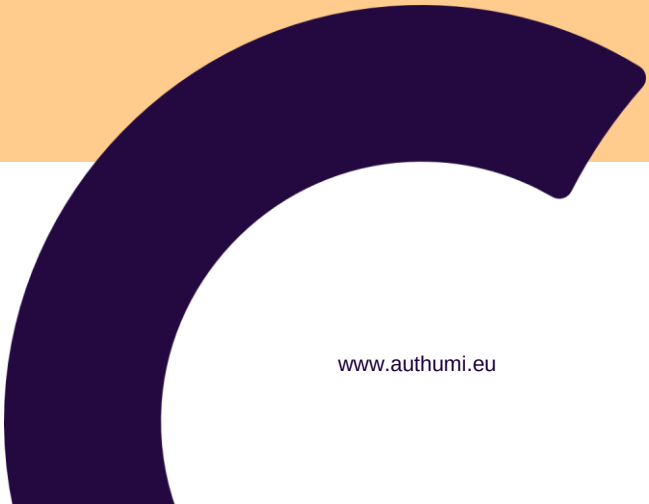
Rapport

IMKL 2.3 to IMKL 3 Migration Guide

Version 6

Publication date 20/03/2025



athumi

www.authumi.eu

Author: Niels Gabriels

Creation date: 02/10/2024

Publication date: 20/03/2025

Internal file name: IMKL 2.3 to IMKL 3 migration guide.docx

Document history:

Version	Comments	Date	Author	Status
1	Document created	02/10/2024	Niels Gabriels	Accepted
2	Section about kabelDiameter added	02/12/2024	Niels Gabriels	Accepted
3	Added info on refersTo for ExtraPlan. Added section on additional constraints.	13/02/2025	Niels Gabriels	Accepted
4	Updated namespace for UtilityLink references	21/02/2025	Niels Gabriels	Accepted
5	Clarified validation of refersTo in ExtraPlan	10/03/2025	Niels Gabriels	Accepted
6	Constraint on phone numbers added	20/03/2025	Niels Gabriels	Accepted

Athumi - Het Vlaams Datanutsbedrijf

Havenlaan 88, bus C

1000 Brussel

KBO 0795.547.478

info@athumi.eu

Table of Contents

1 Introduction

The purpose of this document is to provide a clear, step-by-step guide on how to transform valid IMKL 2.3 documents into valid IMKL 3.0 documents.

This guide is designed for those familiar with the IMKL 2.3 data model and focuses exclusively on mandatory changes that are required for compatibility with IMKL 3.0. Its goal is to guide the reader through the migration process via step-by-step instructions. It does not cover new, optional features introduced in IMKL 3.0. For those looking for a more in-depth comparison of the two versions, we recommend reviewing the *IMKL 3 vs IMKL 2.3: What, Why & How?* document, which offers a detailed overview of all changes, including optional additions.

Chapter 2 provides an overview of the changes that apply generally to all object types in the IMKL model. In the following chapters, we dive deeper into changes that apply to specific object types.

2 General changes

2.1 Introduction

Various changes introduced in IMKL 3 have an impact on different object types. Instead of describing these changes object by object, they are grouped together in this chapter.

2.2 Schema imports

To be able to use the IMKL 3 XSD and other required XSDs, they must be defined in the XML that is generated to represent the *UtilityNetwork*.

To get started, replace the IMKL 2.3 namespace declaration with the IMKL 3 namespace.

Example IMKL 2.3

```
xmlns:imkl=" http://mir.agiv.be/cl/AGIV/v1/xmlns/IMKL2.3"
xsi:schemaLocation="https://vocab.belgif.be/ns/imkl/3.0
http://mir.agiv.be/cl/AGIV/v1/xmlns/IMKL2.3 IMKL2.3.xsd"
```

Example IMKL 3

```
xmlns:imkl="https://vocab.belgif.be/ns/imkl/3.0"
xsi:schemaLocation="https://vocab.belgif.be/ns/imkl/3.0
https://vocab.belgif.be/ns/imkl/3.0/imkl_3_0.xsd"
```

Next, make sure the other namespace declarations are up-to-date. These can be declared at the top of the XML document or in any other XML tag where the namespace is needed. Namespaces that are not used, can be omitted.

The code snippet below shows how all namespaces that are used in the context of IMKL 3 can be declared.

Example IMKL 3:

```
<gml:FeatureCollection
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:act-core="http://inspire.ec.europa.eu/schemas/act-core/4.0"
  xmlns:us-net-common="http://inspire.ec.europa.eu/schemas/us-net-common/4.0"
  xmlns:us-net-el="http://inspire.ec.europa.eu/schemas/us-net-el/4.0"
  xmlns:us-net-tc="http://inspire.ec.europa.eu/schemas/us-net-tc/4.0"
  xmlns:us-net-ogc="http://inspire.ec.europa.eu/schemas/us-net-ogc/4.0"
  xmlns:us-net-sw="http://inspire.ec.europa.eu/schemas/us-net-sw/4.0"
  xmlns:us-net-wa="http://inspire.ec.europa.eu/schemas/us-net-wa/4.0"
```

```
  xmlns:us-net-th="http://inspire.ec.europa.eu/schemas/us-net-th/4.0"
  xmlns:net="http://inspire.ec.europa.eu/schemas/net/4.0"
  xmlns:base="http://inspire.ec.europa.eu/schemas/base/3.3"
  xmlns:base2="http://inspire.ec.europa.eu/schemas/base2/2.0"
  xmlns:imkl="https://vocab.belgif.be/ns/imkl/3.0"
  xsi:schemaLocation="https://vocab.belgif.be/ns/imkl/3.0
https://vocab.belgif.be/ns/imkl/3.0/imkl_3_0.xsd"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:gmd="http://www.isotc211.org/2005/gmd">
```

2.3 References to IMKL objects

Many objects in IMKL have relationships with other objects in the IMKL XML document. These relationships are declared via URIs in the `xlink:href` attribute of XML elements. Because the namespace of IMKL 3 is updated, these URIs need to be updated as well.

Replace http://mir.agiv.be/data/IMKL/v2.3/ with https://vocab.belgif.be/ns/imkl/3.0/ in all URIs.

The namespace for the UtilityLink objects needs to be changed from http://mir.agiv.be/data/INSPIRE-US/v3/ to http://inspire.ec.europa.eu/schemas/us-net-common/4.0/.

Example IMKL 2.3

```
<net:inNetwork xlink:href="http://mir.agiv.be/data/IMKL/v2.3/UtilityNetwork/sewercom-
be:001" />

<net:link xlink:href="http://mir.agiv.be/data/INSPIRE-US/v3/UtilityLink/sewercom-be:001"
/>
```

Example IMKL 3

```
<net:inNetwork xlink:href="https://vocab.belgif.be/ns/imkl/3.0/UtilityNetwork/sewercom-
be:001" />

<net:link xlink:href="http://inspire.ec.europa.eu/schemas/us-net-
common/4.0/UtilityLink/sewercom-be:001" />
```

2.4 Codelist values

Several updates and additions have been made to codelists:

- All codelist values are translated into English.
- The URI of some codelists has changed.

