Environmental Noise Directive Reporting guidelines

DF4_8 Strategic noise maps

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Data reported by the United Kingdom are included in all analyses and assessments contained herein, unless otherwise indicated.

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HISTORY OF CHANGES

Version	List f changes
December 2021	Issue first version
July 2022	Updated information in relation to: - referenceLink: multiplicity is changed from 0 to many - new code list NoiseIndicatorIncludingAgglomerationValue is included for major sources in noise exposure data (DF4_8), used when reporting information for "mostExposedFacadeIncludingAgglomeration" New data set schema included: Submission Declaration Added information in relation to harvesting process: new attributes, new tables and how to import data from a service Decription of Technical acceptance workflow once the data is being released Information about reference datasets regarding NUTS and LAU
October 2022	Correction of the description of: - exposedArea type is Number-Decimal Updated information about the applicable codelists for the fields - noiseLevel - category
March 2023	Updated information in relation to: - Structure of dataflows and data schemas in Reportnet3: previously one combined dataflow is now divided into 4 dataflows - Submission Declaration: referred to a unique noise source Added information in relation to WorkflowLog table: information to support import of Geopackage files Added information in relation to new workflow to import and release data for strategic noise maps

Contents

Summary

The reporting guidelines are intended to support reporters that will be conducting the submission of data required under the Environmental Noise Directive. The document provides an overview to the data reporting and validation process in Reportnet 3. In addition to this, reporting examples are also provided. A key goal of this document is to ensure a common understanding among data providers working on the implementation of the Environmental Noise Directive. This document should further be of assistance to both thematic and IT experts.

Acknowledgements

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The report is the result of the work developed by EEA, ETC/ATNI, ETC/HE and the consultancy work to the EEA provided by the members of the consortia led by KU Leuven, namely Stefania Morrone (Epsilon Italia), Thorsten Reitz (wetransform) and Marc Olijslagers (KU Leuven).

1 Introduction

1.1 Purpose of this document

This document aims to provide detailed guidance on the practicalities and processes for reporting environmental noise data to Reportnet 3, the central hub from which all e-Reporting activities handled by the EEA with Eionet and other partners will be performed.

In this context, a user is assumed to be a representative of an EU Member State or other reporting country who is submitting relevant country-level noise data to Reportnet 3.

These reporting guidelines are intended to support reporting countries in providing high quality noise reports in an efficient manner following the new Implementing Decision on *Setting up a mandatory data repository and a mandatory digital information exchange mechanism according to Directive 2002/49/EC.*

Specifically, this document is focused on the reporting of DF4_8 Strategic Noise Map and covers :

- The legal basis of the END requirements addressed in the Implementing Decision on Setting up a mandatory data repository and a mandatory digital information exchange mechanism according to Directive 2002/49/EC
- The technical requirements for the data submission
- The structure of Reportnet 3 in relation to this dataflow
- The practicalities involved in reporting and submitting data using Reportnet 3

These reporting guidelines are intended to be a stand-alone document that contains all necessary information for reporting. However, other documents and video recordings may offer additional detail on certain aspects and are available in the webpage : https://www.eionet.europa.eu/reportnet/docs/noise.

1.2 The legal basis

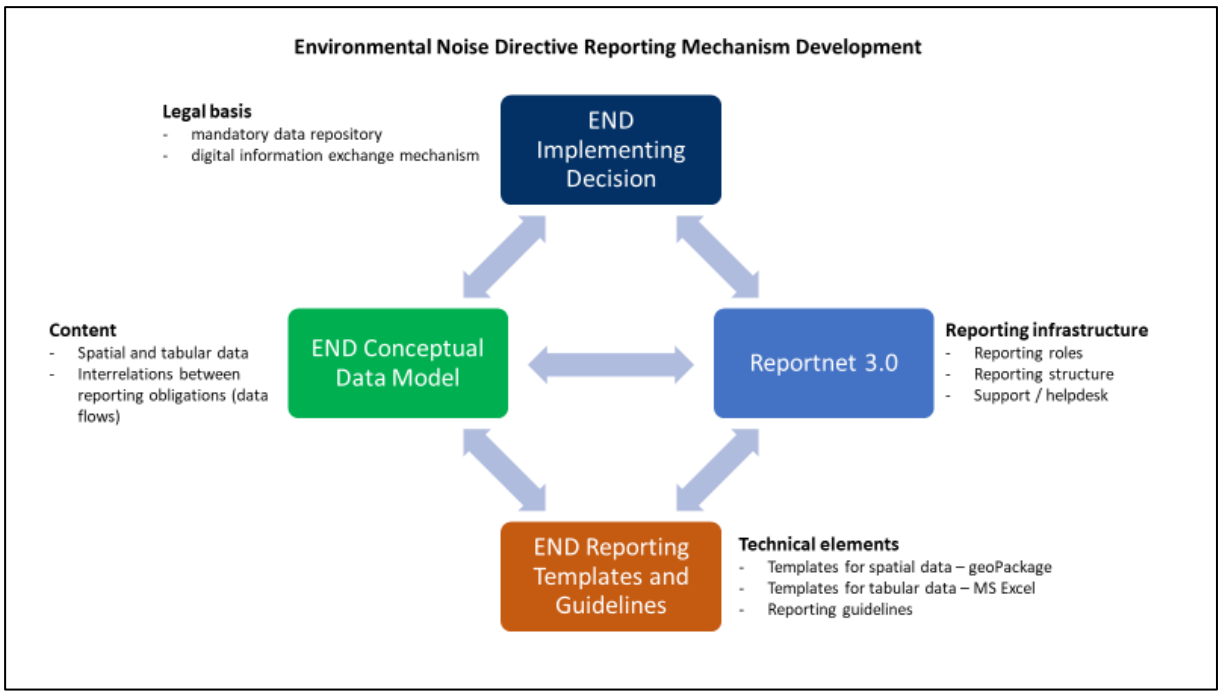
Reporting noise data under the Environmental Noise Directive (END) will occur in Reportnet 3 from 2022. The END reporting is defined in the Directive 2002/49/EC and the reporting requirements are further defined in the Commission Implementing Decision (EU) 2021/1967 of 11 November 2021 on Setting up a mandatory data repository and a mandatory digital information exchange mechanism according to Directive 2002/49/EC1. The current reporting obligations of the Environmental Noise Directive have been adapted to also fulfil the new INSPIRE directive which is based on the harmonisation and sharing of spatial data and infrastructures based on the 2019 regulation2 which amends different articles of the END. Firstly, the regulation obliges countries to produce noise maps and action plans according to the Inspire Directive and secondly, it obliges the EC and the EEA to develop a mandatory digital information exchange mechanism that countries have to use to report

[1] Commission Implementing Decision (EU) 2021/1967 of 11 November 2021 setting up a mandatory data repository and a mandatory digital information exchange mechanism in accordance with Directive 2002/49/EC of the European Parliament and of the Council (Text with EEA relevance) C/2021/7948 ELI: http://data.europa.eu/eli/dec_impl/2021/1967/oj

[2] Regulation (EU) 2019/1010 of the European Parliament and of the Council of 5 June 2019 on the alignment of reporting obligations in the field of legislation related to the environment, and amending Regulations (EC) No 166/2006 and (EU) No 995/2010 of the European Parliament and of the Council, Directives 2002/49/EC, 2004/35/EC, 2007/2/EC, 2009/147/EC and 2010/63/EU of the European Parliament and of the Council, Council Regulations (EC) No 338/97 and (EC) No 2173/2005, and Council Directive 86/278/EEC (Text with EEA relevance). ELI: http://data.europa.eu/eli/reg/2019/1010/oj

and share the data under the END directive. Therefore, the use of the Reportnet 3 platform and the use of data that is INSPIRE compliant will be mandatory for the reporting of data under the END. In order to support countries in their reporting obligations, we developed new templates and a new Reporting system that fulfils both the END and the INSPIRE requirements.

Figure 1.1. Overview on new noise reporting mechanism



1.3 Alignment with the INSPIRE Directive

The alignment between the Environmental Noise Directive and the INSPIRE Directive has been included throughout the development process of establishing the mandatory digital information exchange mechanism.

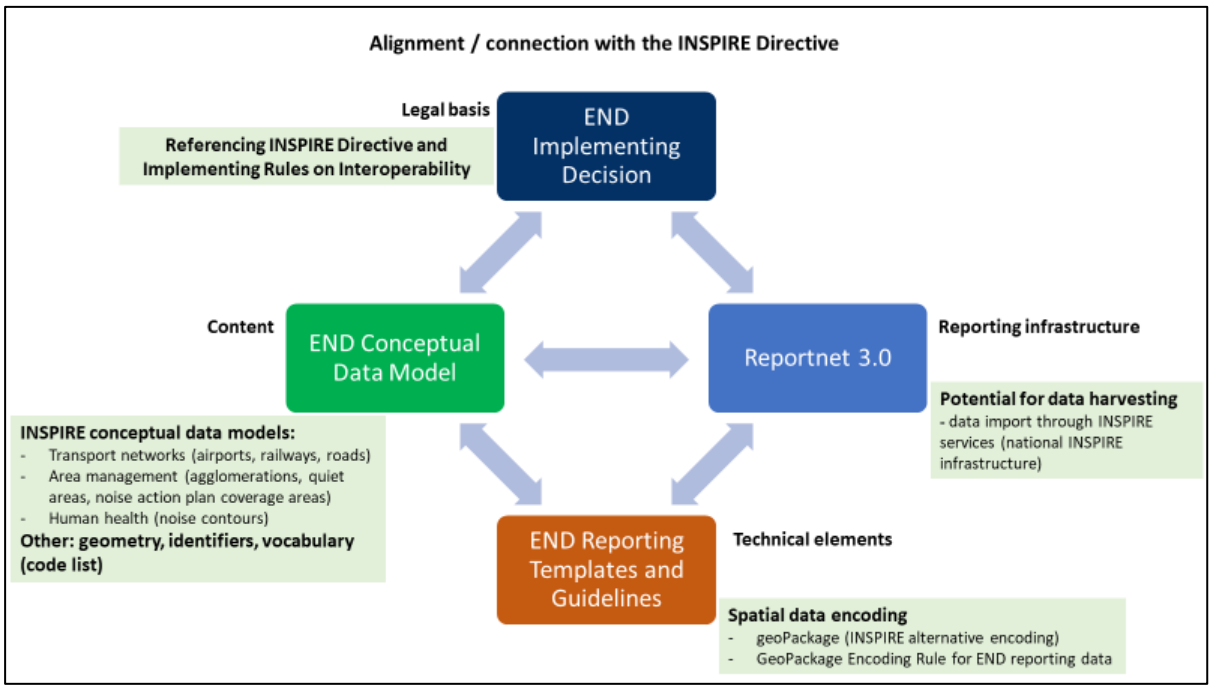
Based on the legal basis, explained in the section above (1.2), the END conceptual data model has been developed on the basis of the INSPIRE conceptual data models for spatial data themes by combining specific END reporting requirements and INSPIRE requirements.

Further on, the END conceptual data model has been used to develop the encoding guidelines for the END spatial data in the GeoPackage file format. The encoding guidelines are based on the INSPIRE work on simplification and alternative encodings following the OGC standard on Geopackage[3]. Development of the INSPIRE Good Practice for GeoPackage is supported by the INSPIRE ad-hoc Working Group on GeoPackage[4] which joins interests of geospatial communities for GeoPackage implementation, and considers the END reported data in GeoPackage as one of the implementation examples.

The flexibility of the reporting infrastructure Reportnet 3 allows providing reported data into infrastructure in different ways, from importing files, programmatically by configuring the Reportnet 3 API, or in the future by harvesting INSPIRE services for spatial data.

[3] https://www.geopackage.org/
[4] https://github.com/INSPIRE-MIF/gp-geopackage-encodings

Figure 1.2. Overview on the integration of INSPIRE directive into noise reporting obligations



2 Understanding the new END data model

The structure and details of the data model are described in the *Data model documentation* and can be accessed at https://www.eionet.europa.eu/reportnet/docs/noise/data-model-documentation.

In order to develop the data model for Strategic Noise Map (DF4_8) we considered the following:

- the END requirements;
- the INSPIRE requirements for spatial data; and
- additional or optional data that links the spatial data to reference data set(s) available in the INSPIRE infrastructure.

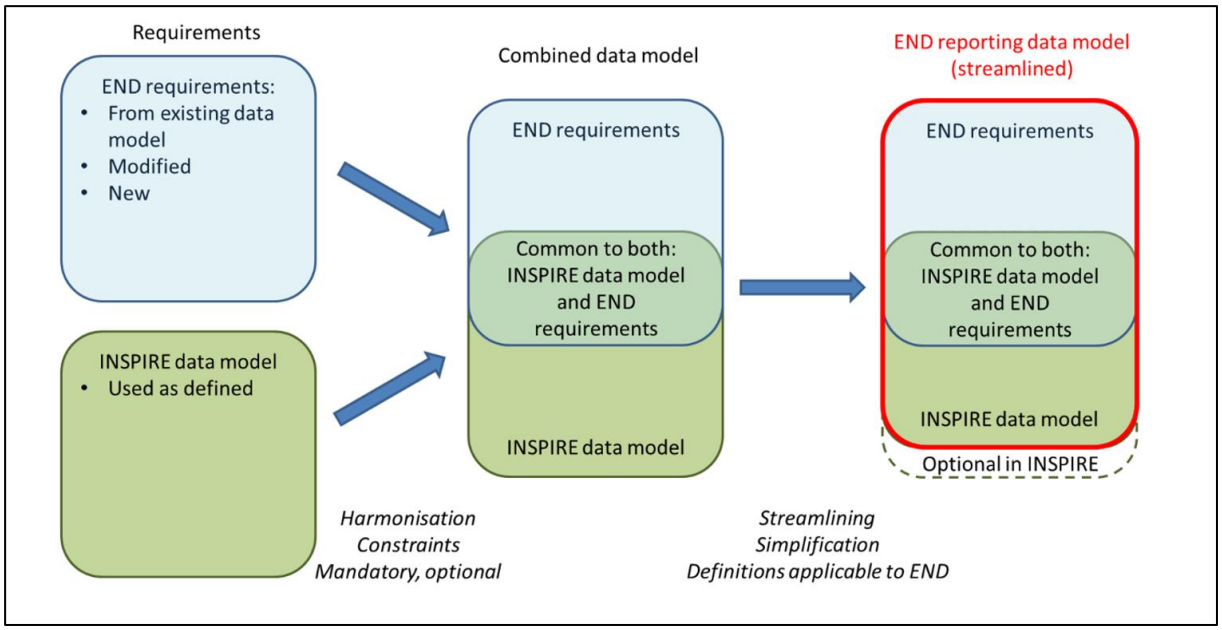
The streamlined data model combines and optimises all the input form the END and INSPIRE into one data model.

The data model described in the data model documentation is used for several interrelated purposes:

- It is used for presenting the content of the noise data that needs to be reported.
- It is used to develop the encoding templates in spatial file format GeoPackage.
- It is used to design the schemas in Reportnet 3 that will be used for data reporting.

The relevant sections of the document for the reporting of dataflow DF4_8 are section 13 and 14.

Figure 2.1. Streamlined data model of END and the INSPIRE requirements



3 Understanding the basic principles of Reportnet 3 from a reporter point of view

The Regulation (EU) 2019/1010 on the alignment of reporting obligations in the field of legislation related to the environment and the implementing decision on setting up a mandatory data repository and a mandatory digital information exchange mechanism according to Directive 2002/49/EC, specifies that a digital information exchange mechanism should be used for reporting on all dimensions of the Environmental Noise Directive (END) by Member States.

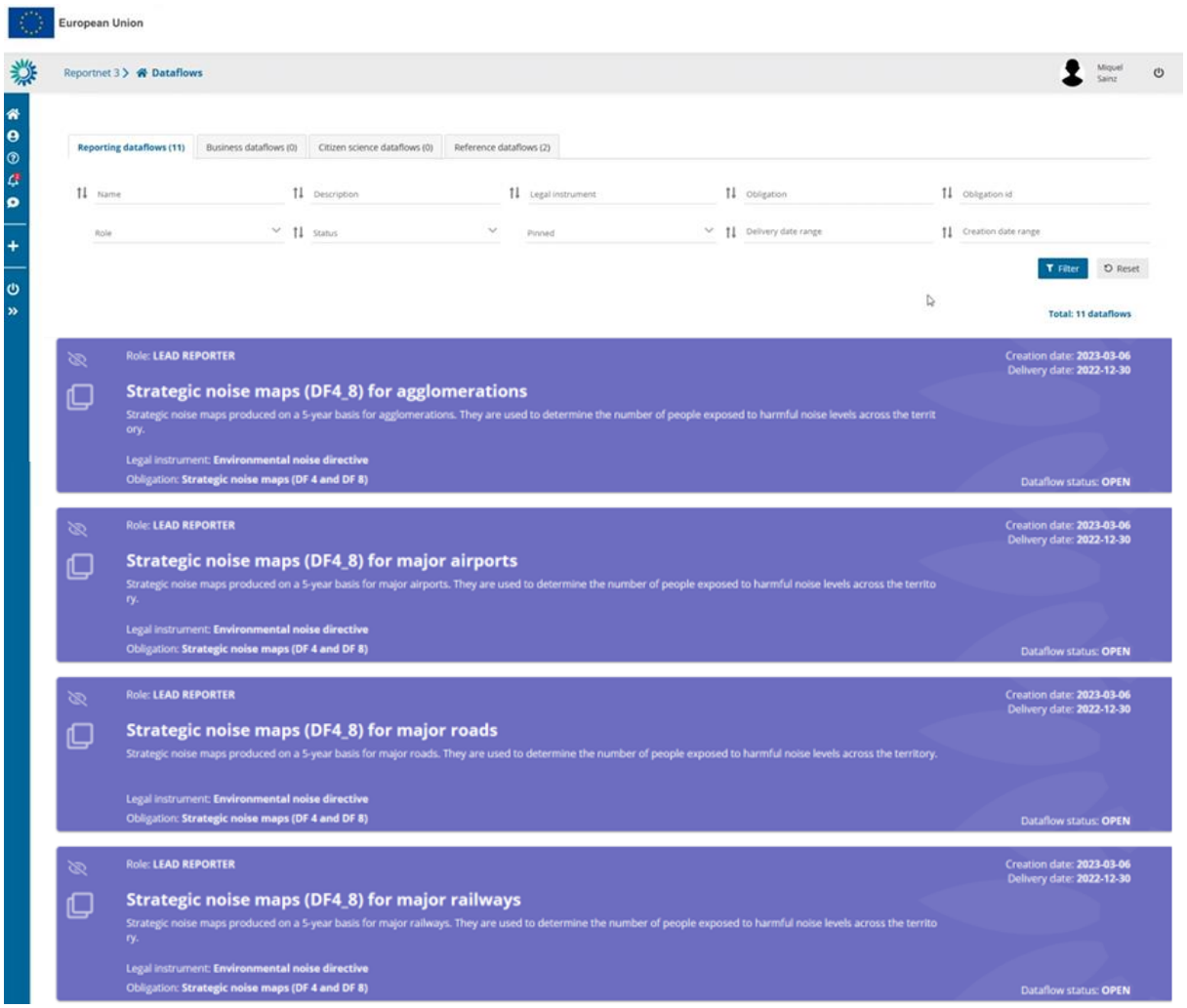
A key element of the new reporting system, Reportnet 3 is being developed by the European Environment Agency. Reportnet 3 (https://reportnet.europa.eu/) is the next generation platform for reporting environmental data to the EEA and also host several reporting tasks for the European Commission. Reportnet 3 is a centralized e-Reporting platform, aiming at simplifying and streamlining the data flow steps across all environmental domains. The system acts as a one-stop-shop for all involved stakeholders.

Important links

- Reportnet 3 reporters' manual : https://www.eionet.europa.eu/reportnet/docs/prod/reporter_howto_reportnet3
- Training videos: https://www.eionet.europa.eu/reportnet/docs/noise/videos

Once the reporter is successfully logged-in in Reportnet 3, the dataflows assigned to the reporter will show up as illustrated in Figure 3.1. In Reportnet 3, the reporter is able to see the list of dataflows along with information related to the role, the delivery date, the dataflow name, the dataflow description, the associated obligation and instrument, the status of the reporting obligation.

Figure 3.1. Dataflows overview: main page and list of dataflows assigned to the reporter



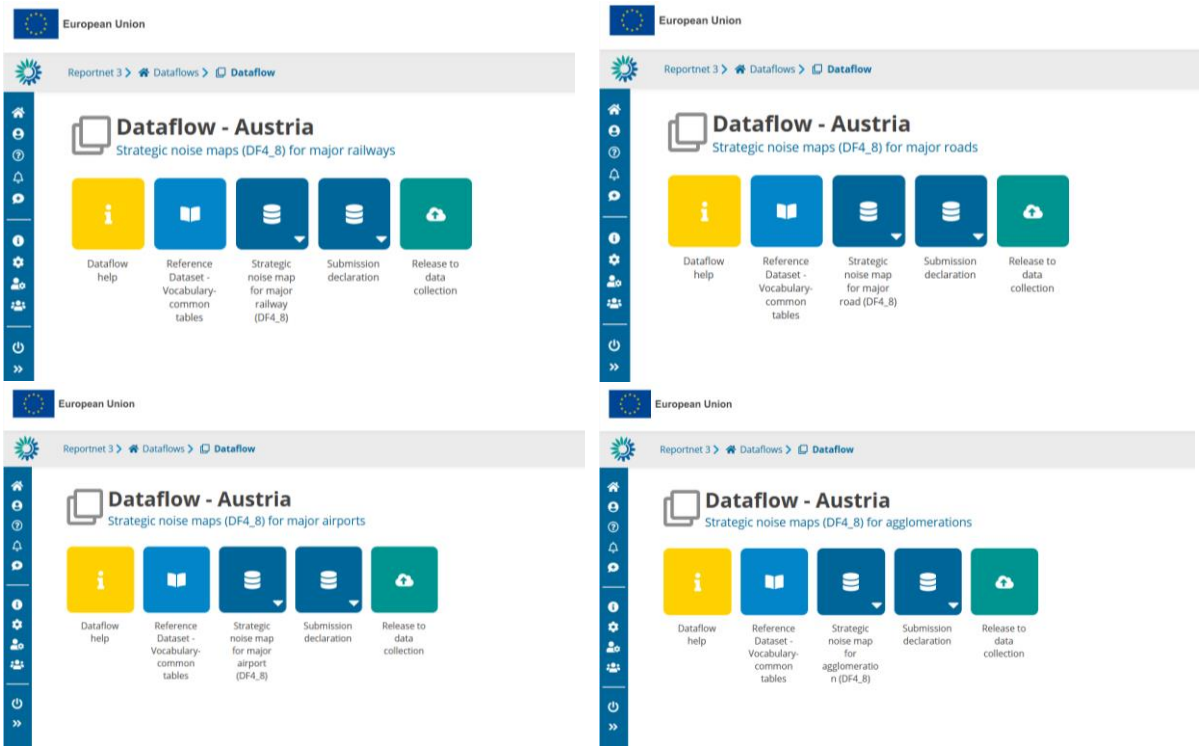
The Noise Directive reporting data flows will typically include several types of dataset schemas:

- Dataflow help includes additional support information, such as templates, UML diagrams, reporting guidelines and reporting videos, as well as the definition of the complete data schema, attributes and quality controls implemented in the dataflow.
- Reference Dataset Vocabulary – common tables include a set of applicable code lists used in the reporting data flow. The code lists can be seen in the Eionet Data Dictionary Vocabulary (https://dd.eionet.europa.eu/vocabularies) in the following folders: noise, inspire and common.
- A set of reporting dataset schemas.

More information will be encountered in Reportnet guidelines (https://www.eionet.europa.eu/reportnet/docs/prod/reporter_howto_reportnet3).

In order to exemplify how to submit data, Austria has been taken as an example throughout this reporting guidelines.
Figure 3.2 shows more specifically the reporting windows of the dataflow Strategic Noise maps (DF4_8) for agglomerations, major roads, major railways and major airports.

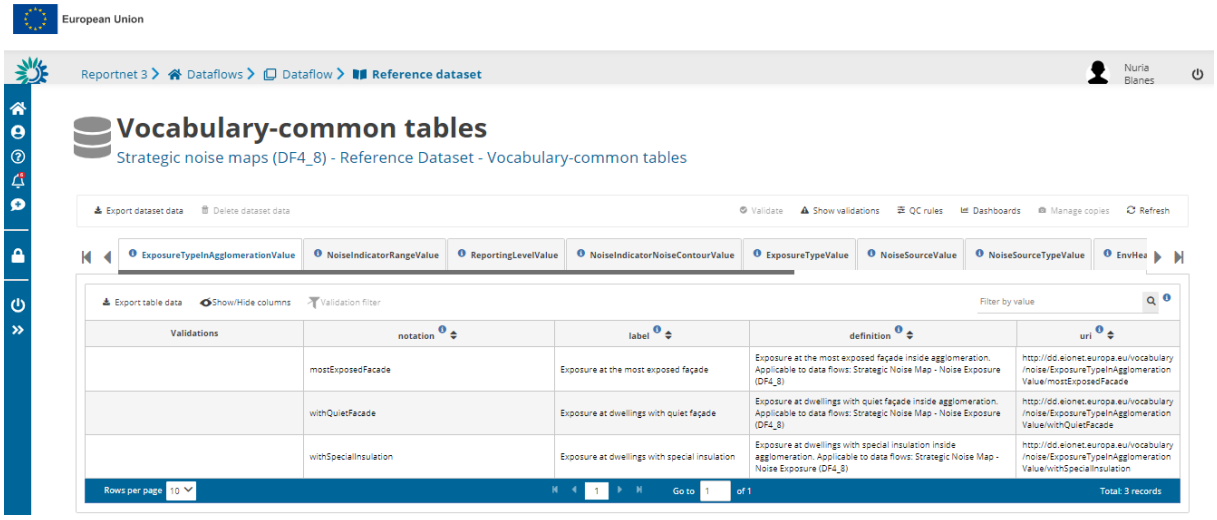
Figure 3.2. Reportnet – Reporter view: general dataflow structure for the END Strategic Noise Map (DF4_8) reporting for agglomerations, major roads, major railways and major airports



Each dataflow is organised by data schemas. The reporting dataflow *Strategic Noise Map (DF4_8)* includes the following dataset schemas (the same structure for all 4 dataflows):

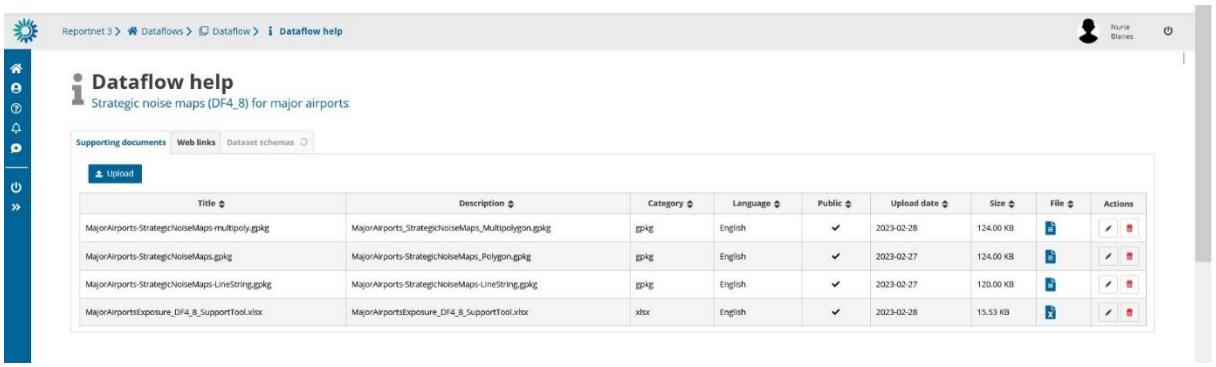
- The thematic dataset schema corresponding to the source to be reported (i.e. strategic noise map for major roads, strategic noise map for major railways, strategic noise map for major airports and strategic noise map for agglomerations).
- The dataset schema called “Submission declaration”, used to provide information on uncomplete reporting or information on the changes from previous submissions and the reasons for submitting updated data after the deadline.
- There is another data schema called *Reference dataset - Vocabulary – Common tables*. This is a read-only schema and contains the different code list that are applicable to the dataflow as well as several tables that are used for data validation (see Figure 3.3).

Figure 3.3. Reference dataset - Vocabulary – Common tables for Strategic Noise Maps (DF4_8) for all 4 dataflows



Finally, the *Dataflow Help* contains relevant help documents, including the GeoPackage templates, the links to all supporting materials, all the information on quality controls and validation rules, as well as the description of the different tables and attributes applicable to each dataflow (see example for Strategic noise maps corresponding to major airports in Figure 3.4). Dataflow help page is included in all other dataflows.

Figure 3.4. Dataflow help page: supporting documents tab, web links tab and dataset schemas tab



If the system doesn't react click refresh/reload page Refresh
If problems with Reportnet 3 persist please contact helpdesk@reportnet.europa.eu

3.1 Validation

The following level error types have been implemented in Reportnet 3:

- BLOCKER: Blocker messages indicate that the detected error will prevent data submission (data release is not possible).
- ERROR: Error messages indicate issues that clearly need corrective action by the data reporter.
- WARNING: Warning messages indicate issues that may be an error. Data reporters are expected to double-check relevant records.
- INFO: Informative message. Neutral or statistical feedback about the delivery, e.g. number of species reported.

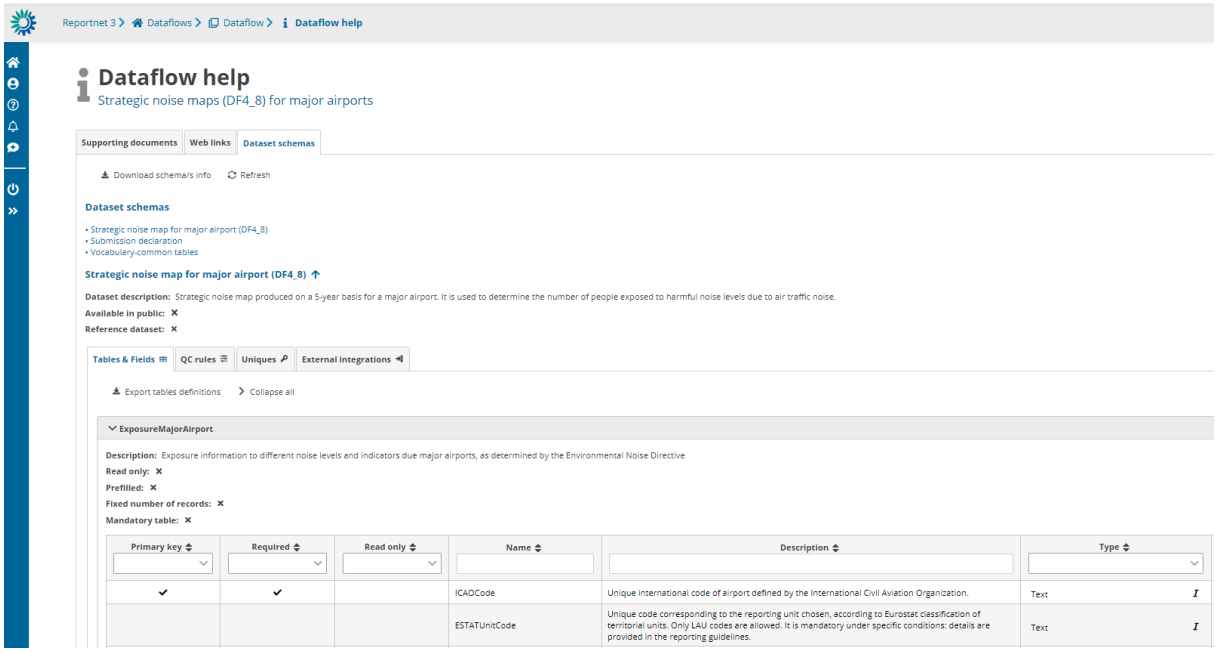
The applicable validations and error types into the different data schemas of the *Strategic Noise Maps (DF4_8)* dataflows are outlined in Table 3.1.

Table 3.1. Applicable validation levels in the different schemas of Strategic Noise Maps (DF4_8) dataflows

	Strategic noise map for agglomeration (DF4_8)	**Strategic noise map for major airport (DF4_8)**	**Strategic noise map for major railway (DF4_8)**	**Strategic noise map for major road (DF4_8)**
Applicable validation level	Blocker Error Warning Info	Blocker Error Warning Info	Blocker Error Warning Info	Blocker Error Warning Info

The validations (quality control - QC) are documented in the Reportnet 3 Data Flow Help schema in each dataflow (see example for Strategic noise maps corresponding to major airports in Figure 3.5).

Figure 3.5. Dataflow help – Details of the data schemas and applied validations



Additionally, a copy of validations applicable to the Strategic Noise Maps (DF4_8) dataflows is published in the Noise Eionet Portal for public consideration. Please note that the original information is always in the Reportnet 3 platform.

The detailed validations applicable to the Strategic Noise Maps (DF4_8) dataflows can be consulted in: https://www.eionet.europa.eu/reportnet/docs/noise/validation-rules/.

