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Annex D (informative)

Examples

D.1 Regulated fairways at sea or large inland waters

Example based on Norway and information available from the Norwegian Coastal Administration (www.kystverket.no)

D.1.1 Description of type of area

Fairways (or the equal term waterways) at sea are a term that has different types of meaning, depending on perspective and approach. The most common are:

- a. Fairways as a generic term for most appropriate way of navigation. The general rule for transportation on the sea is that any ship may sail at any place, unless given restrictions are defined (e.g. related to type of goods, need for pilot, military areas, national boundaries, custom, etc.) – and as long as the physical restrictions related to width and depth are met.

Fairway in this context is related to routes which have been modified or supported for sea navigation, e.g. by lighthouses and buoys or by physical modification of the terrain (dredging or blasting rocks).

- b. Fairways – as approved routes for navigating with or without pilot. A captain may be certified to navigate a certain fairway without a pilot. A dedicated fairway certificate is then issued.
- c. Fairways, restricting navigation in a given area, e.g. traffic going in one direction in one area – and the other in the opposite area. Typically at large ports.
- d. Fairways – given as areas reserved for sea navigation, implying a different type management and usage regime.

For the INSPIRE Area Management theme, it is only (d) that is relevant (the others relate to navigation and transport).

Fairways under area management are hence defined as areas at sea or inland lakes that have defined certain restrictions or management regimes that are related to maintain navigation and transport on water.

D.1.2 Legal basis

The legal basis for fairways defined as (d) above is based on Norwegian legislation and regulations;

- Law: [LOV-2009-04-17-19-§9](#) and [LOV-2009-04-17-19-§16](#)
- Regulation ("forskrift"): [FOR 2009-11-30 nr 1477: Forskrift om farleder](#)

The Norwegian text may be found at <http://www.lovdato.no/for/sf/fi/xi-20091130-1477.html>

What is regulated, managed, restricted?

The regulation defines:

- a. Fairways (main and secondary) line with fairway number,
- b. The area delimitation defined by the fairway, or by harbours defined through the regulation.

A spatial dataset is given and is presented through a web-map portal and formally integrated in the regulation (the web-map portal is a part of the regulation – which is unique for a regulation in Norway) - <http://kart.kystverket.no/farledsforskrift>. The fairway ends at the entrance of a defined harbour area.



Within a fairway area, the Ministry of Fisheries and Coastal Affairs, or any department acting on their behalf, has regulation and management authority. For areas outside, areas are managed and regulated as per common Norwegian law by private owners, municipalities, counties and the state.

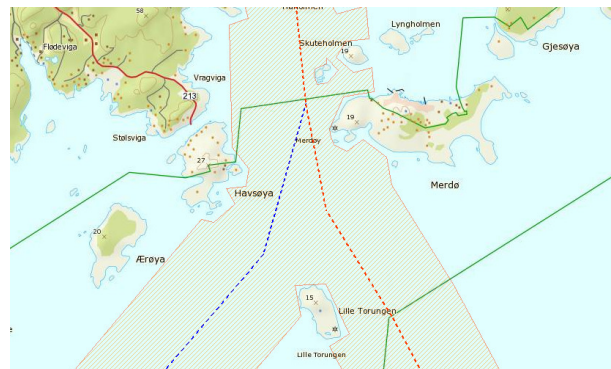
The purpose of the regulated fairway area is to ensure that no physical or administrative interventions are imposed on these areas limiting their usage for maritime navigation. Typically interventions that are limited are fish farming and construction work.

D.1.3 Spatial structure

The spatial representation of the regulated fairway consists of the following spatial data:

- Line dataset – indicating the fairway itself,
- Polygon dataset – delimiting the defined regulated fairway area,
- Line dataset – indicates the entrance to a defined harbour area.

The spatial data has been generated by creating buffers along the defined fairway lines and overlaying these with land or other constructions.



The data is available for download, or as a WMS service from the Norwegian Coastal Administration through Norway Digital (the Norwegian national SDI implementation).

D.1.4 Description of tasks – questions that data can answer

The regulated fairway can be used for two main purposes:

- Defines clearly who has authority to plan, approve and make interventions within the defined area,
- Indicates that the area is reserved for maritime navigation, and shall hence be restrictive for interventions.

D.1.5 Any specific data quality requirements

The fairway delineation data is defined by regulations (i.e. not measured in the field or otherwise collected) and is thus correct as per the legal definition, assuring 100% data quality.

D.1.6 Illustrations – screen shots

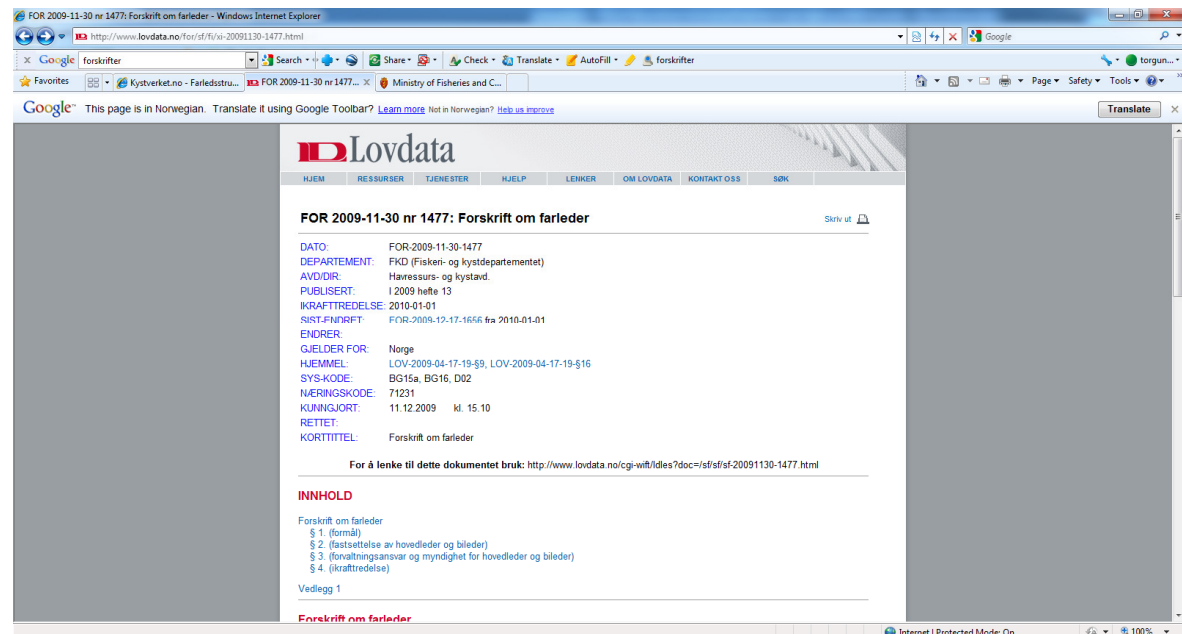


Figure D1.6.1– The fairway regulation.

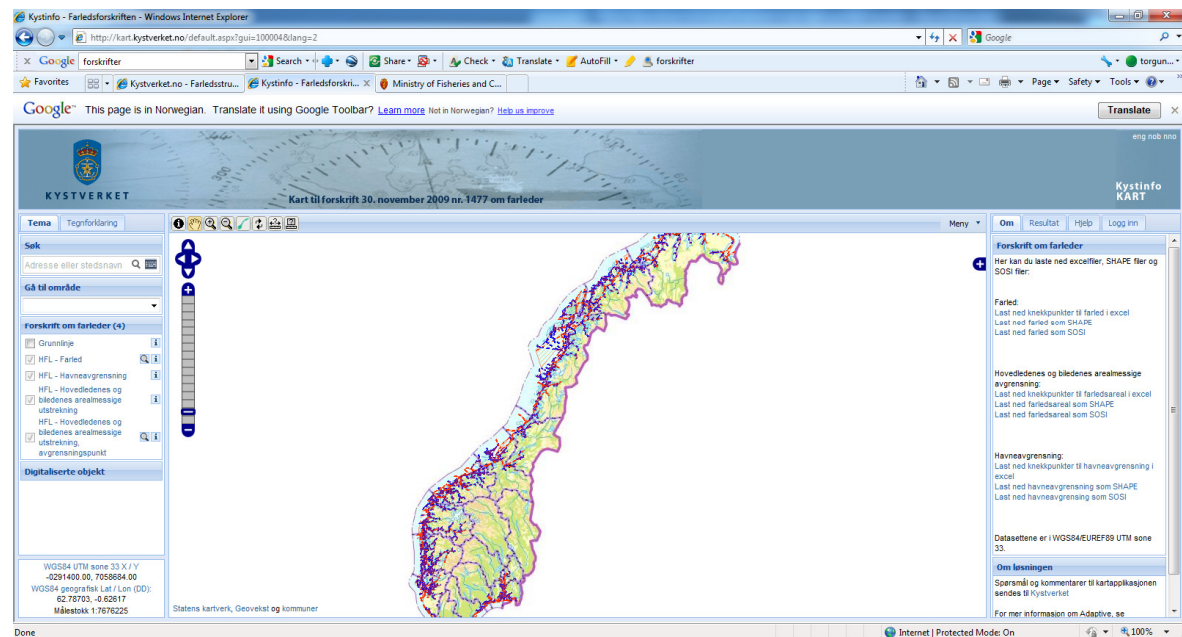


Figure D1.6.21 – Web map portal – integrated as part of the regulation. Through the interface, the data can be downloaded as an excel file, shape file or SOSI (the Norwegian spatial data exchange format) – in WGS 84 / EUREF89, UTM 33.

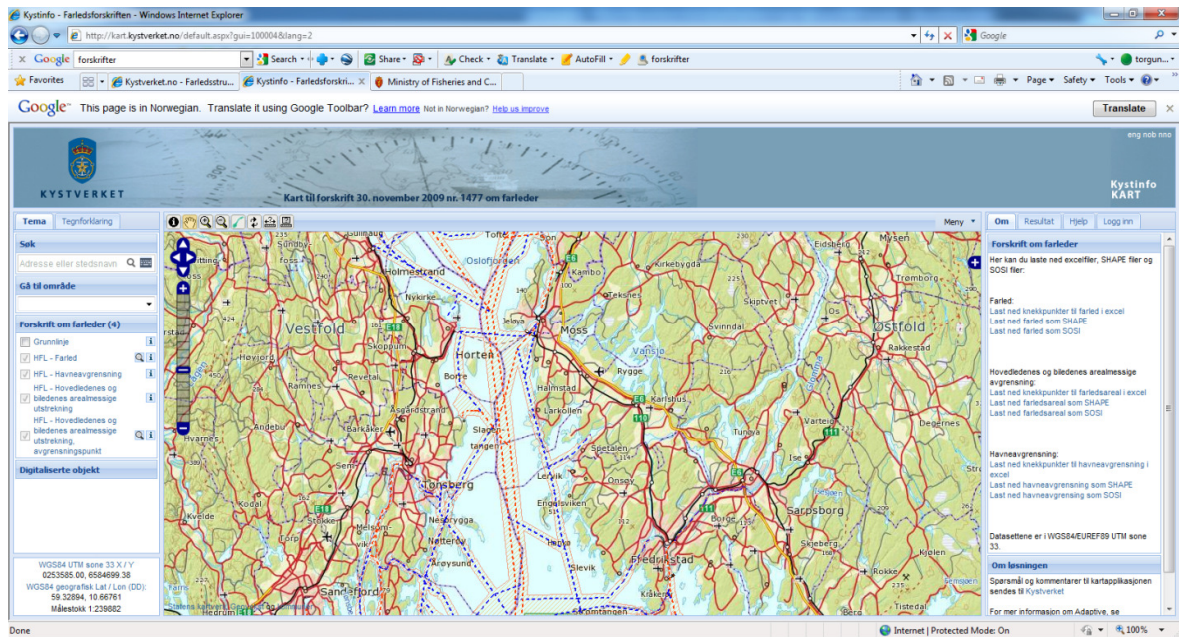


Figure D1.6.3 – Illustration of the data for the Oslo fjord.