- Some codelists have been removed.
- A few new codelists are introduced.

To determine the correct codelist value and its URI, please refer to the separate document: IMKL3_Codelists.xlsx. This document provides detailed information on the applicable codelists for each element in the IMKL 3 schema. It lists all changes made to the codelists in IMKL 3 compared to IMKL 2.3. It also contains the URI for each codelist value.

2.5 Geometries

In IMKL 2.3 geometries had to be provided using the Lambert72 coordinate reference system. In IMKL 3 this needs to be changed to the Lambert2008 coordinate reference system.

1. Transform all coordinates from Lambert72 (EPSG:31370) into Lambert2008 (EPSG:3812). The procedure to convert coordinates from one coordinate reference system into another is not within the scope of this document. More information on coordinate conversion can be found online (e.g., https://ngi.be/hulpmiddelen-voor-transformatie-van-coordinaten/).
2. Change the value of the `srsName` attribute from http://spatialreference.org/ref/epsg/31370/ into http://spatialreference.org/ref/epsg/3812/.
3. Add the `srsDimension` attribute if it was not yet present. Set its value to 2.

Example IMKL 2.3

```
<net:geometry>
  <gml:Point gml:id="ID_c162014f-5554-47f2-9973-a9bb8bbec7ed"
    srsName="http://spatialreference.org/ref/epsg/31370/">
    <gml:pos>103572.468 192239.637</gml:pos>
  </gml:Point>
</net:geometry>
```

Example IMKL 3

```
<net:geometry>
  <gml:Point gml:id="ID_c162014f-5554-47f2-9973-a9bb8bbec7ed"
    srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:pos>603569.9396172985 692234.4285400314</gml:pos>
  </gml:Point>
</net:geometry>
```

2.6 Order of elements

The XSD schema of IMKL 3 defines which elements can appear per object and specifies the order of these elements. In IMKL 3, the order of some elements has been changed compared to IMKL 2.3. For the correct order of elements, please refer to the XSD schema itself or to the Entity-Relationship

Diagrams associated with IMKL 3. These resources provide detailed information on the sequence of elements required for each object.

2.7 label, omschrijving and taal

Most objects in IMKL 2.3 have properties *label*, *omschrijving* and *taal*. These must be updated in IMKL 3 as follows:

1. Remove all `imkl:taal` elements.
2. Replace each `imkl:omschrijving` element with an `imkl:description element`.
3. The type of the `imkl:label` and `imkl:omschrijving` elements needs to be changed from a simple string into a language specific string of type `gmd:PT_FreeText_PropertyType`. Provide a value in at least one of the supported languages. The supported languages are German (#de), English (#en), French (#fr), or Dutch (#nl).

Example IMKL 2.3

```
<imkl:label>Voorbeeld</imkl:label>
<imkl:omschrijving>Voorbeeld</imkl:omschrijving>
<imkl:taal xlink:href="Nederlands" />
```

Example IMKL 3

```
<imkl:label>
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">
        Example
      </gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">
        Voorbeeld
      </gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#fr">
        Exemple
      </gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
</imkl:label>
<imkl:description>
```

```
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">
        Example
      </gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">
        Voorbeeld
      </gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#fr">
        Exemple
      </gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
</imkl:description>
```

2.8 subThema

Replace each `imkl:subThema` element with an `imkl:subtheme` element. Verify the referenced codelist value as described in section 2.4.

Example IMKL 2.3

```
<imkl:subThema
xlink:href="http://mir.agiv.be/cl/IMKL/v2/SewerSubThemaValue/rioleringAfvalwaterPersleidi
ng" />
```

Example IMKL 3

```
<imkl:subtheme
  xlink:href="https://vocab.belgif.be/auth/IMKL-
SewerSubthemeValue/sewageWasteWaterPressurePipe" />
```

2.9 isRisicovol

Remove the `imkl:isRisicovol` elements.

2.10 isBovengrondsZichtbaar

Replace each `imkl:isBovengrondsZichtbaar` element with an `imkl:visibility` element. Replace the value of the element with a reference to a codelist value:

- The value `true` must be replaced with a reference to https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/visibleAboveGround.
- The value `false` must be replaced with a reference to https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/notVisibleAboveGround.

Example IMKL 2.3

```
<imkl:isBovengrondsZichtbaar>true</imkl:isBovengrondsZichtbaar>
<imkl:isBovengrondsZichtbaar>false</imkl:isBovengrondsZichtbaar>
```

Example IMKL 3

```
<imkl:visibility
  xlink:href="https://vocab.belgif.be/auth/IMKL-VisibilityTypeValue/visibleAboveGround"
/>
<imkl:visibility
  xlink:href="https://vocab.belgif.be/auth/IMKL-
VisibilityTypeValue/notVisibleAboveGround" />
```

2.11 kleur

Replace each `imkl:kleur` element with an `imkl:appearance` element. The `imkl:appearance` element must have an `imkl:colour` element containing the colour value as a language specific string of type `gmd:PT_FreeText_PropertyType`. Provide a colour value in at least one of the supported languages. The supported languages are German (#de), English (#en), French (#fr), or Dutch (#nl).

Example IMKL 2.3

```
<imkl:kleur>wit</imkl:kleur>
```

Example IMKL 3

```
<imkl:appearance>
  <imkl:colour>
    <gmd:PT_FreeText>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#en">White</gmd:LocalisedCharacterString>
      </gmd:textGroup>
```

```
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#nl">Wit</gmd:LocalisedCharacterString>
      </gmd:textGroup>
      <gmd:textGroup>
        <gmd:LocalisedCharacterString locale="#fr">Blanc</gmd:LocalisedCharacterString>
      </gmd:textGroup>
    </gmd:PT_FreeText>
  </imkl:colour>
</imkl:appearance>
```

2.12 heeftExtraInformatie

Each `imkl:heeftExtraInformatie` element must be replaced with another element depending on the type of object that is referenced:

1. Replace `imkl:heeftExtraInformatie` elements that reference an *ExtraPlan* object with `imkl:documentation`.
2. Replace `imkl:heeftExtraInformatie` elements that reference an *Annotatie* object with `imkl:annotation`. In the URI, replace *Annotatie* with *Annotation*.
3. `imkl:heeftExtraInformatie` elements that reference an *Aansluiting* object are a special case. The changes required in this situation are described in section 4.5.