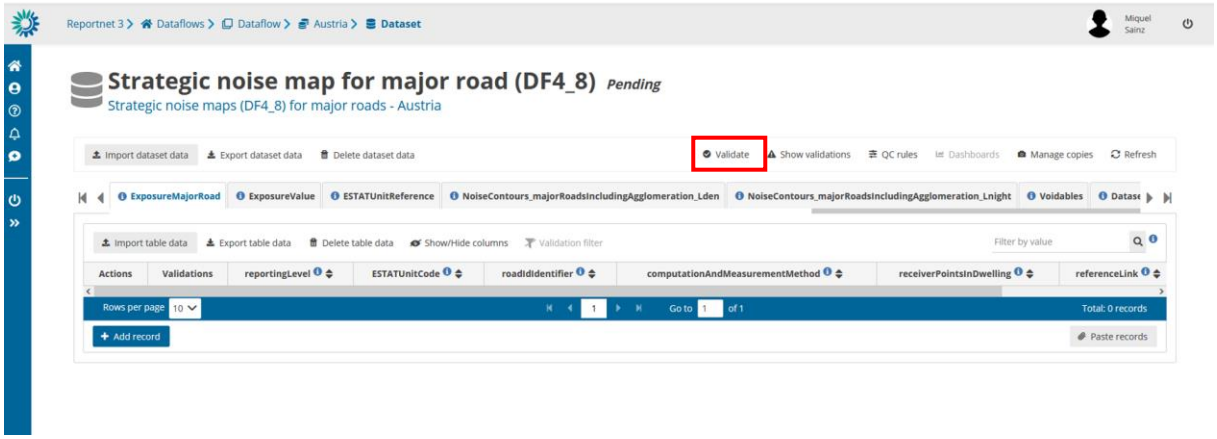
They consist primarily in two different sets of validations: the first one relates solely to DF4_8 data submitted and coherence with data being reported (e.g. same entities between the different tables) and the second set refers to the validation of entities reported against the noise sources (DF1_5) being submitted, checking the following:

- Existence and coherence of the unique codes provided per agglomerations and major airports
- Existence and coherence of the noise sources inside agglomerations declared in DF1_5 and the corresponding noise exposure information provided

- Existence of the territorial administrative units (LAU or NUTS codes) provided for major roads and major railways strategic noise maps reporting
- Existence of the LAU codes provided for agglomerations and major airports for strategic noise maps reporting on voluntary basis
- Existence and coherence with roadIdIdentifier and railIdIdentifier in major roads and major railways respectively, if provided.

Validations need to be run for each data schema. In each schema, data should be validated by clicking on “Validate” (Figure 3.6). After importing data or after validating data it is important to press "Refresh" to display the latest update.

Figure 3.6. Validation of the data being loaded



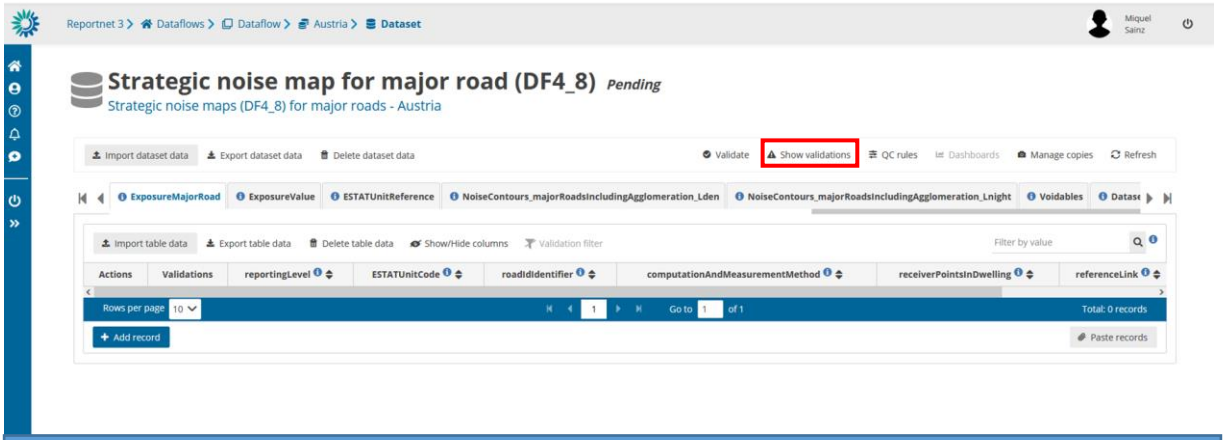
Once the validation has been performed a notification will pop up on the top-right hand of the screen. In order to see if there are any problems in the data submitted, it is needed to click “Refresh”, and (new) errors, if any, will be displayed at four types:

- Field error
- Record error
- Table error
- Dataset error

The column “*Validations*” shows for each record which level of errors at field and record level can be found.

Finally, the button “*Show validations*” in the dataset menu (Figure 3.7) shows the list of all errors in the dataset, displayed in a summary table grouped by a particular error type (more information can be found in https://www.eionet.europa.eu/reportnet/docs/prod/reporter_howto_reportnet3).

Figure 3.7. Show validations function in the dataset menu

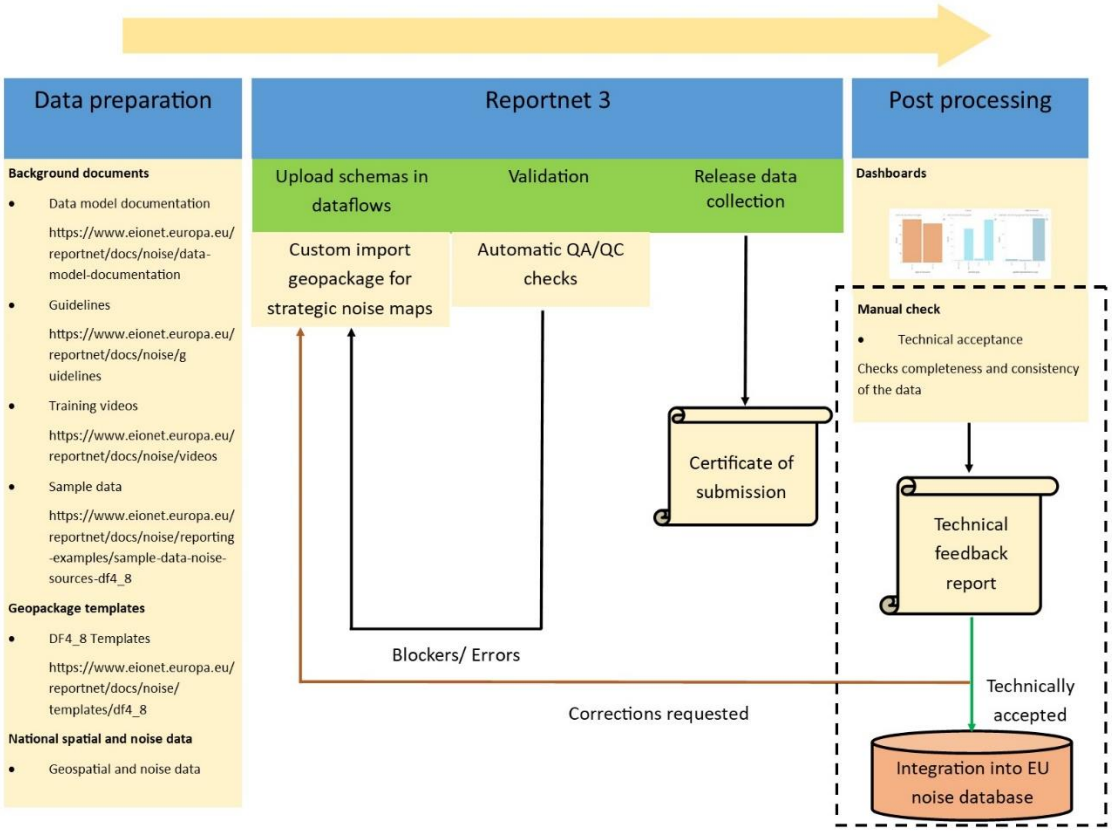


A BLOCKER in the dataflow will prevent the reporter to officially submit any data in Reportnet 3.

3.2 Technical acceptance of the data delivery

To ensure high quality of the noise data submitted under the END, specific quality checks will be performed after the countries submit the data in Reportnet 3. This dataflow has been configured as "manual acceptance" and its status will appear as "Pending" until the delivery has been technically accepted by the EEA-ETC/HE team. The final deliveries will be reviewed to identify any errors that could compromise the quality of the data. The countries will receive feedback document stating if the delivery is technically accepted or if a correction is requested. If a correction is requested the reporter will have to resubmit the data until it is technically accepted. Only deliveries that are technically accepted will be integrated into the EU noise database. Figure 3.8 presents an overview of the process.

Figure 3.8. Overview of the submission process of DF4_8



The quality controls performed after the submission will check coherence, completeness and consistency of the data. Completeness checks ensure that all relevant noise information as described in the END are included. The consistency checks ensure that the reported data comply with logical rules of data structure, attribution and relationships. Coherence checks assess positional accuracy of the spatial data as well as whether the reported data are in line with other dataflows and are credible. The main steps between the initial submission of information by countries and the publication of the EU noise database are described in Table 3.2. The effective implementation of the procedure requires efficient responses from all parties at each step and therefore the timeline is only indicative.

Table 3.2. Main steps between the initial submission of information by countries and the publication of the EU noise database

Before 31 December	Preparation of the submission Internal quality checks and via validation on Reportnet	MS and EEA countries
By 31 December	Release submission via Reportnet	MS and EEA countries
Between 1 week and 4 weeks after the submission of the data (*)	Provision of technical feedback report to reporters	EEA and ETC/HE
Maximum of 4 weeks after feedback is received	If required by feedback report: Adjustment of the reported data via Reportnet Resubmission	MS and EEA countries

(*) This applies after the develoment of the Technical Acceptance framework: longer timeframe is expected for 2023

Table 3.3 shows an overview of the main checks to be performed after the submission of the dataflow.

Table 3.3. Overview of main checks per END noise source

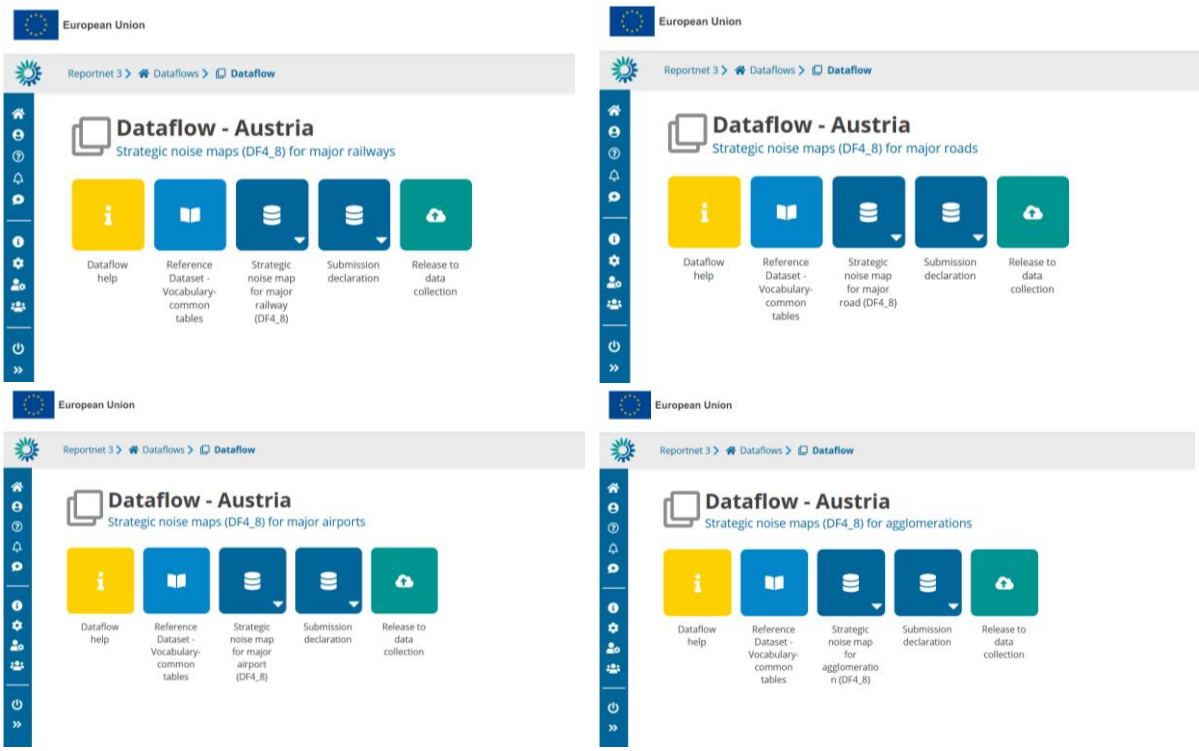
Agglomerations	- Missing agglomerations - Missing noise sources in agglomerations - Spatial checks for checking if contour maps are inside the agglomeration polygon - Spatial checks to detect overlapping polygons - Missing exposure data and noise contour bands - Comparison between total number of inhabitants and people exposed - Comparison between number of people exposed to major sources and to source inside agglomeration
Major airports	- Missing ICAO - Spatial checks for checking if contour maps cover airport point - Spatial checks to detect overlapping polygons - Missing exposure data and noise contour bands - Check that area exposed, number of people including agglomeration and values are coherent
Major roads / major railways	- Missing LAU/NUTS - Spatial checks for checking if contour maps cover line segment - Spatial checks to detect overlapping polygons - Missing exposure data and noise contour bands - Check that area exposed, number of people including agglomeration and values are coherent

4 Key concepts in relation to Strategic Noise Maps (DF4_8) dataflows

4.1 Reporting data schemas structure for Strategic Noise Maps (DF4_8) dataflows

The data schemas developed in Reportnet 3 are based on the specific UML diagrams illustrated in the *END Data model documentation* (https://www.eionet.europa.eu/reportnet/docs/noise/data-model-documentation). The GeoPackage templates follow the same schemas and principles as the UML diagrams.
The information to be provided for Strategic Noise maps (DF4_8) have been divided into 4 dataflows: Strategic noise maps (DF4_8) for major roads, Strategic noise maps (DF4_8) for major railways, Strategic noise maps (DF4_8) for major airports and Strategic noise maps (DF4_8) for agglomerations.

Figure 4.1. Data schemas for Strategic Noise Maps (DF4_8) delivery in Reportnet 3



4.2 Identifiers

4.2.1 Thematic identifiers

The concept of thematic identifiers is re-used in the END reporting scope from the INSPIRE data specifications. Thematic identifiers may have been established to meet data exchange requirements within thematic domains, e.g. different reporting obligations at International, European or national levels, and/or internal data maintenance requirements. A property that is considered a thematic identifier will use data type **ThematicIdentifier** which is composed of two mandatory parts:

- **identifier**: Unique identifier used to identify the spatial object within the specified identification scheme;
- **identifierScheme**: Identifier defining the scheme used to assign the identifier.

This concept of thematic identifiers and data type ThematicIdentifier are re-used across the complete END data model to uniquely identify spatial objects and all other objects – entities, e.g.: major road

segments, major railway segments, agglomerations, competent authorities, quiet areas, reports of limit values, noise control programmes and noise action plans. The internationally defined ICAO code for airports is also used as a thematic identifier.

The guidelines ”Proposal on how to build the unique thematic identifiers for the new END data model” provides detailed information and coding system to create thematic identifiers. (See more information in: https://www.eionet.europa.eu/reportnet/docs/noise/guidelines/codes_formation_doc.pdf/view).

4.2.2 Providing thematic identifiers in the END reported data

Identifier scheme EUENDCode

The unique identifier scheme with the name EUENDCode is defined for the END reporting scope. It is published in the Eionet Data Dictionary as http://dd.eionet.europa.eu/vocabulary/inspire/IdentifierScheme/EUENDCode.

It is used across the END reporting data flows and reporting data as the default value and it is stored (pre-filled) in the table DatasetDefaultProperties. This table is included in the pre-defined data templates in GeoPackage (spatial data) and in the Reportnet 3 data schemas.

To make data preparation easier, the table DatasetDefaultProperties is pre-filled with all applicable default values in the reporting data flow, therefore it doesn’t require any changes.

4.2.3 Re-using object identifiers defined in data flow DF1_5 for data flows DF4_8

Data flows DF4_8 re-uses object identifiers of agglomerations and major airports, and optionally major roads and major railways that have been defined in the data flow DF1_5.
The only value required to be provided for each object is ”identifier”.
Identifier will be provided in a specific field defined in each data flow and Reportnet 3 data schema. For example, in the END data flow DF4_8, the reporting of exposure data will include object identifiers in the following way:

- The field agglomerationIdIdentifier in the data schema Strategic noise map for agglomeration (in the dataflow Strategic noise maps (DF4_8) for agglomerations) will be used for identifier of an agglomeration;
- Optionally, road identifiers can be provided. The field roadIdIdentifier in the data schema Strategic noise map for major road (in the dataflow Strategic noise maps (DF4_8) for major roads) will be used for identifier of a road segment;
- Optionally, rail identifiers can be provided. The field railIdIdentifier in the data schema Strategic noise map for major railway (in the dataflow Strategic noise maps (DF4_8) for major railways) will be used for identifier of a railway segment;
- The field ICAOCode in the data schema Strategic noise map for major airport (in the dataflow Strategic noise maps (DF4_8) for major airports) will be used for identifier of an airport (ICAO code to be provided).

4.2.4 INSPIRE identifiers

The INSPIRE data model used for the conceptual data model of noise contours (i.e. revised INSPIRE data model for spatial object type EnvHealthDeterminantMeasure) does not include external unique object identifiers of spatial objects. Thus, those INSPIRE identifiers are not included in the reporting of strategic noise maps – noise contours.

4.3 Spatial data

4.3.1 General recommendations for spatial data sets

For the END reporting scope, the following recommendations are provided for spatial data sets of strategic noise maps – noise contours:

- Use of coordinate reference system ETRS89-extended / Lambert azimuthal equal-area LAEA (EPSG:3035) (one of the coordinate reference systems defined in the INSPIRE specifications that facilitates creation of the pan-European spatial data sets);
- Use of coordinate reference system World Geodetic System 1984 (EPSG: 4326) for territories outside of the continental Europe geographical scope. The WGS84 is linked to the ITRS that is in line with the INSPIRE specifications on the datum of the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS in areas that are outside the geographical scope of ETRS89;
- Spatial data sets should be provided accordingly to the pre-defined templates in the file format GeoPackage (INSPIRE good practice for GeoPackage is in development to become INSPIRE alternative encoding to GML);
- The predefined templates in GeoPackage include geometry (i.e. (multi)line or (multi)polygon) and coordinate reference system information;
- The predefined templates in GeoPackage ensure the highest compatibility with the Reportnet 3 data schemas, therefore those templates shall not be modified.

4.3.2 From conceptual data model (UML) to templates in GeoPackage

The templates for spatial data in file format GeoPackage have been developed from the conceptual data models in UML (from UML streamlined view) by using a set of model transformation rules created for the END reporting scope on the basis of outcomes of the development of INSPIRE alternative encodings. More information is available in the document "GeoPackage Encoding Rule for Environmental Noise Directive Reporting Data".

The GeoPackage templates are aligned with the Reportnet 3 data schemas (names, types, cardinality, use of code lists) to facilitate reporting in the Reportnet 3 infrastructure. This section provides generic information of the GeoPackage template structure and the next chapters provide details of the Reportnet 3 data schemas.

The GeoPackage templates combine spatial and tabular data together, thus include noise contours and exposure data. The conceptual data models (presented in the UML diagrams) for data flow DF4_8 are transformed into the following typical tables in the GeoPackage template :

- Tables related to noise contours:
  - Primary (or core) tables containing spatial data of noise contour maps organised per noise indicator and noise source
  - Voidables table (of the spatial data)
- Tables related to exposure data
  - Common data related to exposure data
  - Detailed exposure data
  - Information on reference data sets of NUTS or LAU
- Tables that include information related to noise contours and exposure data (common tables):
  - DatasetDefaultProperties
  - CodelistProperties.

The **Primary (or core) tables containing spatial data** includes the essential properties of spatial data (slim primary table).

The table **Voidables** is a companion table to the primary tables in relation to spatial data of noise contours. It includes voidable properties which values can be assigned for individual spatial objects instead of default values. The values in the Voidables table prevail over the pre-defined default values. If default values are applicable to all spatial objects in the data set, the Voidables table can remain empty.

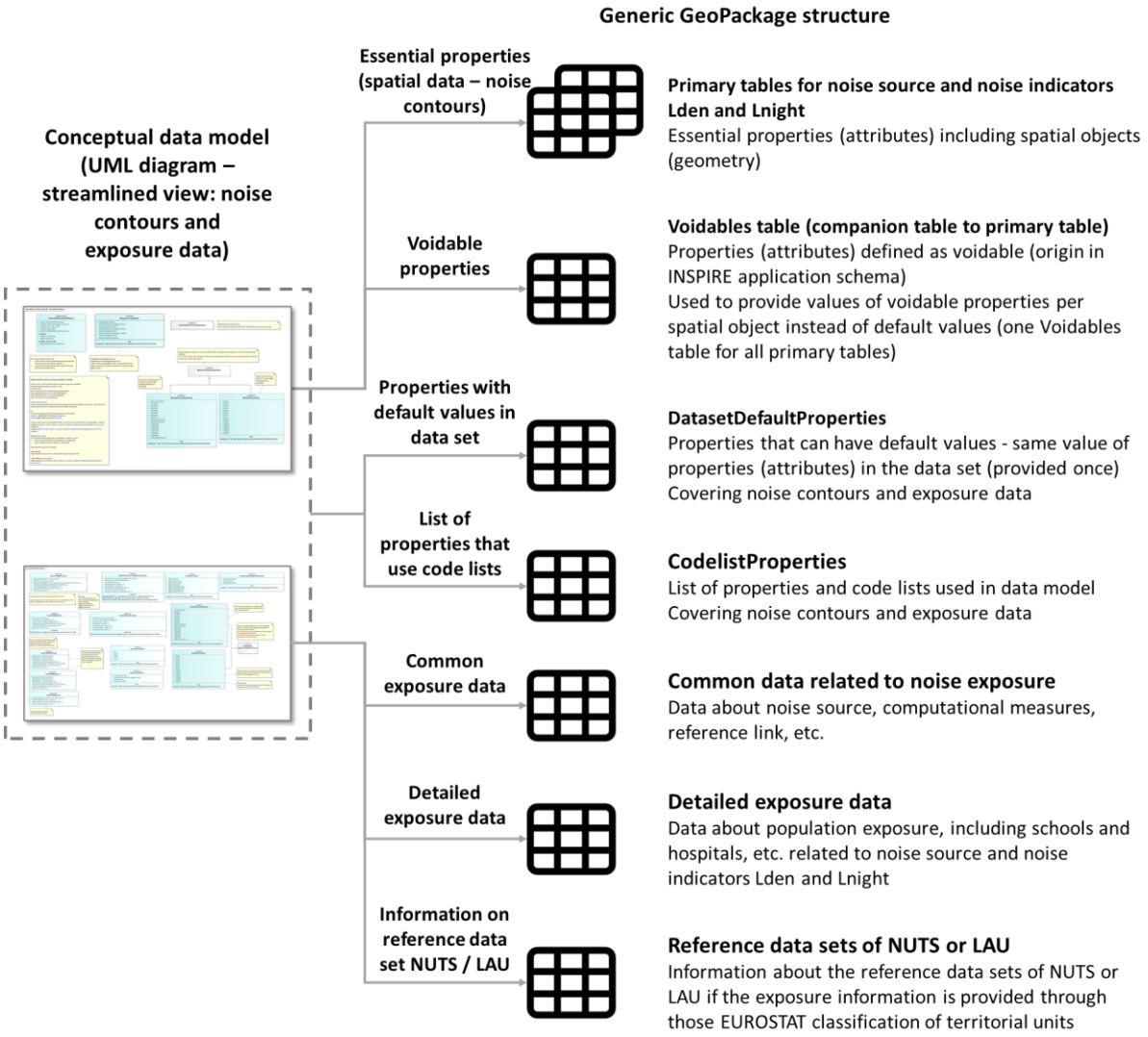
Properties than can have default values – same values in the complete data set are provided in the table **DatasetDefaultProperties**. This table can include a default void reason or another default value for voidable properties, or other properties with default values. The origin of voidable properties is the underlying INSPIRE conceptual data models for spatial data. All expected properties and default values are already pre-defined and pre-filled in each GeoPackage template.

CodelistProperties table includes the list of properties that use values from agreed vocabularies – code lists. This table is already pre-filled in each GeoPacakge template and helps finding the correct values for the properties from the related code lists. The code lists defined for the END reporting scope are published in two registers:

- INSPIRE code list registry for INSPIRE code lists (re-using INSPIRE code lists), and
- Eionet Data Dictionary – Vocabularies for other code lists used in the END reporting scope.

The following diagram in Figure 4.2 summarizes the GeoPackage template structure.

Figure 4.2 Transformation from conceptual data model (UML) to GeoPackage structure

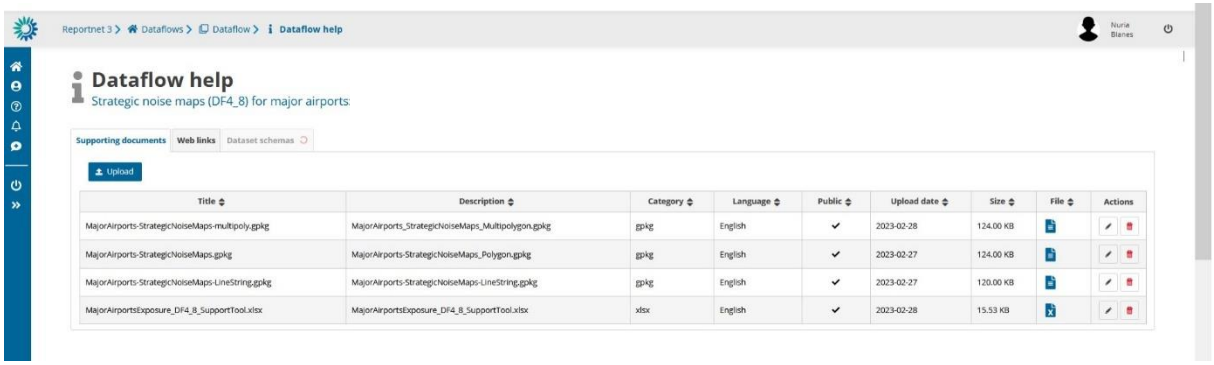


The GeoPackage templates have been already designed to facilitate data preparation in the following way:

- The pre-filled tables DatasetDefaultProperties and CodelistProperties don't need modifications;
- For noise contours:
  - If the recommended and pre-filled void reasons or other values for voidable properties are applicable, the voidable properties in the Voidables table can remain empty;
  - The main tables for reporting data are therefore the primary tables (feature tables for Lden and Lnight indicators).
- For noise exposure data:
  - Two types of tables are included, a table with general infomration and the table for detiled noise exposure data.
- Regarding the reference data set of NUTS and LAU:
  - Includes the title and the URL of the reference data set.

The GeoPackage templates that have been created to support data reporting can be found in the Dataflow Help page in Reportnet 3 in the corresponding dataflow (see example for Strategic noise maps corresponding to major airports in Figure 4.3).

Figure 4.3. Screenshot of the Dataflow help page where all GeoPackage templates and MS Excel support tools are available for download



Geopackage templates and MS Excel support tools can be downloaded from: https://www.eionet.europa.eu/reportnet/docs/noise

4.4 Reference datasets of statistical (NUTS) and administrative units (LAU)

Reporting of noise exposure data can be provided on the level of the territorial units, i.e. statistical units following the NUTS classification (Nomenclature of territorial units for statistics) established in the EU, other statistical classifications (non-EU) or local administrative units (LAU). Establishing the common basis of NUTS / LAU units will serve two main purposes:

- Harmonised provision of noise exposure data, and
- Validation of the reported data in the reporting process.

For the common reference datasets of NUTS / LAU units, it is recommended to use the Eurostat European geospatial datasets of NUTS and LAU units that are published in the Geographic Information System of the Commission (GISCO)[5] together with the correspondence table between LAU and NUTS units and codes[6]. Those datasets are compiled from the contributions of the national mapping agencies and statistical offices and are provided as seamless pan-European datasets[7].

The NUTS classification and local administrative units (LAU) are created in a hierarchical structure, dividing up the national territory into the three NUTS levels (NUTS 1, NUTS 2 and NUTS 3). The NUTS 3 units are further composed of a set of local administrative units.

The general rule for selection of NUTS / LAU reference geospatial datasets:

The version of the NUTS and LAU geospatial datasets used for the END reporting purpose should be the version of the European geospatial datasets of NUTS and LAU units published by Eurostat and available at the time of the preceding calendar year of the noise mapping obligations (the noise mapping obligations represent the situation in the preceding calendar year). The selected NUTS / LAU

[5] https://ec.europa.eu/eurostat/web/gisco
[6] https://ec.europa.eu/eurostat/web/nuts/local-administrative-units
[7] The GISCO database includes the country codes according to the EC Publications Office Interinstitutional Style Guide which applies 2-character ISO country codes (ISO 3166 alpha-2) for EU and non-EU countries, with the exception of country code abbreviation EL (instead of GB) for Greece, https://publications.europa.eu/code/en/en-370100.htm .

geospatial datasets will be used in the whole END reporting cycle, especially for strategic noise maps and noise action plans.

Recommendation for the END reporting cycle 2020 – 2025:

For the reporting of strategic noise maps in 2022 and for the complete END reporting cycle 2020 – 2025, it is recommended to use the following Eurostat NUTS and LAU geospatial datasets, or national equivalents in a higher scale:

- **Eurostat NUTS 2021**, https://gisco-services.ec.europa.eu/distribution/v2/nuts/nuts-2021-metadata.pdf
- **Eurostat LAU 2020**, https://gisco-services.ec.europa.eu/distribution/v2/lau/lau-2020-metadata.pdf

For the END reporting purpose, the recommended minimum scale of the NUTS / LAU geospatial datasets is 1:100 000. However, it is recommended to use instead the national geospatial datasets in a higher scale that are content wise equivalent to the Eurostat NUTS 2021 and LAU 2020. Highly detailed NUTS and LAU geospatial datasets might be more suitable for a precise calculation of noise exposure data.

NUTS / LAU reference datasets and validation in the END reporting cycle 2020 – 2025:

The validation process will use as the reference datasets the Eurostat geospatial datasets of NUTS 2021 and LAU 2020 in the scale of 1:100 000 with additional information from the Correspondence table LAU – NUTS 2021.

The version of the Eurostat NUTS 2021 and LAU 2020 geospatial datasets can be consulted on the Eurostat website. The public datasets in small scale (one million or smaller) can be downloaded from the GISCO Administrative and Statistical Units web site, or through the GISCO Application Programming Interface (API), as following:

- NUTS: https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/nuts
- LAU: https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/lau
- GISCO Data Distribution API: https://gisco-services.ec.europa.eu/distribution/v2/
- Correspondence table LAU – NUTS 2021, https://ec.europa.eu/eurostat/web/nuts/local-administrative-units

The EEA Spatial Data infrastructure (EEA-SDI) also includes the GISCO database and the geospatial datasets of NUTS 2021 and LAU 2020 in the scale of 1:100 000. The EEA-SDI can be consulted at:

- https://sdi.eea.europa.eu/
- NUTS 2021, https://sdi.eea.europa.eu/catalogue/EEA_Reference_Catalogue/eng/catalog.search#/metadata/e4316fd1-db00-428b-8034-61d56c2fe2ca
- LAU 2020, https://sdi.eea.europa.eu/catalogue/EEA_Reference_Catalogue/eng/catalog.search#/metadata/fd30a070-48b7-49e9-a6b6-c37d4f1e15f9

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

Information related to the table ESTATUnitReference

The END conceptual data model and the END reporting mechanism require information about the NUTS / LAU reference datasets used for calculation of noise exposure data on the level of NUTS or LAU units. To provide this information, the pre-defined GeoPackage templates and the Reportnet 3 dataset schemas include a table ESTATUnitReference.

If the recommended Eurostat NUTS 2021 and LAU 2020 geospatial datasets are used in the strategic noise maps, the following default information can be included in the table ESTATUnitReference:

ESTATNUTSReferenceTitle	Eurostat, GISCO, Nomenclature of Territorial Units for Statistics (NUTS) 2021 - Statistical Units
ESTATNUTSReferenceLink	https://gisco-services.ec.europa.eu/distribution/v2/nuts/nuts-2021-metadata.pdf
ESTATLAUReferenceTitle	Eurostat, GISCO Local Administrative Units, 2020 - Administrative Units
ESTATLAUReferenceLink	https://gisco-services.ec.europa.eu/distribution/v2/lau/lau-2020-metadata.pdf

If other NUTS and LAU geospatial datasets are used, a dataset title and URL for additional information or access to a dataset must be provided in the table ESTATUnitReference.

5 Dataflow: Strategic noise map (DF4_8) for agglomerations

5.1 Description

Strategic noise map produced on a 5-year basis for one of the sources inside the agglomeration. It is used to determine the number of people exposed to harmful noise levels in the agglomeration.

The Strategic noise map (DF4_8) for agglomerations dataflow includes 3 data schemas:

- Strategic noise map for agglomeration (DF4_8) data schema, including 18 tables described in sections 5.2 to 5.10
- Submission Declaration schema described in section 9
- Reference Dataset – Vocabulary - common tables described in section 3.

The following sections include information about the data schema for Strategic noise map for agglomeration (DF4_8).

5.1.1 Tables for exposure data

- ExposureAgglomeration: Contains information on the agglomeration, the noise source, the computation and measurement methods, the coverage criteria, the information of how receiver points in dwellings were calculated and links (URL) that contains any relevant additional information.
- ExposureValueInAgglomeration: Contains information about population exposure, including schools and hospitals, per each noise source inside an agglomeration or a LAU unit inside an agglomeration, both for L_{den} and L_{night}, with the range values specified in the END.
- ESTATUnitReference: Contains information on the LAU dataset version used when reporting of population exposure is done per LAU units.