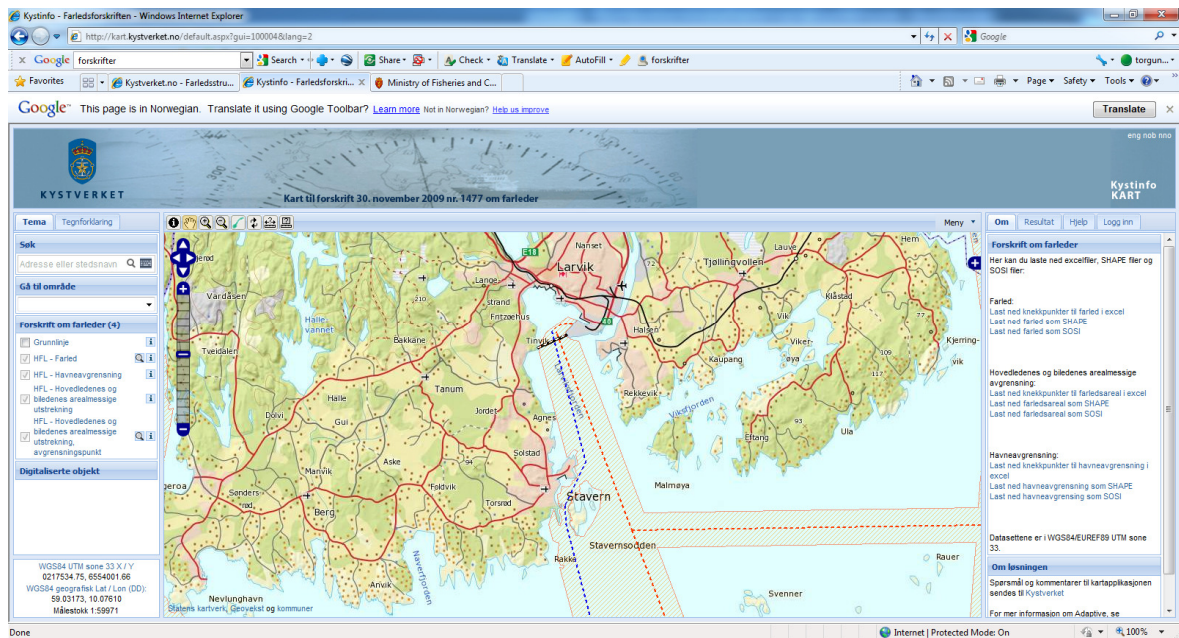


Figure D1.6.4 – Detailed illustration of Larvik harbor, including its delimitation of the harbor itself (black and white dashed line)

D.2 Data model support for restricted areas around drinking water source

D.2.1 Needs for allocating protection zones around drinking water bodies

The Water Framework Directive (WFD), which established a new, integrated approach to the protection, improvement and sustainable use of surface waters, imposes some requirements on Member States to take account of pressures on water quality from point and diffuse sources, and to ensure that necessary measures to meet quality objectives are selected. One way of preventing the water bodies from being polluted by many different kinds of pollutants is to design certain protection zones adjacent to those indicated water bodies. In the broader sense, such conservation areas not only improve water quality by removing sediment, fertilizers, pesticides, pathogens, and other potential contaminants from runoff, but also control soil erosion by both wind and water, improve soil quality, enhance fish and wildlife habitat, reduce flooding, conserve energy, protect buildings, roads, and livestock, and conserve biodiversity.

D.2.2 Designing reservoir protection zones at various distances from the reservoir

While establishing zones around surface water bodies for protecting the quality of drinking water from potential pollution arising from their catchments, a variety of methods may be used. In the “Time of Travel (TOT)” method, the protection zone is defined by a threshold travel time that is computed along drainage networks down to the reservoir and that is typically based on the response times for controlling point pollution or on times desired within the protection zone for rehabilitating the quality of polluted water originating from non-point sources. In the fixed-distance method, setbacks from reservoir boundaries, tributaries, or the intakes are established by assigning certain fixed distances.

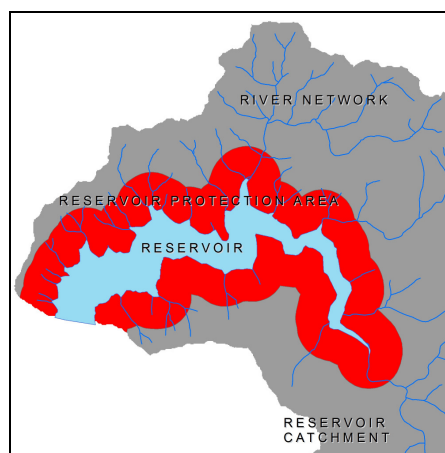


Figure D2.1 – Application of a fixed-distance protection zone around a reservoir *

Reservoir protection zones can be designed as a set of subsequent zones, e.g. absolute zone closest to the reservoir boundaries, proximate and mediate zones with bigger distances from the reservoir and remote zone covering the entire catchment, to secure overall water pollution prevention in catchments of drinking water sources. In such a case, the application of rules and restrictions assigned to the zones changes gradually between the zones, generally by increasing the protective measures as the zone gets closer to the water body, e.g. adapting proper vegetation types and densities for different ranges; sorting out of the restricted/prohibited activities, etc..

D.2.3 Example modelling of reservoir protection zones as spatial objects (based on the “Area Management/Restriction/Regulation Zones and Reporting Units (AM)” specification)

The figure below indicates how a reservoir protection zone is modelled as a spatial entity in the data model prepared for the INSPIRE spatial data theme “Area Management/Restriction/Regulation Zones and Reporting Units (AM)”.

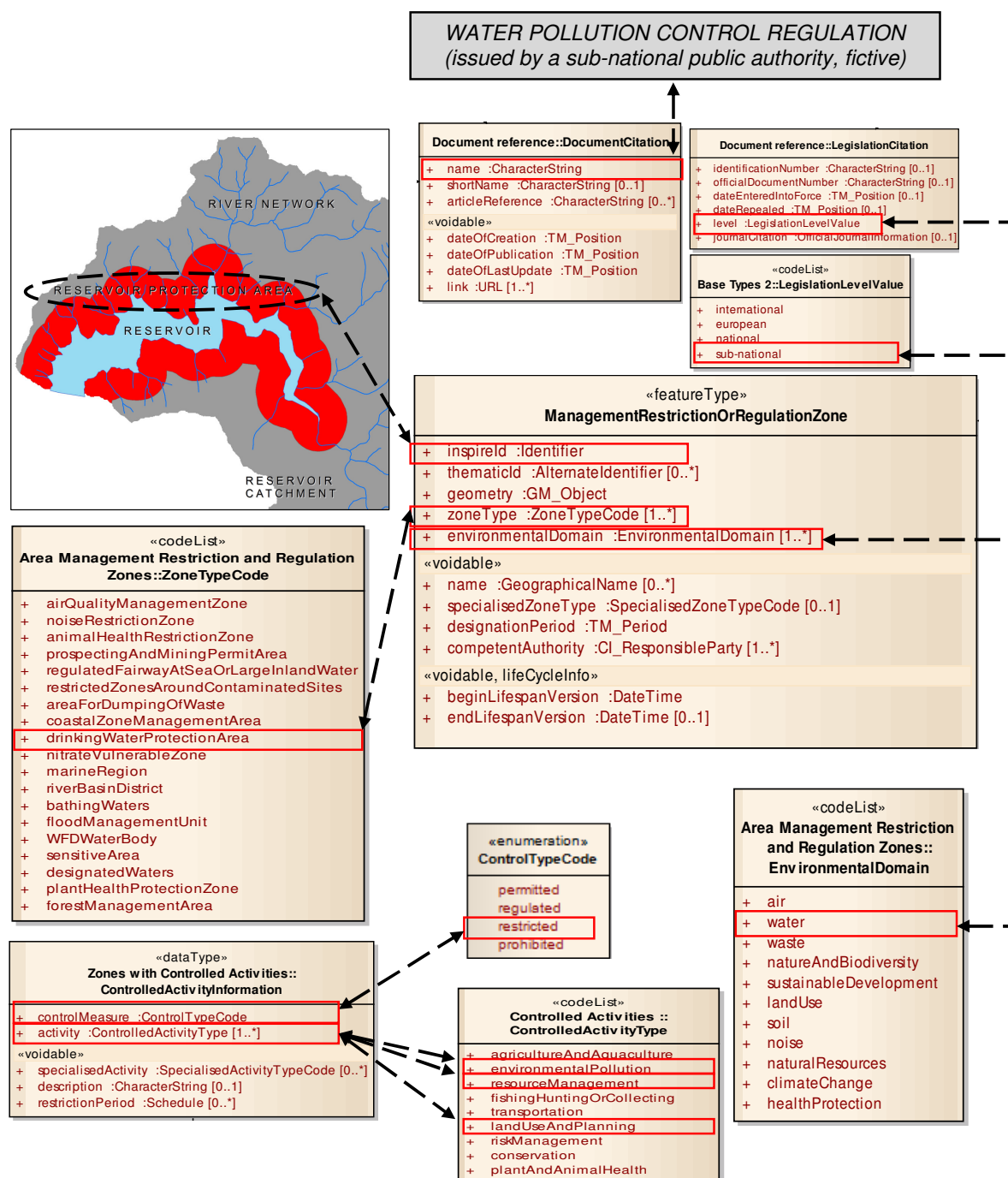


Figure D2.2 – Modelling restricted areas around drinking water sources in TWG-AM data model

D.3 Data model support for WFD river basin districts

D.3.1 River basin districts as defined by the Water Framework Directive

A river basin district is the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3(1) (of the Water Framework Directive) as the main unit for management of river basins. [definition source: Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy (Water Framework Directive).]

D.3.2 Modelling of river basin districts as spatial objects in AM data model structure

The figure below indicates how river basin districts are modelled as spatial entities in the data model prepared for the INSPIRE spatial data theme “Area Management/Restriction/Regulation Zones and Reporting Units (AM)” (partially by using legislation references and the specific zone type assigned).