Example IMKL 2.3

```
<imkl:heeftExtraInformatie
  xlink:href="http://mir.agiv.be/data/IMKL/v2.3/ExtraPlan/electricitycom-be:EP001" />
<imkl:heeftExtraInformatie
  xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Annotatie/electricitycom-be:AN001" />
```

Example IMKL 3

```
<imkl:documentation
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/ExtraPlan/electricitycom-be:EP001" />
<imkl:annotation
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Annotation/electricitycom-be:AN001" />
```

2.13 Additional constraints

With the transition to IMKL 3.0 extra validation constraints are introduced:

1. The value of the `validTo` element of an object must be greater than or equal to the object's `validFrom` value if present.

2. The value of the `endLifespanVersion` element of an object must be greater than or equal to the object's `beginLifespanVersion` value if present.
3. The value of elements that represent an angle (i.e. the elements with a uom of `urn:ogc:def:uom:OGC::deg`) must be between 0 and 360 (both 0 and 360 are valid).
4. Phone numbers can only consist of digits, +, /, . and space characters.

3 UtilityNetwork

3.1 Introduction

This chapter covers the changes specific to the *UtilityNetwork* object.

3.2 us-net-common:authorityRole

Make sure the `us-net-common:authorityRole` is present within the *UtilityNetwork* object. This element must include an empty `base2:RelatedParty` element.

Example IMKL 3

```
<us-net-common:authorityRole>
  <base2:RelatedParty />
</us-net-common:authorityRole>
```

3.3 technischContactpersoon

Replace the `imkl:technischContactpersoon` element with an `imkl:authorityRole` element. This element must include a name, phone number and email address. The phone number must include the country code.

Example IMKL 2.3:

```
<imkl:technischContactpersoon>
 <imkl:TechnischContactpersoon>
  <imkl:naam>Athumi</imkl:naam>
  <imkl:telefoon>0123456789</imkl:telefoon>
  <imkl:email>example@athumi.eu</imkl:email>
 </imkl:TechnischContactpersoon>
</imkl:technischContactpersoon>
```

Example IMKL 3:

```
<imkl:authorityRole>
  <imkl:name>Athumi</imkl:name>
  <imkl:phone>+3212345678</imkl:phone>
  <imkl:email>example@athumi.eu</imkl:email>
</imkl:authorityRole>
```

3.4 heeftDieptes

Replace each `imkl:heeftDieptes` element with an `imkl:verticalPositionDetail` element. In the URI, replace *RelatieveDiepte* and *TAWDiepte* with either *DepthDetail* or *CoverageDetail* depending on the type of object that is referenced (see chapter 12).

RelatieveDiepte and *TAWDiepte* objects that are only used for the standard coverage (standaard dekking) should not be referenced via an `imkl:verticalPositionDetail` element. These should only be referenced via an `imkl:standardCoverageDetail` element (see section 0).

The changes need to the referenced *RelatieveDiepte* and *TAWDiepte* objects are described in chapter 12.

Example IMKL 2.3:

```
<imkl:heeftDieptes
  xlink:href="http://mir.agiv.be/data/IMKL/v2.3/RelatieveDiepte/electricitycom-be:CD001"
/>
<imkl:heeftDieptes
  xlink:href="http://mir.agiv.be/data/IMKL/v2.3/RelatieveDiepte/electricitycom-be:DD002"
/>
<imkl:heeftDieptes
  xlink:href="http://mir.agiv.be/data/IMKL/v2.3/TAWDiepte/electricitycom-be:DD003" />
```

Example IMKL 3:

```
<imkl:verticalPositionDetail
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/CoverageDetail/electricitycom-be:CD001"
/>
<imkl:verticalPositionDetail
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/DepthDetail/electricitycom-be:DD002" />
<imkl:verticalPositionDetail
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/DepthDetail/electricitycom-be:DD003" />
```

3.5 voorzorgsmaatregel

Add a *Document* object for each `imkl:voorzorgsmaatregel` element. A *Document* object is similar to an *ExtraPlan* object, but does not have a *ligging/location*. See chapter 13 for changes regarding *ExtraPlan* objects.

The `imkl:documentType` of the *Document* object must be *precaution*. Make sure the *Document* object is linked to the *UtilityNetwork* object via the `imkl:inNetwork` element.

Next, replace the `imkl:voorzorgsmaatregel` elements of the *UtilityNetwork* object with references to the *Document* objects via an `imkl:documentation` element.

Example IMKL 2.3:

```
<imkl:UtilityNetwork>
  ...
  <imkl:voorzorgsmaatregel>
    <imkl:Voorzorgsmaatregel>
      <imkl:bestandLocatie>veiligheidsvoorschriften.pdf</imkl:bestandLocatie>
      <imkl:bestandMediaType
        xlink:href="http://mir.agiv.be/cl/IMKL/v2/BestandMediaTypeValue/PDF" />
    </imkl:Voorzorgsmaatregel>
  </imkl:voorzorgsmaatregel>
  ...
</imkl:UtilityNetwork>
```

Example IMKL 3:

```
<imkl:UtilityNetwork>
  ...
  <imkl:documentation
    xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Document/electricitycom-be:D001" />
  ...
</imkl:UtilityNetwork>

<gml:featureMember>
  <imkl:Document gml:id="ID_5b5e7f28-c98d-4bfd-bf0f-33e5c3cbb9c8">
    <imkl:imklId>
      <base:Identifier>
        <base:localId>D001</base:localId>
        <base:namespace>electricitycom-be</base:namespace>
      </base:Identifier>
    </imkl:imklId>
    <imkl:beginLifespanVersion>2001-12-17T09:30:47.0Z</imkl:beginLifespanVersion>
    <imkl:documentType
      xlink:href="https://vocab.belgif.be/auth/IMKL-DocumentTypeValue/precaution" />
    <imkl:documentLocation>veiligheidsvoorschriften.pdf</imkl:documentLocation>
    <imkl:documentMediaType
      xlink:href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/PDF" />
    <imkl:inNetwork
      xlink:href="https://vocab.belgif.be/ns/imkl/3.0/UtilityNetwork/electricitycom-
be:001" />
  </imkl:Document>
</gml:featureMember>
```

3.6 eigenUtilityFacilityReference

Remove the `imkl:eigenUtilityFacilityReference` elements.

3.7 eigenExtraInformatie

Remove the `imkl:eigenExtraInformatie` elements.

3.8 heeftExtraTopografieen

Remove the `imkl:heeftExtraTopografieen` elements.

3.9 heeftBeschermdeGebieden

Replace each `imkl:heeftBeschermdeGebieden` element with an `imkl:protectedArea` element. In the URI, replace *BeschermdGebied* with *ProtectedArea*.