5.1.2 Tables for noise contours

The tables related to noise contours are organised according to the noise source in agglomeration (airports, roads, railways, industry or combined for all sources in agglomeration) and to the noise indicators L_{den} and L_{night}.
Respecting the INSPIRE characteristics of voidable properties, one table Voidables is created to store voidable information for all applicable spatial objects.

- NoiseContours_airportsInAgglomeration_Lden: Information corresponding to the areas or isolines affected by harmful noise levels in L_{den} as determined by the Environmental Noise Directive due to aircraft noise inside agglomeration
- NoiseContours_airportsInAgglomeration_Lnight: Information corresponding to the areas or isolines affected by harmful noise levels in L_{night} as determined by the Environmental Noise Directive due to aircraft noise inside agglomeration
- NoiseContours_industryInAgglomeration_Lden: Information corresponding to the areas or isolines affected by harmful noise levels in L_{den} as determined by the Environmental Noise Directive due to industrial noise inside agglomeration
- NoiseContours_industryInAgglomeration_Lnight: Information corresponding to the areas or isolines affected by harmful noise levels in L_{night} as determined by the Environmental Noise Directive due to industrial noise inside agglomeration
- NoiseContours_railwaysInAgglomeration_Lden: Information corresponding to the areas or isolines affected by harmful noise levels in L_{den} as determined by the Environmental Noise Directive due to railway noise inside agglomeration
- NoiseContours_railwaysInAgglomeration_Lnight: Information corresponding to the areas or isolines affected by harmful noise levels in L_{night} as determined by the Environmental Noise Directive due to railway noise inside agglomeration

- NoiseContours_roadsInAgglomeration_Lden: Information corresponding to the areas or isolines affected by harmful noise levels in L_{den} as determined by the Environmental Noise Directive due to road noise inside agglomeration
- NoiseContours_roadsInAgglomeration_Lnight: Information corresponding to the areas or isolines affected by harmful noise levels in L_{night} as determined by the Environmental Noise Directive due to road noise inside agglomeration
- NoiseContours_allSourcesInAgglomeration_Lden: Information corresponding to the areas or isolines affected by harmful noise levels in L_{den} as determined by the Environmental Noise Directive due to combined levels of road, rail, aircraft and industrial noise inside agglomeration.
- NoiseContours_allSourcesInAgglomeration_Lnight: Information corresponding to the areas or isolines affected by harmful noise levels in L_{night} as determined by the Environmental Noise Directive due to combined levels of road, rail, aircraft and industrial noise inside agglomeration.
- Voidables: Voidable attributes defined in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps – noise contours related to agglomerations source.

5.1.3 Tables related to noise contours and exposure data (common tables)

- DatasetDefaultProperties: Information about the default values of objects in a data set or a table (read only schema, and already pre-filled in in Reportnet 3).
- CodelistProperties: List of applicable code lists in that data schema (read only schema, and already pre-filled in in Reportnet 3) .

5.1.4 Tables supporting data harvesting through INSPIRE download services

- HarvestSource: URLs from which to harvest the geospatial features needed for the reporting.
- WorkflowLog: log messages from the harvesting process (i.e. harvested resources, errors occurring during harvesting).

5.2 Table ExposureAgglomeration

The table *ExposureAgglomeration* provides exposure information to different noise levels and indicators due to different noise sources that are mapped inside agglomerations, as determined by the Environmental Noise Directive.

Table 5.1. ExposureAgglomeration table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	agglomerationIdIdentifier	Text	
M	noiseSource	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceValue/
M	computationAndMeasurementMethod	Text	
O	sourceCoverageCriteria	Text	
O	receiverPointsInDwelling	Text	
O	referenceLink	Text	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

5.2.1 Field agglomerationIdIdentifier

Requirement	Mandatory
Description	Unique identifier assigned to each agglomeration. It is expected to be the same as the identifier from the feature type AgglomerationSource (agglomerationId_identifier) from END dataflow DF1_5 for Agglomerations.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The value of this field re-uses the identifier of the agglomerations defined in DF1_5 (see more information in section 4.2.3).
Example	AG_AT_00_1
Reporting constraints	Agglomeration identifier will be re-used across the complete END data model to uniquely identify spatial objects and all other objects – entities. Each unique identifier used in this dataflow should be already provided in the Noise Sources (DF1_5) dataflow. The submission of DF4_8 will be blocked if the agglomeration identifier is not included in DF1_5 agglomerations.

5.2.2 Field noiseSource

Requirement	Mandatory
Description	Noise source of the exposed population values inside agglomeration
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceValue/ Applicable code list values: - agglomerationAir - agglomerationIndustry - agglomerationRoad - agglomerationRailway - agglomerationMajorAirport - agglomerationMajorRoad - agglomerationMajorRailway - agglomerationAllSources
Information	Cities need to provide exposure information for all the existing noise sources in the agglomeration. For instance cities that have roads and railways but no airports are expected to select "agglomerationRoad", "agglomerationRailway", "agglomerationMajorRoad", "agglomerationMajorRailway" and provide the information expected in relation to each noise source inside the agglomeration. "agglomerationAllSources" can also be selected to provide the exposure information corresponding to the combined exposure of all sources together. It needs to be taken into account that the provision of the exposure data separated by each noise source existing in the agglomeration cannot be superseded by the provision of exposure to "agglomerationAllSources" only. The values provided in "agglomerationAllSources" will be assumed to be those related to multiple exposures from the sources declared in DF1_5 and therefore the data reported should not include double counting from the addition of different sources.
Example	agglomerationRoad
Reporting constraints	Exposure to the different noise sources reported here will be compared with the "applicableSource" reported in Agglomeration Source (DF1_5) schema of the Noise Sources (DF1_5) dataflow. All noise sources declared in DF1_5 "applicableSource" must be provided in strategic noise maps for agglomerations. The submission of DF4_8 will be blocked if the information on population exposure in an agglomeration is provided per any source not declared in "applicableSource" in DF1_5 for agglomerations. For example, the submission will be blocked for airports if in an agglomeration in DF1_5, the declared sources in "applicableSource" are road and rail but in DF4_8 the data is submitted under "noiseSource" is for road, rail and airport. DF1_5 always needs to be aligned with DF4_8. Other mismatches between DF1_5 "applicableSource" and DF4_8 "noiseSource" in agglomerations, will be evaluated in the technical acceptance process.

5.2.3 Field computationAndMeasurementMethod

Requirement	Mandatory
Description	Computation and measurement method being used to calculate the noise maps
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate method compliant with Commission Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council (known as CNOSSOS-EU). The title of the document and the version should be indicated.
Example	Example 1: Environmental Noise Directive, Annex II, Chapter 2.2 road traffic noise and chapter 2.5 sound propagation, in the version of 28.07.2021 Example 2: RVS 02.04.11 in the version of 1.11.2021 for road traffic noise and ÖAL directive no 28 in the version of 1.10.2021 for sound propagation). Links: http://recht.fsv.at/, https://www.oeal.at/richtlinien

5.2.4 Field sourceCoverageCriteria

Requirement	Optional
Description	Information on criteria used to select the roads, railways and airports that are mapped in agglomerations. Attribute sourceCoverageCriteria is recommended to be provided when selecting agglomerationRoad, agglomerationRail and agglomerationAir.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Following the amendment of the END of 21.12.2020, roads/railways inside agglomerations include both, major and non-major roads/railways. Roads/railways and airports inside agglomerations producing harmful noise levels need to be assessed. In this field, information on the criteria used to select the roads, railways and airports that are mapped in agglomerations (e.g. above a certain traffic flow, type of road/rail, above certain noise threshold, other) needs to be provided.
Example	All roads inside the agglomeration above 45 dB Lden. All roads inside the agglomerations above 40 dB Lnight.

5.2.5 Field receiverPointsInDwelling

Requirement	Optional
Description	Information on the methods employed to calculate exposure to noise at the most exposed façade as described in section 2.8 of Annex II to Directive 2002/49/EC.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate the following: Determination of the dwellings and people living in dwellings exposed to noise (choose between: Case 1A, 1B, 2A, 2B, 2C, 2D) Assigning noise assessment points to dwellings and people living in dwellings: (choose between: Case 1 Procedure, Case 2 Procedure) Assigning dwellings and people living in dwellings to receiver points information on the location of dwellings within building footprints is available or no information on the location of dwellings within building footprints as explained above is available (choose between: Case a; Case b) See details in END Annex II - Section 2.8
Example	Determination of the dwellings and people living in dwellings exposed to noise (Case 2A); Assigning noise assessment points to dwellings and people living in dwellings: (Case 1 procedure); Assigning dwellings and people living in dwellings to receiver points: no information on the location of dwellings within building footprints as explained above is available (Case a)

5.2.6 Field referenceLink

Requirement	Optional
Description	Link to the published online information. This attribute can present links (URL) to maps, web applications, or other online information.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Provision of the links (URL) to maps, web applications, or other online information; separated by ";" if more than one link is provided.
Example	https://geoportal.mzcr.cz/SHM2017/

5.2.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:23:28Z //cifs_svm13/noise/Reportnet3_2022/922/2/58616/_20230307072328/Agglomerations-StrategicNoiseMaps.gpkg

5.3 Table ExposureValueInAgglomeration

The table *ExposureValueInAgglomeration* provides information about population exposure, including schools and hospitals, to be provided inside agglomerations per each noise source to be mapped, both for L_{den} and L_{night} range values specified in the END.
A correct link must be provided between the tables ExposureValueInAgglomeration and ExposureAgglomeration by using the same values in the fields agglomerationIdIdentifier and noiseSource in both tables.

Table 5.2. ExposureValueInAgglomeration table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	agglomerationIdIdentifier	Text	
M	noiseSource	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceValue/
M	exposureType	Link	https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeInAgglomerationValue/
M	noiseLevel	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/
M	exposedPeople	Number - Integer	
O	exposedHospitals	Number - Integer	
O	exposedSchools	Number - Integer	
C	ESTATUnitCode	Text	
C	ICAOCode	Text	
C	descriptionAllSources	Text	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

5.3.1 Field agglomerationIdIdentifier

Requirement	Mandatory
Description	Unique identifier assigned to each agglomeration. It is expected to be the same as the identifier from the feature type AgglomerationSource (agglomerationId_identifier) from END dataflow DF1_5 for Agglomerations.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The value of this field re-uses the identifier of the agglomerations defined in DF1_5 (see more information in section 4.2.3).
Example	AG_AT_00_1
Reporting constraints	Agglomeration identifier will be re-used across the complete END data model to uniquely identify spatial objects and all other objects – entities. Each unique identifier provided in this dataflow should be provided in Noise Sources (DF1_5) dataflow. Agglomeration identifier must be the same as in the table “ExposureAgglomeration”.

5.3.2 Field noiseSource

Requirement	Mandatory
Description	Noise source of the exposed population values inside agglomeration
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceValue/ Applicable code list values: - agglomerationAir - agglomerationIndustry - agglomerationRoad - agglomerationRailway - agglomerationMajorAirport - agglomerationMajorRoad - agglomerationMajorRailway - agglomerationAllSources
Information	Cities need to provide exposure information from all the noise sources from which their inhabitants are exposed to. For instance cities that have roads and railways but no airports are expected to select “agglomerationRoad”, “agglomerationRailway”, “agglomerationMajorRoad”, “agglomerationMajorRailway” and provide the information expected in relation to each noise source inside the agglomeration. “agglomerationAllSources” can also be selected to provide the exposure information corresponding to all the existing sources in the agglomeration as declared in Noise Sources (DF1_5) in “applicableSource”. It needs to be taken into account that the provision of the exposure data separated by each noise source existing in the agglomeration cannot be superseded by the provision of exposure to “agglomerationAllSources” only. The values provided in “agglomerationAllSources” will be assumed to be those related to multiple exposures from the sources declared in DF1_5 and therefore the data reported should not include double counting from the addition of different sources.
Example	agglomerationRoad;
Reporting constraints	Exposure to the different noise sources reported here will be compared with the “applicableSource” reported in Agglomeration Source (DF1_5) schema of the Noise Sources (DF1_5) dataflow. All noise sources declared in DF1_5 “applicableSource” must be provided in strategic noise maps for agglomerations. The submission of DF4_8 will be blocked if the information on population exposure in an agglomeration is provided per any source not declared in “applicableSource” in DF1_5 for agglomerations. For example, the submission will be blocked for airports if in an agglomeration in DF1_5, the declared sources in “applicableSource” are road and rail but in DF4_8 the data is submitted under “noiseSource” is for road, rail and airport. DF1_5 always needs to be aligned with DF4_8. Other mismatches between DF1_5 “applicableSource” and DF4_8 “noiseSource” in agglomerations, will be evaluated in the technical acceptance process.

5.3.3 Field exposureType

Requirement	Mandatory
Description	Defines the characteristics of the dwellings' façade where noise exposure is calculated. It is mandatory for the code value "mostExposedFacade".
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeInAgglomerationValue/ Applicable code list values: - mostExposedFacade - withQuietFacade - withSpecialInsulation
Information	The code value “mostExposedFacade” is mandatory. Code values “withQuietFacade” and “withSpecialInsulation” are optional.
Example	mostExposedFacade
Reporting constraints	The provision of data on population exposure at the “mostExposedFacade” will be evaluated during the technical acceptance process.

5.3.4 Field noiseLevel

Requirement	Mandatory
Description	Defines the dB range value for L_{den} or L_{night} at which the number of people exposed is calculated. It is mandatory for the code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ Applicable code list values: - LdenLowerThan40 - Lden4044 - Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70
Information	The code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 are mandatory.
Example	Lden6569
Reporting constraints	The provision of data on population exposure for all mandatory code list values for the attribute noiseLevel will be evaluated during the technical acceptance process.

5.3.5 Field exposedPeople

Requirement	Mandatory
Description	Number of people exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of people. The number should indicate the total number of people to avoid any confusion on rounding issues. For example the number 135472 corresponds to one hundred thirty five thousand four hundred seventy two exposed people. The estimated number of people rounded to the nearest hundred as specified in the END will be calculated when compiling all the data into the EU database.
Example	135472
Reporting constraints	The provision of data on population exposure for all mandatory values will be evaluated during the technical acceptance process.

5.3.6 Field exposedHospitals

Requirement	Optional
Description	Number of hospitals exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of hospitals.
Example	3

5.3.7 Field exposedSchools

Requirement	Optional
Description	Number of schools exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of schools.
Example	7

5.3.8 Field ESTATUnitCode

Requirement	Conditional
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Only LAU codes are allowed.
Example	50101
Reporting constraints	It is optional, but when exposure data is reported at LAU level, this attribute is mandatory. LAU codes need to be provided if exposure data is reported per territorial units smaller than the delineation of the agglomeration polygon. If LAU codes are reported, the table ESTATUnitReference needs to be filled in. The reporting is allowed per agglomeration as a whole or per LAU units within the agglomeration. The mixture of both reporting approaches is not allowed. The submission of DF4_8 will be blocked if the LAU code is not included in the reference dataset of LAU/NUTS.

5.3.9 Field ICAOCode

Requirement	Conditional
Description	Unique international code of airport defined by the International Civil Aviation Organization.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	LOWW
Reporting constraints	It is optional, but when exposure data is reported for a specific major airport inside agglomeration, this attribute is mandatory. The reporting should be per agglomeration as a whole when selecting “agglomerationAir” in noiseSource (which includes the reporting of major airports and other airports) and per each major airport within the agglomeration when selecting “agglomerationMajorAirport”. Information on ICAO code is only expected when selecting “agglomerationMajorAirport” in noiseSource attribute. The submission of DF4_8 will be blocked if ICAO code is not included in DF1_5 major airports.

5.3.10 Field descriptionAllSources

Requirement	Conditional
Description	Description of the noise sources considered for calculating combined exposure data when the code value “agglomerationAllSources” is selected in noiseSource attribute.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	agglomerationRoad + agglomerationRail + agglomerationAir
Reporting constraints	It is optional, but when noiseSource = “agglomerationAllSources”, this attribute is mandatory.

5.3.11 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:23:28Z //cifs_svm13/noise/Reportnet3_2022/922/2/58616/_20230307072328/Agglomerations-StrategicNoiseMaps.gpkg

5.4 Table ESTATUnitReference

The table *ESTATUnitReference* provides reference information concerning NUTS or LAU data if the exposure information is provided through those EUROSTAT classification of territorial units. In the case of exposure data inside agglomerations, only LAU codes are expected and therefore, it is only expected to provide reference information in relation to LAU data.

Table 5.3. ESTATUnitReference table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
C	ESTATNUTSReferenceTitle	Text	
C	ESTATNUTSReferenceLink	URL	
C	ESTATLAUReferenceTitle	Text	
C	ESTATLAUReferenceLink	URL	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data,

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

5.4.1 Field ESTATNUTSReferenceTitle

Requirement	Optional and conditional
Description	Version of the NUTS data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	
Reporting constraints	**This field is not applicable for data schema Strategic noise maps for agglomerations (DF4_8).** It is not expected to be provided when reporting exposure information inside agglomerations.

5.4.2 Field ESTATNUTSReferenceLink

Requirement	Optional and conditional
Description	Link to the NUTS data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	
Reporting constraints	**This field is not applicable for data schema Strategic noise maps for agglomerations (DF4_8).** It is not expected to be provided when reporting exposure information inside agglomerations.

5.4.3 Field ESTATLAUReferenceTitle

Requirement	Optional and conditional
Description	Version of the LAU data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	EUROSTAT Local Administrative Units (LAU), 2020
Reporting constraints	It is expected to be provided when the field ESTATUnitCode from the table "ExposureValueInAgglomeration" is filled in with a LAU code.

5.4.4 Field ESTATLAUReferenceLink

Requirement	Optional and conditional
Description	Link to the LAU data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/lau
Reporting constraints	It is expected to be provided when the field ESTATUnitCode from the table "ExposureValueInAgglomeration" is filled in with a LAU code.

5.4.5 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:23:28Z //cifs_svm13/noise/Reportnet3_2022/922/2/58616/_20230307072328/Agglomerations-StrategicNoiseMaps.gpkg

5.5 Overview of tables for noise contours for agglomerations

All tables for noise contours have the same structure. The tables are organised per noise source and noise indicators L_{den} and L_{night} – there are two tables per each noise source, one for noise contours

corresponding to the noise indicator L_{den} and one for noise contours corresponding to the noise indicator L_{night}.

Depending on the geometry type, (multi)polygon or (multi)line, different code lists will apply.

The code list NoiseIndicatorRangeValue applies for (multi)polygon geometry for both noise indicators L_{den} and L_{night}. The code list NoiseIndicatorValue applies for (multi)line geometry for both noise indicators L_{den} and L_{night}.

Please note that for noise values equal and greater than 75 dB L_{den} and for noise values equal and greater than 70 dB L_{night}, a unique (multi)polygon is expected. The same principle applies for noise values equal and lower than 40 dB L_{den} and for noise values equal and lower than 40 dB L_{night}.

The following overview provides information on tables for noise contours, noise source, noise indicators, geometry types and corresponding code lists for attributes in data schema Strategic noise map for agglomeration (DF4_8).

Table 5.4. Overview of tables for noise contours, geometry types and code lists

Table for noise contours	Noise source	Noise indicator	Geometry type	MesaureCategoryTypeValue		NoiseSourceTypeValue	EnvHealthDeterminantTypeValue (default value)
				NoiseIndicatorRangeValue	NoiseIndicatorValue		
NoiseContours_airportsInAgglomeration_Lden	Aircraft noise inside agglomeration	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_airportsInAgglomeration_Lnight	Aircraft noise inside agglomeration	Lnight	polygon	X		X	X
			line		X	X	X
NoiseContours_industryInAgglomeration_Lden	Industrial noise inside agglomeration	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_industryInAgglomeration_Lnight	Industrial noise inside agglomeration	Lnight	polygon	X		X	X
			line		X	X	X
NoiseContours_railwaysInAgglomeration_Lden	Railway noise inside agglomeration	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_railwaysInAgglomeration_Lnight	Railway noise inside agglomeration	Lnight	polygon	X		X	X
			line		X	X	X
NoiseContours_roadsInAgglomeration_Lden	Road noise inside agglomeration	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_roadsInAgglomeration_Lnight	Road noise inside agglomeration	Lnight	polygon	X		X	X
			line		X	X	X
NoiseContours_allSourcesInAgglomeration_Lden	Noise from all sources inside agglomeration	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_allSourcesInAgglomeration_Lnight	Noise from all sources inside agglomeration	Lnight	polygon	X		X	X
			line		X	X	X

5.6 Details of tables for noise contours for agglomerations

The tables for noises contours provide information corresponding to the areas or isolines affected by high noise levels in L_{den} or L_{night} as determined by the Environmental Noise Directive due to noise sources inside agglomeration. The details are presented in the next sections.

Table 5.5. Overview of the table noise contours for agglomerations

Mandatory /optional/ conditional	**Name**	**Reportnet 3 Type**	**Code list**
M	id	Number - Integer	
C	measureTime_beginPosition	DateTime	
C	measureTime_endPosition	DateTime	
M	category	Link	The common code list MeasureCategoryTypeValue includes two individual code lists NoiseIndicatorRangeValue and NoiseIndicatorValue. If the geometry type is (multi)polygon the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ . If the geometry type is (multi)line the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ . There are separate values for indicators L_{den} and L_{night}.
M	source	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/
C	location_area	Multiple polygons	
C	location_line	Multiple lines	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

5.6.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

5.6.2 Field measureTime_beginPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "beginPosition". The default value for attribute “measureTime_beginPosition” is included in the table DatasetDefaultProperties, which is: 2021-01-01T01:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-01-01T01:00:00Z
Reporting constraints	It is conditional: or default value or values per feature. The value must follow the format YYYY-MM-DDThh:mm:ssZ.

5.6.3 Field measureTime_endPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "endPosition". The default value for attribute “measureTime_endPosition” is included in the table DatasetDefaultProperties, which is: 2021-12-31T23:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-12-31T23:00:00Z
Reporting constraints	It is conditional: or default value or values per feature. The value must follow the format YYYY-MM-DDThh:mm:ssZ.

5.6.4 Field category

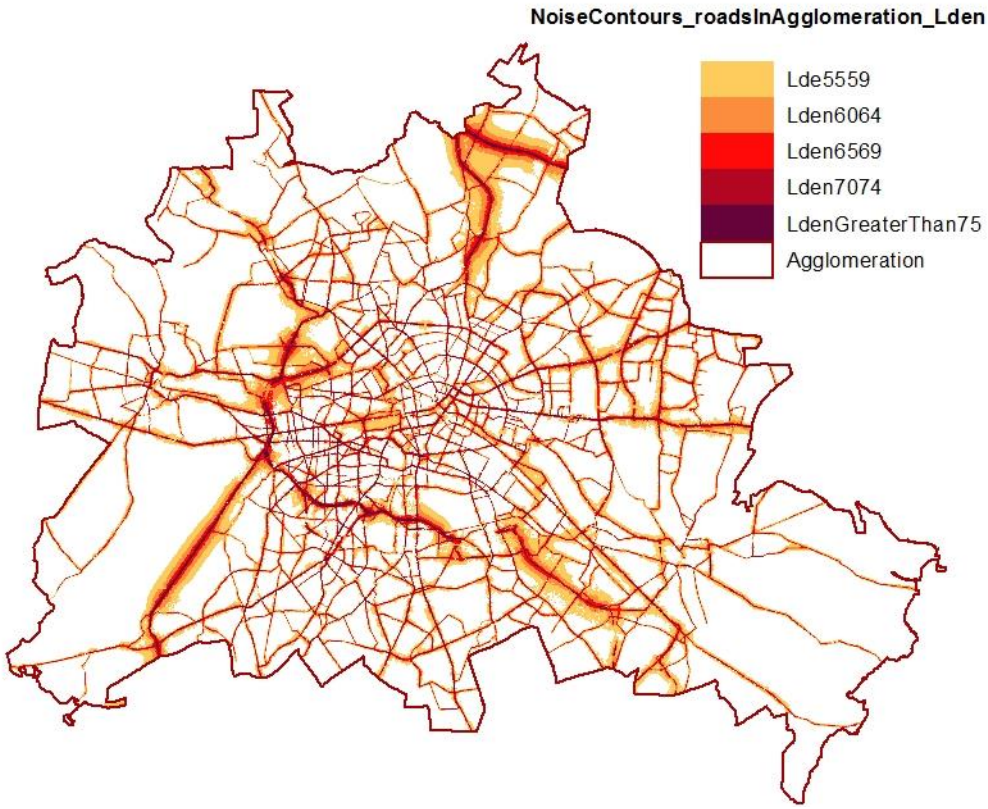
Requirement	Mandatory
Description	Identifies the different indicator values or range values of the noise contour maps.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The applicable code lists are: NoiseIndicatorRangeValue and NoiseIndicatorValue: Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{den},** the applicable code list values are: - LdenLowerThan40 - Lden4044 - Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{den},** the applicable code list values are: - Lden40 - Lden45 - Lden50 - Lden55 - Lden60 - Lden65 - Lden70 - Lden75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{night},** the applicable code list values are: - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{night},** the applicable code list values are: - Lnight40 - Lnight45 - Lnight50

	- Lnight55 - Lnight60 - Lnight65 - Lnight70
Information	This is an INSPIRE attribute. This attribute uses a value from the extended INSPIRE code list MeasureCategoryTypeValue. For the END reporting purpose, two extended code lists are defined: NoiseIndicatorRangeValue code list and NoiseIndicatorValue code list with regard to the type of geometry of noise contours (area or line) and noise indicators L_{den} or L_{night}. In Reportnet platform, both code lists are merged into NoiseIndicatorNoiseContourValue.
Example	Example 1: A noise contour with geometry of a (multi)polygon and noise indicator L_{den} will include value Lden5559 in the field category: **Lden5559** Example 2: A noise contour with geometry (multi)line and noise indicator L_{den} will include value Lden55 in the field category: **Lden55** Example 3: A noise contour with geometry of a (multi)polygon and noise indicator L_{night} will include value Lnight5559 in the field category: **Lnight5559** Example 4: A noise contour with geometry (multi)line and noise indicator L_{night} will include value Lnight55 in the field category: **Lnight55**
Reporting constraints	If noise contours are provided as polygons (recommended), the NoiseIndicatorRangeValue code list and corresponding codes are to be used. If noise contours are provided as lines, the NoiseIndicatorValue code list and corresponding codes are to be used.

5.6.5 Field source

Requirement	Mandatory
Description	Source of the noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/ Depending on the noise source, the following code list values apply: - For noise contours in agglomerations: ○ roadsInAgglomeration ○ railwaysInAgglomeration ○ airportsInAgglomeration ○ industryInAgglomeration ○ allSourcesInAgglomeration
Information	This is an INSPIRE attribute. For the END reporting purpose it defines the END noise source types.
Example	airportsInAgglomeration
Reporting constraints	The existing noise contours for noise sources in agglomerations must be provided according to INSPIRE Directive and therefore should also be reported for the END.

5.6.6 Field location_area

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple polygons
Information	For the END reporting purpose, the geometry of the noise contour map can be polygon or multipolygon. It is mandatory for this geometry type.
Example (multipolygon geometry)	 Source: END reported data from Berlin (Germany)
Reporting constraints	The NoiseIndicatorRangeValue code list and corresponding codes are to be used for reporting polygons or multipolygons. It is mandatory and conditional: location_area or location_line should be provided.

5.6.7 Field location_line

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple lines
Information	For the END reporting purpose, the geometry of the noise contour map can be line or multiline. It is mandatory for this geometry type.
Example (multiline geometry)	 Source: END reported data from Vitoria (Spain)
Reporting constraints	The NoiseIndicatorValue code list and corresponding codes are to be used for reporting lines or multilines. It is mandatory and conditional: location_area or location_line should be provided. It must be a closed line or multiline – representing a boundary of an area.

5.6.8 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:23:28Z //cifs_svm13/noise/Reportnet3_2022/922/2/58616/_20230307072328/Agglomerations-StrategicNoiseMaps.gpkg

5.6.9 Data example of table NoiseContours_airportsInAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lden5559	airportsInAgglomeration	x	
2			Lden6064	airportsInAgglomeration	x	
3			Lden6569	airportsInAgglomeration	x	
4			Lden7074	airportsInAgglomeration	x	
5			LdenGreaterThan75	airportsInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

5.6.10 Data example of table NoiseContours_airportsInAgglomeration_Lnight

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lnight5054	airportsInAgglomeration	x	
2			Lnight5559	airportsInAgglomeration	x	
3			Lnight6064	airportsInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

5.6.11 Data example of table NoiseContours_industryInAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1	2021-01-01T01:00:00Z	2021-12-31T23:00:00Z	Lden5559	industryInAgglomeration	x	
2	2021-01-01T01:00:00Z	2021-12-31T23:00:00Z	Lden6064	industryInAgglomeration	x	
3	2021-01-01T01:00:00Z	2021-12-31T23:00:00Z	Lden6569	industryInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided per features (noise contours). In such cases, these values prevail over the default values. Data must be provided in the required format “YYYY-MM-DDThh:mm:ssZ”.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

5.6.12 Data example of table NoiseContours_industryInAgglomeration_Lnight

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1	2021-01-01T01:00:00Z	2021-12-31T23:00:00Z	Lnight5054	industryInAgglomeration	x	
2	2021-01-01T01:00:00Z	2021-12-31T23:00:00Z	Lnight5559	industryInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided per features (noise contours). In such cases, these values prevail over the default values. Data must be provided in the required format “YYYY-MM-DDThh:mm:ssZ”.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

5.6.13 Data example of table NoiseContours_railwaysInAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lden55	railwaysInAgglomeration		x

2			Lden60	railwaysInAgglomeration		x

In this example:

- x: (Multi)line geometry will be provided in the field location_line
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/

5.6.14 Data example of table NoiseContours_railwaysInAgglomeration_Lnight

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lnight50	railwaysInAgglomeration		x
2			Lnight60	railwaysInAgglomeration		x
			Lnight70	railwaysInAgglomeration		x

In this example:

- x: (Multi)line geometry will be provided in the field location_line
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/

5.6.15 Data example of table NoiseContours_roadsInAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lden5559	roadsInAgglomeration	x	
2			Lden6064	roadsInAgglomeration	x	
3			Lden6569	roadsInAgglomeration	x	
4			Lden7074	roadsInAgglomeration	x	
5			LdenGreaterThan75	roadsInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

5.6.16 Data example of table NoiseContours_roadsInAgglomeration_Lnight

id	measureTime_ beginPosition	measureTime_ endPosition	category	source	location _area	location _line
1			Lnight5054	roadsInAgglomeration	x	
2			Lnight5559	roadsInAgglomeration	x	
3			Lnight6064	roadsInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

5.6.17 Data example of table NoiseContours_allSourcesInAgglomeration_Lden

id	measureTime_ beginPosition	measureTime_ endPosition	category	source	location _area	location _line
1			Lden5559	allSourcesInAgglomeration	x	
2			Lden6064	allSourcesInAgglomeration	x	
3			Lden6569	allSourcesInAgglomeration	x	
4			Lden7074	allSourcesInAgglomeration	x	
5			LdenGreater Than75	allSourcesInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/
- NoiseContours_allSourcesInAgglomeration_Lden corresponds to the areas affected by harmful noise levels in L_{den} as determined by the Environmental Noise Directive due to combined levels of road, rail, aircraft and industrial noise inside agglomeration.

5.6.18 Data example of table NoiseContours_allSourcesInAgglomeration_Lnight

id	measureTime_ beginPosition	measureTime_ endPosition	category	source	location _area	location _line
1			Lnight5054	allSourcesInAgglomeration	X	
2			Lnight5559	allSourcesInAgglomeration	x	
3			Lnight6064	allSourcesInAgglomeration	x	
4			Lnight6569	allSourcesInAgglomeration	x	
5			LnightGreate rThan70	allSourcesInAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/
- NoiseContours_allSourcesInAgglomeration_Lnight corresponds to the areas affected by harmful noise levels in L_{night} as determined by the Environmental Noise Directive due to combined levels of road, rail, aircraft and industrial noise inside agglomeration

5.7 Table Voidables

This table includes attributes that are defined as voidable in the data model and in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps – noise contours related to agglomerations source. Only the attributes defined in the INSPIRE specifications are voidable. This table is used in case a value is assigned to a voidable attribute for an individual spatial object which is already provided in any of the applicable 10 tables of noise contours - primary tables of spatial data (one Voidables table for all voidable attributes). Otherwise, the default value of these attributes is used and therefore this table can be left empty.

It is recommended to use table DatasetDefaultProperties to provide default values applicable to the complete data set or data schema. By doing this, the table Voidables can be left empty.

In case a value for a voidable property for each special object is provided, the following constraints apply to individual voidable property :

1) DateTime data type requires ISO DateTime format with UTC information. The required format is YYYY-MM-DDThh:mm:ssZ. It is applicable to the fields validFrom, validTo and beginLifespanVersion;
2) If any value for a voidable attribute of a spatial object is provided, a correct linking between the primary tables of spatial data (e.g. NoiseContours_airportsInAgglomeration_Lden, NoiseContours_airportsInAgglomeration_Lnight, etc.) and Voidables table must be provided: the field primaryTable_id in the table Voidables must include the corresponding id of the spatial object from the table of noise contours, and the name of that table must be provided in the field tableName, see example below.