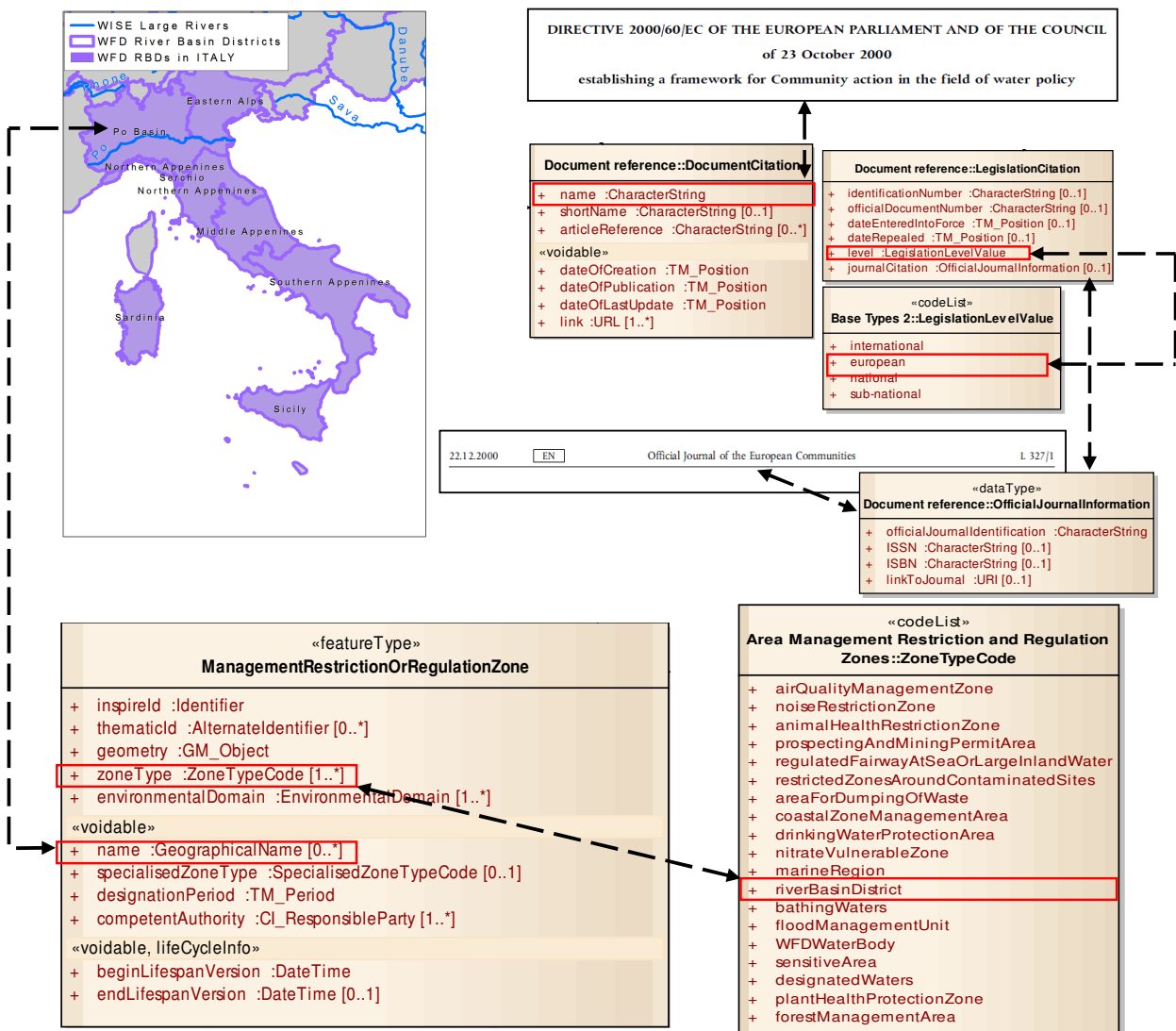


Figure D3.1 – Partial modelling example of river basin districts within the TWG-AM data model

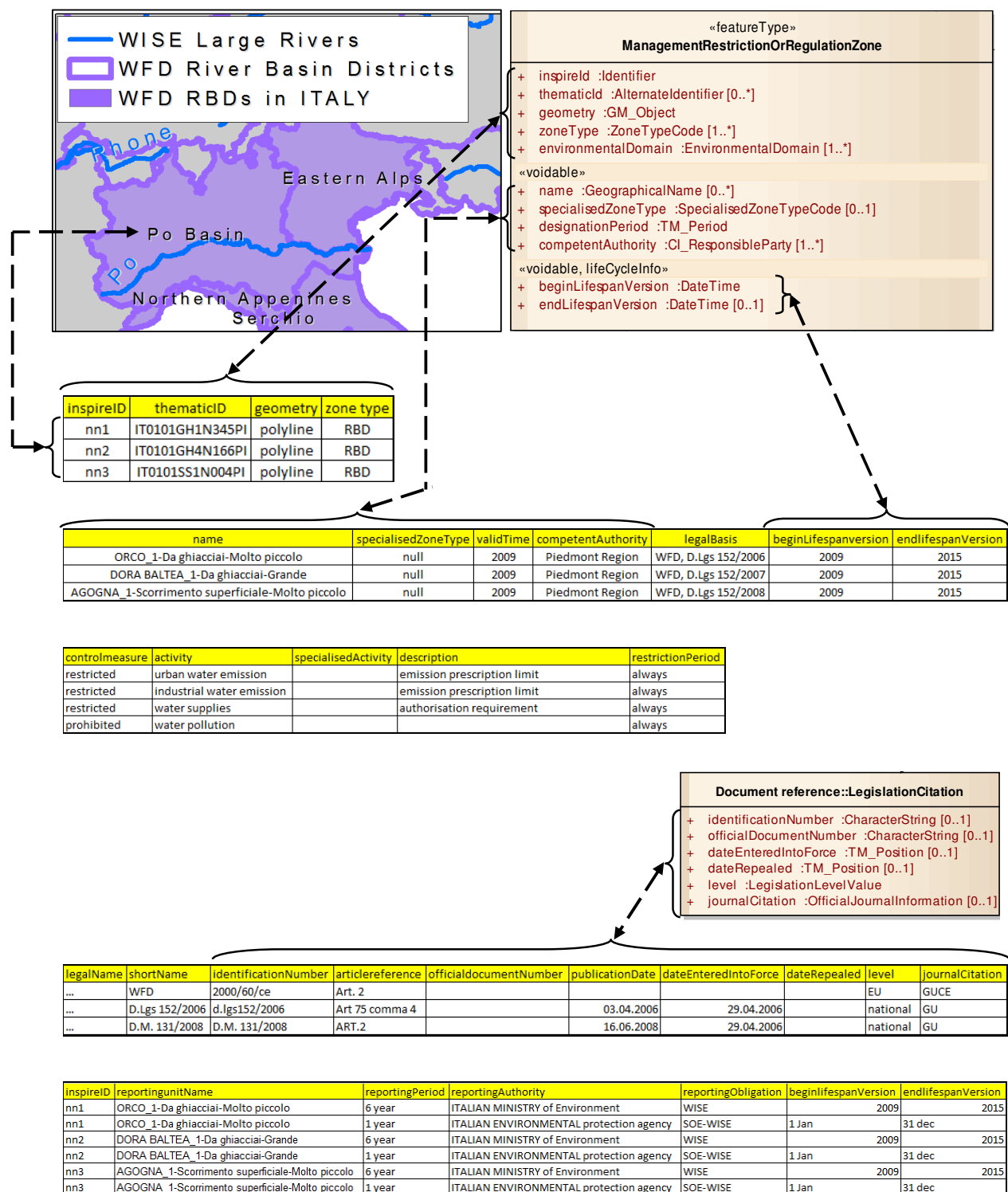


Figure D3.2 – Sample links between the RBD spatial object, related data types and code lists defined in the data model

D.4 Data model support for Nitrate Vulnerable Zones designated in accordance with the Nitrates Directive

D.4.1 Reporting obligations for Nitrates Directive and designations of nitrate vulnerable zones

Council Directive 91/676/EEC (the Nitrates Directive) concerning the protection of waters against pollution caused by nitrates from agricultural sources was adopted on 12 December 1991. Article 10 of the Nitrates Directive requires Member States to submit a report to the Commission every four years following its notification. This report should contain information pertaining to codes of good agricultural practice, designated vulnerable zones, the results of water monitoring and a summary of the relevant aspects of action programmes drawn up in relation to nitrate vulnerable zones (source: SEC(2011)909).

Nitrate vulnerable zones, designated by Member States for the protection of Europe's waters against nitrate pollutions, are included in the AM model structure through the model components designed to cover the specific zone type 'nitrateVulnerableZone' as a management zone and the relevant legislative reference.

D.4.2 Modelling of nitrate vulnerable zones in AM data model structure

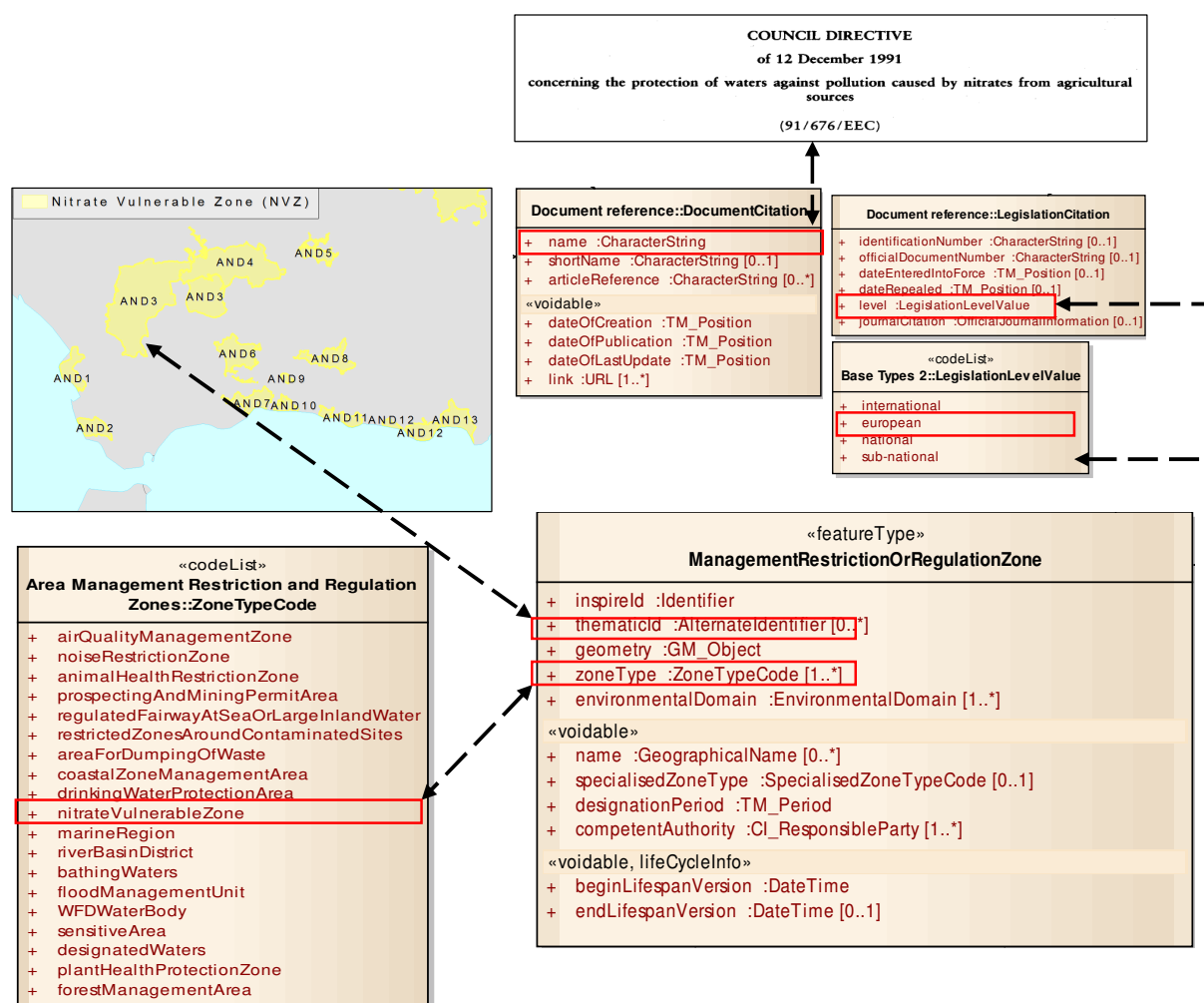


Figure D4.1 – Partial modelling example of nitrate vulnerable zones

Annex E (informative)

Application schema Water Framework Directive

This Annex describes an application schema containing management / restriction / regulation zones relevant for the Water Framework Directive (WFD, 2000/60/EC). This application schema contains the WFD candidate types that were defined by the Annex I TWG on Hydrography.