Example IMKL 2.3

```
<imkl:heeftBeschermdeGebieden
xlink:href="http://mir.agiv.be/data/IMKL/v2.3/BeschermdGebied/gascom-be:PA001"/>
```

Example IMKL 3

```
<imkl:protectedArea xlink:href="https://vocab.belgif.be/ns/imkl/3.0/ProtectedArea/gascom-be:PA001" />
```

3.10 standaardDekking

Replace each `imkl:standaardDekking` element with an `imkl:standardCoverageDetail` element. In the URI, replace *RelatieveDiepte* with *StandardCoverageDetail*.

The changes need to the referenced *RelatieveDiepte* object are described in chapter 12.

Example IMKL 2.3

```
<imkl:standaardDekking
  xlink:href="http://mir.agiv.be/data/IMKL/v2.3/RelatieveDiepte/electricitycom-be:DD001"
/>
```

Example IMKL 3

```
<imkl:standardCoverageDetail
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/StandardCoverageDetail/electricitycom-be:DD001" />
```

4 Appurtenance

4.1 Introduction

This chapter covers the changes specific to the *Appurtenance* object.

4.2 liggingNauwkeurigheid

Replace each `imkl:liggingNauwkeurigheid` element with an `imkl:geometrySurvey` element. The accuracy that was specified via the codelist value in the `imkl:liggingNauwkeurigheid` element can be used as the value for the `imkl:accuracy` element within the `imkl:geometrySurvey` element. The `imkl:geometrySurvey` element must have a `method` element, but this element can be nil (as shown in the example).

Example IMKL 2.3

```
<imkl:liggingNauwkeurigheid
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/NauwkeurigheidValue/tot50cm" />
```

Example IMKL 3

```
<imkl:geometrySurvey>
  <imkl:method nilReason="missing" xsi:nil="true" />
  <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm">50</imkl:accuracy>
</imkl:geometrySurvey>
```

4.3 orientatie

Replace each `imkl:orientatie` element with an `imkl:orientation` element.

Example IMKL 2.3

```
<imkl:orientatie uom="urn:ogc:def:uom:OGC::deg">30</imkl:orientatie>
```

Example IMKL 3

```
<imkl:orientation uom="urn:ogc:def:uom:OGC::deg">30</imkl:orientation>
```

4.4 diepte

Replace each `imkl:diepte` element with an `imkl:depthDetail` element. In the URI, replace *RelatieveDiepte* and *TAWDiepte* with *DepthDetail*.

The changes need to the referenced *RelatieveDiepte* and *TAWDiepte* objects are described in chapter 12.

Example IMKL 2.3

```
<imkl:diepte xlink:href="http://mir.agiv.be/data/IMKL/v2.3/TAWDiepte/sewercom-be:DD002"
/>
```

Example IMKL 3

```
<imkl:depthDetail xlink:href="https://vocab.belgif.be/ns/imkl/3.0/DepthDetail/sewercom-
be:DD002" />
```

4.5 heeftExtraInformatie

The changes to `imkl:heeftExtraInformatie` as described in section 2.12 also apply to *Appurtenance* objects. On top of that, *Appurtenance* objects can have an `imkl:heeftExtraInformatie` element that references an *Aansluiting* object. When this is the case, the following things need to be changed:

1. Replace the `imkl:Appurtenance` object with an `imkl:Connection` object.
2. Update the URI of all references to this object, by replacing *Appurtenance* with *Connection*.
3. Add an `imkl:address` element to the `imkl:Connection` object. This element must have an `imkl:municipalityName`, `imkl:streetName`, `imkl:postalCode` and optional `imkl:houseNumber` element.
4. Remove the `imkl:Aansluiting` object. The information in this object should be included in the new `imkl:address` element.
5. Remove the `imkl:heeftExtraInformatie` element that was used to reference the `imkl:Aansluiting` object.

Example IMKL 2.3

```
<gml:featureMember>
  <imkl:Appurtenance gml:id="ID_f7091406-a508-4a3f-afc0-cc725d8b400c">
    ...
    <net:inspireId>
      <base:Identifier>
        <base:localId>Appurtenance_001</base:localId>
        <base:namespace>Demo</base:namespace>
```

```
      </base:Identifier>
    </net:inspireId>
    ...
    <imkl:heeftExtraInformatie
      xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Aansluiting/Demo:Aansluiting_001" />
  </imkl:Appurtenance>
</gml:featureMember>

<gml:featureMember>
  <imkl:Aansluiting>
    <imkl:imklId>
      <base:Identifier>
        <base:localId>Aansluiting_001</base:localId>
        <base:namespace>Demo</base:namespace>
      </base:Identifier>
    </imkl:imklId>
    <imkl:beginLifespanVersion>2001-12-17T09:30:47.0Z</imkl:beginLifespanVersion>
    <imkl:inNetwork
      xlink:href="http://mir.agiv.be/data/IMKL/v2.2/UtilityNetwork/Demo:Network_001" />
    <imkl:opLeidingElementen
      xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Appurtenance/Demo:Appurtenance_001"
/>
    <imkl:adres>
      <imkl:Adres>
        <imkl:gemeente>Gent</imkl:gemeente>
        <imkl:straatnaam>Koningin Maria Hendrikaplein</imkl:straatnaam>
        <imkl:huisnummer>70</imkl:huisnummer>
        <imkl:postcode>9000</imkl:postcode>
      </imkl:Adres>
    </imkl:adres>
  </imkl:Aansluiting>
</gml:featureMember>
```

Example IMKL 3

```
<gml:featureMember>
  <imkl:Connection gml:id="ID_f7091406-a508-4a3f-afc0-cc725d8b400c">
    ...
    <net:inspireId>
      <base:Identifier>
        <base:localId>Appurtenance_001</base:localId>
        <base:namespace>Demo</base:namespace>
      </base:Identifier>
    </net:inspireId>
    ...
    <imkl:address>
      <imkl:municiaplityName>
        <gmd:PT_FreeText>
          <gmd:textGroup>
            <gmd:LocalisedCharacterString
locale="#fr">Gand</gmd:LocalisedCharacterString>
          </gmd:textGroup>
          <gmd:textGroup>
            <gmd:LocalisedCharacterString
locale="#nl">Gent</gmd:LocalisedCharacterString>
          </gmd:textGroup>
        </gmd:PT_FreeText>
      </imkl:municiaplityName>
      <imkl:streetName>
        <gmd:PT_FreeText>
          <gmd:textGroup>
            <gmd:LocalisedCharacterString locale="#nl">Koningin
Fabiolaan</gmd:LocalisedCharacterString>
          </gmd:textGroup>
        </gmd:PT_FreeText>
      </imkl:streetName>
      <imkl:houseNumber>5</imkl:houseNumber>
      <imkl:postalCode>9000</imkl:postalCode>
    </imkl:address>
  </imkl:Connection>
</gml:featureMember>
```

4.6 hoogte

Replace each `imkl:hoogte` element with an `imkl:height` element.