Table 5.6. Voidables table and relation to primary tables of noise contours

NoiseContours_airportsInAgglomeration_Lden (attribute table)	
id	… other fields …
10	

NoiseContours_airportsInAgglomeration_Lnight (attribute table)	
id	… other fields …
100	

Voidables table		
primaryTable_id	tableName	… other fields …
10	NoiseContours_airportsInAgglomeration_Lden	
100	NoiseContours_airportsInAgglomeration_Lnight	

Detailed information about requirements of voidable properties in the INSPIRE application schema used for END noise contours can be also found in the INSPIRE Data Specification on Human Health and Safety – Technical Guidelines and in the Implementing Rules on Interoperability of spatial data sets and services.

Table 5.7. Voidables table overview

Mandatory /optional	Name	Reportnet 3 Type	Code list
M	id	Number - Integer	
M	beginLifespanVersion	DateTime	
M	validFrom	DateTime	
M	validTo	DateTime	
M	primaryTable_id	Number - Integer	
M	tableName	Text	
M	sourceIdentifier	Text	

5.7.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

5.7.2 Field beginLifespanVersion

Requirement	Mandatory
Description	It records a start or a change of noise contours in the spatial dataset, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, lifespan information when a noise contour has been inserted or changed in the spatial dataset is not required, but can be provided as date and time information of creation of a noise contour in a dataset, or of creation of a dataset itself, or a void reason must be provided. In that case, the value “unpopulated” is proposed to be used. It is recommended to use a default value of void reason (“unpopulated”) in the DatasetDefaultProperties and leave this field empty.
Example	2022-01-01T01:00:00Z

5.7.3 Field validFrom

Requirement	Mandatory
Description	Starting date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it started to exist in the real world) can be provided as a starting date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value “unpopulated” is proposed to be used. The default value for validFrom is included in the table DatasetDefaultProperties, which is: 2022-12-31T01:00:00Z
Example	2022-12-31T01:00:00Z

5.7.4 Field validTo

Requirement	Mandatory
Description	Ending date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it is no longer valid in the real world) can be provided as an end date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value “unpopulated” is proposed to be used. The default value for validTo is included in the table DatasetDefaultProperties, which is: 2027-12-30T23:00:00Z
Example	2027-12-30T23:00:00Z

5.7.5 Field primaryTable_id

Requirement	Mandatory
Description	Refers to unique identifiers in the tables of noise contour map layers.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Unique identifier is automatically created in Geopackage file (primary key in the SQLite database).
Example	1

5.7.6 Field tableName

Requirement	Mandatory
Description	Name of the table of noise contour map layer to which the voidable attributes are linked.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	
Example	NoiseContours_airportsInAgglomeration_Lden

5.7.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:23:28Z //cifs_svm13/noise/Reportnet3_2022/922/2/58616/_20230307072328/Agglomerations-StrategicNoiseMaps.gpkg

5.8 Table DatasetDefaultProperties

This table includes all properties that can have a default value in a data set. Typically, it includes: default values or void reason for voidable attributes defined in the INSPIRE specifications, and default values of other attributes. The table is prefilled and read-only.

Table 5.8. DatasetDefaultProperties table overview

Mandatory /optional	**Name**	**Reportnet 3 Type**
M	tableName	Text
M	propertyName	Text
O	attribute	Text
M	defaultValue	Text

Table 5.9. Applicable values for the DatasetDefaultProperties

The table includes all assigned default values from all tables of noise contours.

tableName	propertyName	attribute	defaultValue
NoiseContours_roadsInAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_roadsInAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_roadsInAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_roadsInAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_roadsInAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_roadsInAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_roadsInAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_roadsInAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_roadsInAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_airportsInAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_airportsInAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_airportsInAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_airportsInAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_railwaysInAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_airportsInAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_airportsInAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_airportsInAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_railwaysInAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_railwaysInAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_railwaysInAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_railwaysInAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_railwaysInAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_railwaysInAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_railwaysInAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated

tableName	propertyName	attribute	defaultValue
NoiseContours_railwaysInAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_industryInAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_industryInAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_industryInAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_industryInAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_industryInAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_industryInAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_industryInAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_industryInAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_airportsInAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_industryInAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_industryInAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_industryInAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_airportsInAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_airportsInAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_airportsInAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_airportsInAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_allSourcesInAglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_allSourcesInAglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_allSourcesInAglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_allSourcesInAglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_allSourcesInAglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_allSourcesInAglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_allSourcesInAglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_allSourcesInAglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_allSourcesInAglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise

tableName	propertyName	attribute	defaultValue
NoiseContours_industryInAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_allSourcesInAglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_allSourcesInAglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_allSourcesInAglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_roadsInAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_railwaysInAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_railwaysInAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_railwaysInAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_roadsInAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_roadsInAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z

5.9 Table CodelistProperties

This table includes a list of the code lists that have to be used for reporting data on the DF4_8 Strategic noise maps for agglomerations data model. The complete code lists used in the END data model are also published in the Eionet Data Dictionary (https://dd.eionet.europa.eu/vocabularies) and are used in the Reportnet 3 data schemas.

The specific applicable code lists can also be found in the Vocabulary – common tables data schema of this dataflow.

The table is prefilled and read-only.

Table 5.10. CodelistProperties table overview

Mandatory /optional	Name	Reportnet 3 Type
M	tableName	Text
M	propertyName	Text
M	codelist	Text

Table 5.11. Applicable values for the CodelistProperties

tableName	propertyName	codelist
NoiseContours_airportsInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_airportsInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue

tableName	propertyName	codelist
NoiseContours_railwaysInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_railwaysInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_railwaysInAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_railwaysInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
ExposureValueInAgglomeration	exposureType	http://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeInAgglomerationValue
NoiseContours_roadsInAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
ExposureValueInAgglomeration	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
ExposureValueInAgglomeration	noiseSource	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceValue
NoiseContours_roadsInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_roadsInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_railwaysInAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_roadsInAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_roadsInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_roadsInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_allSourcesInAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_allSourcesInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_allSourcesInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
ExposureAgglomeration	noiseSource	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceValue
NoiseContours_industryInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_allSourcesInAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_allSourcesInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_allSourcesInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_industryInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_industryInAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_industryInAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_industryInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_airportsInAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue

tableName	propertyName	codelist
NoiseContours_airportsInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_airportsInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_industryInAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_railwaysInAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_airportsInAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_roadsInAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_roadsInAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_railsInAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_railsInAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_airportsInAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_airportsInAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_industryInAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_industryInAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_allSourcesInAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_allSourcesInAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue

5.10 Tables supporting data harvesting through INSPIRE download services

The dataset schema includes two additional tables for the alternative reporting method by providing INSPIRE download services and trigger a data harvesting process. The tables HarvestSource and WorkflowLog are described together with the harvesting process in section 10.4 and in Annex 4.

Regardles of the import process, file import or download service harvesting, the expected file format is GeoPackage provided on the pre-defined template.

5.11 GeoPackage format

5.11.1 Support to data transformation into GeoPackage

GeoPackage template

The GeoPackage template Agglomerations-StrategicNoiseMaps.gpkg has been created to support data reporting of noise contours in (multi)polygon geometry, which is the recommended reporting format. Additionally, the GeoPackage template Agglomerations-StrategicNoiseMaps-LineString.gpkg has been created to support data reporting of noise contours in (multi)line geometry.

All templates can be found in:

- Dataflow Help page in Reportnet 3. (see 4.3.2), and

- https://www.eionet.europa.eu/reportnet/docs/noise/templates/

Demonstration of data transformation with the ETL tool HALE Studio
A demonstration video on how to create the new GeoPackage file has been issued, using HALE Studio tool, which is accessible in: https://www.eionet.europa.eu/reportnet/docs/noise/videos.

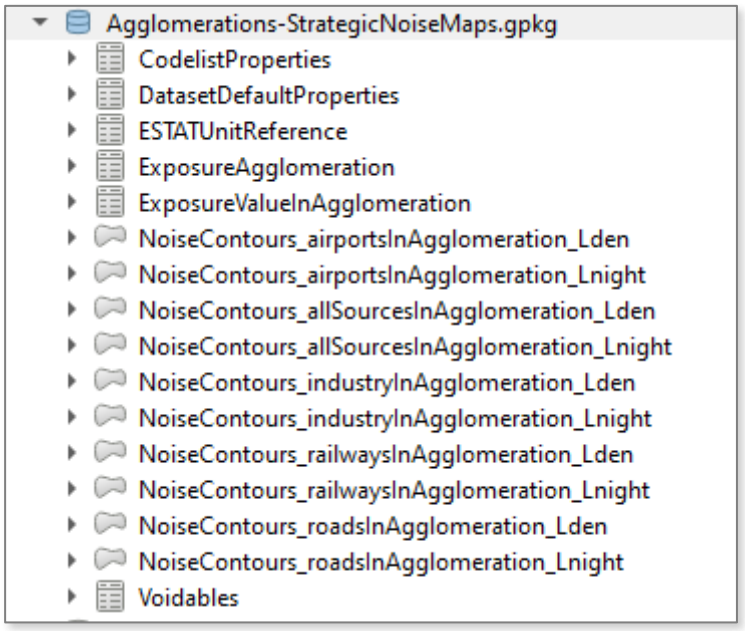
The data transformation project (HALE Studio) details with test data (note: using simulated data for feasibility of data transformation, not exact data for noise reporting) can also be found in the repository https://github.com/wetransform-os/geopackage-end/tree/main/DF4_8. It shows possibilities to create a mapping between a source schema and target GeoPackage schema and transform source data into the Geopackage file format.

5.11.2 Use of GeoPackage file format in the Reportnet 3

The GeoPackage template for DF4_8 agglomerations includes the same tables as the ones that are included in Reportnet 3, see example below. The data import process in the Reportnet 3 transfers data from the GeoPackage file into the correlated tables into the Reportnet 3 data schema *Strategic noise map for agglomeration (DF4_8)*.

GeoPackage template Agglomerations-StrategicNoiseMaps.gpkg – list of tables	**Reportnet 3 data schema Strategic noise map for agglomeration (DF4_8) – list of tables**
NoiseContours_airportsInAgglomeration_Lden	NoiseContours_airportsInAgglomeration_Lden
NoiseContours_airportsInAgglomeration_Lnight	NoiseContours_airportsInAgglomeration_Lnight
NoiseContours_industryInAgglomeration_Lden	NoiseContours_industryInAgglomeration_Lden
NoiseContours_industryInAgglomeration_Lnigh t	NoiseContours_industryInAgglomeration_Lnigh t
NoiseContours_railwaysInAgglomeration_Lden	NoiseContours_railwaysInAgglomeration_Lden
NoiseContours_railwaysInAgglomeration_Lnigh t	NoiseContours_railwaysInAgglomeration_Lnigh t
NoiseContours_roadsInAgglomeration_Lden	NoiseContours_roadsInAgglomeration_Lden
NoiseContours_roadsInAgglomeration_Lnight	NoiseContours_roadsInAgglomeration_Lnight
NoiseContours_allSourcesInAgglomeration_Lde n	NoiseContours_allSourcesInAgglomeration_Lde n
NoiseContours_allSourcesInAgglomeration_Lnig ht	NoiseContours_allSourcesInAgglomeration_Lnig ht
Voidables	Voidables
ExposureAgglomeration	ExposureAgglomeration
ExposureValueInAgglomeration	ExposureValueInAgglomeration
ESTATUnitReference	ESTATUnitReference
DatasetDefaultProperties (pre-filled)	DatasetDefaultProperties (pre-filled, read-only)
CodelistProperties (pre-filled)	CodelistProperties (pre-filled, read-only)

Figure 5.1. Structure of GeoPackage file Agglomerations-StrategicNoiseMaps (DF4_8) in QGIS



6 Dataflow: Strategic noise map (DF4_8) for major airports

6.1 Description

Strategic noise map produced on a 5-year basis for a major airport. It is used to determine the number of people exposed to harmful noise levels due to air traffic noise.

The Strategic noise map (DF4_8) for major airports dataflow includes 3 data schemas:

- Strategic noise map for major airport (DF4_8) data schema, including 10 tables described in sections 6.2 to 6.10
- Submission Declaration schema described in section 9
- Reference Dataset – Vocabulary - common tables described in section 3.

The following sections include information about the data schema for Strategic noise map for major airport (DF4_8).

6.1.1 Tables for exposure data

- ExposureMajorAirport: It contains information on ICAO code, LAU code in case that this is used, the computations and measurement method, the information of how receiver points in dwellings were calculated and links (URL)that contains any relevant additional information.
- ExposureValue: It contains information on population exposure, including schools and hospitals, to be provided for major airports both for L_{den} and L_{night} range values specified in the END.
- ESTATUnitReference: It contains information on the dataset reference version of LAU codes used in case reporting of major airports is noise per LAU units.

6.1.2 Tables for noise contours

- NoiseContours_majorAirportIncludingAgglomeration_Lden: It contains information corresponding to the areas or isophones affected by high noise levels in L_{den} as determined by the Environmental Noise Directive due to major airports including agglomerations.
- NoiseContours_majorAirportIncludingAgglomeration_Lnight: It contains information corresponding to the areas or isophones affected by high noise levels in L_{night} as determined by the Environmental Noise Directive due to major airports including agglomerations.
- Voidables: It contains information on voidable attributes defined in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps - noise contours related to major airport source.

6.1.3 Tables related to noise contours and exposure data (common tables)

- DatasetDefaultProperties: Information about the default values of objects in a data set or a table (read only schema, and already pre-filled in in Reportnet 3).
- CodelistProperties: List of applicable code lists in that data schema (read only schema, and already pre-filled in in Reportnet 3).

6.1.4 Tables supporting data harvesting through INSPIRE download services

- HarvestSource: URLs from which to harvest the geospatial features needed for the reporting.
- WorkflowLog: log messages from the harvesting process (i.e. harvested resources, errors occurring during harvesting).

6.2 Table ExposureMajorAirport

ExposureMajorAirport table includes exposure information to different noise levels and indicators due major airports, as determined by the Environmental Noise Directive.

Table 6.1. ExposureMajorAirport table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	ICAOCode	Text	
C	ESTATUnitCode	Text	
M	computationAndMeasurementMethod	Text	
O	receiverPointsInDwelling	Text	
O	referenceLink	Text	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

6.2.1 Field ICAOCode

Requirement	Mandatory
Description	Unique international code of airport defined by the International Civil Aviation Organization. It is mandatory.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	LOWW
Reporting constraints	ICAOCode will be re-used across the complete END data model to uniquely identify spatial objects and all other objects – entities. Each ICAO code provided in this dataflow should be provided in Noise Sources (DF1_5) dataflow. The submission of DF4_8 will be blocked if the ICAO code is not included in DF1_5 Major airports.

6.2.2 Field ESTATUnitCode

Requirement	Conditional
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Only LAU codes are allowed.
Example	50101
Reporting constraints	It is optional, but when exposure data is reported at LAU level, this attribute is mandatory. LAU codes need to be provided if exposure data is reported per territorial units. If exposure information is reported per LAU codes, unique combinations of ICAO code and LAU code are expected. The reporting is allowed per ICAO code as a whole or per LAU units affected by the major airport. The mixture of both reporting approaches is not allowed. If LAU codes are reported, the table ESTATUnitReference need to be filled in. The submission of DF4_8 will be blocked if the LAU code is not included in the reference dataset of LAU/NUTS.

6.2.3 Field computationAndMeasurementMethod

Requirement	Mandatory
Description	Computation and measurement method being used to calculate the noise maps
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate method compliant with Commission Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council (known as CNOSSOS-EU). The title of the document and the version should be indicated.
Example	Example 1: Environmental Noise Directive, Annex II, Chapter 2.2 road traffic noise and chapter 2.5 sound propagation, in the version of 28.07.2021 Example 2: RVS 02.04.11 in the version of 1.11.2021 for road traffic noise and ÖAL directive no 28 in the version of 1.10.2021 for sound propagation). Links: http://recht.fsv.at/, https://www.oeal.at/richtlinien

6.2.4 Field receiverPointsInDwelling

Requirement	Optional
Description	Information on the methods employed to calculate exposure to noise at the most exposed façade as described in section 2.8 of Annex II to Directive 2002/49/EC.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate the following: I. Determination of the dwellings and people living in dwellings exposed to noise (choose between: Case 1A, 1B, 2A, 2B, 2C, 2D) II. Assigning noise assessment points to dwellings and people living in dwellings: (choose between: Case 1 Procedure, Case 2 Procedure) III. Assigning dwellings and people living in dwellings to receiver points - information on the location of dwellings within building footprints is available - or - no information on the location of dwellings within building footprints as explained above is available (choose between: Case a; Case b) See details in END Annex II - Section 2.8
Example	Determination of the dwellings and people living in dwellings exposed to noise (Case 2A); Assigning noise assessment points to dwellings and people living in dwellings: (Case 1 procedure); Assigning dwellings and people living in dwellings to receiver points: no information on the location of dwellings within building footprints as explained above is available (Case a);

6.2.5 Field referenceLink

Requirement	Optional
Description	Link to the published online information. This attribute can present links (URL) to maps, web applications, or other online information.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Provision of the links (URL) to maps, web applications, or other online information; separated by ";" if more than one link is provided.
Example	https://geoportal.mzcr.cz/SHM2017/

6.2.6 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorAirports-StrategicNoiseMaps.gpkg

6.3 Table ExposureValue

The table *ExposureValue* provides information about population exposure, including schools and hospitals, to be provided for major airports both for L_{den} and L_{night} range values specified in the END.

Table 6.2. ExposureValue table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	ICAOCode	Text	
O	ESTATUnitCode	Text	
M	exposureType	Link	https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue/
M	noiseLevel	Link	The common code list MeasureCategoryTypeValue includes two individual code lists NoiseIndicatorRangeValue and NoiseIndicatorIncludingAgglomerationValue: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue/
M	exposedPeople	Number - Integer	
C	exposedArea	Number - Decimal	
C	exposedDwellings	Number - Integer	
O	exposedHospitals	Number - Integer	
O	exposedSchools	Number - Integer	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

6.3.1 Field ICAOCode

Requirement	Mandatory
Description	Unique international code of airport defined by the International Civil Aviation Organization.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	LOWW
Reporting constraints	ICAOCode will be re-used across the complete END data model to uniquely identify spatial objects and all other objects – entities. Each ICAO code provided in this dataflow should be provided in Noise Sources (DF1_5) dataflow. ICAO code must be the same as in the table "ExposureMajorAirport".

6.3.2 Field ESTATUnitCode

Requirement	Conditional
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Only LAU codes are allowed.
Example	50101
Reporting constraints	It is optional, but when exposure data is reported at LAU level, this attribute is mandatory. LAU codes need to be provided if exposure data is reported per territorial units. If exposure information is reported per LAU codes, unique combinations of ICAO code and LAU code are expected. The reporting is allowed per ICAO code as a whole or per LAU units affected by the major airport. The mixture of both reporting approaches is not allowed. If LAU codes are reported, the table ESTATUnitReference need to be filled in. LAU code must be the same as in the table "ExposureMajorAirport".

6.3.3 Field exposureType

Requirement	Mandatory
Description	Defines the characteristics of the dwellings' façade where noise exposure is calculated. It is mandatory for the code values "mostExposedFacade" and "mostExposedFacadeIncludingAgglomeration"
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue/ Applicable code list values: - mostExposedFacade - mostExposedFacadeIncludingAgglomerations - withQuietFacade - withSpecialInsulation
Information	The code values “mostExposedFacade” and "mostExposedFacadeIncludingAgglomeration" are mandatory and needs to be provided per each ICAO code (or unique combination of ICAO code and LAU code). Code values “withQuietFacade” and “withSpecialInsulation” are optional.
Example	mostExposedFacadeIncludingAgglomerations
Reporting constraints	The provision of data on population exposure at the “mostExposedFacade” and at the “mostExposedFacadeIncludingAgglomeration” will be evaluated during the technical acceptance process.

6.3.4 Field noiseLevel

Requirement	Mandatory
Description	Defines the dB range value for L_{den} or L_{night} at which the number of people exposed is calculated. It is mandatory for the code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 when reporting most exposed façade and also for the code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75 when reporting most exposed façade including agglomerations
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The following two code lists are applicable: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue/ The combined applicable code list values are: - LdenLowerThan40 - Lden4044 - Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 - LdenEqualHigher55 - LdenEqualHigher65 - LdenEqualHigher75
Information	The code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 are mandatory and needs to be provided per each ICAO code (or unique combination of ICAO code and LAU code) when selecting exposureType = “mostExposedFacade”. The code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75 are mandatory and needs to be provided per each ICAO code (or unique combination of ICAO code and LAU code) when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	Lnight6569
Reporting constraints	The provision of data on population exposure for all mandatory code list values for the attribute noiseLevel will be evaluated during the technical acceptance process.

6.3.5 Field exposedPeople

Requirement	Mandatory
Description	Number of people exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of people. The number should indicate the total number of people to avoid any confusion on rounding issues. For example the number 135472 corresponds to one hundred thirty five thousand four hundred seventy two exposed people. The estimated number of people rounded to the nearest hundred as specified in the END will be calculated when compiling all the data into the EU database.
Example	36214
Reporting constraints	The provision of data on population exposure for all mandatory values will be evaluated during the technical acceptance process.

6.3.6 Field exposedArea

Requirement	Conditional
Description	Area (in km2) at a specific noise range and indicator (including agglomerations).
Reportnet 3 type	Number - Decimal
Format	Maximum of 40 characters
Information	It is mandatory when reporting exposure information of the most exposed façade including agglomerations. exposedArea need to be provided for the noiseLevel code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75, per each ICAO code (or unique combination of ICAO code and LAU code) and when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	56.10
Reporting constraints	The provision of data on exposedArea for all mandatory values will be evaluated during the technical acceptance process.

6.3.7 Field exposedDwellings

Requirement	Conditional
Description	Number of dwellings exposed to noise according to the selected noise range, indicator and source (including agglomerations).
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	It is mandatory when reporting exposure information of the most exposed façade including agglomerations exposedDwellings need to be provided for the noiseLevel code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75, per each ICAO code (or unique combination of ICAO code and LAU code) and when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	10527
Reporting constraints	The provision of data on exposedDwellings for all mandatory values will be evaluated during the technical acceptance process.

6.3.8 Field exposedHospitals

Requirement	Optional
Description	Number of hospitals exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of hospitals.
Example	3

6.3.9 Field exposedSchools

Requirement	Optional
Description	Number of schools exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of schools.
Example	7

6.3.10 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorAirports-StrategicNoiseMaps.gpkg

6.4 Table ESTATUnitReference

The table *ESTATUnitReference* provides reference information concerning NUTS or LAU data if the exposure information is provided through those EUROSTAT classification of territorial units. In the case

of exposure data due to major airports, only LAU codes are expected and therefore, it is only expected to provide reference information in relation to LAU data.

Table 6.3. ESTATUnitReference table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
C	ESTATNUTSReferenceTitle	Text	
C	ESTATNUTSReferenceLink	URL	
C	ESTATLAUReferenceTitle	Text	
C	ESTATLAUReferenceLink	URL	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

6.4.1 Field ESTATNUTSReferenceTitle

Requirement	Optional and conditional
Description	Version of the NUTS data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	
Reporting constraints	**This field is not applicable for data schema Strategic noise maps for major airports (DF4_8).** It is not expected to be provided when reporting exposure information due to major airports.

6.4.2 Field ESTATNUTSReferenceLink

Requirement	Optional and conditional
Description	Link to the NUTS data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	
Reporting constraints	**This field is not applicable for data schema Strategic noise maps for major airports (DF4_8).** It is not expected to be provided when reporting exposure information due to major airports.

6.4.3 Field ESTATLAUReferenceTitle

Requirement	Optional and conditional
Description	Version of the LAU data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	EUROSTAT Local Administrative Units (LAU), 2020
Reporting constraints	It is expected to be provided when the field ESTATUnitCode from tables "ExposureMajorAirport" and "ExposureValue" are filled in with a LAU code.

6.4.4 Field ESTATLAUReferenceLink

Requirement	Optional and conditional
Description	Link to the LAU data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/lau
Reporting constraints	It is expected to be provided when the field ESTATUnitCode from tables "ExposureMajorAirport" and "ExposureValue" are filled in with a LAU code.

6.4.5 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorAirports-StrategicNoiseMaps.gpkg

6.5 Overview of tables for noise contours for major airports

All tables for noise contours have the same structure. The tables are organised per noise source and noise indicators L_{den} and L_{night} – there are two tables per major airports, one for noise contours

corresponding to the noise indicator L_{den} and one for noise contours corresponding to the noise indicator L_{night}.

Depending on the geometry type, (multi)polygon or (multi)line, different code lists will apply.

The code list NoiseIndicatorRangeValue applies for (multi)polygon geometry for both noise indicators L_{den} and L_{night}. The code list NoiseIndicatorValue applies for (multi)line geometry for both noise indicators L_{den} and L_{night}.

Please note that for noise values equal and greater than 75 dB L_{den} and for noise values equal and greater than 70 dB L_{night}, a unique (multi)polygon is expected. The same principle applies for noise values equal and lower than 40 dB L_{den} and for noise values equal and lower than 40 dB L_{night}.

The following overview provides information on tables for noise contours for major airports, noise source, noise indicators, geometry types and corresponding code lists for attributes in data schema Strategic noise map for major airports (DF4_8).

Table 6.4. Overview of tables for noise contours, geometry types and code lists

Table for noise contours	Noise source	Noise indicator	Geometry type	MesaureCategoryTypeValue		NoiseSourceTypeValue	EnvHealthDeterminantTypeValue (default value)
				NoiseIndicatorRangeValue	NoiseIndicatorValue		
NoiseContours_majorAirportsIncludingAgglomeration_Lden	Major Airports including agglomerations	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	Major Airports including agglomerations	Lnight	polygon	X		X	X
			line		X	X	X

6.6 Details of tables for noise contours for major airports

The tables for noises contours provide information corresponding to the areas or isolines affected by high noise levels in L_{den} or L_{night} as determined by the Environmental Noise Directive due to major airports. The details are presented in the next sections.

Table 6.5. Overview of the table noise contours for major airports

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	id	Number - Integer	
C	measureTime_beginPosition	DateTime	
C	measureTime_endPosition	DateTime	
M	category	Link	The common code list MeasureCategoryTypeValue includes two individual code

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
			lists NoiseIndicatorRangeValue and NoiseIndicatorValue. If the geometry type is (multi)polygon the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/. If the geometry type is (multi)line the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ . There are separate values for indicators Lden and Lnight.
M	source	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/
C	location_area	Multiple polygons	
C	location_line	Multiple lines	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

6.6.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

6.6.2 Field measureTime_beginPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "beginPosition". The default value for attribute “measureTime_beginPosition” is included in the table DatasetDefaultProperties, which is: 2021-01-01T01:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-01-01T01:00:00Z
Reporting constraints	It is conditional: or default value or values per feature.

6.6.3 Field measureTime_endPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "endPosition". The default value for attribute “measureTime_endPosition” is included in the table DatasetDefaultProperties, which is: 2021-12-31T23:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-12-31T23:00:00Z
Reporting constraints	It is conditional: or default value or values per feature.

6.6.4 Field category

Requirement	Mandatory
Description	Identifies the different indicator values or range values of the noise contour maps.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The applicable code lists are: NoiseIndicatorRangeValue and NoiseIndicatorValue:

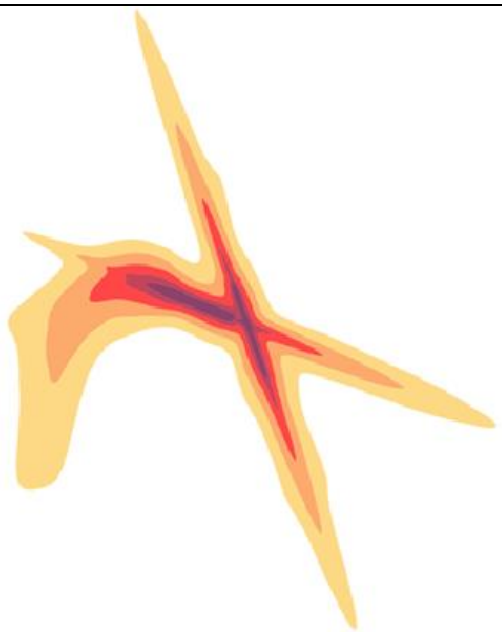
	Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{den},** the applicable code list values are: - LdenLowerThan40 - Lden4044 - Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{den},** the applicable code list values are: - Lden40 - Lden45 - Lden50 - Lden55 - Lden60 - Lden65 - Lden70 - Lden75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{night},** the applicable code list values are: - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{night},** the applicable code list values are: - Lnight40 - Lnight45 - Lnight50 - Lnight55 - Lnight60 - Lnight65 - Lnight70
Information	This is an INSPIRE attribute. This attribute uses a value from the extended INSPIRE code list MeasureCategoryTypeValue. For the END reporting purpose, two extended code lists are defined: NoiseIndicatorRangeValue code list and NoiseIndicatorValue code list with regard

	to the type of geometry of noise contours (area or line) and noise indicators L_{den} or L_{night}. In Reportnet platform, both code lists are merged into NoiseIndicatorNoiseContourValue.
Example	Example 1: A noise contour with geometry of a (multi)polygon and noise indicator L_{den} will include value Lden5559 in the field category: **Lden5559** Example 2: A noise contour with geometry (multi)line and noise indicator L_{den} will include value Lden55 in the field category: **Lden55** Example 3: A noise contour with geometry of a (multi)polygon and noise indicator L_{night} will include value Lnight5559 in the field category: **Lnight5559** Example 4: A noise contour with geometry (multi)line and noise indicator L_{night} will include value Lnight55 in the field category: **Lnight55**
Reporting constraints	If noise contours are provided as polygons (recommended), the NoiseIndicatorRangeValue code list and corresponding codes are to be used. If noise contours are provided as lines, the NoiseIndicatorValue code list and corresponding codes are to be used. The recommended format is (multi)polygon geometry. The provision of noise contour maps for all mandatory values will be evaluated during the technical acceptance process.

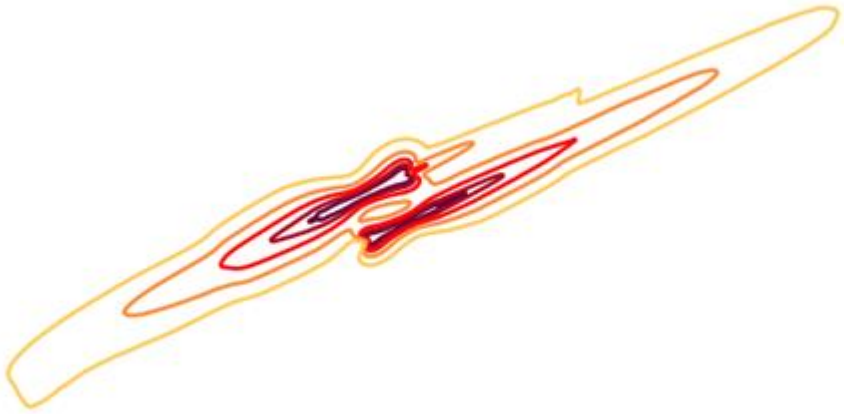
6.6.5 Field source

Requirement	Mandatory
Description	Source of the noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/ Depending on the noise source, the following code list values apply: - For noise contours of major airports: o majorAirportsIncludingAgglomeration
Information	This is an INSPIRE attribute. For the END reporting purpose it defines the END noise source types. The applicable code value is “majorAirportsIncludingAgglomeration”.
Example	majorAirportsIncludingAgglomeration
Reporting constraints	Noise contours for major airports including agglomerations are mandatory. Mismatches between Declaration of noise sources in dataset schema Noise sources (DF1_5) and noise contour maps provided will be evaluated in the technical acceptance process.

6.6.6 Field location_area

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple polygons
Information	For the END reporting purpose, the geometry of the noise contour map can be polygon or multipolygon. It is mandatory for this geometry type.
Example (multipolygon geometry)	 Source: END reported data from Vienna major airport (Austria)
Reporting constraints	The NoiseIndicatorRangeValue code list and corresponding codes are to be used for reporting polygons or multipolygons. It is mandatory and conditional: location_area or location_line should be provided.

6.6.7 Field location_line

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple lines
Information	For the END reporting purpose, the geometry of the noise contour map can be line or multiline. It is mandatory for this geometry type.
Example (multiline geometry)	 Source: END reported data from La Palma major airport (Spain)
Reporting constraints	The NoiseIndicatorValue code list and corresponding codes are to be used for reporting lines or multilines. It is mandatory and conditional: location_area or location_line should be provided. It must be a closed line or multiline – representing a boundary of an area.

6.6.8 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorAirports-StrategicNoiseMaps.gpkg

6.6.9 Data example of table NoiseContours_majorAirportsIncludingAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lden5559	majorAirportsIncludingAgglomeration	x	
2			Lden6064	majorAirportsIncludingAgglomeration	x	
3			Lden6569	majorAirportsIncludingAgglomeration	x	
4			Lden7074	majorAirportsIncludingAgglomeration	x	
5			LdenGreaterThan75	majorAirportsIncludingAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

6.6.10 Data example of table NoiseContours_majorAirportsIncludingAgglomeration_Lnight

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lnight5054	majorAirportsIncludingAgglomeration	x	
2			Lnight5559	majorAirportsIncludingAgglomeration	x	
3			Lnight6064	majorAirportsIncludingAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

6.7 Table Voidables

This table includes attributes that are defined as voidable in the data model and in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps – noise contours related to major airport source. Only the attributes defined in the INSPIRE specifications are voidable. This table is used in case a value is assigned to a voidable attribute for an individual spatial object which is already provided in any of the applicable 2 tables of noise contours - primary tables of spatial data (one Voidables table for all voidable attributes). Otherwise, the default value of these attributes is used and therefore this table can be left empty.