The application schema presented in this Annex has been discussed and agreed between the themes on *Area Management/Restriction/Regulation Zones and Reporting Units*, Environmental monitoring facilities and Geology & Mineral resources. It will be further developed by the relevant WFD / WISE working groups and should thus be considered as an *example* thematic extension at this stage.

The spatial object types in this application schema are considered as specific sub-types of the ManagementRestrictionOrRegulationZone spatial object type defined in the Area Management Restriction and Regulation Zones application schema. The application schema for WFD is therefore considered as a thematic extension. As a consequence, the spatial object types included in this application schema would not form part of the Implementing Rule for interoperability of spatial data sets and services.

As an example for the WFD domain-specific extension of the generic Area Management Restriction and Regulation Zones application schema it would be used by the relevant WFD/WISE guidelines as they align with INSPIRE.

E.1 Narrative description

The definition of water bodies in the Water Framework Directive (2000/60/EC) state that: "Water bodies form the principle management units for the protection of water resources". Therefore they fall within the scope of the theme "*Area Management/Restriction/Regulation Zones and Reporting Units*", alongside River Basin Districts.

The Area Management Restriction and Regulation Zones application schema is very generic and does not include specialised classes, attributes or associations for address domain-specific requirements. To determine what type of Management Area is being represented two code list-valued attributes are used:

- zoneTypeCode
- specialisedZoneTypeCode

Management units as defined in the WFD can be described using the generic ManagementRestrictionOrRegulationZone spatial object type with the value waterBodyForWFD as the zoneTypeCode. Specific types of water body could then be defined using the specialisedZoneTypeCode.

However, a set of candidate types representing WFD water bodies were defined by HY during the Annex I development:

- WFDWaterBody as an abstract base type for the following concrete spatial object types
- WFDGroundWaterBody for WFD groundwater bodies
- WFDSurfaceWaterBody for WFD surface water bodies
- WFDCoastalWater for WFD coastal water bodies
- WFDTransitionalWater for WFD transitional waters
- WFDRiver for WFD rivers
- WFDLake for WFD lakes

This application schema retains the proposed candidate types, but proposes the following minor amendments:

1. All WFD spatial object types now specialise from ManagementRegulationAndRestrictionZone rather than HydroObject (HY).
2. WFDWaterBody is removed, since the new new super-class ManagementRegulationAndRestrictionZone provides all attributes previously included in WFDWaterBody and no additional constraints or associations are defined for this type.
3. Two association roles (relatedSurfaceWaterBody and relatedGroundWaterBody) are added to replace the associationRole relatedHydroObject that is lost by changing the super-class to ManagementRegulationAndRestrictionZone.
4. The following properties are removed, since they are now inherited from the new super-class ManagementRegulationAndRestrictionZone:
 - a. inspireId
 - b. geometry
 - c. beginLifespanVersion
 - d. endLifespanVersion
5. The following properties are replaced by equivalent properties now inherited from the new super-class ManagementRegulationAndRestrictionZone:
 - a. geographicalName is replaced by name
 - b. hydroId is replaced by thematicId

E.2 UML overview

Figure gives an overview of the complete application schema.

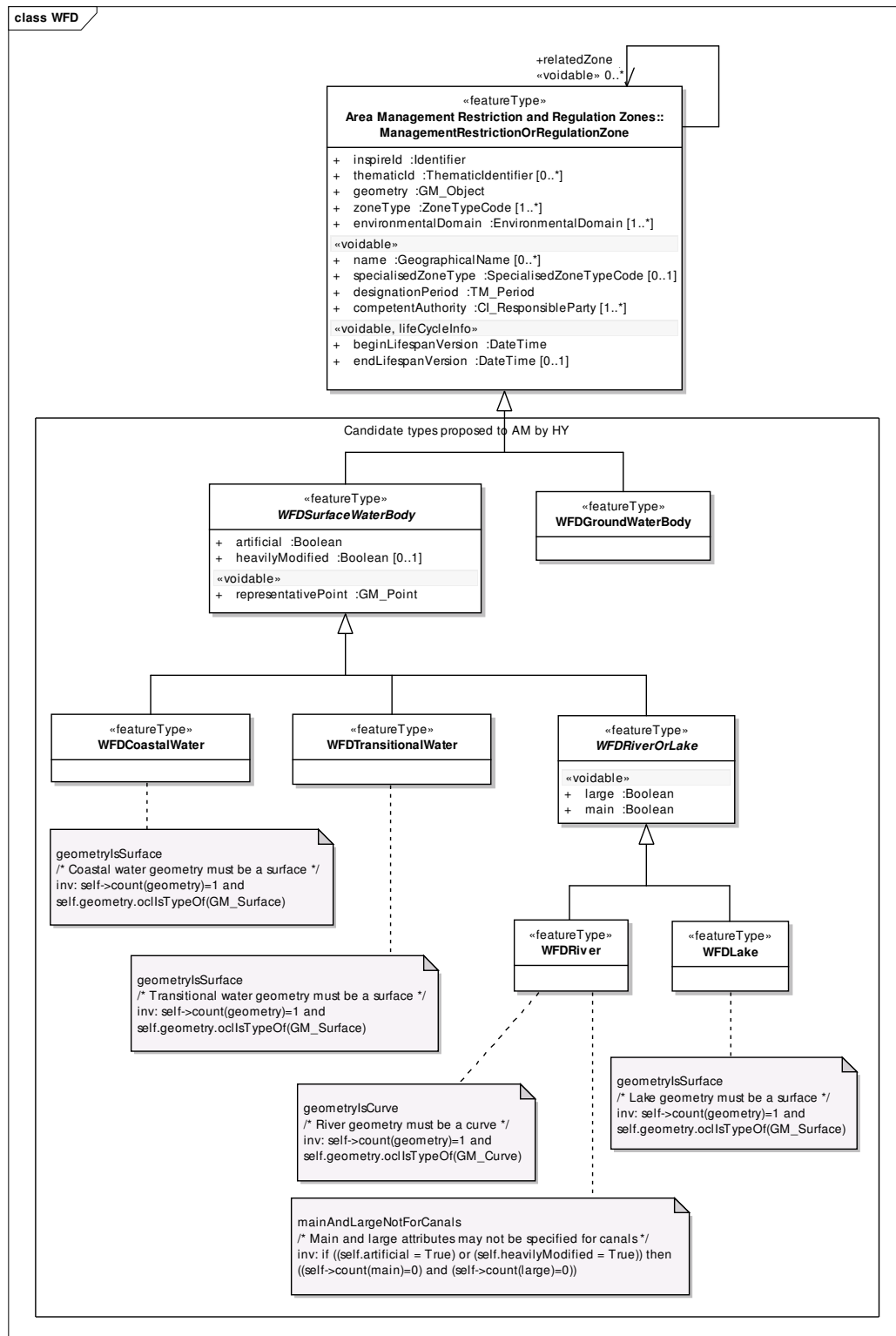


Figure E2.1 – UML class diagram: Overview of the Water Framework Directive application schema

Figure E2.1 gives an overview of the relationships to spatial objects in the themes Hydrography (through the association role relatedSurfaceWaterBody) and Geology (through the association roles relatedGroundWaterBody and relatedHydrogeologicalUnit).

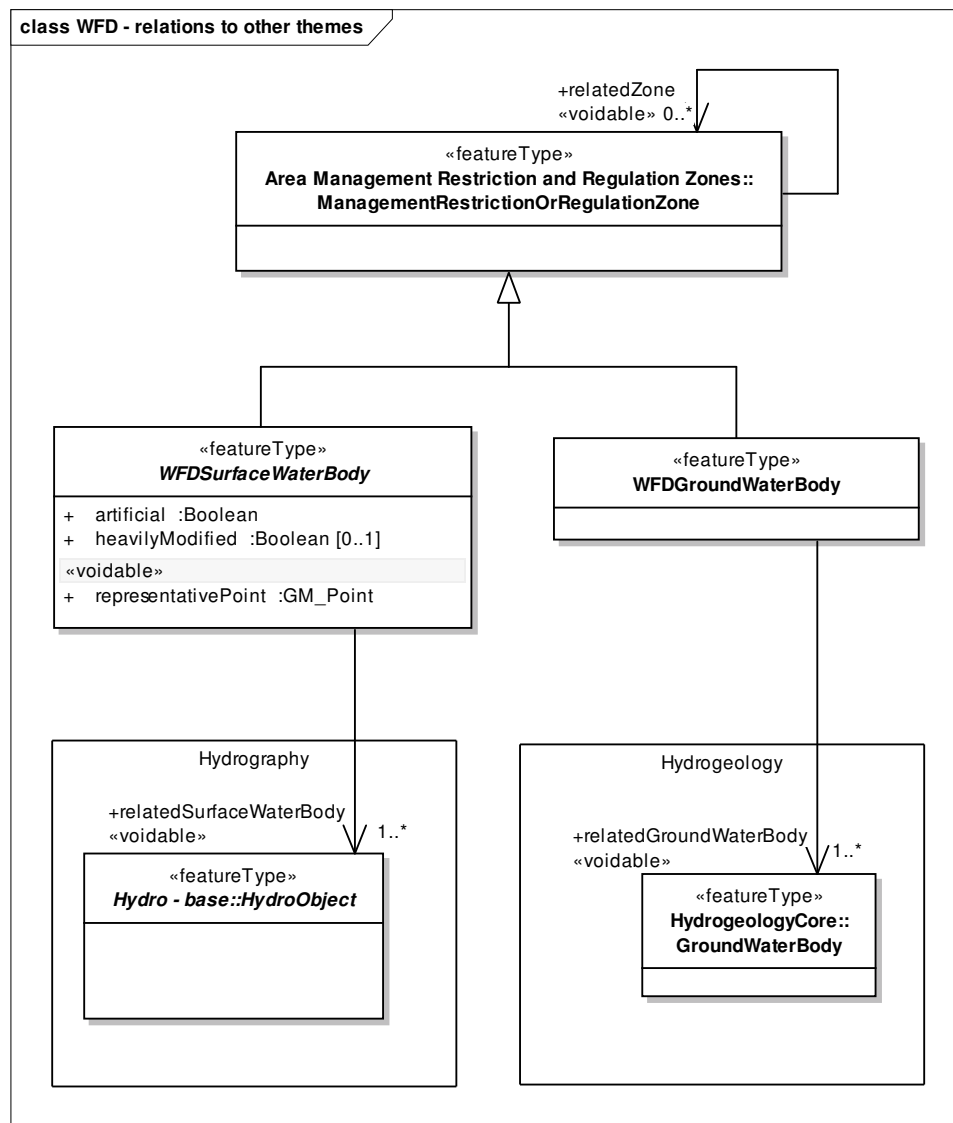


Figure E2.2 – UML class diagram: Relationships between the Water Framework Directive application schema and the spatial data themes Hydrography and Geology

E.2.1 Consistency between spatial data sets

Besides the requirements and / or recommendations stated for the base application scheme the following applies to this application schema.

The Reporting schema provides a framework for water related reporting (more specifically the Water Framework Directive). European water reporting is expected to extend specific reporting obligation formats from this application scheme. Therefore there must be compatibility with information reported under these directives (specifically the Water Framework Directive [2000/60/EC]). The specific reporting obligations are likely to be updated to reflect the example and align with the specifics of INSPIRE.