Example IMKL 2.3

```
<imkl:hoogte uom="urn:ogc:def:uom:OGC::cm">10</imkl:hoogte>
```

Example IMKL 3

```
<imkl:height uom="urn:ogc:def:uom:OGC::cm">10</imkl:height>
```

5 Cabinet, Manhole, Pole and Tower

5.1 Introduction

This chapter covers the changes specific to the *Cabinet, Manhole, Pole* and *Tower* objects.

5.2 beginLifespanVersion

Add an `imkl:beginLifespanVersion` element to each `imkl:Cabinet`, `imkl:Manhole`, `imkl:Pole` and `imkl:Tower` object. This element was added in IMKL 3 to ensure consistency across all objects.

Example IMKL 3

```
<imkl:beginLifespanVersion>2001-12-17T09:30:47.0Z</imkl:beginLifespanVersion>
```

5.3 liggingNauwkeurigheid

Replace each `imkl:liggingNauwkeurigheid` element with an `imkl:geometrySurvey` element. The accuracy that was specified via the codelist value in the `imkl:liggingNauwkeurigheid` element can be used as the value for the `imkl:accuracy` element within the `imkl:geometrySurvey` element. The `imkl:geometrySurvey` element must have a `method` element, but this element can be nil (as shown in the example).

Example IMKL 2.3

```
<imkl:liggingNauwkeurigheid
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/NauwkeurigheidValue/tot50cm" />
```

Example IMKL 3

```
<imkl:geometrySurvey>
  <imkl:method nilReason="missing" xsi:nil="true" />
  <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm">50</imkl:accuracy>
</imkl:geometrySurvey>
```

5.4 orientatie

Replace each `imkl:orientatie` element with an `imkl:orientation` element.

Example IMKL 2.3

```
<imkl:orientatie uom="urn:ogc:def:uom:OGC::deg">30</imkl:orientatie>
```

Example IMKL 3

```
<imkl:orientation uom="urn:ogc:def:uom:OGC::deg">30</imkl:orientation>
```

5.5 diepte

Replace each `imkl:diepte` element with an `imkl:depthDetail` element. In the URI, replace *RelatieveDiepte* and *TAWDiepte* with *DepthDetail*.

The changes need to the referenced *RelatieveDiepte* and *TAWDiepte* objects are described in chapter 12.

Example IMKL 2.3

```
<imkl:diepte xlink:href="http://mir.agiv.be/data/IMKL/v2.3/TAWDiepte/sewercom-be:DD002"
/>
```

Example IMKL 3

```
<imkl:depthDetail xlink:href="https://vocab.belgif.be/ns/imkl/3.0/DepthDetail/sewercom-
be:DD002" />
```

6 Cable, Pipe and Duct

6.1 Introduction

This chapter covers the changes specific to all of the following object types:

- ElectricityCable
- TelecommunicationsCable
- OilGasChemicalsPipe
- SewerPipe
- WaterPipe
- ThermalPipe
- Pipe
- Duct

6.2 liggingNauwkeurigheid

Replace each `imkl:liggingNauwkeurigheid` element with an `imkl:locationSurvey` element. The accuracy that was specified via the codelist value in the `imkl:liggingNauwkeurigheid` element can be used as the value for the `imkl:accuracy` element within the `imkl:locationSurvey` element. The `imkl:locationSurvey` element must have a `method` element, but this element can be nil (as shown in the example).

Example IMKL 2.3

```
<imkl:liggingNauwkeurigheid
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/NauwkeurigheidValue/tot50cm" />
```

Example IMKL 3

```
<imkl:locationSurvey>
  <imkl:method nilReason="missing" xsi:nil="true" />
  <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm">50</imkl:accuracy>
</imkl:locationSurvey>
```

6.3 materiaalType

Replace each `imkl:materiaalType` element with an `imkl:materialType` element.

Example IMKL 2.3

```
<imkl:materiaalType xlink:href="http://mir.agiv.be/cl/IMKL/v2/MaterialTypeValue/pvc" />
```

Example IMKL 3

```
<imkl:materialType xlink:href="https://vocab.belgif.be/auth/IMKL-MaterialTypeValue/pvc"
/>
```

6.4 technischeSpecificaties

Replace each `imkl:technischeSpecificaties` element with an `imkl:technicalSpecification` element. The type of the `imkl:technicalSpecification` elements needs to be changed into a language specific string of type `gmd:PT_FreeText_PropertyType`. Provide a value in at least one of the supported languages. The supported languages are German (#de), English (#en), French (#fr), or Dutch (#nl).

Example IMKL 2.3

```
<imkl:technischeSpecificaties>
  <gco:CharacterString>Voorbeeld</gco:CharacterString>
</imkl:technischeSpecificaties>
```

Example IMKL 3

```
<imkl:technicalSpecification>
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">Example</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">Voorbeeld</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#fr">Exemple</gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
```

```
</imkl:technicalSpecification>
```

6.5 dekking

Replace each `imkl:dekking` element with an `imkl:coverageDetail` element. In the URI, replace *RelatieveDiepte* and *TAWDiepte* with *CoverageDetail*.

The changes need to the referenced *RelatieveDiepte* and *TAWDiepte* objects are described in chapter 12.

Example IMKL 2.3

```
<imkl:diepte xlink:href="http://mir.agiv.be/data/IMKL/v2.3/TAWDiepte/sewercom-be:DD002"
/>
```

Example IMKL 3

```
<imkl:coverageDetail
xlink:href="https://vocab.belgif.be/ns/imkl/3.0/CoverageDetail/sewercom-be:DD002" />
```

6.6 Gestuurde boringen

If a *Cable*, *Pipe* or *Duct* object is linked to an *ExtraPlan* with `imkl:extraPlanType` *gestuurdeBoring*, it is strongly recommended to add the `imkl:constructionTechnique` element. This element must reference the *directionalDrilling* value from the *ConstructionTechniqueValue* codelist.

For all other *Cable*, *Pipe* or *Duct* objects, it is recommended to add the `imkl:constructionTechnique` element if its value is known.

Example IMKL 3

```
<imkl:constructionTechnique
  xlink:href="https://vocab.belgif.be/auth/IMKL-
ConstructionTechniqueValue/directionalDrilling" />
```

6.7 temperatuur

Replace each `imkl:temperatuur` element with an `imkl:temperature` element. Since the `imkl:temperatuur` element is only available for *ThermalPipe* objects, this change only applies to these objects.

Example IMKL 2.3

```
<imkl:temperatuur uom="urn:ogc:def:uom:OGC::degC">100</imkl:temperatuur>
```

Example IMKL 3

```
<imkl:temperature uom="urn:ogc:def:uom:OGC::degC">100</imkl:temperature>
```

6.8 kabelDiameter

Replace each `imkl:kabelDiameter` element with an `imkl:cableDiameter` element.
This change only applies to `ElectricityCable` and `TelecommunicationsCable` objects.