It is recommended to use table DatasetDefaultProperties to provide default values applicable to the complete data set or data schema. By doing this, the table Voidables can be left empty.

In case a value for a voidable property for each special object is provided, the following constraints apply to individual voidable property :

1) DateTime data type requires ISO DateTime format with UTC information. The required format is YYYY-MM-DDThh:mm:ssZ. It is applicable to the fields validFrom, validTo and beginLifespanVersion;
2) If any value for a voidable attribute of a spatial object is provided, a correct linking between the primary tables of spatial data (e.g. NoiseContours_majorAirportsIncludingAgglomeration_Lden, NoiseContours_majorAirportsIncludingAgglomeration_Lnight) and Voidables table must be provided: the field primaryTable_id in the table Voidables must include the corresponding id of the spatial object from the table of noise contours, and the name of that table must be provided in the field tableName, see example below.

Table 6.6. Voidables table and relation to primary tables of noise contours

NoiseContours_majorAirportsIncludingAglomeration_Lden (attribute table)	
id	… other fields …
10	

NoiseContours_majorAirportsIncludingAglomeration_Lnight (attribute table)	
id	… other fields …
100	

Voidables table		
primaryTable_id	tableName	… other fields …
10	NoiseContours_majorAirportsIncludingAgglomeration_Lden	
100	NoiseContours_majorAirportsIncludingAgglomeration_Lnight	

Detailed information about requirements of voidable properties in the INSPIRE application schema used for END noise contours can be also found in the INSPIRE Data Specification on Human Health and Safety – Technical Guidelines and in the Implementing Rules on Interoperability of spatial data sets and services.

Table 6.7. Voidables table overview

Mandatory /optional	**Name**	**Reportnet 3 Type**	**Code list**
M	id	Number - Integer	
M	beginLifespanVersion	DateTime	
M	validFrom	DateTime	
M	validTo	DateTime	
M	primaryTable_id	Number - Integer	
M	tableName	Text	
M	sourceIdentifier	Text	

6.7.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

6.7.2 Field beginLifespanVersion

Requirement	Mandatory
Description	It records a start or a change of noise contours in the spatial dataset, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, lifespan information when a noise contour has been inserted or changed in the spatial dataset is not required, but can be provided as date and time information of creation of a noise contour in a dataset, or of creation of a dataset itself, or a void reason must be provided. In that case, the value “unpopulated” is proposed to be used. It is recommended to use a default value of void reason (“unpopulated”) in the DatasetDefaultProperties and leave this field empty.
Example	2022-01-01T01:00:00Z

6.7.3 Field validFrom

Requirement	Mandatory
Description	Starting date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it started to exist in the real world) can be provided as a starting date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value “unpopulated” is proposed to be used. The default value for validFrom is included in the table DatasetDefaultProperties, which is: 2022-12-31T01:00:00Z
Example	2022-12-31T01:00:00Z

6.7.4 Field validTo

Requirement	Mandatory
Description	Ending date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it is no longer valid in the real world) can be provided as an end date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value "unpopulated" is proposed to be used. The default value for validTo is included in the table DatasetDefaultProperties, which is: 2027-12-30T23:00:00Z
Example	2027-12-30T23:00:00Z

6.7.5 Field primaryTable_id

Requirement	Mandatory
Description	Refers to unique identifiers in the tables of noise contour map layers.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Unique identifier is automatically created in Geopackage file (primary key in the SQLite database).
Example	1

6.7.6 Field tableName

Requirement	Mandatory
Description	Name of the table of noise contour map layer where the voidable value is used.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	
Example	NoiseContours_majorAirportsIncludingAgglomeration_Lden

6.7.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorAirports-StrategicNoiseMaps.gpkg

6.8 Table DatasetDefaultProperties

This table includes all properties that can have a default value in a data set. Typically, it includes: default values or void reason for voidable attributes defined in the INSPIRE specifications, and default values of other attributes. The table is prefilled and read-only.

Table 6.8. DatasetDefaultProperties table overview

Mandatory /optional	Name	Reportnet 3 Type
M	tableName	Text
M	propertyName	Text
O	attribute	Text
M	defaultValue	Text

Table 6.9. Applicable values for the DatasetDefaultProperties

tableName	propertyName	attribute	defaultValue
NoiseContours_majorAirportsIncludingAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_majorAirportsIncludingAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z

tableName	propertyName	attribute	defaultValue
NoiseContours_majorAirportsIncludingAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated

6.9 Table CodelistProperties

This table includes a list of the code lists that have to be used for reporting data on the DF4_8 Strategic noise maps for major airports data model. The complete code lists used in the END data model are also published in the Eionet Data Dictionary (https://dd.eionet.europa.eu/vocabularies) and are used in the Reportnet 3 data schemas.

The specific applicable code lists can also be found in the Vocabulary – common tables data schema of this dataflow.

The table is prefilled and read-only.

Table 6.10. CodelistProperties table overview

Mandatory/ optional	Name	Reportnet 3 Type
M	tableName	Text
M	propertyName	Text
M	codelist	Text

Table 6.11. Applicable values for the CodelistProperties

tableName	propertyName	codelist
NoiseContours_majorAirportsIncludingAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_majorAirportsIncludingAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue

tableName	propertyName	codelist
NoiseContours_majorAirportsIncludingAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_majorAirportsIncludingAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
ExposureMajorAirport	reportingLevel	http://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue
ExposureValue	exposureType	http://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue
ExposureValue	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
ExposureValue	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue

6.10 Tables supporting data harvesting through INSPIRE download services

The dataset schema includes two additional tables for the alternative reporting method by providing INSPIRE download services and trigger a data harvesting process. The tables HarvestSource and WorkflowLog are described together with the harvesting process in section 10.4 and in Annex 4.

Regardles of the import process, file import or download service harvesting, the expected file format is GeoPackage provided on the pre-defined template.

6.11 GeoPackage format

6.11.1 Support to data transformation into GeoPackage

GeoPackage template

The GeoPackage template MajorAirports-StrategicNoiseMaps.gpkg has been created to support data reporting of noise contours in (multi)polygon geometry, which is the recommended reporting format.

Additionally, the GeoPackage template MajorAirports-StrategicNoiseMaps-LineString.gpkg has been created to support data reporting of noise contours in (multi)line geometry.

All templates can be found in:

- Dataflow Help page in Reportnet 3. (see 4.3.2), and
- https://www.eionet.europa.eu/reportnet/docs/noise.

Demonstration of data transformation with the ETL tool HALE Studio
A demonstration video on how to create the new GeoPackage file has been issued, using HALE Studio tool, which is accessible in: https://www.eionet.europa.eu/reportnet/docs/noise/videos.

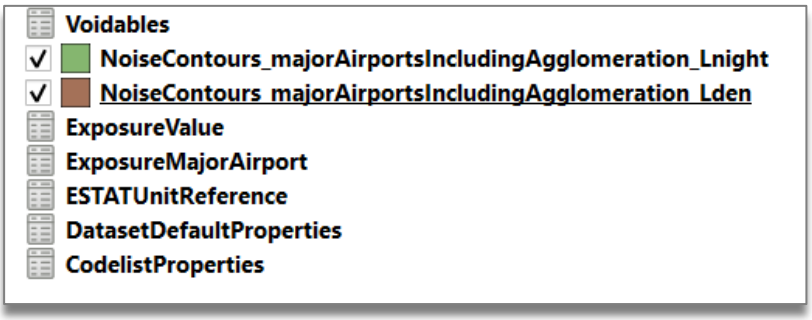
The data transformation project (HALE Studio) details with test data (note: using simulated data for feasibility of data transformation, not exact data for noise reporting) can also be found in the repository https://github.com/wetransform-os/geopackage-end/tree/main/DF4_8. It shows possibilities to create a mapping between a source schema and target GeoPackage schema and transform source data into the Geopackage file format.

6.11.2 Use of GeoPackage file format in the Reportnet 3

The GeoPackage template for DF4_8 major airports includes the same tables as the ones that are included in Reportnet 3, see example below. The data import process in the Reportnet 3 transfers data from the GeoPackage file into the correlated tables into the Reportnet 3 data schema *Strategic noise map for major airports (DF4_8)*.

GeoPackage template MajorAirports-StrategicNoiseMaps.gpkg – list of tables	**Reportnet 3 data schema Strategic noise map for major airports (DF4_8) – list of tables**
NoiseContours_majorAirportsIncludingAgglomeration_Lden	NoiseContours_majorAirportsIncludingAgglomeration_Lden
NoiseContours_majorAirportsIncludingAgglomeration_Lnight	NoiseContours_majorAirportsIncludingInAgglomeration_Lnight
Voidables	Voidables
ExposureMajorAirport	ExposureMajorAirport
ExposureValue	ExposureValue
ESTATUnitReference	ESTATUnitReference
DatasetDefaultProperties (pre-filled)	DatasetDefaultProperties (pre-filled, read-only)
CodelistProperties (pre-filled)	CodelistProperties (pre-filled, read-only)

Figure 6.1. Structure of GeoPackage file MajorAirports-StrategicNoiseMaps (DF4_8) in QGIS



7 Dataflow: Strategic noise map (DF4_8) for major railways

7.1 Description

Strategic noise map produced on a 5-year basis for a major railway. It is used to determine the number of people exposed to harmful noise levels due to rail traffic noise.

The Strategic noise map (DF4_8) for major railways dataflow includes 3 data schemas:

- Strategic noise map for major railway (DF4_8) data schema, including 10 tables described in sections 7.2 to 7.10
- Submission Declaration schema described in section 9
- Reference Dataset – Vocabulary - common tables described in section 3.

The following sections include information about the data schema for Strategic noise map for major railway (DF4_8).

7.1.1 Tables for exposure data

- ExposureMajorRailway: It contains information on reporting level, NUTS or LAU codes, the computation and measurement method, the information of how receiver points in dwellings were calculated and links (URL) that contains any relevant additional information.
- ExposureValue: It contains information on population exposure, including schools and hospitals, to be provided for major railways both for L_{den} and L_{night} range values specified in the END.
- ESTATUnitReference: It contains reference information concerning NUTS or LAU data if the exposure information is provided through those EUROSTAT classification of territorial units

7.1.2 Tables for noise contours

- NoiseContours_majorRailwaysIncludingAgglomeration_Lden: Information corresponding to the areas or isophones affected by high noise levels in L_{den} as determined by the Environmental Noise Directive due to major railways including agglomerations
- NoiseContours_majorRailwaysIncludingAgglomeration_Lnight: Information corresponding to the areas or isophones affected by high noise levels in L_{night} as determined by the Environmental Noise Directive due to major railways including agglomerations
- Voidables : Voidable attributes defined in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps - noise contours related to major railway source.

7.1.3 Tables related to noise contours and exposure data (common tables)

- DatasetDefaultProperties: Information about the default values of objects in a data set or a table (read only schema, and already pre-filled in in Reportnet 3).
- CodelistProperties: List of applicable code lists in that data schema (read only schema, and already pre-filled in in Reportnet 3) .

7.1.4 Tables supporting data harvesting through INSPIRE download services

- HarvestSource: URLs from which to harvest the geospatial features needed for the reporting.
- WorkflowLog: log messages from the harvesting process (i.e. harvested resources, errors occurring during harvesting).

7.2 Table ExposureMajorRailway

ExposureMajorRailway table includes exposure information to different noise levels and indicators due major railways, as determined by the Environmental Noise Directive.

Table 7.1. ExposureMajorRailway table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	reportingLevel	Link	https://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue/
M	ESTATUnitCode	Text	
O	railIdIdentifier	Text	
M	computationAndMeasurementMethod	Text	
O	receiverPointsInDwelling	Text	
O	referenceLink	Text	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

7.2.1 Field reportingLevel

Requirement	Mandatory
Description	Reporting level of the exposure data related to major railways.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue Applicable code list values: - LAU - NUTS3 - NUTS2 - NUTS1 - country
Example	LAU

7.2.2 Field ESTATUnitCode

Requirement	Mandatory
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	LAU code to be reported when selecting LAU code value in the attribute "reportingLevel". NUTS1, NUTS 2, NUTS3 code to be reported when selecting NUTS1, NUTS2, NUTS3 code values respectively in the attribute "reportingLevel". Country code to be reported when selecting country code value in the attribute "reportingLevel".
Example	50101
Reporting constraints	If NUTS or LAU are provided, the table ESTATUnitReference should be filled in. The submission of DF4_8 will be blocked if the LAU or NUTS code is not included in the reference dataset of LAU/NUTS.

7.2.3 Field railIdIdentifier

Requirement	Optional
Description	Unique code corresponding to a railway segment comprised within the territorial unit code. The unique code is expected to be the same as the identifier from the feature type MajorRailwaySource (railId_identifier) from END dataflow DF1_5 for Major Railways.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The segment must be split according to the territorial unit chosen in reportingLevel and that will be used for reporting of exposure data. The value of this field re-uses the identifier of the major railways defined in DF1_5 (see more information in section 4.2.3).
Example	RL_AT_00_1
Reporting constraints	It is optional, but if exposure information is reported per railIdIdentifier, unique combinations between ESTATUnitCode and railIdIdentifier are expected, avoiding double counting of the reported data. In the post processing of reported data provided, the exposure values per individual railway segments will be summed up according to the territorial unit chosen in "reportingLevel" attribute. If rail identifier is reported, the submission of DF4_8 will be blocked if the rail identifier is not in DF1_5 Major railways.

7.2.4 Field computationAndMeasurementMethod

Requirement	Mandatory
Description	Computation and measurement method being used to calculate the noise maps
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate method compliant with Commission Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council (known as CNOSSOS-EU). The title of the document and the version should be indicated.
Example	Example 1: Environmental Noise Directive, Annex II, Chapter 2.2 road traffic noise and chapter 2.5 sound propagation, in the version of 28.07.2021 Example 2: RVS 02.04.11 in the version of 1.11.2021 for road traffic noise and ÖAL directive no 28 in the version of 1.10.2021 for sound propagation). Links: http://recht.fsv.at/, https://www.oeal.at/richtlinien

7.2.5 Field receiverPointsInDwelling

Requirement	Optional
Description	Information on the methods employed to calculate exposure to noise at the most exposed façade as described in section 2.8 of Annex II to Directive 2002/49/EC.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate the following: I. Determination of the dwellings and people living in dwellings exposed to noise (choose between: Case 1A, 1B, 2A, 2B, 2C, 2D) II. Assigning noise assessment points to dwellings and people living in dwellings: (choose between: Case 1 Procedure, Case 2 Procedure) III. Assigning dwellings and people living in dwellings to receiver points - information on the location of dwellings within building footprints is available - or - no information on the location of dwellings within building footprints as explained above is available (choose between: Case a; Case b) See details in END Annex II - Section 2.8
Example	Determination of the dwellings and people living in dwellings exposed to noise (Case 2A); Assigning noise assessment points to dwellings and people living in dwellings: (Case 1 procedure); Assigning dwellings and people living in dwellings to receiver points: no information on the location of dwellings within building footprints as explained above is available (Case a);

7.2.6 Field referenceLink

Requirement	Optional
Description	Link to the published online information. This attribute can present links (URL) to maps, web applications, or other online information.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Provision of the links (URL) to maps, web applications, or other online information; separated by ";" if more than one link is provided.
Example	https://geoportal.mzcr.cz/SHM2017/

7.2.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRailways-StrategicNoiseMaps.gpkg

7.3 Table ExposureValue

The table *ExposureValue* provides information about population exposure, including schools and hospitals, to be provided for major railways both for L_{den} and L_{night} range values specified in the END.

Table 7.2. ExposureValue table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	ESTATUnitCode	Text	
O	railIdIdentifier	Text	
M	exposureType	Link	https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue/
M	noiseLevel	Link	The common code list MeasureCategoryTypeValue includes two individual code lists NoiseIndicatorRangeValue and NoiseIndicatorIncludingAgglomerationValue: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue/
M	exposedPeople	Number - Integer	
C	exposedArea	Number - Decimal	
C	exposedDwellings	Number - Integer	
O	exposedHospitals	Number - Integer	
O	exposedSchools	Number - Integer	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

7.3.1 Field ESTATUnitCode

Requirement	Mandatory
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	50101
Reporting constraints	Same codes as the ones provided in the table “ExposureMajorRailway” are expected If NUTS or LAU are provided, the table ESTATUnitReference should be filled in. ESTATUnitCode must be the same as in the table “ExposureMajorRailway”.

7.3.2 Field railIdIdentifier

Requirement	Optional
Description	Unique code corresponding to a railway segment comprised within the territorial unit code. The unique code is expected to be the same as the identifier from the feature type MajorRailwaySource (railId_identifier) from END dataflow DF1_5 for Major Railways.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The segment must be split according to the territorial unit chosen in reportingLevel and that will be used for reporting of exposure data. The value of this field re-uses the identifier of the major railways defined in DF1_5 (see more information in section 4.2.3).
Example	RL_AT_00_1
Reporting constraints	It is optional, but if exposure information is reported per railIdIdentifier, unique combinations between ESTATUnitCode and railIdIdentifier are expected, avoiding double counting of the reported data. In the post processing of reported data provided, the exposure values per individual railway segments will be summed up according to the territorial unit chosen in “reportingLevel” attribute. If rail identifier is reported, rail identifier must be the same as in the table “ExposureMajorRailway”.

7.3.3 Field exposureType

Requirement	Mandatory
Description	Defines the characteristics of the dwellings' façade where noise exposure is calculated. It is mandatory for the code values "mostExposedFacade" and "mostExposedFacadeIncludingAgglomeration"
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue/ Applicable code list values: - mostExposedFacade - mostExposedFacadeIncludingAgglomerations - withQuietFacade - withSpecialInsulation
Information	The code values “mostExposedFacade” and "mostExposedFacadeIncludingAgglomeration" are mandatory and needs to be provided per each ESTATUnitCode (or unique combination of ESTATUnitCode code and railIdIdentifier). Code values “withQuietFacade” and “withSpecialInsulation” are optional.
Example	mostExposedFacadeIncludingAgglomerations
Reporting constraints	The provision of data on population exposure at the “mostExposedFacade” and at the “mostExposedFacadeIncludingAgglomeration” will be evaluated during the technical acceptance process.

7.3.4 Field noiseLevel

Requirement	Mandatory
Description	Defines the dB range value for L_{den} or L_{night} at which the number of people exposed is calculated. It is mandatory for the code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 when reporting most exposed façade and also for the code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75 when reporting most exposed façade including agglomerations
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The following two code lists are applicable: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue/ The combined applicable code list values are: - LdenLowerThan40 - Lden4044

	- Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 - LdenEqualHigher55 - LdenEqualHigher65 - LdenEqualHigher75
Information	The code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 are mandatory and needs to be provided per each ESTATUnitCode (or unique combination of ESTATUnitCode and railIdIdentifier) when selecting exposureType = “mostExposedFacade”. The code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75 are mandatory and needs to be provided per each ESTATUnitCode (or unique combination of ESTATUnitCode and railIdIdentifier) when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	Lnight6569
Reporting constraints	The provision of data on population exposure for all mandatory code list values for the attribute noiseLevel will be evaluated during the technical acceptance process.

7.3.5 Field exposedPeople

Requirement	Mandatory
Description	Number of people exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of people. The number should indicate the total number of people to avoid any confusion on rounding issues. For example the number 135472 corresponds to one hundred thirty five thousand four hundred seventy two exposed people. The estimated number of people rounded to the nearest hundred as specified in the END will be calculated when compiling all the data into the EU database.
Example	36214
Reporting constraints	The provision of data on population exposure for all mandatory values will be evaluated during the technical acceptance process.

7.3.6 Field exposedArea

Requirement	Conditional
Description	Area (in km2) at a specific noise range and indicator (including agglomerations).
Reportnet 3 type	Number - Decimal
Format	Maximum of 40 characters
Information	It is mandatory when reporting exposure information of the most exposed façade including agglomerations. exposedArea need to be provided for the noiseLevel code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75, per each ESTATUnitCode (or unique combination of ESTATUnitCode and railIdIdentifier) and when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	56.10
Reporting constraints	The provision of data on exposedArea for all mandatory values will be evaluated during the technical acceptance process.

7.3.7 Field exposedDwellings

Requirement	Conditional
Description	Number of dwellings exposed to noise according to the selected noise range, indicator and source (including agglomerations).
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	It is mandatory when reporting exposure information of the most exposed façade including agglomerations exposedDwellings need to be provided for the noiseLevel code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75, per each ESTATUnitCode (or unique combination of ESTATUnitCode and railIdIdentifier) and when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	10527
Reporting constraints	The provision of data on exposedDwellings for all mandatory values will be evaluated during the technical acceptance process.

7.3.8 Field exposedHospitals

Requirement	Optional
Description	Number of hospitals exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of hospitals.
Example	3

7.3.9 Field exposedSchools

Requirement	Optional
Description	Number of schools exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of schools.
Example	7

7.3.10 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRailways-StrategicNoiseMaps.gpkg

7.4 Table ESTATUnitReference

The table *ESTATUnitReference* provides reference information concerning NUTS or LAU data if the exposure information is provided through those EUROSTAT classification of territorial units.

Table 7.3. ESTATUnitReference table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
C	ESTATNUTSReferenceTitle	Text	
C	ESTATNUTSReferenceLink	URL	
C	ESTATLAUReferenceTitle	Text	
C	ESTATLAUReferenceLink	URL	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

7.4.1 Field ESTATNUTSReferenceTitle

Requirement	Optional and conditional
Description	Version of the NUTS data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	ESTATNUTSReferenceTitle NUTS 2021, Version date: 01/02/2020, Scale: 1:1M, Source: Eurostat

7.4.2 Field ESTATNUTSReferenceLink

Requirement	Optional and conditional
Description	Link to the NUTS data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	https://gisco-services.ec.europa.eu/distribution/v2/nuts/download/ref-nuts-2021-01m.shp.zip

7.4.3 Field ESTATLAUReferenceTitle

Requirement	Optional and conditional
Description	Version of the LAU data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	EUROSTAT Local Administrative Units (LAU), 2020

7.4.4 Field ESTATLAUReferenceLink

Requirement	Optional and conditional
Description	Link to the LAU data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/lau

7.4.5 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRailways-StrategicNoiseMaps.gpkg

7.5 Overview of tables for noise contours for major railways

All tables for noise contours have the same structure. The tables are organised per noise source and noise indicators L_{den} and L_{night} – there are two tables per major railways, one for noise contours corresponding to the noise indicator L_{den} and one for noise contours corresponding to the noise indicator L_{night}.

Depending on the geometry type, (multi)polygon or (multi)line, different code lists will apply.

The code list NoiseIndicatorRangeValue applies for (multi)polygon geometry for both noise indicators L_{den} and L_{night}. The code list NoiseIndicatorValue applies for (multi)line geometry for both noise indicators L_{den} and L_{night}.

Please note that for noise values equal and greater than 75 dB L_{den} and for noise values equal and greater than 70 dB L_{night}, a unique (multi)polygon is expected. The same principle applies for noise values equal and lower than 40 dB L_{den} and for noise values equal and lower than 40 dB L_{night}.

The following overview provides information on tables for noise contours for major railways, noise source, noise indicators, geometry types and corresponding code lists for attributes in data schema Strategic noise map for major railways (DF4_8).

Table 7.4. Overview of tables for noise contours, geometry types and code lists

Table for noise contours	Noise source	Noise indicator	Geometry type	MesaureCategoryTypeValue		NoiseSourceTypeValue	EnvHealthDeterminantTypeValue (default value)
				NoiseIndicatorRangeValue	NoiseIndicatorValue		
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	Major Railways including agglomerations	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	Major Railways including agglomerations	Lnight	polygon	X		X	X
			line		X	X	X

7.6 Details of tables for noise contours for major railways

The tables for noises contours provide information corresponding to the areas or isolines affected by high noise levels in L_{den} or L_{night} as determined by the Environmental Noise Directive due to major railways. The details are presented in the next sections.

Table 7.5. Overview of the table noise contours for major railways

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	id	Number - Integer	
C	measureTime_beginPosition	DateTime	
C	measureTime_endPosition	DateTime	
M	category	Link	The common code list MeasureCategoryTypeValue includes two individual code lists NoiseIndicatorRangeValue and NoiseIndicatorValue. If the geometry type is (multi)polygon the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/. If the geometry type is (multi)line the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/. There are separate values for indicators Lden and Lnight.
M	source	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/
C	location_area	Multiple polygons	
C	location_line	Multiple lines	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

7.6.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

7.6.2 Field measureTime_beginPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Datetime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "beginPosition". The default value for attribute “measureTime_beginPosition” is included in the table DatasetDefaultProperties, which is: 2021-01-01T01:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-01-01T01:00:00Z
Reporting constraints	It is conditional: or default value or values per feature.

7.6.3 Field measureTime_endPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Datetime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "endPosition". The default value for attribute “measureTime_endPosition” is included in the table DatasetDefaultProperties, which is: 2021-12-31T23:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-12-31T23:00:00Z
Reporting constraints	It is conditional: or default value or values per feature.

7.6.4 Field category

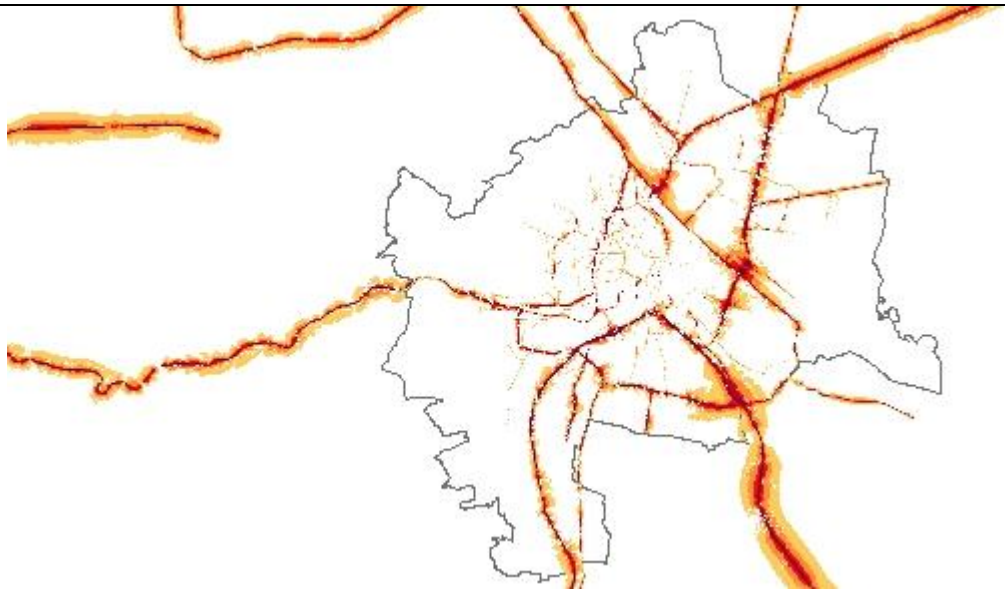
Requirement	Mandatory
Description	Identifies the different indicator values or range values of the noise contour maps.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The applicable code lists are: NoiseIndicatorRangeValue and NoiseIndicatorValue: Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{den},** the applicable code list values are: - LdenLowerThan40 - Lden4044 - Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{den},** the applicable code list values are: - Lden40 - Lden45 - Lden50 - Lden55 - Lden60 - Lden65 - Lden70 - Lden75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{night},** the applicable code list values are: - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{night},** the applicable code list values are: - Lnight40 - Lnight45 - Lnight50

	- Lnight55 - Lnight60 - Lnight65 - Lnight70
Information	This is an INSPIRE attribute. This attribute uses a value from the extended INSPIRE code list MeasureCategoryTypeValue. For the END reporting purpose, two extended code lists are defined: NoiseIndicatorRangeValue code list and NoiseIndicatorValue code list with regard to the type of geometry of noise contours (area or line) and noise indicators L_{den} or L_{night}. In Reportnet platform, both code lists are merged into NoiseIndicatorNoiseContourValue.
Example	Example 1: A noise contour with geometry of a (multi)polygon and noise indicator L_{den} will include value Lden5559 in the field category: **Lden5559** Example 2: A noise contour with geometry (multi)line and noise indicator L_{den} will include value Lden55 in the field category: **Lden55** Example 3: A noise contour with geometry of a (multi)polygon and noise indicator L_{night} will include value Lnight5559 in the field category: **Lnight5559** Example 4: A noise contour with geometry (multi)line and noise indicator L_{night} will include value Lnight55 in the field category: **Lnight55**
Reporting constraints	If noise contours are provided as polygons (recommended), the NoiseIndicatorRangeValue code list and corresponding codes are to be used. If noise contours are provided as lines, the NoiseIndicatorValue code list and corresponding codes are to be used. The recommended format is (multi)polygon geometry. The provision of noise contour maps for all mandatory code values will be evaluated during the technical acceptance process.

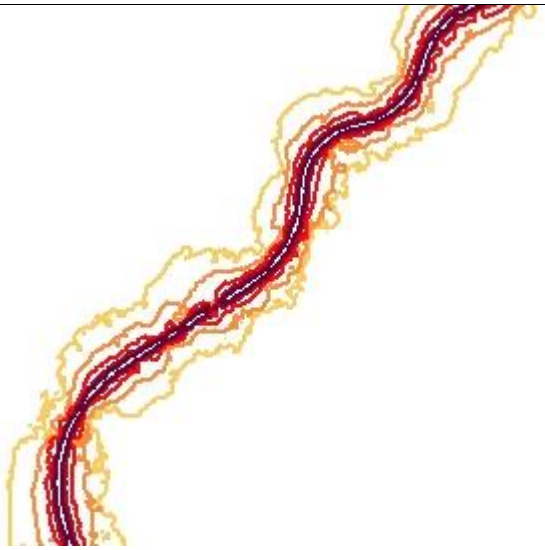
7.6.5 Field source

Requirement	Mandatory
Description	Source of the noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/ Depending on the noise source, the following code list values apply: - For noise contours of major railways: o majorRailwaysIncludingAgglomeration
Information	This is an INSPIRE attribute. For the END reporting purpose it defines the END noise source types. The applicable code value is “majorRailwaysIncludingAgglomeration”.
Example	majorRailwaysIncludingAgglomeration
Reporting constraints	Noise contours for major railways including agglomerations are mandatory. Mismatches between Declaration of noise sources in dataset schema Noise sources (DF1_5) and noise contour maps provided will be evaluated in the technical acceptance process.

7.6.6 Field location_area

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple polygons
Information	For the END reporting purpose, the geometry of the noise contour map can be polygon or multipolygon. It is mandatory for this geometry type.
Example (multipolygon geometry)	 Source: END reported data from Austria (Viena)
Reporting constraints	The NoiseIndicatorRangeValue code list and corresponding codes are to be used for reporting polygons or multipolygons. It is mandatory and conditional: location_area or location_line should be provided.

7.6.7 Field location_line

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple lines
Information	For the END reporting purpose, the geometry of the noise contour map can be line or multiline. It is mandatory for this geometry type.
Example (multiline geometry)	 Source: END reported data from Portugal
Reporting constraints	The NoiseIndicatorValue code list and corresponding codes are to be used for reporting lines or multilines. It is mandatory and conditional: location_area or location_line should be provided. It must be a closed line or multiline – representing a boundary of an area.

7.6.8 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRailways-StrategicNoiseMaps.gpkg

7.6.9 Data example of table NoiseContours_majorRailwaysIncludingAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lden5559	majorRailwaysIncludingAgglomeration	x	
2			Lden6064	majorRailwaysIncludingAgglomeration	x	
3			Lden6569	majorRailwaysIncludingAgglomeration	x	
4			Lden7074	majorRailwaysIncludingAgglomeration	x	
5			LdenGreaterThan75	majorRailwaysIncludingAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

7.6.10 Data example of table NoiseContours_majorRailwaysIncludingAgglomeration_Lnight

id	measureTime_ beginPosition	measureTime_ endPosition	category	source	location _area	location _line
1			Lnight5054	majorRailwaysIncludingAgglomeration	x	
2			Lnight5559	majorRailwaysIncludingAgglomeration	x	
3			Lnight6064	majorRailwaysIncludingAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

7.7 Table Voidables

This table includes attributes that are defined as voidable in the data model and in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps – noise contours related to major railways source. Only the attributes defined in the INSPIRE specifications are voidable. This table is used in case a value is assigned to a voidable attribute for an individual spatial object which is already provided in any of the applicable 2 tables of noise contours - primary tables of spatial data (one Voidables table for all voidable attributes). Otherwise, the default value of these attributes is used and therefore this table can be left empty.

It is recommended to use table DatasetDefaultProperties to provide default values applicable to the complete data set or data schema. By doing this, the table Voidables can be left empty.

In case a value for a voidable property for each special object is provided, the following constraints apply to individual voidable property :

1) DateTime data type requires ISO DateTime format with UTC information. The required format is YYYY-MM-DDThh:mm:ssZ. It is applicable to the fields validFrom, validTo and beginLifespanVersion;
2) If any value for a voidable attribute of a spatial object is provided, a correct linking between the primary tables of spatial data (e.g. NoiseContours_majorRailwaysIncludingAgglomeration_Lden, NoiseContours_majorRailwaysIncludingAgglomeration_Lnight) and Voidables table must be provided: the field primaryTable_id in the table Voidables must include the corresponding id of the spatial object from the table of noise contours, and the name of that table must be provided in the field tableName, see example below.