Recommendation 1 All attribution of objects in this schema shall be the same as the equivalent property of that object used for reporting obligations under Directive [2000/60/EC].

E.2.2 Identifier management

Besides the requirements and / or recommendations stated for the base application scheme the following applies to this application schema.

Recommendation 2 The localId attribute of the external object identifier of a spatial object shall be the same as the ID used for reporting obligations under the Water Framework Directive [2000/60/EC].

E.2.3 Modelling of object references

No additional requirements and / or recommendations are required beyond those stated for the base application scheme.

E.2.4 Geometry representation

Besides the requirements and / or recommendations stated for the base application scheme the following applies to this application schema.

Recommendation 3 The geometry shall be the same as the geometry used for reporting obligations under the Water Framework Directive [2000/60/EC]

E.2.5 Temporality representation

No additional requirements and / or recommendations are required over and on top of those stated for the base application scheme.

E.3 Feature catalogue

Feature catalogue metadata

Application Schema	INSPIRE Application Schema Water Framework Directive
Version number	3.0

Types defined in the feature catalogue

Type	Package	Stereotypes
<i>WFDCoastalWater</i>	Water Framework Directive	«featureType»
<i>WFDGroundWaterBody</i>	Water Framework Directive	«featureType»
<i>WFDLake</i>	Water Framework Directive	«featureType»
<i>WFDRiver</i>	Water Framework Directive	«featureType»
<i>WFDRiverOrLake</i>	Water Framework Directive	«featureType»
<i>WFDSurfaceWaterBody</i>	Water Framework Directive	«featureType»
<i>WFDTransitionalWater</i>	Water Framework Directive	«featureType»

E.3.1 Spatial object types

E.3.1.1 WFDCoastalWater

WFDCoastalWater	
Subtype of:	WFDSurfaceWaterBody
Definition:	Surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.
Description:	SOURCE [2000/60/EC Art. 2(7)]. NOTE All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»
Constraint: geometryIsSurface	
Natural language:	Coastal water geometry must be a surface
OCL:	inv: self->count(geometry)=1 and self.geometry.ocIsTypeOf(GM_Surface)

E.3.1.2 WFDGroundWaterBody

WFDGroundWaterBody	
Subtype of:	ManagementRestrictionOrRegulationZone
Definition:	A distinct volume of groundwater within an aquifer or aquifers.
Description:	SOURCE [2000/60/EC Art. 2(12)]. NOTE All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»
Association role: relatedGroundWaterBody	
Name:	related groundwater body
Value type:	GroundWaterBody
Definition:	The natural groundwater body that the WFDGroundWaterBody is related to.
Description:	Based on the different assumptions established in Member States the delineation of a WFDGroundWaterBody boundary can differ from the natural GroundWaterBody extent.
Multiplicity:	1..*
Stereotypes:	«voidable»

E.3.1.3 WFDLake

WFDLake	
Subtype of:	WFDRiverOrLake
Definition:	A body of standing inland surface water.
Description:	SOURCE [2000/60/EC Art. 2(5)]. NOTE All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»

WFDLake	
Constraint: geometryIsSurface	
Natural language:	Lake geometry must be a surface
OCL:	inv: self->count(geometry)=1 and self.geometry.ocIsTypeOf(GM_Surface)

E.3.1.4 *WFDRiver*

WFDRiver	
Subtype of:	WFDRiverOrLake
Definition:	A body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course.
Description:	SOURCE [2000/60/EC Art. 2(4)]. NOTE All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»
Constraint: geometryIsCurve	
Natural language:	River geometry must be a curve
OCL:	inv: self->count(geometry)=1 and self.geometry.ocIsTypeOf(GM_Curve)
Constraint: mainAndLargeNotForCanals	
Natural language:	Main and large attributes may not be specified for canals
OCL:	inv: if ((self.artificial = True) or (self.heavilyModified = True)) then ((self->count(main)=0) and (self->count(large)=0))

E.3.1.5 *WFDRiverOrLake*

WFDRiverOrLake (abstract)	
Subtype of:	WFDSurfaceWaterBody
Definition:	Abstract class containing common attributes for a WFD river or lake.
Description:	NOTE All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»
Attribute: large	
Value type:	Boolean
Definition:	Rivers with a catchment area > 50,000 km ² ; or rivers and main tributaries that have a catchment area between 5,000 km ² and 50,000 km ² . Lakes that have a surface area > 500 km ² .
Description:	SOURCE [WISE GIS Guidance].
Multiplicity:	1
Stereotypes:	«voidable»
Attribute: main	
Value type:	Boolean
Definition:	Rivers that have a catchment area > 500 km ² . Lakes that have a surface area > 10 km ² .
Description:	SOURCE [WISE GIS Guidance].
Multiplicity:	1

WFDRiverOrLake (abstract)	
Stereotypes:	«voidable»

E.3.1.6 *WFDSurfaceWaterBody*

WFDSurfaceWaterBody (abstract)

Subtype of:	ManagementRestrictionOrRegulationZone
Definition:	A discrete and significant element of surface water.
Description:	SOURCE [Based on 2000/60/EC Art. 2(10)]. EXAMPLE A lake, a reservoir, a stream, river or canal, part of a stream, river or canal, a transitional water or a stretch of coastal water. NOTE 1 The surface water bodies shall be identified as falling within either one of the following surface water categories - rivers, lakes, transitional waters or coastal waters - or as artificial surface water bodies or heavily modified surface water bodies. [2000/60/EC Ann. II 1.1(ii)] NOTE 2 All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»

Attribute: artificial

Value type:	Boolean
Definition:	'Artificial water body' means a body of surface water created by human activity.
Description:	SOURCE [2000/60/EC Art. 2(8)].
Multiplicity:	1

Attribute: heavilyModified

Value type:	Boolean
Definition:	'Heavily modified water body' means a body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the Member State in accordance with the provisions of WFD Annex II.
Description:	SOURCE [2000/60/EC Art. 2(9)].
Multiplicity:	0..1

Attribute: representativePoint

Value type:	GM_Point
Definition:	Representative point of the WFD water body.
Multiplicity:	1
Stereotypes:	«voidable»

Association role: relatedSurfaceWaterBody

Value type:	HydroObject
Multiplicity:	1..*
Stereotypes:	«voidable»

Constraint: invalidArtificialAndHeavilyModified

Natural language:	heavilyModified attribute allowed only if not artificial
OCL:	inv: if (self.artificial = True) then (self->count(heavilyModified)=0)

E.3.1.7 *WFDTransitionalWater*

WFDTransitionalWater

WFDTransitionalWater	
Subtype of:	WFDSurfaceWaterBody
Definition:	Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.
Description:	SOURCE [2000/60/EC Art. 2(6)]. NOTE All WFD spatial object types are regarded as example extensions of the ManagementAreaRestrictionOrRegulationZone spatial object type whose content needs to be further discussed with the relevant WISE and WFD reporting working groups.
Stereotypes:	«featureType»
Constraint: geometryIsSurface	
Natural language:	Transitional water geometry must be a surface
OCL:	inv: self->count(geometry)=1 and self.geometry.ocllsTypeOf(GM_Surface)

E.3.2 Imported types (informative)

This section lists definitions for feature types, data types and enumerations and code lists that are defined in other application schemas. The section is purely informative and should help the reader understand the feature catalogue presented in the previous sections. For the normative documentation of these types, see the given references.

E.3.2.1 *Boolean*

Boolean	
Package:	Truth
Reference:	Geographic information -- Conceptual schema language [ISO/TS 19103:2005]

E.3.2.2 *GM_Point*

GM_Point	
Package:	Geometric primitive
Reference:	Geographic information -- Spatial schema [ISO 19107:2003]

E.3.2.3 *GroundWaterBody*

GroundWaterBody	
Package:	Hydrogeology
Reference:	INSPIRE Data specification on Geology [DS-D2.8.II.4]
Definition:	A distinct volume of groundwater within an aquifer or system of aquifers, which is hydraulically isolated from nearby groundwater bodies.
Description:	Groundwater bodies form the principal management units under the European Water Framework Directive (2000/60/CE, 2000). They should be hydraulically continuous entities, and must be defined on the basis of flow or abstraction, and are inextricably linked to surface water bodies.

E.3.2.4 *HydroObject*

HydroObject (abstract)	
Package:	Hydro - base
Reference:	INSPIRE Data specification on Hydrography [DS-D2.8.I.8]
Definition:	An identity base for hydrographic (including man-made) objects in the real world.
Description:	NOTE Derived 'views' of real-world hydrographic objects are represented through specialisations in other application schemas; all representations of the same real-world object share a common geographic name or hydrographic identifier.

E.3.2.5 *ManagementRestrictionOrRegulationZone*

ManagementRestrictionOrRegulationZone

Package:	Controlled Activities
Reference:	INSPIRE Data specification on Area Management Restriction Regulation Zones and Reporting units [DS-D2.8.III.11]
Definition:	Area managed, restricted or regulated in accordance with a legal requirement related to an environmental policy or a policy or activity that may have an impact on the environment at any level of administration (or used for reporting at international, European, national, regional and local) levels.

Annex F

(informative)

Extending the Area Management, Restriction and Regulation Zones Application Schema

F.1 Requirements for Extending INSPIRE AM Application Schema

There are two key requirements for extending the Area Management Restriction and Regulation Zones Application Schema:

1. Defining Thematic Community or Member State code lists.
2. Developing thematic data specifications that extend the Area Management Restriction and Regulation Zones Application Schema.

F.2 Defining Thematic Community or Member State code lists

Within the Area Management, Restriction and Regulation Zones Application Schema there are several properties defined whose value is intended to be taken from a code list. Some of the code lists are defined within the INSPIRE Area Management, Restriction and Regulation Zones Application Schema, whereas others are intended to be derived from code lists defined by thematic communities or Member States.

In the Area Management, Restriction and Regulation Zones Application Schema contained in the Implementing Rule, the value defined for the specialisedZoneType should be derived from an external code list as the SpecialisedZoneTypeCode <<CodeList>> is an abstract, empty placeholder code list.

This section provides some example specialised zone type code lists that could be defined for specific zone types defined in the ZoneTypeCode code list (see Figure).

The mechanism for defining specialised zone type code lists for SpecialisedZoneTypeCode is to develop a code list that extends the SpecialisedZoneTypeCode defining the codelist values for a specific zone type.

Recommendations for defining SpecialisedZoneType codelists

When defining a code list for SpecialisedZoneType values related to a specific INSPIRE zoneType, it is recommended that:

1. The name of the code list should include the name of zone type code.
2. The specialisedZoneType codes values should be narrower than the parent zoneType.

For some zoneTypes, such as animalHealthRestrictionZone and plantHealthProtectionZones, there may be a large number of possible specialisedZoneTypes relating to specific diseases. Where this occurs, multiple SpecialisedZoneTypeCode code lists could be defined to enable different organisations to manage and maintain the code lists relevant to their domain.