Example IMKL 2.3

```
<imkl:kabelDiameter uom="urn:ogc:def:uom:cm">10</imkl:kabelDiameter>
```

Example IMKL 3

```
<imkl:cableDiameter uom="urn:ogc:def:uom:cm">10</imkl:cableDiameter>
```

7 UtilityLink

The general changes as described in chapter 2 apply to *UtilityLink* objects. No other changes are required.

8 ActivityComplex

8.1 Introduction

This chapter covers the changes specific to the *ActivityComplex* object.

8.2 opKabelEnLeidingen, opLeidingElementen, opKabelEnLeidingContainers and opContainerLeidingElementen

Replace each `imkl:opKabelEnLeidingen`, `imkl:opLeidingElementen`, `imkl:opKabelEnLeidingContainers` and `imkl:opContainerLeidingElementen` element with an `imkl:on` element.

Example IMKL 2.3

```
<imkl:opLeidingElementen
  xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Appurtenance/electricitycom-be:001" />
```

Example IMKL 3

```
<imkl:on
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:001" />
```

8.3 heeftUtilityNetwork

Remove the `imkl:heeftUtilityNetwork` element within each `imkl:ActivityComplex` object.

9 BeschermdGebied

9.1 Introduction

This chapter covers the changes specific to the *BeschermdGebied* object.

9.2 The BeschermdGebied object

Replace each `imkl:BeschermdGebied` object with an `imkl:ProtectedArea` object.

Example IMKL 2.3

```
<gml:featureMember>
  <imkl:BeschermdGebied>
    ...
  </imkl:BeschermdGebied>
</gml:featureMember>
```

Example IMKL 3

```
<gml:featureMember>
  <imkl:ProtectedArea>
    ...
  </imkl:ProtectedArea>
</gml:featureMember>
```

9.3 label

Replace each `imkl:label` element with an `imkl:name` element. The type of the `imkl:name` elements needs to be changed from a simple string into a language specific string of type `gmd:PT_FreeText_PropertyType`. Provide a value in at least one of the supported languages. The supported languages are German (#de), English (#en), French (#fr), or Dutch (#nl).

Example IMKL 2.3

```
<imkl:label>Ondergrondse gasopslag</imkl:label>
```

Example IMKL 3

```
<imkl:name>
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">Underground gas
storage</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">Ondergrondse
gasopslag</gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
</imkl:name>
```

9.4 ligging

Replace each `imkl:ligging` element with an `imkl:location` element.

Example IMKL 2.3

```
<imkl:ligging>
  <gml:Polygon
    srsName="http://www.opengis.net/def/crs/EPSG/0/31370/">
    <gml:exterior>
      <gml:LinearRing>
        <gml:posList>...</gml:posList>
      </gml:LinearRing>
    </gml:exterior>
  </gml:Polygon>
</imkl:ligging>
```

Example IMKL 3

```
<imkl:geometry>
  <gml:Polygon srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:exterior>
      <gml:LinearRing>
        <gml:posList>...</gml:posList>
      </gml:LinearRing>
    </gml:exterior>
  </gml:Polygon>
</imkl:geometry>
```

9.5 beschermdGebiedType

Replace each `imkl:beschermdGebiedType` element with an `imkl:protectedAreaType` element.

Example IMKL 2.3

```
<imkl:beschermdGebiedType

xlink:href="http://mir.agiv.be/cl/IMKL/v2/BeschermdGebiedTypeValue/geothermischeInstallatie" />
```

Example IMKL 3

```
<imkl:protectedAreaType
  xlink:href="https://vocab.belgif.be/auth/IMKL-ProtectedAreaTypeValue/undergroundGasStorage" />
```

10 Annotatie

10.1 Introduction

This chapter covers the changes specific to the *Annotatie* object.

10.2 The Annotatie object

Replace each `imkl:Annotatie` object with an `imkl:Annotation` object.

Example IMKL 2.3

```
<gml:featureMember>
  <imkl:Annotatie>
    ...
  </imkl:Annotatie>
</gml:featureMember>
```

Example IMKL 3

```
<gml:featureMember>
  <imkl:Annotation>
    ...
  </imkl:Annotation>
</gml:featureMember>
```

10.3 label

Replace each `imkl:label` element with an `imkl:text` element. The type of the `imkl:text` elements needs to be changed from a simple string into a language specific string of type `gmd:PT_FreeText_PropertyType`. Provide a value in at least one of the supported languages. The supported languages are German (#de), English (#en), French (#fr), or Dutch (#nl).

Example IMKL 2.3

```
<imkl:label>Voorbeeld</imkl:label>
```

Example IMKL 3

```
<imkl:text>
  <gmd:PT_FreeText>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#en">Example</gmd:LocalisedCharacterString>
    </gmd:textGroup>
    <gmd:textGroup>
      <gmd:LocalisedCharacterString locale="#nl">Voorbeeld</gmd:LocalisedCharacterString>
    </gmd:textGroup>
  </gmd:PT_FreeText>
</imkl:text>
```

10.4 opKabelEnLeidingen, opLeidingElementen, opKabelEnLeidingContainers and opContainerLeidingElementen

Replace each `imkl:opKabelEnLeidingen`, `imkl:opLeidingElementen`, `imkl:opKabelEnLeidingContainers` and `imkl:opContainerLeidingElementen` element with an `imkl:associatedWith` element.

Example IMKL 2.3

```
<imkl:opLeidingElementen
  xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Appurtenance/electricitycom-be:001" />
```

Example IMKL 3

```
<imkl:associatedWith
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:001" />
```

10.5 heeftUtilityNetwork

Remove the `imkl:heeftUtilityNetwork` element within each `imkl:Annotation` object.

10.6 annotatieType

Replace each `imkl:annotatieType` element with an `imkl:annotationType` element.

Example IMKL 2.3

```
<imkl:annotatieType
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/AnnotatieTypeValue/maatvoeringsLijn" />
```

Example IMKL 3

```
<imkl:annotationType
  xlink:href="https://vocab.belgif.be/auth/IMKL-AnnotationTypeValue/annotationLine" />
```

10.7 rotatieHoek

Replace each `imkl:rotatieHoek` element with an `imkl:rotationAngle` element.

Example IMKL 2.3

```
<imkl:rotatiehoek uom="urn:ogc:def:uom:OGC::deg">10</imkl:rotatiehoek>
```

Example IMKL 3

```
<imkl:rotationAngle uom="urn:ogc:def:uom:OGC::deg">10</imkl:rotationAngle>
```

10.8 ligging

Replace each `imkl:ligging` element with an `imkl:location` element.