Table 7.6. Voidables table and relation to primary tables of noise contours

NoiseContours_majorRailwaysIncludingAgglomeration_Lden (attribute table)	
id	… other fields …
10	

NoiseContours_majorRailwaysIncludingAgglomeration_Lnight (attribute table)	
id	… other fields …
100	

Voidables table		
primaryTable_id	tableName	… other fields …
10	NoiseContours_majorRailwaysIncludingAgglomeration_Lden	
100	NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	

Detailed information about requirements of voidable properties in the INSPIRE application schema used for END noise contours can be also found in the INSPIRE Data Specification on Human Health and Safety – Technical Guidelines and in the Implementing Rules on Interoperability of spatial data sets and services.

Table 7.7. Voidables table overview

Mandatory /optional	**Name**	**Reportnet 3 Type**	**Code list**
M	id	Number - Integer	
M	beginLifespanVersion	DateTime	
M	validFrom	DateTime	
M	validTo	DateTime	
M	primaryTable_id	Number - Integer	
M	tableName	Text	
M	sourceIdentifier	Text	

7.7.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

7.7.2 Field beginLifespanVersion

Requirement	Mandatory
Description	It records a start or a change of noise contours in the spatial dataset, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, lifespan information when a noise contour has been inserted or changed in the spatial dataset is not required, but can be provided as date and time information of creation of a noise contour in a dataset, or of creation of a dataset itself, or a void reason must be provided. In that case, the value “unpopulated” is proposed to be used. It is recommended to use a default value of void reason (“unpopulated”) in the DatasetDefaultProperties and leave this field empty.
Example	2022-01-01T01:00:00Z

7.7.3 Field validFrom

Requirement	Mandatory
Description	Starting date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it started to exist in the real world) can be provided as a starting date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value “unpopulated” is proposed to be used. The default value for validFrom is included in the table DatasetDefaultProperties, which is: 2022-12-31T01:00:00Z
Example	2022-12-31T01:00:00Z

7.7.4 Field validTo

Requirement	Mandatory
Description	Ending date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it is no longer valid in the real world) can be provided as an end date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value “unpopulated” is proposed to be used. The default value for validTo is included in the table DatasetDefaultProperties, which is: 2027-12-30T23:00:00Z
Example	2027-12-30T23:00:00Z

7.7.5 Field primaryTable_id

Requirement	Mandatory
Description	Refers to unique identifiers in the tables of noise contour map layers.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Unique identifier is automatically created in Geopackage file (primary key in the SQLite database).
Example	1

7.7.6 Field tableName

Requirement	Mandatory
Description	Name of the table of noise contour map layer where the voidable value is used.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	
Example	NoiseContours_majorRailwaysIncludingAgglomeration_Lden

7.7.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRailways-StrategicNoiseMaps.gpkg

7.8 Table DatasetDefaultProperties

This table includes all properties that can have a default value in a data set. Typically, it includes: default values or void reason for voidable attributes defined in the INSPIRE specifications, and default values of other attributes. The table is prefilled and read-only.

Table 7.8. DatasetDefaultProperties table overview

Mandatory /optional	**Name**	**Reportnet 3 Type**
M	tableName	Text
M	propertyName	Text
O	attribute	Text
M	defaultValue	Text

Table 7.9. Applicable values for the DatasetDefaultProperties

tableName	propertyName	attribute	defaultValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated

7.9 Table CodelistProperties

This table includes a list of the code lists that have to be used for reporting data on the DF4_8 Strategic noise maps for major railways data model. The complete code lists used in the END data model are also published in the Eionet Data Dictionary (https://dd.eionet.europa.eu/vocabularies) and are used in the Reportnet 3 data schemas.

The specific applicable code lists can also be found in the Vocabulary – common tables data schema of this dataflow.

The table is prefilled and read-only.

Table 7.10. CodelistProperties table overview

Mandatory/ optional	Name	Reportnet 3 Type
M	tableName	Text
M	propertyName	Text
M	codelist	Text

Table 7.11. Applicable values for the CodelistProperties

tableName	propertyName	codelist
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
ExposureMajorRailway	reportingLevel	http://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue
ExposureValue	exposureType	http://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue
ExposureValue	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
ExposureValue	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue

7.10 Tables supporting data harvesting through INSPIRE download services

The dataset schema includes two additional tables for the alternative reporting method by providing INSPIRE download services and trigger a data harvesting process. The tables HarvestSource and WorkflowLog are described together with the harvesting process in section 10.4 and in Annex 4.

Regardles of the import process, file import or download service harvesting, the expected file format is GeoPackage provided on the pre-defined template.

7.11 GeoPackage format

7.11.1 Support to data transformation into GeoPackage

GeoPackage template

The GeoPackage template MajorRailways-StrategicNoiseMaps.gpkg has been created to support data reporting of noise contours in (multi)polygon geometry, which is the recommended reporting format.

Additionally, the GeoPackage template MajorRailways-StrategicNoiseMaps-LineString.gpkg has been created to support data reporting of noise contours in (multi)line geometry.

All templates can be found in:

- Dataflow Help page in Reportnet 3. (see 4.3.2), and
- https://www.eionet.europa.eu/reportnet/docs/noise.

Demonstration of data transformation with the ETL tool HALE Studio
A demonstration video on how to create the new GeoPackage file has been issued, using HALE Studio tool, which is accessible in: https://www.eionet.europa.eu/reportnet/docs/noise/videos.

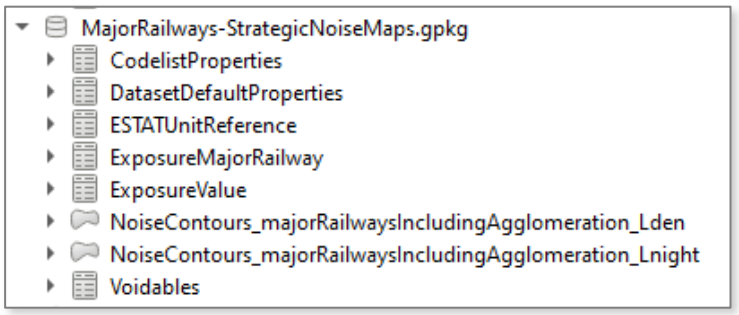
The data transformation project (HALE Studio) details with test data (note: using simulated data for feasibility of data transformation, not exact data for noise reporting) can also be found in the repository https://github.com/wetransform-os/geopackage-end/tree/main/DF4_8. It shows possibilities to create a mapping between a source schema and target GeoPackage schema and transform source data into the Geopackage file format.

7.11.2 Use of GeoPackage file format in the Reportnet 3

The GeoPackage template for DF4_8 major railways includes the same tables as the ones that are included in Reportnet 3, see example below. The data import process in the Reportnet 3 transfers data from the GeoPackage file into the correlated tables into the Reportnet 3 data schema *Strategic noise map for major railways (DF4_8)*.

GeoPackage template MajorRailways-StrategicNoiseMaps.gpkg – list of tables	**Reportnet 3 data schema Strategic noise map for major railways (DF4_8) – list of tables**
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	NoiseContours_majorRailwaysIncludingAgglomeration_Lden
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	NoiseContours_majorRailwaysIncludingInAgglomeration_Lnight
Voidables	Voidables
ExposureMajorRailway	ExposureMajorRailway
ExposureValue	ExposureValue
ESTATUnitReference	ESTATUnitReference
DatasetDefaultProperties (pre-filled)	DatasetDefaultProperties (pre-filled, read-only)
CodelistProperties (pre-filled)	CodelistProperties (pre-filled, read-only)

Figure 7.1. Structure of GeoPackage file MajorRailways-StrategicNoiseMaps (DF4_8) in QGIS



8 Dataflow: Strategic noise map (DF4_8) for major roads

8.1 Description

Strategic noise map produced on a 5-year basis for a major road. It is used to determine the number of people exposed to harmful noise levels due to road traffic noise.

The Strategic noise map (DF4_8) for major roads dataflow includes 3 data schemas:

- Strategic noise map for major road (DF4_8) data schema, including 10 tables described in sections 8.2 to 8.10
- Submission Declaration schema described in section 9
- Reference Dataset – Vocabulary - common tables described in section 3.

The following sections include information about the data schema for Strategic noise map for major road (DF4_8).

8.1.1 Tables for exposure data

- ExposureMajorRoad: It contains information on reporting level, NUTS or LAU codes, the computation and measurement method, the information of how receiver points in dwellings were calculated and links (URL) that contains any relevant additional information.
- ExposureValue: It contains information on population exposure, including schools and hospitals, to be provided for major roads both for L_{den} and L_{night} range values specified in the END.
- ESTATUnitReference: It contains reference information concerning NUTS or LAU data if the exposure information is provided through those EUROSTAT classification of territorial units

8.1.2 Tables for noise contours

- NoiseContours_majorRoadsIncludingAgglomeration_Lden: Information corresponding to the areas or isophones affected by high noise levels in L_{den} as determined by the Environmental Noise Directive due to major roads including agglomerations
- NoiseContours_majorRoadsIncludingAgglomeration_Lnight: Information corresponding to the areas or isophones affected by high noise levels in L_{night} as determined by the Environmental Noise Directive due to major roads including agglomerations
- Voidables : Voidable attributes defined in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps - noise contours related to major road source.

8.1.3 Tables related to noise contours and exposure data (common tables)

- DatasetDefaultProperties: Information about the default values of objects in a data set or a table (read only schema, and already pre-filled in in Reportnet 3).
- CodelistProperties: List of applicable code lists in that data schema (read only schema, and already pre-filled in in Reportnet 3) .

8.1.4 Tables supporting data harvesting through INSPIRE download services

- HarvestSource: URLs from which to harvest the geospatial features needed for the reporting.
- WorkflowLog: log messages from the harvesting process (i.e. harvested resources, errors occurring during harvesting).

8.2 Table ExposureMajorRoad

ExposureMajorRoad table includes exposure information to different noise levels and indicators due major roads, as determined by the Environmental Noise Directive.

Table 8.1. ExposureMajorRoad table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	reportingLevel	Link	https://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue/
M	ESTATUnitCode	Text	
O	roadIdIdentifier	Text	
M	computationAndMeasurementMethod	Text	
O	receiverPointsInDwelling	Text	
O	referenceLink	Text	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

8.2.1 Field reportingLevel

Requirement	Mandatory
Description	Reporting level of the exposure data related to major roads.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue/ Applicable code list values: - LAU - NUTS3 - NUTS2 - NUTS1 - country
Example	LAU

8.2.2 Field ESTATUnitCode

Requirement	Mandatory
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	LAU code to be reported when selecting LAU code value in the attribute "reportingLevel". NUTS1, NUTS 2, NUTS3 code to be reported when selecting NUTS1, NUTS2, NUTS3 code values respectively in the attribute "reportingLevel". Country code to be reported when selecting country code value in the attribute "reportingLevel".
Example	50101
Reporting constraints	If NUTS or LAU are provided, the table ESTATUnitReference should be filled in. The submission of DF4_8 will be blocked if the LAU or NUTS code is not included in the reference dataset of LAU/NUTS.

8.2.3 Field roadIdIdentifier

Requirement	Optional
Description	Unique code corresponding to a road segment comprised within the territorial unit code. The unique code is expected to be the same as the identifier from the feature type MajorRoadSource (roadId_identifier) from END dataflow DF1_5 for Major Roads.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The segment must be split according to the territorial unit chosen in reportingLevel and that will be used for reporting of exposure data. The value of this field re-uses the identifier of the major roads defined in DF1_5 (see more information in section 4.2.3).
Example	RD_AT_00_1
Reporting constraints	It is optional, but if exposure information is reported per roadIdIdentifier, unique combinations between ESTATUnitCode and roadIdIdentifier are expected, avoiding double counting of the reported data. In the post processing of reported data provided, the exposure values per individual road segments will be summed up according to the territorial unit chosen in "reportingLevel" attribute. If road identifier is reported, the submission of DF4_8 will be blocked if the road identifier is not in DF1_5 Major roads.

8.2.4 Field computationAndMeasurementMethod

Requirement	Mandatory
Description	Computation and measurement method being used to calculate the noise maps
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate method compliant with Commission Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council (known as CNOSSOS-EU). The title of the document and the version should be indicated.
Example	Example 1: Environmental Noise Directive, Annex II, Chapter 2.2 road traffic noise and chapter 2.5 sound propagation, in the version of 28.07.2021 Example 2: RVS 02.04.11 in the version of 1.11.2021 for road traffic noise and ÖAL directive no 28 in the version of 1.10.2021 for sound propagation). Links: http://recht.fsv.at/, https://www.oeal.at/richtlinien

8.2.5 Field receiverPointsInDwelling

Requirement	Optional
Description	Information on the methods employed to calculate exposure to noise at the most exposed façade as described in section 2.8 of Annex II to Directive 2002/49/EC.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	It is expected to indicate the following: I. Determination of the dwellings and people living in dwellings exposed to noise (choose between: Case 1A, 1B, 2A, 2B, 2C, 2D) II. Assigning noise assessment points to dwellings and people living in dwellings: (choose between: Case 1 Procedure, Case 2 Procedure) III. Assigning dwellings and people living in dwellings to receiver points - information on the location of dwellings within building footprints is available - or - no information on the location of dwellings within building footprints as explained above is available (choose between: Case a; Case b) See details in END Annex II - Section 2.8
Example	Determination of the dwellings and people living in dwellings exposed to noise (Case 2A); Assigning noise assessment points to dwellings and people living in dwellings: (Case 1 procedure); Assigning dwellings and people living in dwellings to receiver points: no information on the location of dwellings within building footprints as explained above is available (Case a);

8.2.6 Field referenceLink

Requirement	Optional
Description	Link to the published online information. This attribute can present links (URL) to maps, web applications, or other online information.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Provision of the links (URL) to maps, web applications, or other online information; separated by ";" if more than one link is provided.
Example	https://geoportal.mzcr.cz/SHM2017/

8.2.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRoads-StrategicNoiseMaps.gpkg

8.3 Table ExposureValue

The table *ExposureValue* provides information about population exposure, including schools and hospitals, to be provided for major roads both for L_{den} and L_{night} range values specified in the END.

Table 8.2. ExposureValue table overview

Mandatory /optional/ conditional	**Name**	**Reportnet 3 Type**	**Code list**
M	ESTATUnitCode	Text	
O	roadIdIdentifier	Text	

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	exposureType	Link	https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue/
M	noiseLevel	Link	The common code list MeasureCategoryTypeValue includes two individual code lists NoiseIndicatorRangeValue and NoiseIndicatorIncludingAgglomerationValue: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue/
M	exposedPeople	Number - Integer	
C	exposedArea	Number - Decimal	
C	exposedDwellings	Number - Integer	
O	exposedHospitals	Number - Integer	
O	exposedSchools	Number - Integer	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

8.3.1 Field ESTATUnitCode

Requirement	Mandatory
Description	Unique code corresponding to the reporting unit chosen, according to Eurostat classification of territorial units.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	50101
Reporting constraints	Same codes as the ones provided in the table “ExposureMajorRoad” are expected If NUTS or LAU are provided, the table ESTATUnitReference should be filled in.

8.3.2 Field roadIdIdentifier

Requirement	Optional
Description	Unique code corresponding to a road segment comprised within the territorial unit code. The unique code is expected to be the same as the identifier from the feature type MajorRoadSource (roadId_identifier) from END dataflow DF1_5 for Major Roads.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The segment must be split according to the territorial unit chosen in reportingLevel and that will be used for reporting of exposure data. The value of this field re-uses the identifier of the major roads defined in DF1_5 (see more information in section 4.2.3).
Example	RD_AT_00_1
Reporting constraints	It is optional, but if exposure information is reported per roadIdIdentifier, unique combinations between ESTATUnitCode and roadIdIdentifier are expected, avoiding double counting of the reported data. In the post processing of reported data provided, the exposure values per individual road segments will be summed up according to the territorial unit chosen in “reportingLevel” attribute. If road identifier is reported, the submission of DF4_8 will be blocked if the road identifier is not in DF1_5 Major roads.

8.3.3 Field exposureType

Requirement	Mandatory
Description	Defines the characteristics of the dwellings' façade where noise exposure is calculated. It is mandatory for the code values "mostExposedFacade" and "mostExposedFacadeIncludingAgglomeration"
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue/ Applicable code list values: - mostExposedFacade - mostExposedFacadeIncludingAgglomerations - withQuietFacade - withSpecialInsulation
Information	The code values “mostExposedFacade” and "mostExposedFacadeIncludingAgglomeration" are mandatory and needs to be provided per each ESTATUnitCode (or unique combination of ESTATUnitCode code and roadIdIdentifier). Code values “withQuietFacade” and “withSpecialInsulation” are optional.
Example	mostExposedFacadeIncludingAgglomerations
Reporting constraints	The provision of data on population exposure at the “mostExposedFacade” and at the “mostExposedFacadeIncludingAgglomeration” will be evaluated during the technical acceptance process.

8.3.4 Field noiseLevel

Requirement	Mandatory
Description	Defines the dB range value for L_{den} or L_{night} at which the number of people exposed is calculated. It is mandatory for the code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 when reporting most exposed façade and also for the code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75 when reporting most exposed façade including agglomerations
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The following two code lists are applicable: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue/ The combined applicable code list values are: - LdenLowerThan40 - Lden4044

	- Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 - LdenEqualHigher55 - LdenEqualHigher65 - LdenEqualHigher75
Information	The code values Lden5559, Lden6064, Lden6569, Lden7074, LdenGreaterThan75, Lnight5054, Lnight5559, Lnight6064, Lnight6569, LnightGreaterThan70 are mandatory and needs to be provided per each ESTATUnitCode (or unique combination of ESTATUnitCode and roadIdIdentifier) when selecting exposureType = “mostExposedFacade”. The code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75 are mandatory and needs to be provided per each ESTATUnitCode (or unique combination of ESTATUnitCode and roadIdIdentifier) when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	Lden6569
Reporting constraints	The provision of data on population exposure for all mandatory code list values for the attribute noiseLevel will be evaluated during the technical acceptance process.

8.3.5 Field exposedPeople

Requirement	Mandatory
Description	Number of people exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of people. The number should indicate the total number of people to avoid any confusion on rounding issues. For example the number 135472 corresponds to one hundred thirty five thousand four hundred seventy two exposed people. The estimated number of people rounded to the nearest hundred as specified in the END will be calculated when compiling all the data into the EU database.
Example	36214
Reporting constraints	The provision of data on population exposure for all mandatory values will be evaluated during the technical acceptance process.

8.3.6 Field exposedArea

Requirement	Conditional
Description	Area (in km2) at a specific noise range and indicator (including agglomerations).
Reportnet 3 type	Number - Decimal
Format	Maximum of 40 characters
Information	It is mandatory when reporting exposure information of the most exposed façade including agglomerations. exposedArea need to be provided for the noiseLevel code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75, per each ESTATUnitCode (or unique combination of ESTATUnitCode and roadIdIdentifier) and when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	56.10
Reporting constraints	The provision of data on exposedArea for all mandatory values will be evaluated during the technical acceptance process.

8.3.7 Field exposedDwellings

Requirement	Conditional
Description	Number of dwellings exposed to noise according to the selected noise range, indicator and source (including agglomerations).
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	It is mandatory when reporting exposure information of the most exposed façade including agglomerations. exposedDwellings need to be provided for the noiseLevel code values LdenEqualHigher55, LdenEqualHigher65 and LdenEqualHigher75, per each ESTATUnitCode (or unique combination of ESTATUnitCode and roadIdIdentifier) and when selecting exposureType = “mostExposedFacadeIncludingAgglomeration”
Example	10527
Reporting constraints	The provision of data on exposedDwellings for all mandatory values will be evaluated during the technical acceptance process.

8.3.8 Field exposedHospitals

Requirement	Optional
Description	Number of hospitals exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of hospitals.
Example	3

8.3.9 Field exposedSchools

Requirement	Optional
Description	Number of schools exposed to noise according to the selected noise range, indicator and source.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Number of schools.
Example	7

8.3.10 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRoads-StrategicNoiseMaps.gpkg

8.4 Table ESTATUnitReference

The table *ESTATUnitReference* provides reference information concerning NUTS or LAU data if the exposure information is provided through those EUROSTAT classification of territorial units.

Table 8.3. ESTATUnitReference table overview

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
C	ESTATNUTSReferenceTitle	Text	
C	ESTATNUTSReferenceLink	URL	
C	ESTATLAUReferenceTitle	Text	
C	ESTATLAUReferenceLink	URL	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

The reference NUTS/LAU datasets used for dataflow validations can be found in the link below: https://www.eionet.europa.eu/reportnet/docs/noise/reference-datasets

8.4.1 Field ESTATNUTSReferenceTitle

Requirement	Optional and conditional
Description	Version of the NUTS data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	ESTATNUTSReferenceTitle NUTS 2021, Version date: 01/02/2020, Scale: 1:1M, Source: Eurostat

8.4.2 Field ESTATNUTSReferenceLink

Requirement	Optional and conditional
Description	Link to the NUTS data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at NUTS level.
Example	https://gisco-services.ec.europa.eu/distribution/v2/nuts/download/ref-nuts-2021-01m.shp.zip

8.4.3 Field ESTATLAUReferenceTitle

Requirement	Optional and conditional
Description	Version of the LAU data used for the noise data reporting.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	EUROSTAT Local Administrative Units (LAU), 2020

8.4.4 Field ESTATLAUReferenceLink

Requirement	Optional and conditional
Description	Link to the LAU data used for the noise data reporting.
Reportnet 3 type	URL
Format	Maximum of 10000 characters
Information	Needs to be reported if exposure information is specified at LAU level.
Example	https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/lau

8.4.5 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRoads-StrategicNoiseMaps.gpkg

8.5 Overview of tables for noise contours for major roads

All tables for noise contours have the same structure. The tables are organised per noise source and noise indicators L_{den} and L_{night} – there are two tables per major roads, one for noise contours corresponding to the noise indicator L_{den} and one for noise contours corresponding to the noise indicator L_{night}.

Depending on the geometry type, (multi)polygon or (multi)line, different code lists will apply.

The code list NoiseIndicatorRangeValue applies for (multi)polygon geometry for both noise indicators L_{den} and L_{night}. The code list NoiseIndicatorValue applies for (multi)line geometry for both noise indicators L_{den} and L_{night}.

Please note that for noise values equal and greater than 75 dB L_{den} and for noise values equal and greater than 70 dB L_{night}, a unique (multi)polygon is expected. The same principle applies for noise values equal and lower than 40 dB L_{den} and for noise values equal and lower than 40 dB L_{night}.

The following overview provides information on tables for noise contours for major roads, noise source, noise indicators, geometry types and corresponding code lists for attributes in data schema Strategic noise map for major roads (DF4_8).

Table 8.4. Overview of tables for noise contours, geometry types and code lists

Table for noise contours	Noise source	Noise indicator	Geometry type	MesaureCategoryTypeValue		NoiseSourceTypeValue	EnvHealthDeterminantTypeValue (default value)
				NoiseIndicatorRangeValue	NoiseIndicatorValue		
NoiseContours_majorRoadsIncludingAgglomeration_Lden	Major Roads including agglomerations	Lden	polygon	X		X	X
			line		X	X	X
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	Major Roads including agglomerations	Lnight	polygon	X		X	X
			line		X	X	X

8.6 Details of tables for noise contours for major roads

The tables for noises contours provide information corresponding to the areas or isolines affected by high noise levels in L_{den} or L_{night} as determined by the Environmental Noise Directive due to major roads. The details are presented in the next sections.

Table 8.5. Overview of the table noise contours for major roads

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
M	id	Number - Integer	
C	measureTime_beginPosition	DateTime	
C	measureTime_endPosition	DateTime	
M	category	Link	The common code list MeasureCategoryTypeValue

Mandatory /optional/ conditional	Name	Reportnet 3 Type	Code list
			includes two individual code lists NoiseIndicatorRangeValue and NoiseIndicatorValue. If the geometry type is (multi)polygon the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/. If the geometry type is (multi)line the applicable values are in the code list http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/. There are separate values for indicators Lden and Lnight.
M	source	Link	https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/
C	location_area	Multiple polygons	
C	location_line	Multiple lines	
M	sourceIdentifier	Text	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

8.6.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

8.6.2 Field measureTime_beginPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Datetime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "beginPosition". The default value for attribute “measureTime_beginPosition” is included in the table DatasetDefaultProperties, which is: 2021-01-01T01:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-01-01T01:00:00Z
Reporting constraints	It is conditional: or default value or values per feature.

8.6.3 Field measureTime_endPosition

Requirement	Conditional
Description	Period when the noise contour map has been calculated, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Datetime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, the measureTime presents the provision of the period when the noise contour map has been calculated showing the situation in the preceding calendar year. This attribute correspond to the parameter "endPosition". The default value for attribute “measureTime_endPosition” is included in the table DatasetDefaultProperties, which is: 2021-12-31T23:00:00Z. Therefore this attribute can be empty in the noise contour layers.
Example	2021-12-31T23:00:00Z
Reporting constraints	It is conditional: or default value or values per feature.

8.6.4 Field category

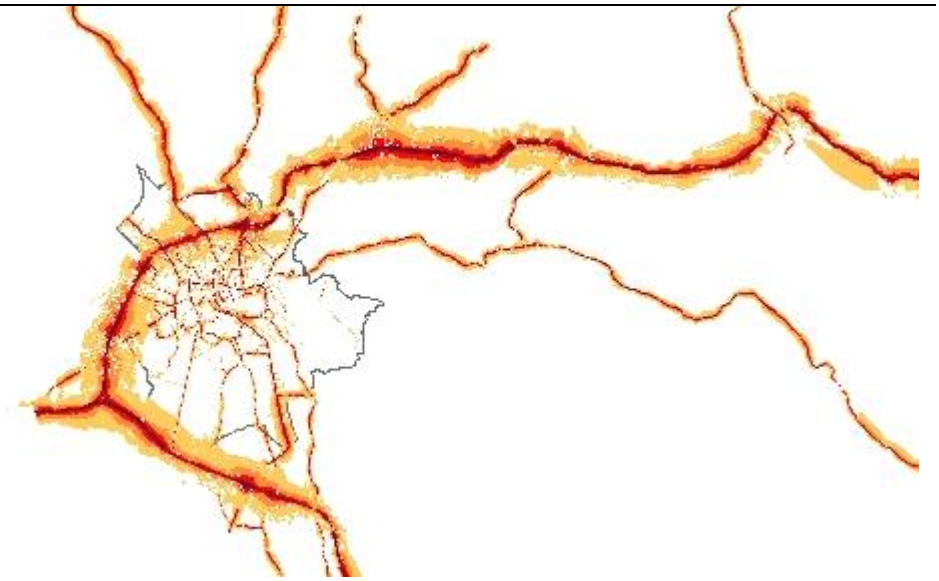
Requirement	Mandatory
Description	Identifies the different indicator values or range values of the noise contour maps.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	The applicable code lists are: NoiseIndicatorRangeValue and NoiseIndicatorValue: Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{den},** the applicable code list values are: - LdenLowerThan40 - Lden4044 - Lden4549 - Lden5054 - Lden5559 - Lden6064 - Lden6569 - Lden7074 - LdenGreaterThan75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{den},** the applicable code list values are: - Lden40 - Lden45 - Lden50 - Lden55 - Lden60 - Lden65 - Lden70 - Lden75 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/ For the **geometry type (multi)polygon and the noise indicator L_{night},** the applicable code list values are: - LnightLowerThan40 - Lnight4044 - Lnight4549 - Lnight5054 - Lnight5559 - Lnight6064 - Lnight6569 - LnightGreaterThan70 Code list URL: http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue/ For the **geometry type (multi)line and the noise indicator L_{night},** the applicable code list values are:

	- Lnight40 - Lnight45 - Lnight50 - Lnight55 - Lnight60 - Lnight65 - Lnight70
Information	This is an INSPIRE attribute. This attribute uses a value from the extended INSPIRE code list MeasureCategoryTypeValue. For the END reporting purpose, two extended code lists are defined: NoiseIndicatorRangeValue code list and NoiseIndicatorValue code list with regard to the type of geometry of noise contours (area or line) and noise indicators L_{den} or L_{night}. In Reportnet platform, both code lists are merged into NoiseIndicatorNoiseContourValue.
Example	Example 1: A noise contour with geometry of a (multi)polygon and noise indicator L_{den} will include value Lden5559 in the field category: **Lden5559** Example 2: A noise contour with geometry (multi)line and noise indicator L_{den} will include value Lden55 in the field category: **Lden55** Example 3: A noise contour with geometry of a (multi)polygon and noise indicator L_{night} will include value Lnight5559 in the field category: **Lnight5559** Example 4: A noise contour with geometry (multi)line and noise indicator L_{night} will include value Lnight55 in the field category: **Lnight55**
Reporting constraints	If noise contours are provided as polygons (recommended), the NoiseIndicatorRangeValue code list and corresponding codes are to be used. If noise contours are provided as lines, the NoiseIndicatorValue code list and corresponding codes are to be used. The recommended format is (multi)polygon geometry. The provision of noise contour maps for all mandatory code values will be evaluated during the technical acceptance process.

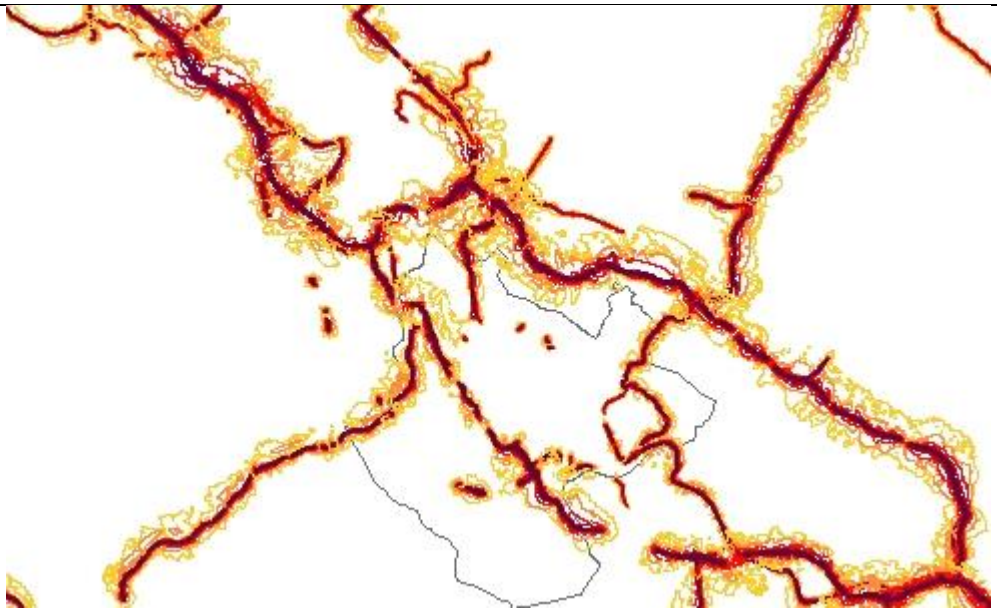
8.6.5 Field source

Requirement	Mandatory
Description	Source of the noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	Link
Format	Only one value is allowed
Code list	Code list URL: https://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/ Depending on the noise source, the following code list values apply: - For noise contours of major roads: o majorRoadsIncludingAgglomeration
Information	This is an INSPIRE attribute. For the END reporting purpose it defines the END noise source types. The applicable code value is “majorRoadsIncludingAgglomeration”.
Example	majorRoadsIncludingAgglomeration
Reporting constraints	Noise contours for major roads including agglomerations are mandatory. Mismatches between Declaration of noise sources in dataset schema Noise sources (DF1_5) and noise contour maps provided will be evaluated in the technical acceptance process.

8.6.6 Field location_area

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple polygons
Information	For the END reporting purpose, the geometry of the noise contour map can be polygon or multipolygon. It is mandatory for this geometry type.
Example (multipolygon geometry)	 Source: END reported data from Austria (Salzburg)
Reporting constraints	The NoiseIndicatorRangeValue code list and corresponding codes are to be used for reporting polygons or multipolygons. It is mandatory and conditional: location_area or location_line should be provided.

8.6.7 Field location_line

Requirement	Conditional
Description	Geometry of the noise contour maps, according to the definition in the INSPIRE Implementing Rules on Interoperability. It is based on the INSPIRE attribute location.
Reportnet 3 type	Multiple lines
Information	For the END reporting purpose, the geometry of the noise contour map can be line or multiline. It is mandatory for this geometry type.
Example (multiline geometry)	 Source: END reported data from Spain (Bilbao)
Reporting constraints	The NoiseIndicatorValue code list and corresponding codes are to be used for reporting lines or multilines. It is mandatory and conditional: location_area or location_line should be provided.