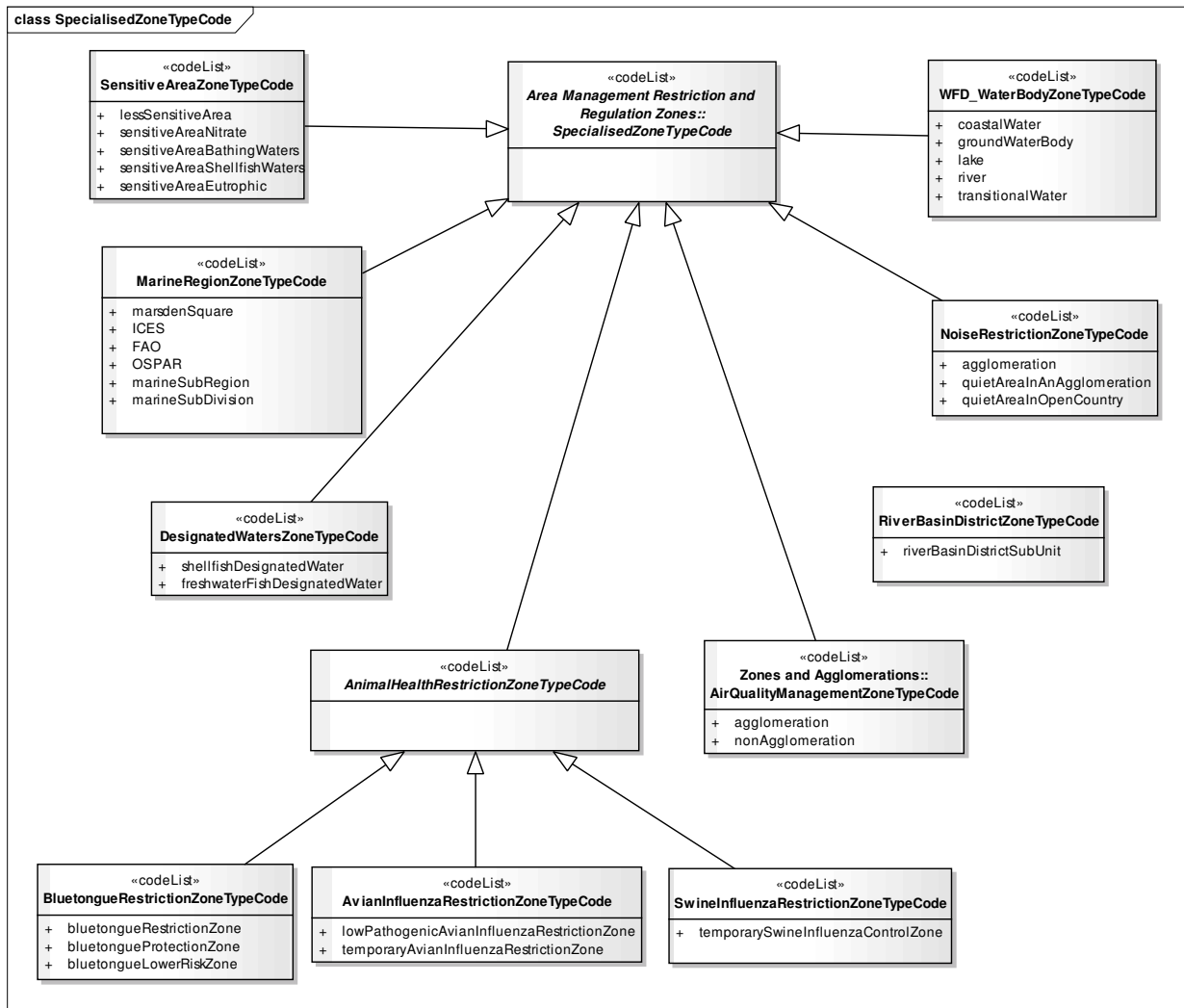


Figure F2.1. Example code lists extending SpecialisedZoneTypeCode

This approach can also be followed for the abstract, empty placeholder SpecialisedActivityTypeCode code list in the Controlled Activities Extension Application Schema. Developing thematic data specifications that extend INSPIRE AM Application Schemas.

It is expected that the INSPIRE application schema defined for the INSPIRE Annex themes should form the foundation schemas, along with the ISO/OGC specifications upon which thematic community, Member States and European Commission data specifications are developed. Reporting use cases form many of the key user scenarios that have informed the development of most INSPIRE Annex themes, including AM. It is envisaged that many of the existing EC reporting data specifications will be updated to extend from INSPIRE Application Schema (Figure F2.2).

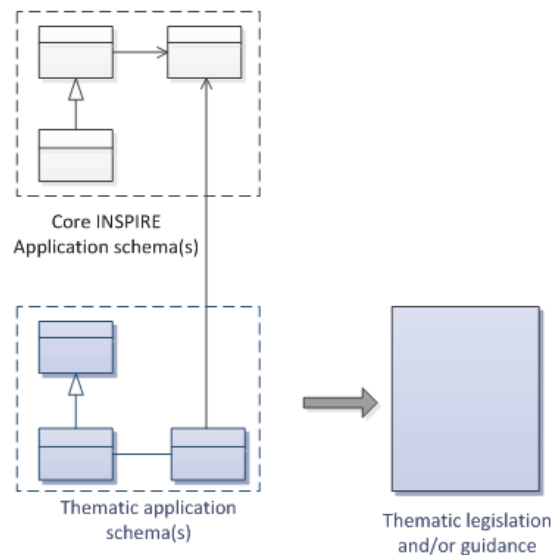


Figure F2.2 - Extending INSPIRE Application for the development of thematic data specifications for reporting

This section demonstrates how Thematic Communities and Member States can extend the INSPIRE Application schemas, particularly the application schemas defined in the AM Theme. The example uses a real-world example that was developed for the Air Quality Directive (AQD) e-Reporting Implementing Provision (2011/850/EU).

F.2.1 Reporting and exchanging of Air Quality data under 2011/850/EU

A number of EU legal instruments require EU Member States to monitor and report air quality data. This information is collated and disseminated by the European Environment Agency (EEA). At present much of the data is reported electronically by countries, but not necessarily in the best integrated fashion. The recent introduction of 2011/850/EU (Commission Implementing Decision of 12 December 2011 laying down rules for Directives 2004/107/EC and 2008/50/EC as regards the reciprocal exchange of information and reporting on ambient air quality) provides an opportunity to examine the reporting process overall to determine how it can be modernised to improve data quality, facilitate data sharing and reduce the administrative burden of reporting.

The Air Quality Directive (AQD) implementing provisions (AQD IPR) will apply from the end of a 2-year transitional period commencing at the date of their adoption. Consequently, the decision applies from 31 December 2013. To successfully manage and facilitate the transition process, the countries' reporting agencies, their data providers, and the EEA operational services will need to work closely together to establish, test and commission a new reporting process. The AQD Directive 2008/50/EC requires that the e-Reporting procedures are compatible with the requirements of the INSPIRE Directive (2007/2/EC).

Reporting and exchange of air quality information under the AQD IPR are of relevance to at least four of the INSPIRE Annex II/III data specification areas:

- D2.8.II/III.5 Human Health and Safety (HH)
- D2.8.III.7 Environmental Monitoring Facilities (EF)
- D2.8.III.11 *Area Management/Restriction/Regulation Zones and Reporting Units* (AM) and
- D2.8.III.13-14 Atmospheric Conditions and Meteorological Geographical Features (AC-MF)

Future electronic reporting of Air Quality data in Europe will therefore need to use the data specifications from all these thematic areas and it is essential that all four consider the use case of Air Quality data, which now includes both measurement and modelled data.

F.2.2 Draft AQD e-Reporting Data Specification

A draft AQD e-Reporting Data Specification was developed in December 2011 based on version 2.0 of the INSPIRE Annex III data specifications. This data specification is being tested by a group of pilot countries that are supporting the Commission transition to the new e-reporting system with the following mandate (see <http://aqportal.eionet.europa.eu/>).

NOTE: The version of the draft AQD data specification illustrated reflects the changes to the INSPIRE data specifications, and so differs from the version that was tested. The example below demonstrates how to extend the application schema defined in INSPIRE data specifications for the development of new data specifications to support data exchange for reporting for environmental legislation.

F.2.3 Extending INSPIRE Data Specifications for developing thematic data specifications

The INSPIRE Data Specifications was established to provide a core data specification that is applicable across multiple thematic domains. For some INSPIRE Annex themes, extension application schemas have also been developed to meet additional use cases that were identified during development. These can also be used to develop thematic data specifications.

Extending INSPIRE data specifications requires the thematic data specification to create a new thematic application schema package. This shall then contain either:

- One or more spatial objects that extend (i.e. specialise) from the relevant INSPIRE spatial object. This specialised spatial object shall then carry only the additional thematic properties.
- One or more sub-packages that contain specific groupings of spatial objects. For example, in the AQD e-Reporting Data Specification, five sub-packages could be generated for each of the key reporting use cases as defined in the Use Case: Reporting and exchanging of Air Quality data under 2011/850/EU document (Figure):
 - Aggregated Assessment Data
 - Primary Assessment Data
 - Assessment Methods
 - Assessment and Attainment of Environment Objectives
 - Zones and Agglomerations

Extending the Area Management, Restriction and Regulation Zones Application Schema

In the Zones and Agglomerations package, the AQD Zone spatial object extends from the ManagementRestrictionOrRegulationZone spatial object. It therefore inherits all of the properties of the ManagementRestrictionOrRegulationZone.

To meet the reporting data requirements for the AQD, only seven additional properties were added. The AQD data specification also extends the SpecialisedZoneTypeCode code list to define the relevant specialised ZoneType values that are applicable to the airQualityManagementZone zoneType. Finally, a constraint is added to the Zone to state that the zoneType shall be airQualityManagementZone (Figure).

DISCLAIMER: The version of the AQD e-Reporting Data Specification provided in this Annex was developed as an example only. Although it is based on of the original draft data specification it is not officially endorsed. Please do not use.

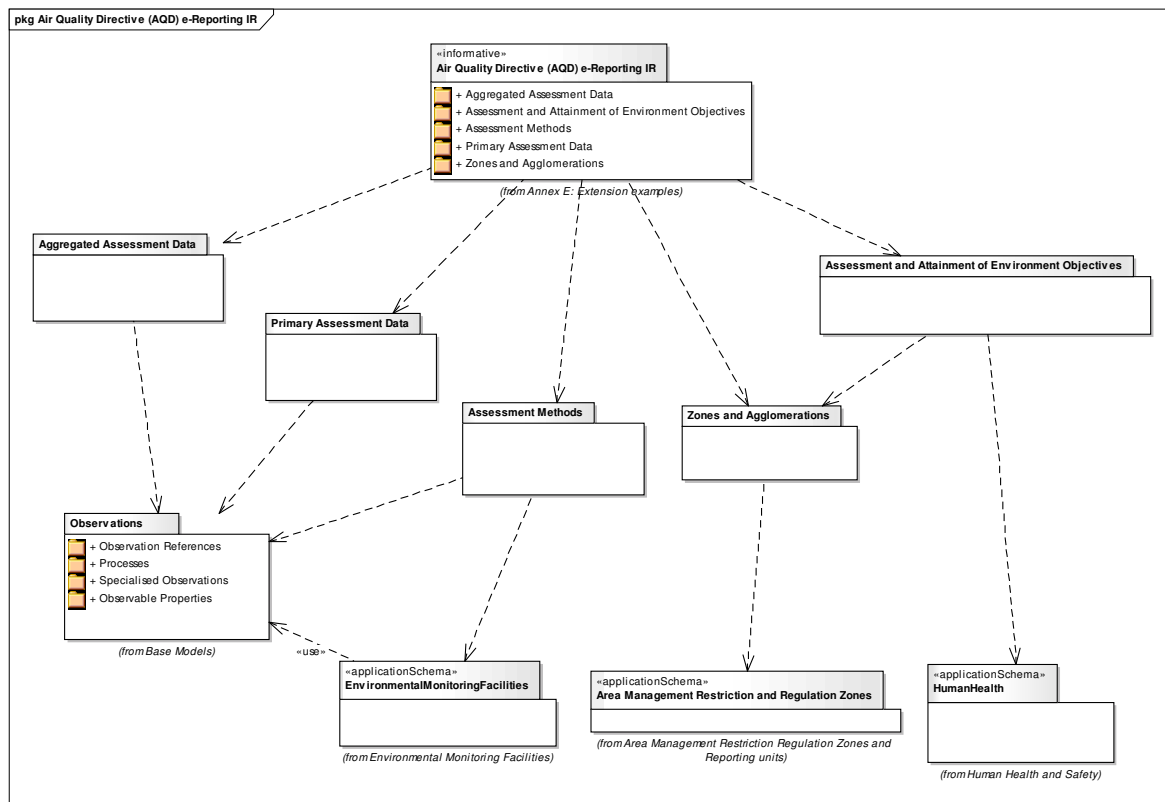


Figure F2.3.1 - UML Package Diagram for example Draft AQD e-Reporting Data Specification