Example IMKL 2.3

```
<imkl:ligging>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/31370/">
    <gml:posList>...</gml:posList>
  </gml:LineString>
</imkl:ligging>
```

Example IMKL 3

```
<imkl:location>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:posList>...</gml:posList>
  </gml:LineString>
</imkl:location>
```

11 ExtraTopografie

11.1 Introduction

This chapter covers the changes specific to the *ExtraTopografie* object.

11.2 The ExtraTopografie object

Replace each `imkl:ExtraTopografie` object with an `imkl:TopographicalElement` object.

Example IMKL 2.3

```
<gml:featureMember>
  <imkl:ExtraTopografie>
    ...
  </imkl:ExtraTopografie>
</gml:featureMember>
```

Example IMKL 3

```
<gml:featureMember>
  <imkl:TopographicalElement>
    ...
  </imkl:TopographicalElement>
</gml:featureMember>
```

11.3 extraTopografieType

Remove the `imkl:extraTopografieType` element within each `imkl:TopographicalElement` object.

11.4 ligging

Replace each `imkl:ligging` element with an `imkl:location` element.

Example IMKL 2.3

```
<imkl:ligging>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/31370/">
    <gml:posList>...</gml:posList>
  </gml:LineString>
```

```
</imkl:ligging>
```

Example IMKL 3

```
<imkl:location>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:posList>...</gml:posList>
  </gml:LineString>
</imkl:location>
```

The `location` must be a valid point, line, polygon or multipoint, multiline or multipolygon geometry. A combination of geometry types (points, lines and polygons) in a single object is not allowed. If the `ligging` in the IMKL 2.3 data was a multi-geometry with a mix of different geometry types, then the ExtraTopografie object must be split into multiple TopographicalElement objects.

11.5 inNetwork

Remove the `imkl:inNetwork` element within each `imkl:TopographicalElement` object.

12 RelatieveDiepte and TAWDiepte

12.1 Introduction

This chapter covers the changes specific to the *RelatieveDiepte* and *TAWDiepte* objects.

In IMKL 2.3 the *RelatieveDiepte* and *TAWDiepte* objects were used to provide information on the depth or vertical position of elements within a *UtilityNetwork*. In IMKL 3 these objects are replaced with the *DepthDetail* and *CoverageDetail* objects. Note that this is not a one for one replacement. Both *DepthDetail* and *CoverageDetail* can replace either of the *RelatieveDiepte* and *TAWDiepte* objects.

In IMKL 2.3 the *RelatieveDiepte* object was used to represent a relative depth compared to the surface. *TAWDiepte* was used to represent an absolute TAW/DNG level (Tweede Algemene Waterpassing / Deuxième Nivellement Général).

In IMKL 3 the *DepthDetail* object should be used for elements with a point geometry. It can be used to represent both a relative depth as well as a TAW/DNG level.

Objects with a point geometry are:

- Appurtenance
- Connection
- Tower
- Pole
- Cabinet
- Manhole

The *CoverageDetail* object should be used for elements with a line geometry.

Objects with a line geometry (via the referenced *UtilityLinks*) are:

- ElectricityCable
- TelecommunicationsCable
- Pipe
- OilGasChemicalsPipe
- SewerPipe
- WaterPipe
- ThermalPipe
- Duct

12.2 The RelatieveDiepte and TAWDiepte objects

Replace each `imkl:RelatieveDiepte` and `imkl:TAWDiepte` object as follows:

- Replace the object with an `imkl:DepthDetail` object if the object is used to represent the depth or vertical position of an object with a **point geometry**.
- Replace the object with an `imkl:CoverageDetail` object if the object is used to represent the depth or vertical position of an object with a **line geometry**.

12.3 diepteNauwkeurigheid and datumOpmetingDieptePeil

Replace each `imkl:diepteNauwkeurigheid` element with an `imkl:verticalPositionSurvey` element.

The accuracy that was specified via the codelist value in the `imkl:diepteNauwkeurigheid` element can be used as the value for the `imkl:accuracy` element within the `imkl:verticalPositionSurvey` element.

The date that was specified in the `imkl:datumOpmetingDieptePeil` element can be used as the value for the `imkl:date` element within the `imkl:verticalPositionSurvey` element.

The `imkl:verticalPositionSurvey` element must have a `method` element, but this element can be nil (as shown in the example).

Example IMKL 2.3

```
<imkl:diepteNauwkeurigheid
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/NauwkeurigheidValue/tot30cm" />
<imkl:datumOpmetingDieptePeil>2001-12-17T09:30:47Z</imkl:datumOpmetingDieptePeil>
```

Example IMKL 3

```
<imkl:verticalPositionSurvey>
  <imkl:method nilReason="missing" xsi:nil="true" />
  <imkl:date>2001-12-17T09:30:47Z</imkl:date>
  <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm">30</imkl:accuracy>
</imkl:verticalPositionSurvey>
```

12.4 dieptePeil

Replace each `imkl:dieptePeil` element with either an `imkl:depth` or `imkl:verticalPosition` element. The `imkl:depth` element must be used for *RelatieveDiepte* objects. The `imkl:verticalPosition` must be used for *TAWDiepte* objects as this element represents a TAW/DNG level. Make sure the `srsName` and `srsDimension` attributes are present as shown in the example below.

Example IMKL 2.3

```
<imkl:dieptePeil uom="urn:ogc:def:uom:OGC::mm">100</imkl:dieptePeil>
```

Example of depth in IMKL 3:

```
<imkl:depth uom="urn:ogc:def:uom:OGC::cm">100</imkl:depth>
```

Example of verticalPosition in IMKL 3:

```
<imkl:verticalPosition
   srsName="http://spatialreference.org/ref/epsg/5710/"
   srsDimension="1">21.65
</imkl:verticalPosition>
```

12.5 ligging

Replace each `imkl:ligging` element with an `imkl:location` element. Only `imkl:CoverageDetail` objects can have an `imkl:location` element.

Example IMKL 2.3

```
<imkl:ligging>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/31370/">
    <gml:posList>...</gml:posList>
  </gml:LineString>
</imkl:ligging>
```

Example IMKL 3

```
<imkl:location>
  <gml:LineString srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:posList>...</gml:posList>
  </gml:LineString>
</imkl:location>
```

12.6 heeftKabelOfLeiding, heeftLeidingElement, heeftContainerLeidingElement and heeftKabelEnLeidingContainer

Replace each `imkl:heeftKabelOfLeiding`, `imkl:heeftLeidingElement`, `imkl:heeftContainerLeidingElement` and `imkl:heeftKabelEnLeidingContainer` element with an `imkl:on` element.

Example IMKL 2.3

```
<imkl:heeftLeidingElement
  xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Appurtenance/electricitycom-be:001" />
```

Example IMKL 3

```
<imkl:on
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:001" />
```

12.7 heeftUtilityNetwork

Remove the `imkl:heeftUtilityNetwork` element within each `imkl:DepthDetail` and `imkl:CoverageDetail` object.