8.6.8 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRoads-StrategicNoiseMaps.gpkg

8.6.9 Data example of table NoiseContours_majorRoadsIncludingAgglomeration_Lden

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lden5559	majorRoadsIncludingAgglomeration	x	
2			Lden6064	majorRoadsIncludingAgglomeration	x	
3			Lden6569	majorRoadsIncludingAgglomeration	x	
4			Lden7074	majorRoadsIncludingAgglomeration	x	
5			LdenGreaterThan75	majorRoadsIncludingAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

8.6.10 Data example of table NoiseContours_majorRoadsIncludingAgglomeration_Lnight

id	measureTime_beginPosition	measureTime_endPosition	category	source	location_area	location_line
1			Lnight5054	majorRoadsIncludingAgglomeration	x	
2			Lnight5559	majorRoadsIncludingAgglomeration	x	
3			Lnight6064	majorRoadsIncludingAgglomeration	x	

In this example:

- x: (Multi)polygon geometry will be provided in the field location_area
- Values for fields measureTime_beginPosition and measureTime_endPosition are provided as default values in table DatasetDefaultProperties, thus these two fields can remain empty.
- The applicable code list for the field category is http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue/

8.7 Table Voidables

This table includes attributes that are defined as voidable in the data model and in the INSPIRE Implementing Rules on Interoperability and related to strategic noise maps – noise contours related to major roads source. Only the attributes defined in the INSPIRE specifications are voidable. This table is used in case a value is assigned to a voidable attribute for an individual spatial object which is already provided in any of the applicable 2 tables of noise contours - primary tables of spatial data (one Voidables table for all voidable attributes). Otherwise, the default value of these attributes is used and therefore this table can be left empty.

It is recommended to use table DatasetDefaultProperties to provide default values applicable to the complete data set or data schema. By doing this, the table Voidables can be left empty.

In case a value for a voidable property for each special object is provided, the following constraints apply to individual voidable property :

1) DateTime data type requires ISO DateTime format with UTC information. The required format is YYYY-MM-DDThh:mm:ssZ. It is applicable to the fields validFrom, validTo and beginLifespanVersion;
2) If any value for a voidable attribute of a spatial object is provided, a correct linking between the primary tables of spatial data (e.g. NoiseContours_majorRoadsIncludingAgglomeration_Lden, NoiseContours_majorRoadsIncludingAgglomeration_Lnight) and Voidables table must be provided: the field primaryTable_id in the table Voidables must include the corresponding id of the spatial object from the table of noise contours, and the name of that table must be provided in the field tableName, see example below.

Table 8.6. Voidables table and relation to primary tables of noise contours

NoiseContours_majorRoadsIncludingAgglomeration_Lden (attribute table)	
id	… other fields …
10	

NoiseContours_majorRoadsIncludingAgglomeration_Lnight (attribute table)	
id	… other fields …
100	

Voidables table		
primaryTable_id	tableName	… other fields …
10	NoiseContours_majorRoadsIncludingAgglomeration_Lden	
100	NoiseContours_majorRoadsIncludingAgglomeration_Lnight	

Detailed information about requirements of voidable properties in the INSPIRE application schema used for END noise contours can be also found in the INSPIRE Data Specification on Human Health and Safety – Technical Guidelines and in the Implementing Rules on Interoperability of spatial data sets and services.

Table 8.7. Voidables table overview

Mandatory /optional	Name	Reportnet 3 Type	Code list
M	id	Number - Integer	
M	beginLifespanVersion	DateTime	
M	validFrom	DateTime	
M	validTo	DateTime	
M	primaryTable_id	Number - Integer	
M	tableName	Text	
M	sourceIdentifier	Text	

8.7.1 Field id

Requirement	Mandatory
Description	Unique identifier automatically created in GeoPackage file (primary key in the SQLite database). It is mandatory.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	This attribute is primarily required by the OGC GeoPackage standard. It must be unique within a GeoPackage file.
Example	1

8.7.2 Field beginLifespanVersion

Requirement	Mandatory
Description	It records a start or a change of noise contours in the spatial dataset, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, lifespan information when a noise contour has been inserted or changed in the spatial dataset is not required, but can be provided as date and time information of creation of a noise contour in a dataset, or of creation of a dataset itself, or a void reason must be provided. In that case, the value “unpopulated” is proposed to be used. It is recommended to use a default value of void reason (“unpopulated”) in the DatasetDefaultProperties and leave this field empty.
Example	2022-01-01T01:00:00Z

8.7.3 Field validFrom

Requirement	Mandatory
Description	Starting date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it started to exist in the real world) can be provided as a starting date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value “unpopulated” is proposed to be used. The default value for validFrom is included in the table DatasetDefaultProperties, which is: 2022-12-31T01:00:00Z
Example	2022-12-31T01:00:00Z

8.7.4 Field validTo

Requirement	Mandatory
Description	Ending date and time of validity of a noise contour map, according to the definition in the INSPIRE Implementing Rules on Interoperability.
Reportnet 3 type	DateTime
Format	YYYY-MM-DDThh:mm:ssZ
Information	This is an INSPIRE attribute. For the END reporting purpose, validity information of noise contour maps (i.e. when it is no longer valid in the real world) can be provided as an end date of the next actual reporting cycle for strategic noise maps (recommended to provide), or as voidable information - a void reason has to be provided according to the INSPIRE HH data specifications. In that case, a value "unpopulated" is proposed to be used. The default value for validTo is included in the table DatasetDefaultProperties, which is: 2027-12-30T23:00:00Z
Example	2027-12-30T23:00:00Z

8.7.5 Field primaryTable_id

Requirement	Mandatory
Description	Refers to unique identifiers in the tables of noise contour map layers.
Reportnet 3 type	Number - Integer
Format	Maximum of 20 characters
Information	Unique identifier is automatically created in Geopackage file (primary key in the SQLite database).
Example	1

8.7.6 Field tableName

Requirement	Mandatory
Description	Name of the table of noise contour map layer where the voidable value is used.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	
Example	NoiseContours_majorRailwaysIncludingAgglomeration_Lden

8.7.7 Field sourceIdentifier

Requirement	Mandatory
Description	This field is filled automatically. It indicates the source of the reporting data. It is composed of the source name and time stamp. It can be a name of the directly imported file, or the URL of an external source, from which the data was harvested, as recorded in the HarvestSource table. The field also supports the integrity between the primary table with spatial data and the voidables table.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	The data source will be provided in the form of a time stamp (DateTime format) and the source name (imported file or service URL). It is provided by the import or harvest process and must not be modified.
Example	2023-03-07T07:43:54Z //cifs_svm13/noise/Reportnet3_2022/921/2/58603/_20230307074354/AT_MajorRoads-StrategicNoiseMaps.gpkg

8.8 Table DatasetDefaultProperties

This table includes all properties that can have a default value in a data set. Typically, it includes: default values or void reason for voidable attributes defined in the INSPIRE specifications, and default values of other attributes. The table is prefilled and read-only.

Table 8.8. DatasetDefaultProperties table overview

Mandatory /optional	**Name**	**Reportnet 3 Type**
M	tableName	Text
M	propertyName	Text
O	attribute	Text
M	defaultValue	Text

Table 8.9. Applicable values for the DatasetDefaultProperties

tableName	propertyName	attribute	defaultValue
NoiseContours_majorRoadsIncludingAgglomeration_Lden	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_majorRoadsIncludingAgglomeration_Lden	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lden	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lden	validFrom		2022-12-31T01:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lden	validTo		2027-12-30T23:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lden	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	type	href	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue/noise
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	measureTime_beginPosition		2021-01-01T01:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	measureTime_endPosition		2021-12-31T23:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	validFrom		2022-12-31T01:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	validTo		2027-12-30T23:00:00Z
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	beginLifespanVersion	nilReason	http://inspire.ec.europa.eu/codelist/VoidReasonValue/Unpopulated

8.9 Table CodelistProperties

This table includes a list of the code lists that have to be used for reporting data on the DF4_8 Strategic noise maps for major roads data model. The complete code lists used in the END data model are also published in the Eionet Data Dictionary (https://dd.eionet.europa.eu/vocabularies) and are used in the Reportnet 3 data schemas.

The specific applicable code lists can also be found in the Vocabulary – common tables data schema of this dataflow.

The table is prefilled and read-only.

Table 8.10. CodelistProperties table overview

Mandatory/ optional	Name	Reportnet 3 Type
M	tableName	Text
M	propertyName	Text
M	codelist	Text

Table 8.11. Applicable values for the CodelistProperties

tableName	propertyName	codelist
NoiseContours_majorRoadsIncludingAgglomeration_Lden	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_majorRoadsIncludingAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_majorRoadsIncludingAgglomeration_Lden	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	source	http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	category	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorValue
ExposureMajorRoad	reportingLevel	http://dd.eionet.europa.eu/vocabulary/noise/ReportingLevelValue
ExposureValue	exposureType	http://dd.eionet.europa.eu/vocabulary/noise/ExposureTypeValue
ExposureValue	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorRangeValue
ExposureValue	noiseLevel	http://dd.eionet.europa.eu/vocabulary/noise/NoiseIndicatorIncludingAgglomerationValue
NoiseContours_majorRoadsIncludingAgglomeration_Lden	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	type	http://inspire.ec.europa.eu/codelist/EnvHealthDeterminantTypeValue

8.10 Tables supporting data harvesting through INSPIRE download services

The dataset schema includes two additional tables for the alternative reporting method by providing INSPIRE download services and trigger a data harvesting process. The tables HarvestSource and WorkflowLog are described together with the harvesting process in section 10.4 and in Annex 4.

Regardles of the import process, file import or download service harvesting, the expected file format is GeoPackage provided on the pre-defined template.

8.11 GeoPackage format

8.11.1 Support to data transformation into GeoPackage

GeoPackage template

The GeoPackage template MajorRoads-StrategicNoiseMaps.gpkg has been created to support data reporting of noise contours in (multi)polygon geometry, which is the recommended reporting format.

Additionally, the GeoPackage template MajorRoads-StrategicNoiseMaps-LineString.gpkg has been created to support data reporting of noise contours in (multi)line geometry.

All templates can be found in:

- Dataflow Help page in Reportnet 3. (see 4.3.2), and
- https://www.eionet.europa.eu/reportnet/docs/noise.

Demonstration of data transformation with the ETL tool HALE Studio
A demonstration video on how to create the new GeoPackage file has been issued, using HALE Studio tool, which is accessible in: https://www.eionet.europa.eu/reportnet/docs/noise/videos.

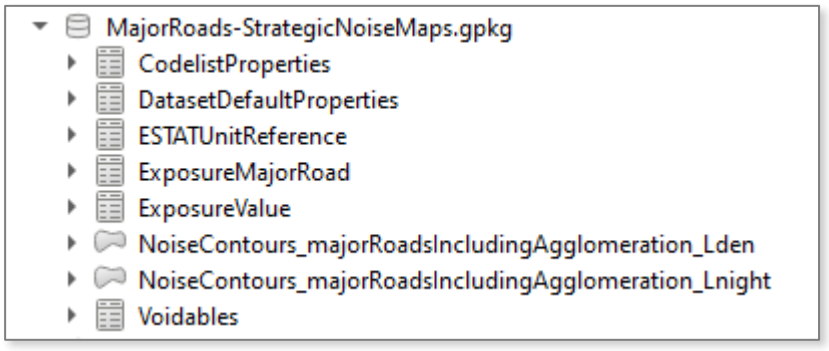
The data transformation project (HALE Studio) details with test data (note: using simulated data for feasibility of data transformation, not exact data for noise reporting) can also be found in the repository https://github.com/wetransform-os/geopackage-end/tree/main/DF4_8. It shows possibilities to create a mapping between a source schema and target GeoPackage schema and transform source data into the Geopackage file format.

8.11.2 Use of GeoPackage file format in the Reportnet 3

The GeoPackage template for DF4_8 major roads includes the same tables as the ones that are included in Reportnet 3, see example below. The data import process in the Reportnet 3 transfers data from the GeoPackage file into the correlated tables into the Reportnet 3 data schema *Strategic noise map for major roads (DF4_8)*.

GeoPackage template MajorRoads-StrategicNoiseMaps.gpkg – list of tables	**Reportnet 3 data schema Strategic noise map for major roads (DF4_8) – list of tables**
NoiseContours_majorRoadsIncludingAgglomeration_Lden	NoiseContours_majorRoadsIncludingAgglomeration_Lden
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	NoiseContours_majorRoadsIncludingInAgglomeration_Lnight
Voidables	Voidables
ExposureMajorRoad	ExposureMajorRoad
ExposureValue	ExposureValue
ESTATUnitReference	ESTATUnitReference
DatasetDefaultProperties (pre-filled)	DatasetDefaultProperties (pre-filled, read-only)
CodelistProperties (pre-filled)	CodelistProperties (pre-filled, read-only)

Figure 8.1. Structure of GeoPackage file MajorRoads-StrategicNoiseMaps (DF4_8) in QGIS



9 Data schema: Submission Declaration

9.1 Description

This dataset schema Submission Declaration is included in the 4 dataflows.

It contains information on strategic noise maps submitted before the deadline or information on the changes from previous submissions and the reasons for submitting updated data after the deadline. According to Article 10, if the country wishes to modify the submission after the deadline, the country needs to explain the changes from the previous submission and the reasons for the update. The information of this schema is also used to understand completeness of the data provided.

The SubmissionDeclaration dataset schema only includes one table:

- SubmissionDeclaration

9.2 Table SubmissionDeclaration

The table *SubmissionDeclaration* includes a list of fields that describe reporting and completeness status of strategic noise maps in relation to noise source of the corresponding dataflow. It also provides a field for specifying the changes from previous submissions and the reasons for re-submitting data.

Table 9.1. Submission Declaration table overview

Mandatory /optional / conditional	Name	Reportnet 3 Type	Code list
M	processStatus	Single select	
C	difference	Text	
C	reason	Text	
O	explanatoryFile	Attachment	
O	dateOfChange	Date	

The following section includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

9.2.1 Field processStatus

Requirement	Mandatory
Description	Type of submission
Reportnet 3 type	Single select
Format	- submissionBeforeDeadline - resubmission
Information	"submissionBeforeDeadline" needs to be selected if the reporting is done before the legal deadline of the dataflow. The value "resubmission" needs to be selected in the following cases: - The first submission is done after the deadline of the dataflow. - A resubmission of the data is done after the deadline, replacing the previous submission.
Example	submissionBeforeDeadline

9.2.2 Field difference

Requirement	Conditional
Description	Description of the differences from the previous submission
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Briefly describe all the differences that apply to the resubmission. It is important to indicate the entities and to describe the changes made. Any first submissions after the legal deadline need to be indicated here.
Example	Population exposure in agglomeration with identifier AG_AT_00_3 was recalculated and values have been corrected. Strategic noise maps for Agglomeration with identifier AG_AT_00_4 were added to the reported data.
Reporting constraints	It must be provided for any resubmission and any first submission after the legal deadline.

9.2.3 Field reason

Requirement	Conditional
Description	Description of the reasons for the data update
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Information	Briefly describe the reasons for the data update
Example	Agglomeration with identifier AG_AT_00_4 were received on DD-MM-YYYY after the deadline by competent authority XX.
Reporting constraints	It must be provided for any resubmission and any first submission after the legal deadline.

9.2.4 Field explanatoryFile

Requirement	Optional
Description	Placeholder to include an extra explanatory file with details of the resubmission, if applicable
Reportnet 3 type	Attachment
Format	Any file extension
Information	Recommended .doc, .pdf, .xls
Reporting constraints	Maximum size of the file is 100 MB

9.2.5 Field dateOfChange

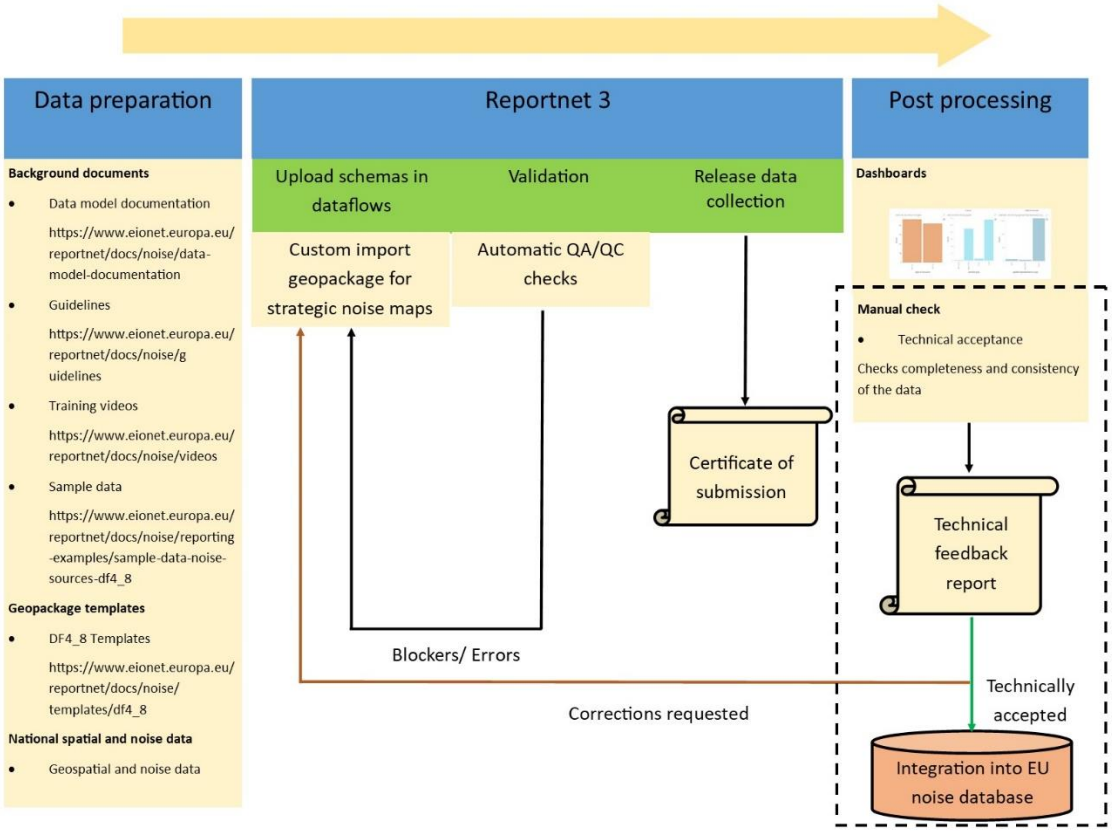
Requirement	Optional
Description	Date when the change in the delivery is done
Reportnet 3 type	Date
Format	YYYY-MM-DD
Information	Date of submission or resubmission
Example	2023-01-20

10 Reporting process

10.1 Reporting data in Reportnet 3: overall workflow

Figure 10.1 illustrates the different processes involved in the reporting of DF4_8 Strategic Noise Maps. The direct link to access to all the available supporting material of the noise sources can be found here: https://www.eionet.europa.eu/reportnet/docs/noise. The preparation of the data involves using predefined templates in GeoPackage with the exposure and noise contour information related to major roads, major railways, major airports and agglomerations. The dataflow is organised by data schemas and a GeoPackage template is available for each source. Once the data files have been uploaded in the corresponding dataflow, they can be assessed based on the quality assurance validations that are programmed inside Reportnet 3. The description of these quality checks can be downloaded from: https://www.eionet.europa.eu/reportnet/docs/noise/validation-rules. Once the data is correct, without any blocking errors in the quality checks, the delivery can be completed by releasing the data collection. In case of blocking errors in the validation, the data cannot be released and the reporter will need to correct the content, replace the files and release the data collection again. After the data has been released, a confirmation receipt will be issued and will be available in the dataflow page. The data submitted will be available in Reportnet3 and if there are other errors, you will receive a standard notification that a correction and a resubmission is needed. All the technically accepted submissions will be integrated in the EU noise database.

Figure 10.1. Reporting workflow



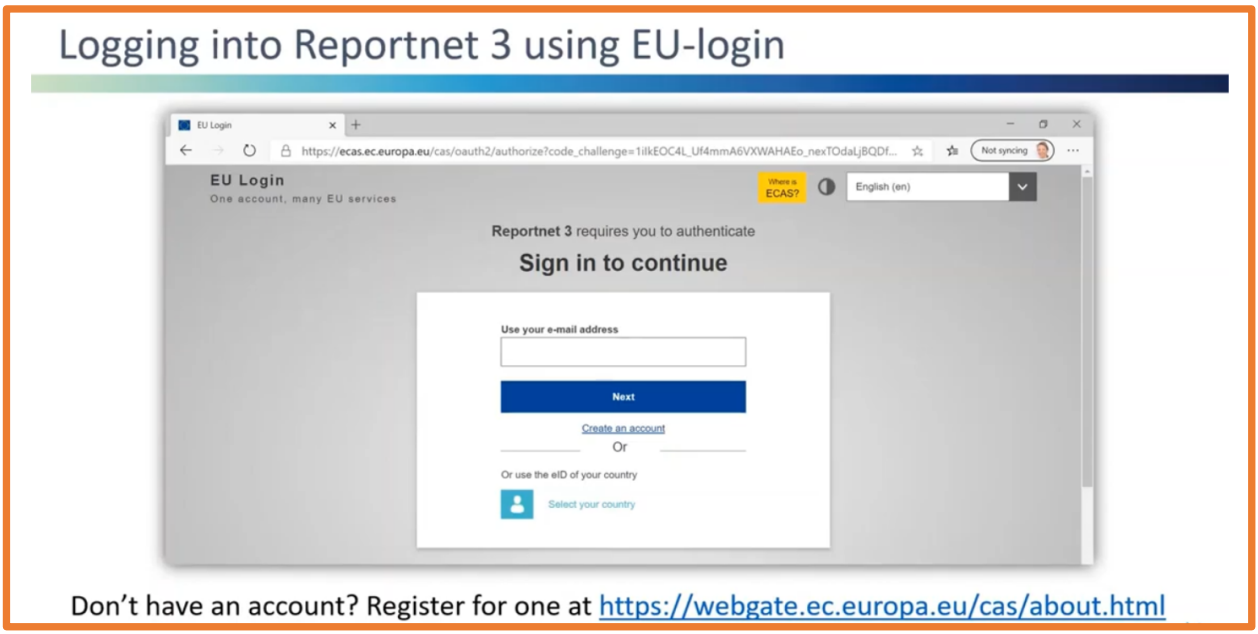
Further information on the reporting process of DF4_8

- Reportnet 3 reporters' manual : https://www.eionet.europa.eu/reportnet/docs/prod/reporter_howto_reportnet3
- Training video: https://www.eionet.europa.eu/reportnet/docs/noise/videos

10.2 User accounts and permissions

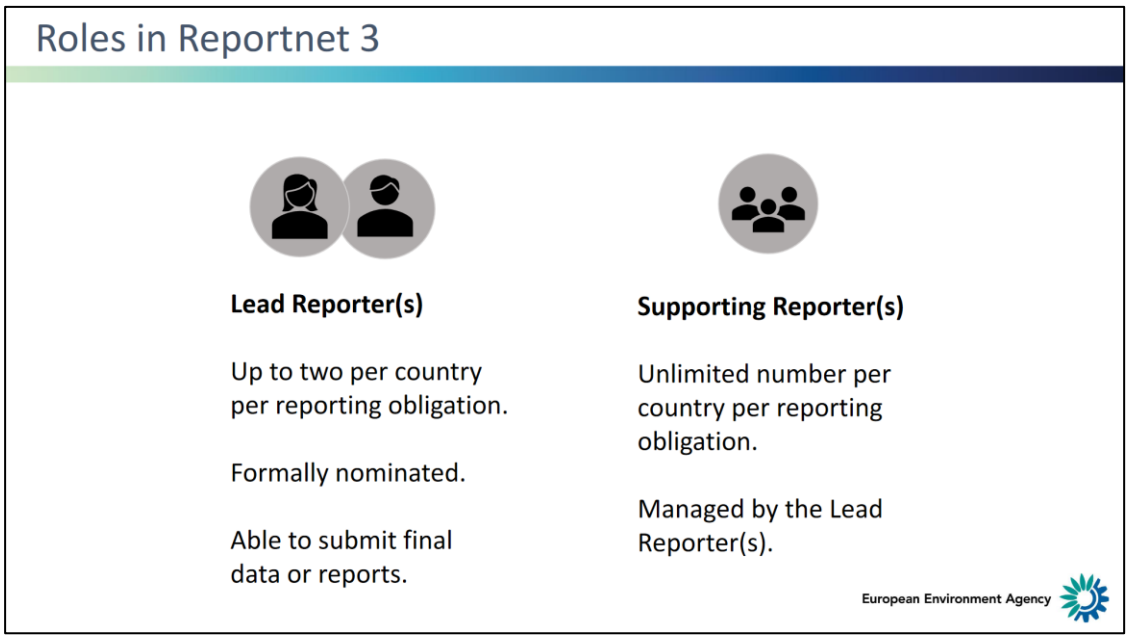
The official reporting will be done through the following URL: https://reportnet.europa.eu/ . The log in will be done through the EU login portal and the reporter will have to use the EU login details. Therefore, reporters will not be managing an Eionet login account but they will use an EU login account which is separately maintained and that can be more easily updated. Creating an EU account can be done at https://webgate.ec.europa.eu/cas/about.html .

Figure 10.2. Log in into Reportnet 3 using EU-login



In Reportnet 3 there are two main roles for reporters, one is the lead reporter's role and the other is the supporting reporter's role. Prior, in Reportnet 2, all reporters were registered by the EEA and the lists were maintained by the agency. In the new reporting mechanism, the supporting reporters can prepare the data and can access the reporting platform. The number of supporting reporters is unlimited but those will be managed by the lead reporter. The lead reporter will be in charge to submit the final data and needs to be formally nominated.

Figure 10.3. Roles in Reportnet 3



10.3 Importing data from a file

To import the GeoPackage file, the custom imports (gpkg) needs to be selected as indicated in Figure 10.4. The reporter will be asked to select a file and upload it. If the reporter is replacing the existing data, Replace data can be selected (see Figure 10.5). The option *Replace data* will delete all previously imported data in all tables, which is particularly important if different reporters will import data for the same data schema.

Figure 10.4. Import dataset data

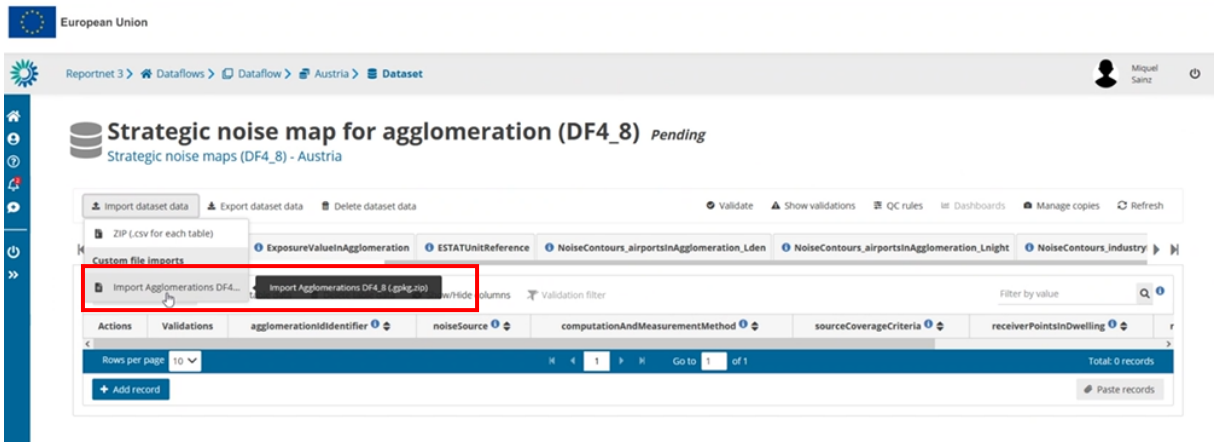
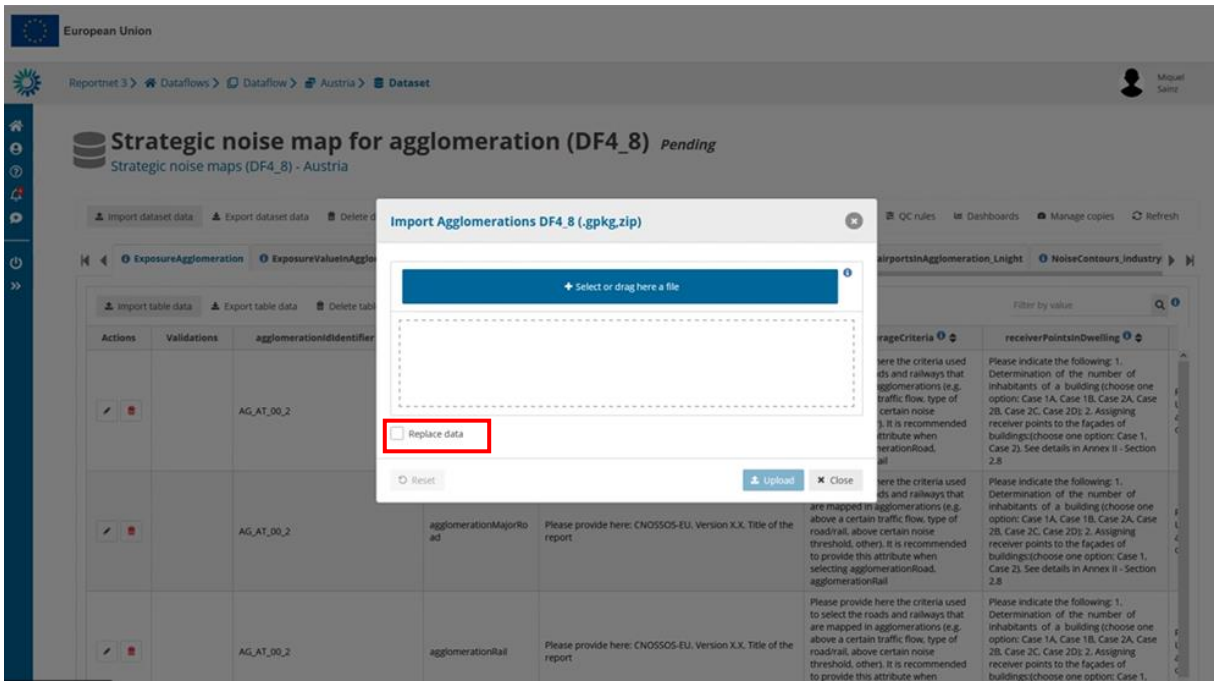


Figure 10.5. Replace data



An alternative solution has been implemented to mitigate Reportnet 3 errors that were preventing the import, validation and release of data.

The new work around has resulted in some minor changes for the reporter which are described in Annex 5. Please consult this annex for information on import errors and validation of geometries.

The main change is that the geometry fields are not imported in Reportnet 3. Only tabular fields are imported, validated and released. In the next step, the background process will combine the released data with the geometries.

10.4 Import data from a service

Importing data from a service is currently under development. The following information will be applicable when this functionality will be implemented in Reportnet 3.

For importing data from a service, the dataset schema in the Reportnet 3 includes two tables: HarvestSource and WorkflowLog which are described in details in Annex 4.

A typical import from a service workflow will look as the following:

1. Manually enter the information about the download services to use in the HarvestSource table.

Figure 10.6. Example of the manual entry of the information in the HarvestSource table

Actions	Validations	serviceType	serviceUrl	operation
		Direct file	https://projects.sadl.kuleuven.be/downloadfolder/eea_testdata/df1_5-1/Agglomeration_IR3_MT.gpkg	Append to table data
		Direct file	https://projects.sadl.kuleuven.be/downloadfolder/eea_testdata/df1_5-1/AgglomerationSource_samples.gpkg	Do not import

Another option is to upload a pre-defined file with service information in csv format using function Import table data.

All three fields in the table HarvestSource must be provided as following:

- **serviceType**: can be Direct file only.
- **serviceUrl:** contains the link to the service. If Direct file is selected, serviceUrl must point to a downloadable GeoPackage file (zipped or unzipped). It is not allowed to point to an atom feed containing the information of a downloadable file.
- **operation:** tells Reportnet what to do with this service. The following options need to be selected:
  - **Append to table data**: This will add the downloaded data to the data already in the thematic tables in the noise source dataset schema in the corresponding dataflow, as following:
    - In the dataset schema Strategic noise map for agglomeration, the tables are:
      - ExposureAgglomeration
      - ExposureValueInAgglomeration
      - ESTATUnitReference
      - NoiseContours_airportsInAgglomeration_Lden
      - NoiseContours_airportsInAgglomeration_Lnight
      - NoiseContours_industryInAgglomeration_Lden
      - NoiseContours_industryInAgglomeration_Lnight
      - NoiseContours_railwaysInAgglomeration_Lden
      - NoiseContours_railwaysInAgglomeration_Lnight
      - NoiseContours_roadsInAgglomeration_Lden
      - NoiseContours_roadsInAgglomeration_Lnight
      - NoiseContours_allSourcesInAgglomeration_Lden
      - NoiseContours_allSourcesInAgglomeration_Lnight
      - Voidables
    - In the dataset schema Strategic noise map for major airport, the tables are:
      - ExposureMajorAirport
      - ExposureValue
      - ESTATUnitReference
      - NoiseContours_majorAirportsIncludingAgglomeration_Lden
      - NoiseContours_majorAirportsIncludingAgglomeration_Lnight
      - Voidables
    - In the dataset schema Strategic noise map for major railway, the tables are:
      - ExposureMajorRailway
      - ExposureValue
      - ESTATUnitReference
      - NoiseContours_majorRailwaysIncludingAgglomeration_Lden
      - NoiseContours_majorRailwaysIncludingAgglomeration_Lnight
      - Voidables
    - In the dataset schema Strategic noise map for major road, the tables are:
      - ExposureMajorRoad
      - ExposureValue
      - ESTATUnitReference
      - NoiseContours_majorRoadsIncludingAgglomeration_Lden
      - NoiseContours_majorRoadsIncludingAgglomeration_Lnight
      - Voidables

- **Delete all data before import**: This will delete the data in the thematic tables in the strategic noise map dataset schema before starting import in the corresponding dataflow. You cannot delete data from one service source only. If “Delete all data before import” is selected for one of the services, all data in all thematic tables in the corresponding dataset schema will be deleted before the process starts.
    - For example: in the dataset schema Strategic noise map for agglomeration in the corresponding dataflow, if “Delete all data before import” is selected for one of the services, ALL data in the thematic tables, listed above (see Apend to table data), will be deleted.
    - This logic applies also to dataset schemas Strategic noise map for major airport, Strategic noise map for major railway and Strategic noise map for major road in the corresponding dataflow.
    - **Do not import**: This will ignore this record when import is started. For example: if you have three services in the HarvestSource table, and you want to test one of them, you can set operation “Do not import” for the other two services.