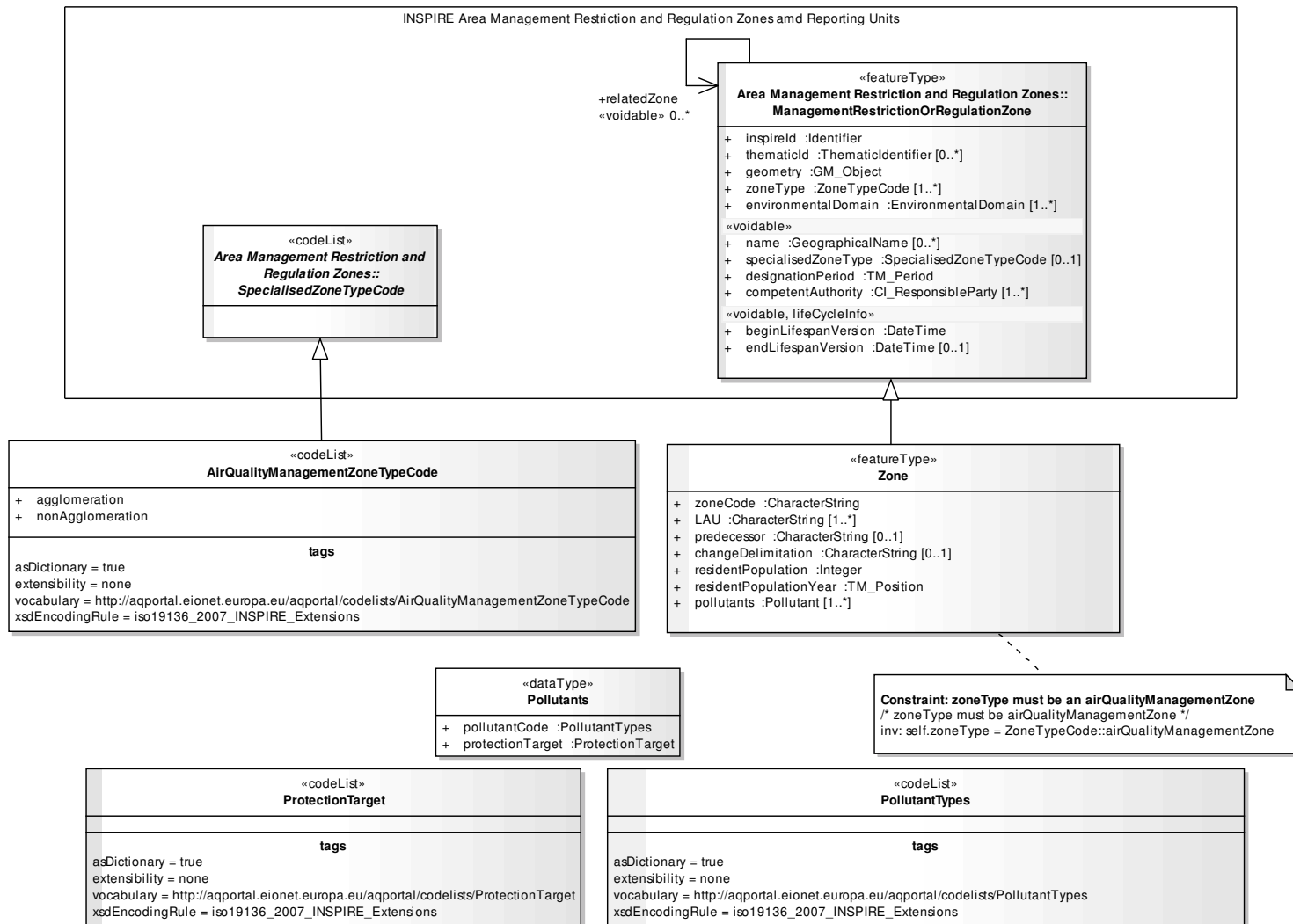


Figure F2.3.2 - UML Class Diagram illustrating the Draft ADQ data specification extending the ManagementRestrictionOrRegulationZone

Annex G

(informative)

Identification of Reporting Units in INSPIRE Spatial Data Themes

G.1 Overview of reporting units within INSPIRE spatial data themes

The “reporting unit” within the scope of INSPIRE and the AM theme is a spatial object that provides a spatial reference for the data being reported under an environmental reporting obligation.

It is not the intention of the AM theme to model the feature types (spatial object types) which are used for providing a spatial reference for the data reported under environmental reporting obligations, but they shall be defined and made available according to the requirements of their respective INSPIRE spatial data theme.

The following overview provides some of the examples, identified by the INSPIRE Thematic Working Groups for data specifications development, where it is known that certain spatial object types within the scope of the INSPIRE spatial data themes provide a spatial reference for the data being reported under environmental reporting obligations.

This annex is a “living document” and will evolve in the future on the basis of new understanding and practical experience from implementation of how INSPIRE spatial objects are used as reporting units in environmental reporting obligations.

The table includes the following information:

- Environmental Legislation or Obligation: means the environmental legislation established at different levels – international, European, national or sub-national (regional, local) or other agreed environmental reporting
- Reporting Obligation: means the title or description of the specific reporting obligation which is defined within the environmental legislation or agreed environmental reporting;
- Annex theme for features: means INSPIRE spatial data theme which includes/defines the spatial object types used in the reporting obligations; acronyms of the INSPIRE spatial data themes are used;
- Reporting Unit (Feature type): means the name of the spatial object type (feature type) in the INSPIRE spatial data theme as it is defined in the related INSPIRE Guidelines (data specification);
- Related reporting data/information: means more detailed information about the related data that are reported.

The table is by no means exhaustive and it can be further updated to include more examples of reporting units and to identify close relationships between the INSPIRE spatial data themes, spatial object types and the reporting obligations in the thematic domains.

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
Air Quality Directive (2008/50/EC) - AQD	AQD Article 7 - AQD pilot: zones	AM	ManagementRestrictionOrRegulationZone (zoneType = airQualityManagementZone)	Zone Descriptions
Air Quality Directive (2008/50/EC) - AQD	(F1a) Information on generated aggregated data - primary validated measurements (Article 11)	AM	ManagementRestrictionOrRegulationZone (zoneType = airQualityManagementZone)	Aggregated data on zones, includes exceedances, statistics, ...
Air Quality Directive (2008/50/EC) - AQD	(F1b) Information on generated aggregated data - primary validated modelled (Article 11)	AM	ManagementRestrictionOrRegulationZone (zoneType = airQualityManagementZone)	Near-real-time Information and alert threshold information (exceedances) on zones, based on modelled data
Air Quality Directive (2008/50/EC) - AQD	(F2) Information on generated aggregated data - primary up-to-date measurements (Article 11)	AM	ManagementRestrictionOrRegulationZone (zoneType = airQualityManagementZone)	Near-real-time Information and alert threshold information (exceedances) on zones, based on measured data
Air Quality Directive (2008/50/EC) - AQD	(D) Information on the assessment methods (Articles 8 and 9)	EF	EnvironmentalMonitoringFacility	Information on EFs including location and measurement equipment
Air Quality Directive (2008/50/EC) - AQD	(E1a) Information on primary validated assessment data - measurements (Article 10)	EF	EnvironmentalMonitoringFacility	Primary Data: <ul style="list-style-type: none"> • validated observations
Air Quality Directive (2008/50/EC) - AQD	(E1b) Information on primary validated assessment data - modelled (Article 10)	EF	EnvironmentalMonitoringFacility	Primary Data: <ul style="list-style-type: none"> • Modelled data
Air Quality Directive (2008/50/EC) - AQD	(E2a) Information on primary up-to-date assessment data - measurements (Article 10)	EF	EnvironmentalMonitoringFacility	Primary Data: <ul style="list-style-type: none"> • Real-time observations
Air Quality Directive (2008/50/EC) - AQD	(F1a) Information on generated aggregated data - primary validated measurements (Article 11)	EF	EnvironmentalMonitoringFacility	Aggregated Data on stations (EF) based on validated measurements
Air Quality Directive	(F1b) Information on generated	EF	EnvironmentalMonitoringFacility	Aggregated Data on stations (EF) based

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
(2008/50/EC) - AQD	aggregated data - primary validated modelled (Article 11)			on modeled data
Air Quality Directive (2008/50/EC) - AQD	(F2) Information on generated aggregated data - primary up-to-date measurements (Article 11)	EF	EnvironmentalMonitoringFacility	Aggregated Data on stations (EF) based on Real-time observations
Bathing Water Directive (2006/7/EC) - BWD	Management respectively Protection of the Quality of Bathing Waters	AM	ManagementRestrictionOrRegulationZone (zoneType = bathingWaters) Bathing water can also be defined as "element of surface water where the competent authority expects a large number of people to bathe and has not imposed a permanent bathing prohibition, or issued permanent advice against bathing".	Coordination is related to WFD-RBD's and WFD-SubUnits because a lot of Bathing Waters are situated in WFD-SurfaceWaterbodies (than WB-Code is requested), if they are situated in other Waterbodies NationalUnitCode is requested. Poor Bathing Water quality or a bad bathing water profile could lead to bathing prohibition or advice against bathing because this is a risk to bathers' health
Drinking Water Directive (98/83/EC) - DWD	Meeting of quality standards for drinking water	AM	ManagementRestrictionOrRegulationZone (zoneType = drinkingWaterProtectionArea)	Appropriate water-protection measures should be applied to ensure that surface and groundwater is kept clean, e.g. by establishing safeguard zones with land-use restrictions. Targeted: all individual supplies of water exceeding 1 000 m³ a day as an average or serving more than 5 000 persons (relation to Art. 7 WFD- waterbodies).
Floods Directive (2007/60/EC) - FD	Administrative arrangements and coordination in terms of flood risk management	AM	ManagementRestrictionOrRegulationZone (zoneType = riverBasinDistrict) ManagementRestrictionOrRegulationZone (zoneType = floodUnitOfManagement) Units Of Management Units of management may be individual river basins and/or certain	same information as for WFD-RBD and SubUnits is requested