12.8 referenceSurface

Every `imkl:DepthDetail`, `imkl:CoverageDetail` and `imkl:StandardCoverageDetail` object must have an `imkl:referenceSurface` element. Add this element including the `imkl:referenceSurfaceType` element as shown in the example.

Example IMKL 3

```
<imkl:referenceSurface>
  <imkl:referenceSurfaceType xlink:href="https://vocab.belgif.be/auth/IMKL-
ReferenceSurfaceTypeValue/surfaceLevel" />
</imkl:referenceSurface>
```

12.9 maaiveldPeil and datumOpmetingMaaiveldPeil

Replace each `imkl:maaiveldPeil` element with an `imkl:verticalPosition` element within the `imkl:referenceSurface` element (section 12.8). The value of the `imkl:maaiveldPeil` element must be converted into a TAW/DNG level in m. The accuracy that was specified via the codelist value in the `imkl:diepteNauwkeurigheid` element can be used as the value for the `imkl:accuracy` element within the `imkl:verticalPositionSurvey` element.

If an `imkl:datumOpmetingMaaiveldPeil` element is present, add an `imkl:verticalPositionSurvey` element to the `imkl:referenceSurface` element (section 12.8). The date that was specified in the `imkl:datumOpmetingMaaiveldPeil` element can be used as the value for the `imkl:date` element within this `imkl:verticalPositionSurvey` element. The `imkl:verticalPositionSurvey` element must have a `method` and `accuracy` element, but these elements can be nil (as shown in the example).

Example IMKL 2.3

```
<imkl:maaiveldPeil uom="urn:ogc:def:uom:OGC::cm">2202</imkl:maaiveldPeil>
<imkl:datumOpmetingMaaiveldPeil>2001-12-17T09:30:47Z</imkl:datumOpmetingMaaiveldPeil>
```

Example IMKL 3

```
<imkl:referenceSurface>
  <imkl:referenceSurfaceType xlink:href="https://vocab.belgif.be/auth/IMKL-
ReferenceSurfaceTypeValue/surfaceLevel" />
  <imkl:verticalPosition srsName="http://spatialreference.org/ref/epsg/5710/"
    srsDimension="1">22.02</imkl:verticalPosition>
  <imkl:verticalPositionSurvey>
    <imkl:method nilReason="unknown" xsi:nil="true" />
    <imkl:date>2001-12-17T09:30:47Z</imkl:date>
    <imkl:accuracy uom="urn:ogc:def:uom:OGC::cm" nilReason="unknown"
xsi:nil="true"></imkl:accuracy>
  </imkl:verticalPositionSurvey>
</imkl:referenceSurface>
```

12.10 standaardDekking

A *RelatieveDiepte* object that is used as *standaardDekking* of a *UtilityNetwork* must be transformed into a *StandardCoverageDetail* object. To do this, replace each `imkl:RelatieveDiepte` object that is used as *standaardDekking* with an `imkl:StandardCoverageDetail` object.

Because of this change, the object can only be used as standard coverage and cannot be linked to specific utility network elements anymore. If the object was used both as *standaardDekking* of a *UtilityNetwork* and as *dekking* of an element, the object must be duplicated. Only the copy that will be used for the *standaardDekking* must be replaced with an `imkl:StandardCoverageDetail` object.

Example IMKL 2.3

```
<gml:featureMember>
  <imkl:RelatieveDiepte>
    ...
  </imkl:RelatieveDiepte >
</gml:featureMember>
```

Example IMKL 3

```
<gml:featureMember>
  <imkl:StandardCoverageDetail>
    ...
  </imkl:StandardCoverageDetail>
</gml:featureMember>
```

13 ExtraPlan

13.1 Introduction

This chapter covers the changes specific to the *ExtraPlan* object.

13.2 extraPlanType

Replace each `imkl:extraPlanType` element with an `imkl:documentType` element.

Example IMKL 2.3

```
<imkl:extraPlanType
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/ExtraPlanTypeValue/detailplan" />
```

Example IMKL 3

```
<imkl:documentType xlink:href="https://vocab.belgif.be/auth/IMKL-
DocumentTypeValue/detailedPlan" />
```

13.3 bestandLocatie

Replace each `imkl:bestandLocatie` element with an `imkl:documentLocation` element.

Example IMKL 2.3

```
<imkl:bestandLocatie>extraplan1.png</imkl:bestandLocatie>
```

Example IMKL 3

```
<imkl:documentLocation>extraplan1.png</imkl:documentLocation>
```

13.4 bestandMediaType

Replace each `imkl:bestandMediaType` element with an `imkl:documentMediaType` element.

Example IMKL 2.3

```
<imkl:bestandMediaType
  xlink:href="http://mir.agiv.be/cl/IMKL/v2/BestandMediaTypeValue/PNG" />
```

Example IMKL 3

```
<imkl:documentMediaType
  xlink:href="https://vocab.belgif.be/auth/IMKL-DocumentMediaTypeValue/PNG" />
```

13.5 ligging

Replace each `imkl:ligging` element with an `imkl:location` element.

Example IMKL 2.3

```
<imkl:ligging>
  <gml:Polygon
    srsName="http://www.opengis.net/def/crs/EPSG/0/31370/">
    <gml:exterior>
      <gml:LinearRing>
        <gml:posList>...</gml:posList>
      </gml:LinearRing>
    </gml:exterior>
  </gml:Polygon>
</imkl:ligging>
```

Example IMKL 3

```
<imkl:geometry>
  <gml:Polygon srsName="http://spatialreference.org/ref/epsg/3812/" srsDimension="2">
    <gml:exterior>
      <gml:LinearRing>
        <gml:posList>...</gml:posList>
      </gml:LinearRing>
    </gml:exterior>
  </gml:Polygon>
</imkl:geometry>
```

13.6 bestandIdentificator

Remove the `imkl:bestandIdentificator` element within each `imkl:ExtraPlan` object.

13.7 opKabelEnLeidingen, opLeidingElementen, opKabelEnLeidingContainers and opContainerLeidingElementen

Replace each `imkl:opKabelEnLeidingen`, `imkl:opLeidingElementen`, `imkl:opKabelEnLeidingContainers` and `imkl:opContainerLeidingElementen` element with an `imkl:refersTo` element.

In IMKL 3 an ExtraPlan must be linked to at least one other network element. This means there should be at least 1 `imkl:refersTo` element.

Example IMKL 2.3

```
<imkl:opKabelEnLeidingen
  xlink:href="http://mir.agiv.be/data/IMKL/v2.2/Appurtenance/electricitycom-be:001" />
```

Example IMKL 3

```
<imkl:refersTo
  xlink:href="https://vocab.belgif.be/ns/imkl/3.0/Appurtenance/electricitycom-be:001" />
```