurrence:	0 (voluntary)
Maximum occurrence:	unbounded
IPR data specifications:	G.5.8 (A.2.9)
Code list constraints:	n/a
Formats Allowed:	Alphanumeric, 255 characters
XPath to schema location:	/aqd:AQD_Attainment/aqd:exceedanceDescriptionFinal/aqd:ExceedanceDescription/aqd:comment