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
			coastal areas, and may be entirely within national borders or may be part of an international unit of management or international river basin district.	
Floods Directive (2007/60/EC) - FD	Areas within flood risk has to be assessed and mitigated	AM, NZ	AM: ManagementRestrictionOrRegulationZone (zoneType = riverBasinDistrict) ManagementRestrictionOrRegulationZone (zoneType = floodUnitOfManagement) NZ: RiskZone Areas with potential significant flood risk (APSFR) on the basis of river basin, sub-basin and/or coastal area or other areas associated with each area of potential significant flood risk.	Declaration of type(s) of flood(s) which could potentially affect APSFR and what type(s) of adverse consequences will potentially occur
Groundwater Directive (2006/118/EC) - GWD	Management of Groundwaterprotection	AM	ManagementRestrictionOrRegulationZone (zoneType = riverBasinDistrict)	Same as for WFD-RBD
Groundwater Directive (2006/118/EC) - GWD		AM	ManagementRestrictionOrRegulationZone (zoneType = waterBodyForWFD) Refers to: groundwaterbodies / groups of groundwaterbodies	Complementing WFD in terms of pollution: background level, baseline level, pollution trends, compliance with good chemical status criteria etc.
Habitats Directive (92/43/EEC)	Reporting every 6 years on the "conservation status" of the habitat types and species protected by the Directive	BR	Bio-geographicalRegion	The bio-geographical regions are used for reporting every 6 years on the "conservation status" of the habitat types and species protected by the Directive. Article 1.iii of the Habitats Directive

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
				<p>identifies 9 bio-geographical regions in the EU.</p> <p>Article 17 of the Habitats Directive requires that every 6 years Member States prepare reports to be sent to the European Commission on the implementation of the Directive.</p> <p>Article 11 of the Habitats Directive requires Member States to monitor the habitats and species listed in the annexes and Article 17 requires a report to be sent to the European Commission every 6 years following an agreed format – hence the term 'Article 17 Reporting'. The report includes assessments on the conservation status of the habitat types and species of Community interest at the bio-geographical level.</p>
Marine Strategy Framework Directive (2008/56/EC) - MSFD	Cooperation in terms of the protection and preserving to maintain or achieve good environmental status in the marine environment	AM	ManagementRestrictionOrRegulationZone (zoneType = marineRegion) includes related attribute competentAuthority	Declaration of Marine waters, coastal waters (=WFD-Coastalwaterbodies), marine regions or sub-regions and responsible authorities within. Information about "regional cooperation" (means cooperation and coordination of activities between Member States and, whenever possible, third countries sharing the same marine region or subregion, for the purpose of developing and implementing marine strategies); Member States sharing a marine region or subregion shall cooperate to ensure that, within each marine region or subregion, the measures required to achieve the objectives of this Directive, in particular the different

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
				elements of the marine strategies referred to in points (a) and (b), are coherent and coordinated across the marine region or subregion concerned. Competent authorities.
Marine Strategy Framework Directive (2008/56/EC) - MSFD	Marine regions and sub-regions	AM or SR	<p>If the marine regions under MSFD are defined based on the AM theme, then the following feature type can be used: ManagementRestrictionOrRegulationZone (zoneType = marineRegions)</p> <p>If the marine regions under MSFD are defined within the scope of the SR theme, then the following feature type is used: Sea (sub-type of SeaArea) (MSFD named sea area)</p>	Marine regions and sub-regions defined under MSFD.
Marine Strategy Framework Directive (2008/56/EC) – MSFD	MSFD initial assessment	AM	ManagementRestrictionOrRegulationZone (zoneType = marineRegion)	<p>Marine regions and sub-regions are the geographical basis to provide marine strategies.</p> <p>Initial assessment of marine waters: (a) an analysis of the essential features and characteristics, and current environmental status of marine waters; (b) an analysis of the predominant pressures and impacts, including human activity; (c) an economic and social analysis of the use of marine waters and of the cost of degradation of the marine environment.</p> <p>MS provide up-to-date marine strategies for each marine region or sub-region ((a) the initial assessment and the determination of good environmental status; (b) the environmental targets; (c) the monitoring programmes; (d) the</p>

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
				programmes of measures).
Nitrates Directive (91/676/EEC) - NID	Establishment and implementation of action programmes; different programmes may be established for different vulnerable zones or parts of zones.	AM	ManagementRestrictionOrRegulationZone (zoneType = nitrateVulnerableZone) Vulnerable zones, parts of vulnerable zones Waters affected by pollution and waters which could be affected by pollution if action pursuant to Article 5 NID is not taken shall be identified by the Member States in accordance with the criteria set out in Annex I NID	Status, trends in vulnerable zones, parts of vulnerable zones. MS are requested to improve status respectively to implement measures to protect water resources or to achieve trend reversal when pollution is increasing, etc.
Nitrates Directive (91/676/EEC) – NID	4-year period report (Annex V reporting)	AM	ManagementRestrictionOrRegulationZone (zoneType = nitrateVulnerableZone)	To be reported: the location of the designed vulnerable zones, distinguishing between existing zones and zones designated since the previous report (map);
Nitrates Directive (91/676/EEC) - NID	MonitoringStations (ground/surface) (Article 10)	EF	EnvironmentalMonitoringFacility	Aggregated datasets (yearly mean, n° of sample, trend)
Noise Directive (2002/49/EC) - END		AM	ManagementRestrictionOrRegulationZone (zoneType = noiseRestrictionZone)	Delimitation of areas: quiet area in an agglomeration, quiet area in open country. END applies also to areas near schools, hospitals and other noise sensitive buildings and areas. Supplementary noise indicators for quiet areas in open country. Action plans should include actions which the competent authorities intend to take, including any measures to preserve quiet areas.
Noise Directive (2002/49/EC) - END	Noise Map	US	GovernmentalService	e.g “A strategic noise map is the presentation of data on one of the following aspects: <...> the estimated number of dwellings, schools and hospitals in a certain area that are exposed to specific values of a noise

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
				indicator, »
Urban Waste Water Treatment Directive (91/271/EEC) - UWWT	Situation in MS	AM	ManagementRestrictionOrRegulationZone (zoneType = sensitiveArea) Agglomerations (= municipalities), Sensitive areas (= catchments), Less sensitive areas Other areas	Treatment level, treatment performance, MS are requested to improve connection to waste water treatment plants if necessary
Water Framework Directive (2000/60/EC) - WFD	River Basin District (Article 3)	AM	ManagementRestrictionOrRegulationZone (zoneType = riverBasinDistrict); specialised zone type = river basin district sub-units	Annual average pollutant concentrations (e.g. nitrates, phosphates)
Water Framework Directive (2000/60/EC) - WFD	Administrative arrangements and coordination in terms of managing protection of inland surface waters, transitional waters, coastal waters and groundwater	AM	ManagementRestrictionOrRegulationZone (zoneType = riverBasinDistrict); specialised zone type = river basin district sub-units RBD means the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3(1) as the main unit for management of river basins.)	Declaration of RBD-name (English, national), area and responsible authorities within RBD ("competent authorities"), postal address of authorities, in summary texts information about coordination and institutional relationships, especially if RBD is an international RBD Declaration of SubUnits (see below) when RBD is divided into sub management units. SubUnit-name (English, national), area <i>Note: Term sub-units cannot be found in text of WFD. SubUnits were introduced to have management units that are more comparable. SubUnits are sub-divisions of large RBD, small RBD's have no SubUnits respectively SubUnit and RBD are equal.</i>
Water Framework Directive (2000/60/EC) - WFD	Status and objectives of inland surface waters, transitional waters, coastal waters and	AM	ManagementRestrictionOrRegulationZone (zoneType = waterBodyForWFD)	e.g. if a waterbody is whether artificial, heavily modified or natural and if waterbody will reach the environmental

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
	groundwater within each ManagementRestrictionOrRegulationZone		<p>Annex D of AM data specification provides technical guidelines for further modelling of the water bodies for WFD (waterBodyForWFD) including the following sub-types:</p> <p>a) WFD Surface waterbodies (Body of surface water means a discrete and significant element of surface water such as a lake, a reservoir, a stream, river or canal, part of a stream, river or canal, a transitional water or a stretch of coastal water.):</p> <ul style="list-style-type: none"> ○ WFD River waterbodies ○ WFD Lake waterbodies ○ WFD Transitional waterbodies ○ WFD Coastal waterbodies <p>b) WFD Groundwaterbodies (Body of groundwater. means a distinct volume of groundwater within an aquifer or aquifers.)</p> <p><i>Note: Waterbodies are also a management unit.</i></p>	<p>objectives in terms of good environmental status respectively potential (ecological, chemical and/or quantitative status/potential). Status/potential is monitored respectively carried out by assessment of so called quality elements:</p> <ul style="list-style-type: none"> – biological (composition, abundance and biomass of invertebrates etc.) – physio-chemical (ph-Value etc.) – hydromorphological (hydrological regime, continuity etc.) – chemical and physico-chemical (heavy metals, pesticides etc.) – etc.
Water Framework Directive (2000/60/EC) - WFD	<p>SurfaceWaterMonitoringStation</p> <p>GroundWaterMonitoringStation Network</p> <p>(Article 8)</p>	EF	<p>EnvironmentalMonitoringFacility</p> <p>EnvironmentalMonitoringNetwork</p>	ObservingCapability Data is for the SoE reporting
Water Framework Directive (2000/60/EC) - WFD	Programme (Article 8)	EF	EnvironmentalMonitoringProgram	Quality Elements
Water Framework	WaterBodies (Article 5)	AM	ManagementRestrictionOrRegulationZ	e.g. Indicators of good environmental

Environmental Legislation or Other Environmental Reporting	Reporting Obligation	Annex Theme for Features	Reporting Unit (Feature type)	Related Reporting Data/Information
Directive (2000/60/EC) - WFD			one (zoneType = waterBodyForWFD)	status
Water Framework Directive (2000/60/EC) – WFD	WFD reporting	SR	MarineCirculationArea (coastal and transitional waters)	to support to define and use coastal and transitional waters (also used in WFD reporting: as WFD coastal waters, WFD transitional waters)
Water Framework Directive (2000/60/EC) - WFD	Economic analysis (annex II)	US	UtilityNetwork	e.g. water network & sewer network Attention: UtilityNetwork has NO geometry itself: it's just a collection of located networks elements (nodes and links).
WISE – Water Information System	Quality of the water	AM	<p>ManagementRestrictionOrRegulationZone (zoneType = waterBodyForWFD)</p> <p>Sub-set can be defined as: Main Rivers Main Lakes Transitional Waters Coastal Waters</p> <p>Remark: Derived from geometries reported under WFD (but not for all MS). These are more a kind of aggregation units or management units. For example: in DE main rivers and main lakes are a selection of WFD-watercourses respectively WFD-waterbodies (catchment $\geq 500 \text{ km}^2$ respectively surface area $\geq 10 \text{ km}^2$)</p>	<p>WISE-Reference datasets – in the case when they are compliant with (sub-set of) the waterBodyForWFD.: EEA maps reported information to WISE Main Rivers, WISE Main Lakes, WISE Transitional waters, WISE Coastal Waters</p>

G.2 Overview of legislation for the identified reporting units

Air Quality Directive (2008/50/EC) - AQD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0050:EN:NOT>

Bathing Water Directive (2006/7/EC) – BWD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:064:0037:0051:EN:PDF>

Drinking Water Directive (98/83/EC) – DWD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:330:0032:0054:EN:PDF>

Floods Directive (2007/60/EC) – FD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:288:0027:0034:EN:PDF>

Groundwater Directive (2006/118/EC) – GWD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:372:0019:0031:EN:PDF>

Habitats Directive (92/43/EEC)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0043:EN:HTML>

Marine Strategy Framework Directive (2008/56/EC) – MSFD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:PDF>

Nitrates Directive (91/676/EEC) – NID

http://ec.europa.eu/environment/water/water-nitrates/index_en.html

Noise Directive (2002/49/EC) – END

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:189:0012:0025:EN:PDF>

Urban Waste Water Treatment Directive (91/271/EEC) – UWWT

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1991:135:0040:0052:EN:PDF>

Water Framework Directive (2000/60/EC) – WFD

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:327:0001:0072:EN:PDF>