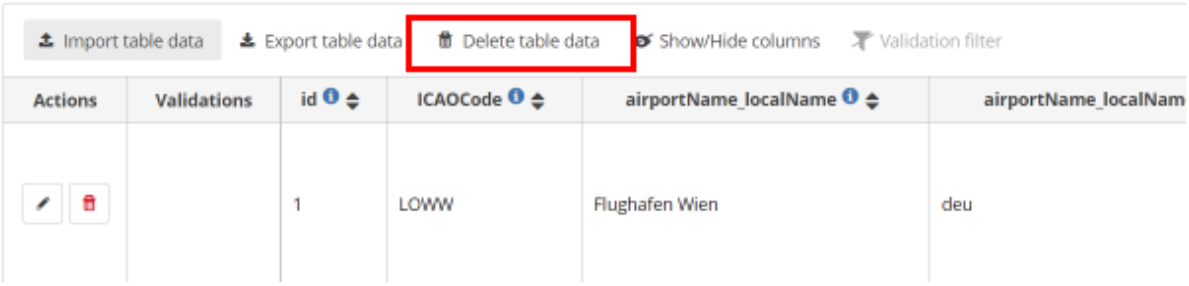
Remark: Import from a file can only process one file for each import. Import from a service will import in one step ALL services in HarvestSource table that do not have operation set to “Do not import”.

2. If you want to start from empty tables in the strategic noise map dataset schema and import all data again, there are several ways to do this. The first option could be to delete data in one table manually by using “Delete table data” (except in HarvestSource table). The second option could be “Delete dataset data” which will delete data from all tables in the dataset schema (except read-only tables). The third option is to ‘Delete all data before import’ as explained in step 1 from the harvesting operation. Please be aware that if you use options 2 and 3, HarvestSource data will also be deleted and you will need to include service information again.

   If you use option 1 (see Figure 10.7), you should manually delete data in the following tables in the corresponding dataflow:
    - In the dataset schema Strategic noise map for agglomeration, delete the tables:
        - ExposureAgglomeration
        - ExposureValueInAgglomeration
        - ESTATUnitReference
        - NoiseContours_airportsInAgglomeration_Lden
        - NoiseContours_airportsInAgglomeration_Lnight
        - NoiseContours_industryInAgglomeration_Lden
        - NoiseContours_industryInAgglomeration_Lnight
        - NoiseContours_railwaysInAgglomeration_Lden
        - NoiseContours_railwaysInAgglomeration_Lnight
        - NoiseContours_roadsInAgglomeration_Lden
        - NoiseContours_roadsInAgglomeration_Lnight
        - NoiseContours_allSourcesInAgglomeration_Lden
        - NoiseContours_allSourcesInAgglomeration_Lnight
        - Voidables
    - In the dataset schema Strategic noise map for major airport, delete the tables:
        - ExposureMajorAirport
        - ExposureValue
        - ESTATUnitReference
        - NoiseContours_majorAirportsIncludingAgglomeration_Lden
        - NoiseContours_majorAirportsIncludingAgglomeration_Lnight
        - Voidables

- In the dataset schema Strategic noise map for major railway, delete the tables:
  - ExposureMajorRailway
  - ExposureValue
  - ESTATUnitReference
  - NoiseContours_majorRailwaysIncludingAgglomeration_Lden
  - NoiseContours_majorRailwaysIncludingAgglomeration_Lnight
  - Voidables
- In the dataset schema Strategic noise map for major road, delete the tables:
  - ExposureMajorRoad
  - ExposureValue
  - ESTATUnitReference
  - NoiseContours_majorRoadsIncludingAgglomeration_Lden
  - NoiseContours_majorRoadsIncludingAgglomeration_Lnight
  - Voidables

Figure 10.7. Delete table data option: to delete each thematic table in that dataset schema manually

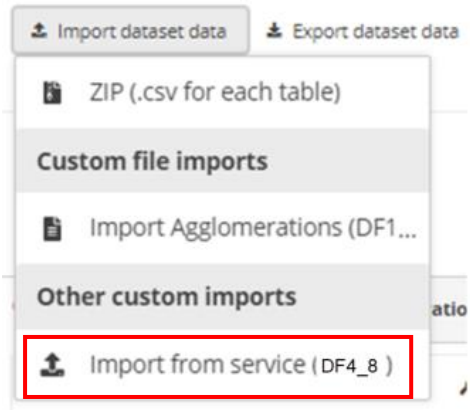


Be aware that this deletes all data in the table, also those previously imported from a file or from a service. It is not possible to delete records from one import only.

If you don't need the logged feedback from previous service imports, you can also delete table data for WorkflowLog.

3. Click on the **Import dataset data** button on the top left of the menu, choose "Import from a service".

Figure 10.8. Import from a service option



4. **Do not check Replace data**. See step 2 if you want to start from empty thematic tables in the noise source dataset schema and import all data again. "Replace data" will delete all data in all non-

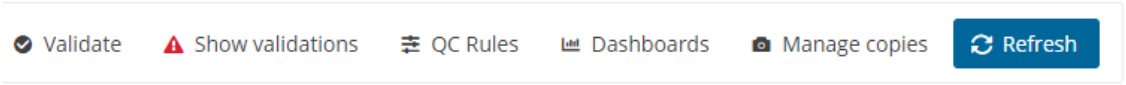
predefined tables, including the tables HarvestSource and WorkflowLog, therefore information about services will be deleted.

5. If the operation field of one of the services in the HarvestSource table is set to “Delete all data before import”, Reportnet 3 will first empty the thematic tables in the strategic noise map dataset schema (e.g. 14 thematic tables in the dataset schema Strategic noise map for agglomeration, see steps 1 and 2 above). After that it will connect to each service in HarvestSource and download the data provided by the service. Services with operation set to “Do not import” are not processed.

6. During the process, Reportnet 3 will enter feedback on the process in the WorkflowLog table. This can be information (logType=info, e.g. number of records downloaded from a service), warnings (logType=warning, e.g. if HarvestSource doesn’t contain any services to harvest) or errors (logType=error, e.g. there is something wrong with a service or with the data provided by a service. The logMessage will contain the error received.

7. Notifications in the top right will inform you the import / load has started and when it has finished. Remember to press the “Refresh” button to properly display the data uploaded.

Figure 10.9. Refresh button to see the results of data load or validation



8. After import from a service, the validation must be activated by triggering the Validate button.

9. Once the validation is finished the “Refresh” button will be highlighted and after clicking it you will see the results of the validation. The validation can be run manually many times and it is triggered automatically when data flow is released to data collection.

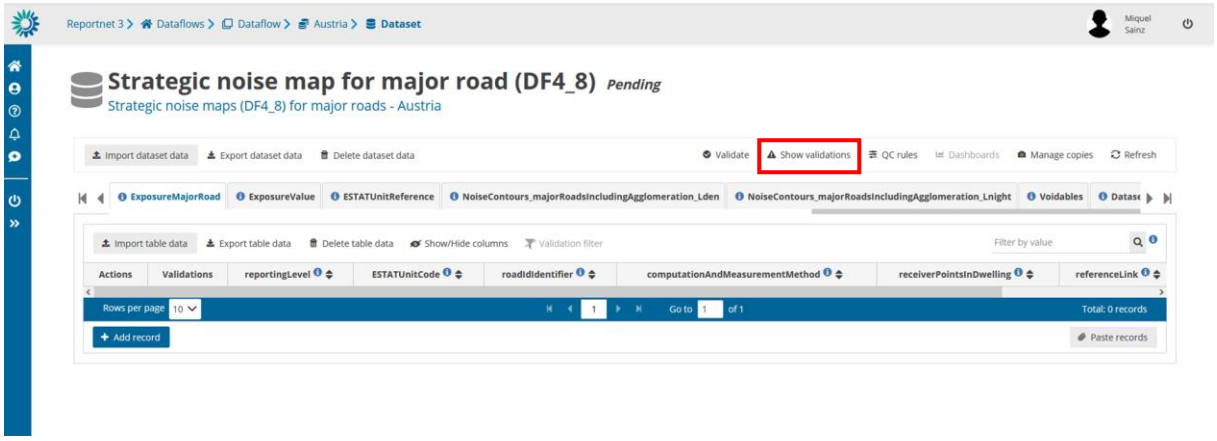
10. If you want to upload additional data from files, continue with process described in section **Error! Bookmark not defined.**10.3.

A reporter can consult the WorkflowLog table for feedback information from processing the services, see step 6 in the workflow above. The WorkflowLog information should help a reporter to adjust service information and parameters.

10.5 Validations

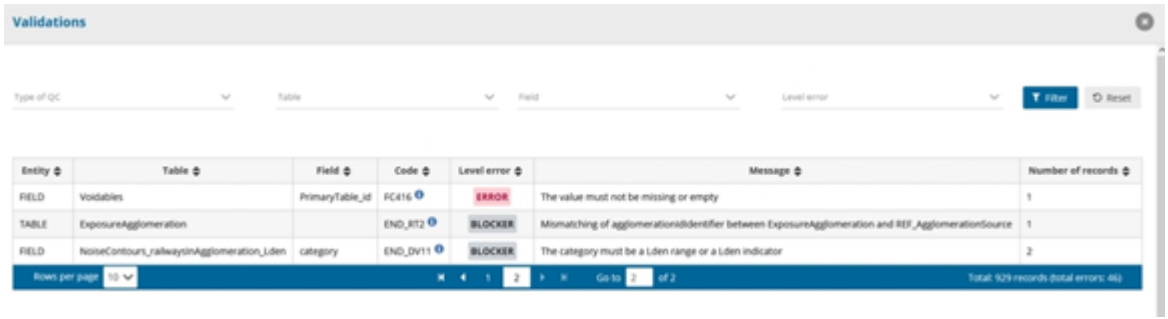
The data to be submitted can be assessed with the validation tools provided in Reportnet 3 as shown in Figure 10.10.

Figure 10.10. Show validations



Validations need to be run for each data schema. In each data schema, data should be validated by clicking “Validate”. After importing data or after validating data it is important to press “Refresh” to display the latest update. Validation errors can be consulted as shown in Figure 10.11.

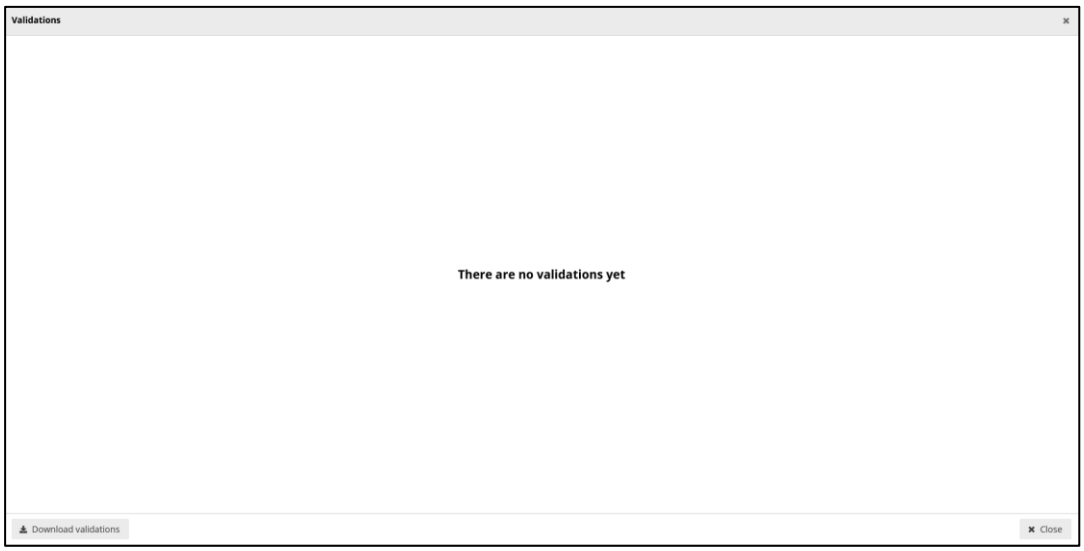
Figure 10.11. Validations report



If there are no blockers, errors, warnings, or information messages in the data uploaded, the message shown in Figure 10.12 will be given. Errors identified as “blockers” will not allow the reporter to release the data collection. Obtaining blockers in the validation process means that the data delivered has missing or erroneous elements that may corrupt the integrity of the European noise database or undermine the consistency of the reported data.

All quality control rules are described in Dataflow Help - Dataset schemas / QC rules (see chapter 3.1).

Figure 10.12. Successful validation message



To ensure high quality of the noise data submitted under the END, specific manual quality checks will be performed after the countries submit the data in Reportnet 3. The countries will receive feedback document stating if the delivery is technically accepted or if a correction is requested.

10.6 Official submission of the report

The reporter will be able to submit the data by clicking on "Release to data collection" as shown in . After the submission, the reporter will receive a technical feedback report prepared by EEA and ETC/HE as shown in Figure 10.15.
Figure 10.13 (example for the Strategic noise maps (DF4_8) for major airports). If there are blockers in any dataset schema, the release will be stopped and the reporter will receive a message indicating that releasing the data is not possible due to errors in the dataset. The reporter can make copies of the data submitted. After the submission a new icon will appear with the confirmation receipt as shown in Figure 10.14. The confirmation receipt is a pdf with a confirmation of the submission which indicates the data schemas that were submitted. If the reporter changes the data and resubmits a new copy to the data collection, then a new confirmation receipt will be available for download. After the submission, the reporter will receive a technical feedback report prepared by EEA and ETC/HE as shown in Figure 10.15.

Figure 10.13. Release data collection

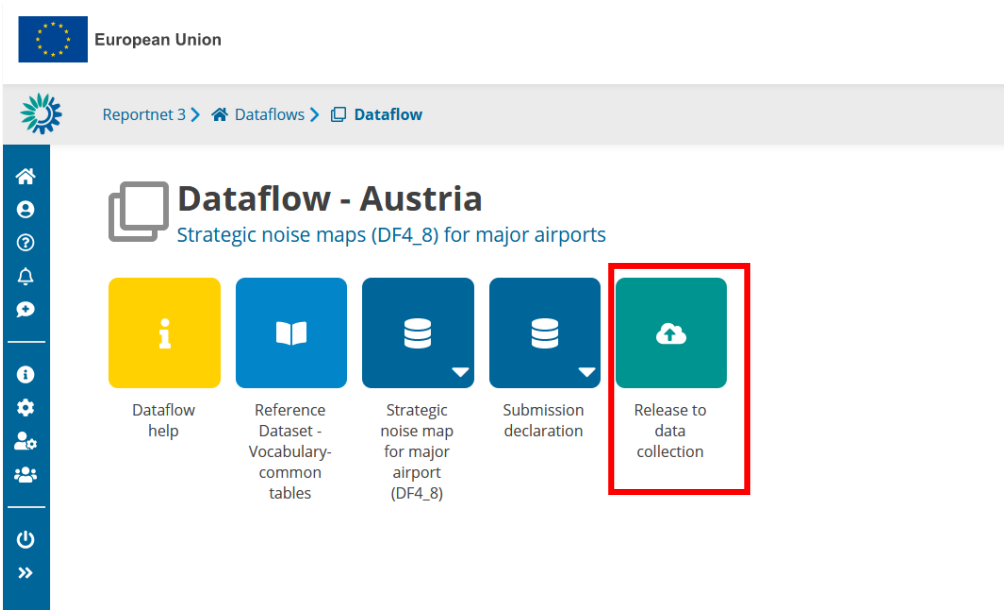


Figure 10.14. Confirmation receipt

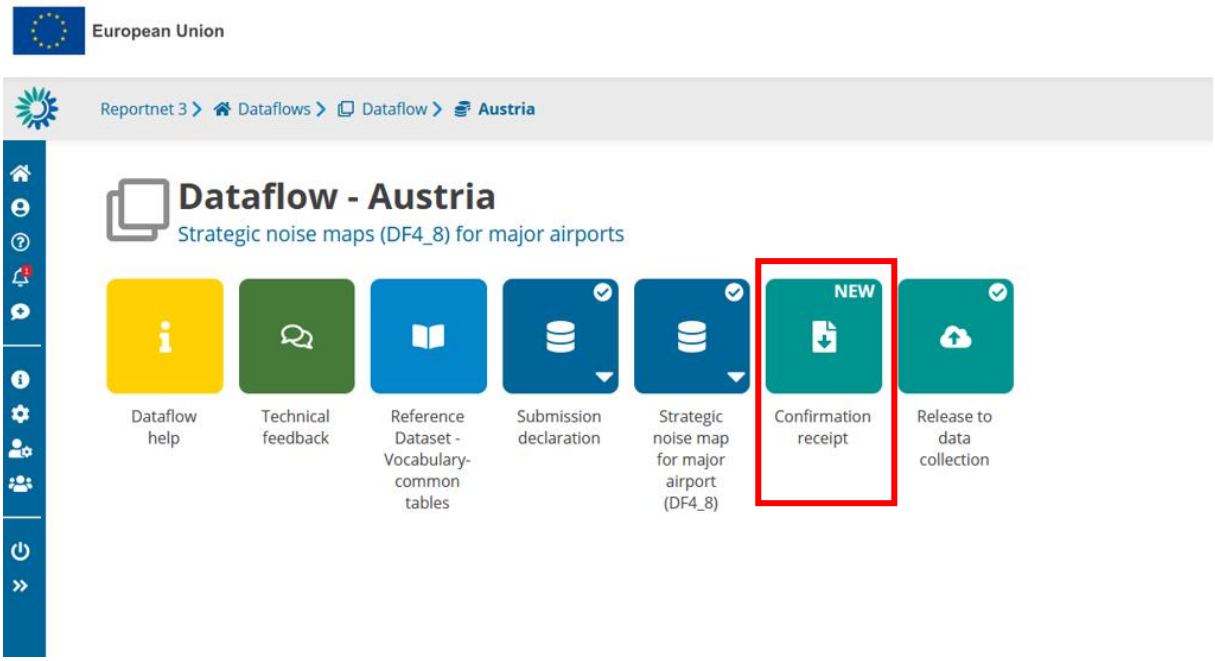
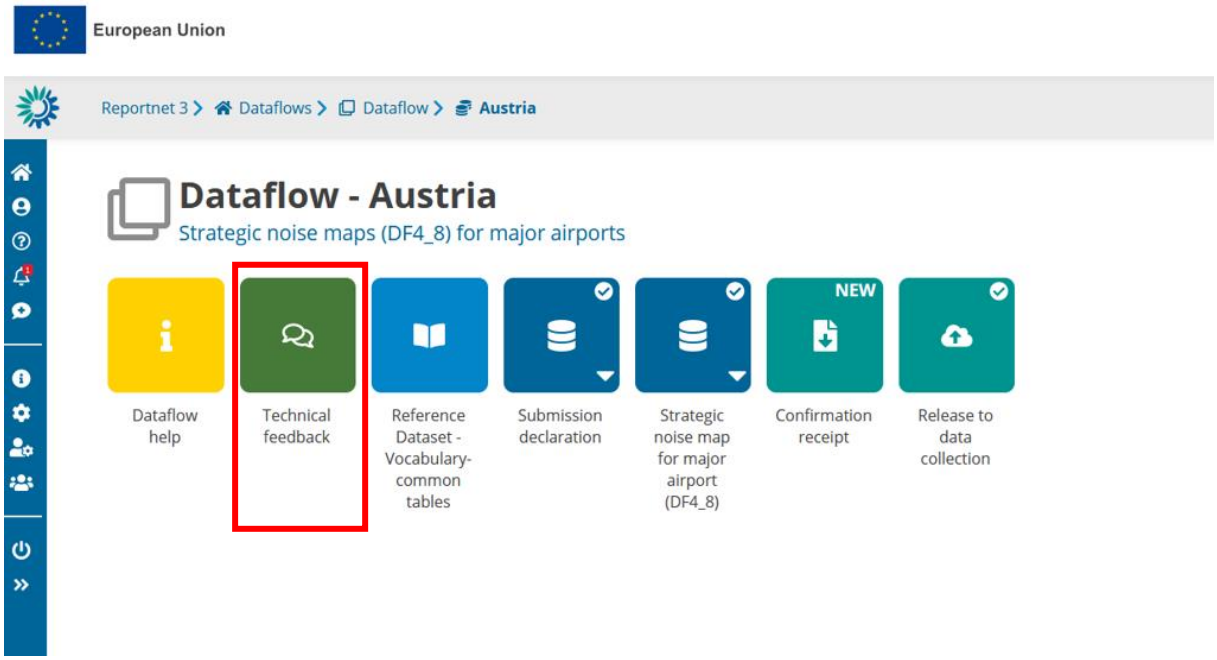


Figure 10.15. Technical feedback



10.7 Resubmission

The reporter will be able to replace/update the submission until the deadline. According to Article 10 (see below), if the reporter wishes to modify the submission after the deadline, an official communication to the EEA and the EC will have to be provided stating the changes from the previous submission and the reasons for the update.

Article 10 – paragraph 2: 'Member States shall ensure that the information from strategic noise maps and summaries of the action plans as referred to in Annex VI are sent to the Commission within six months of the dates laid down in Articles 7 and 8 respectively. For that purpose, Member States shall only report the information by electronic means to a mandatory data repository to be established by the Commission by means of implementing acts. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 13(2). **In the event that a Member State wants to update information, it shall describe the differences between the updated and original information and the reasons for the update when making the updated information available to the data repository**.'

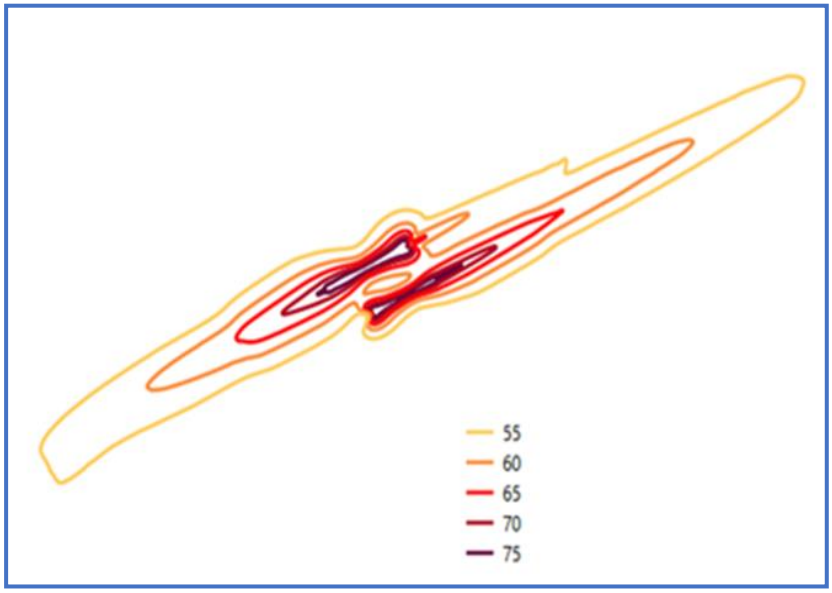
Annex 1
Recommendation for classification of noise levels into 5 dB bands

Prepared by: EEA Working group on END reporting

1. Contour lines and polygons

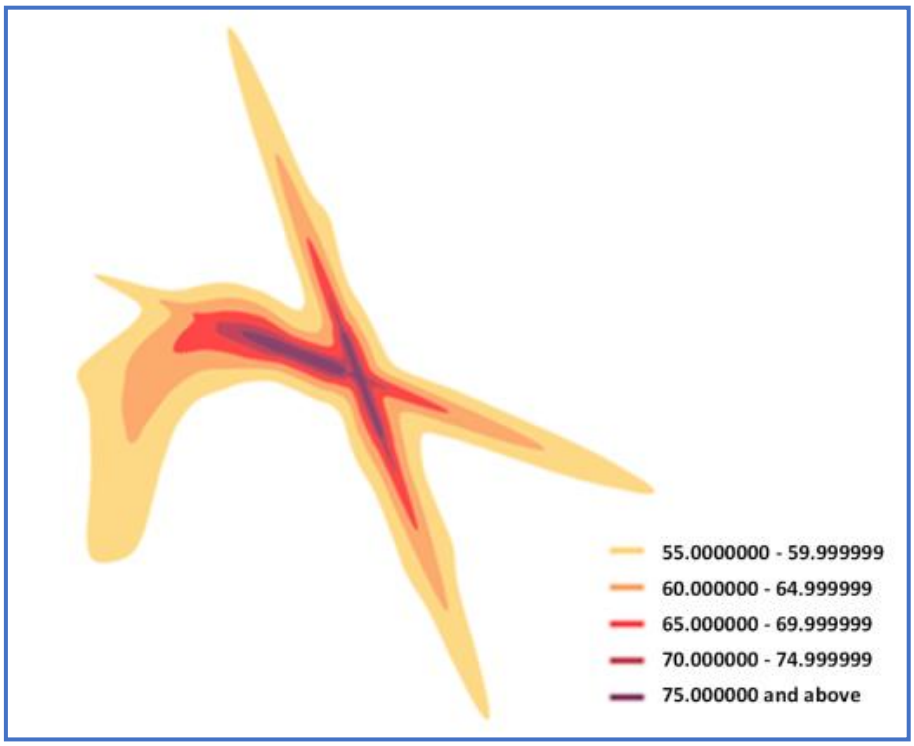
When representing noise contour lines, the value of the line should represent the exact noise value i.e. 55 dB L_{den}, 60 dB L_{den} etc.

Figure A1.1 Noise contour lines



When representing polygons, it is recommended that all class boundaries are .00, i.e. 55-59 represents 55.00 to 59.99. etc. This approach is consistent with the noise contour lines that describe the line where the value is 55.00, 60.00 or 65.00 dB. Rounding with MS Excel is not recommended, however the ROUNDDOWN, TRUNC or INT functions may be used to apply the class boundaries.

Figure A1.2 Noise contour areas



2. Number of exposed dwellings, people in dwellings, and area exposed

For determining the number of dwellings (or schools/hospitals), people in dwellings or area, exposed to noise in 5 dB bands, it is recommended to use the same class boundaries as recommended for noise contours above.
That means that either:

- The query used to collate the results should use class boundaries such as: 55.000000 to 59.999999; 60.000000 to 64.999999 etc, or
- The results are pre-processed and each assigned to a classified 5 dB band. For example, a noise level of 59.99 would be classified to the 55-59 noise level band. This could be accomplished in GIS, or in MS Excel using the ROUNDDOWN, TRUNC or INT functions.

Annex 2
Recommendations for methodological approaches for assignment of grid points within buildings, and creation of noise contours

Prepared by: Simon Shilton

Contributors: Arnaud Kock; Mathias Hintzsche

1. Introduction

There are different approaches for creating contours from grids, and assigning low noise levels inside buildings, which lead to different results. This document was prepared to provide guidance and harmonize these approaches.

2. Legal and technical requirements

I. END Annex II requirements

- Following a development process led by DG Joint Research Centre (DG JRC) between 2009 and 2012, and an implementation project for DG Environment led by Extrium Ltd between 2012 – 2014, the Commission introduced the common noise assessment methods for Europe (CNOSSOS-EU) through EU Directive 2015/996 (OJ L168 of 1st July 2015)[8]. Since Directive 2015/996 was published, there have been two official amendments made to the Directive: Corrigendum to Commission Directive (EU) 2015/996, OJ L168 of 1st July 2015, L5/35 to L5/46[9];

- Commission Delegated Directive (EU) 2021/1226 of 21st December 2020 amending, for the purpose of adapting to scientific and technical progress, Annex II of Directive 2002/49/EC of the European Parliament and the Council as regards common noise assessment methods, OJ L269/65 to L269/142 of 28th July 2021[10].

The consolidated current version will be referred to as CNOSSOS-EU:2020 within this document.

The Delegated Directive introduced significant amendments to Section 2.8, now titled *Exposure to Noise*, which includes the following requirements associated with the noise level calculation results to be determined at receivers (emphasis added):

Determination of the area exposed to noise

*The assessment of the **area exposed to noise** is based on noise assessment points at 4 m ± 0,2 above the ground, corresponding to the receiver points as defined in 2.5, 2.6 and 2.7, calculated on a grid for individual sources.*

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L0996 [Accessed August 2021]
[9] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015L0996R%2801%29 [Accessed August 2021]
[10] https://eur-lex.europa.eu/eli/dir_del/2021/1226/oj [Accessed August 2021]

***Grid points that are located inside buildings shall be assigned a noise level result by assigning the quietest nearby noise receiver points outside buildings**, **except for aircraft noise** where the **calculation is performed without considering the presence of buildings** and in which case the noise **receiver point falling within a building is directly used**.*

*Depending on the grid resolution, the **corresponding area is assigned to each calculation point in the grid**. For example, with a 10 m × 10 m grid, each assessment point represents an area of 100 square metres that is exposed to the calculated noise level.*

Assigning noise assessment points to buildings not containing dwellings

*The assessment of the exposure of **buildings not containing dwellings such as schools and hospitals** to noise is based on noise assessment points at 4 ± 0,2 m above the ground, corresponding to the **receiver points** as defined in 2.5, 2.6 and 2.7.*

*For the assessment of buildings not containing dwellings and **exposed to aircraft noise**, each building is associated to the **noisiest noise receiver point falling within the building itself** or, if not present, on **the grid surrounding the building**.*

*For the assessment of buildings not containing dwellings and **exposed to land-based noise sources, receiver points are placed at approximately 0,1 m in front of building façades**. Reflections from the façade being considered shall be excluded from the calculation. **The building is then associated to the noisiest receiver point on its façades.***

Assigning noise assessment points to dwellings and people living in dwellings

*The assessment of the exposure of dwellings, and **people living in dwellings**, to noise is based on noise assessment points at 4 ± 0,2 m above the ground, corresponding to the **receiver points** as defined in 2.5, 2.6 and 2.7.*

*For the calculation of the number of dwellings, and people living in dwellings **for aircraft noise, all dwellings, and people living in dwellings**, within a building are **associated to the noisiest noise receiver point falling within the building itself** or, if not present, on **the grid surrounding the building**. For the calculation of the number of **dwellings, and people living in dwellings for land-based noise sources, receiver points are placed at approximately 0,1 m in front of building façades of residential buildings**. Reflections from the façade being considered shall be excluded from the calculation. **Either the following Case 1 procedure or the Case 2 procedure shall be used to locate the receiver points**.*

SUMMARY OF ANNEX II REQUIREMENTS

Under CNOSSOS-EU:2020 and for the reporting of strategic noise maps to the EEA (DF4_8) it is now mandatory to calculate noise levels for two types of receiver locations across the whole assessment area for land-based noise sources:

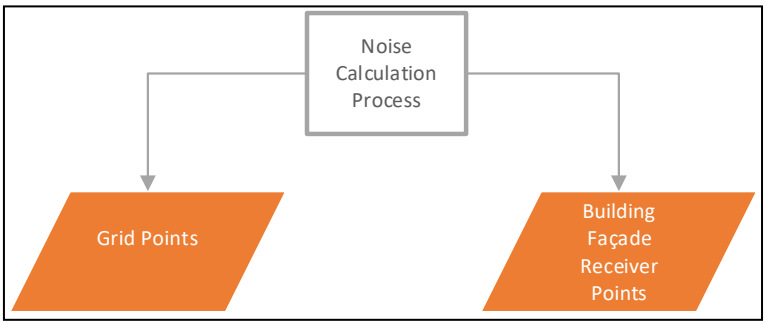
- Grid receivers
  - Grid receiver spacing not specified, therefore fixed or variable grid intervals are acceptable as long as the area represented is known, used for:
    - Area exposed to noise;
    - Noise contours for graphical maps.

- Grid receiver inside buildings need to be known

Note: Area exposed to noise, and therefore the area represented by grid points and whether they are inside buildings, is not mandatory for locations inside agglomerations which are not exposed to major sources.

- Façade receivers
  - Are placed at approximately 0.1m in front of the facades for buildings exposed to noise, such as:
    - Dwellings; and
    - Buildings not containing dwellings such as schools and hospitals.

Figure A2.1 Two types of receiver locations for strategic noise mapping of land-based sources under Directive 2015/996 (as amended)

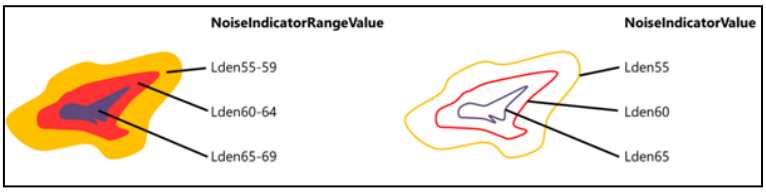


II. EEA Reportnet 3 requirements

Under Reportnet 3 reporting of strategic noise maps within dataflow DF4_8 must be in one of the following formats:

- Areas (polygon or multipolygon geometry type), or
- Isolines (line geometry type).

Figure A2.2 Assigning noise level information to noise contours with area or line geometry



The data model of strategic noise maps – noise contours allows to provide mandatory and optional data for the END reporting purpose. While reporting of mandatory data fulfils the END, ***the INSPIRE Directive sets a wider scope*** *of making spatial data available through the infrastructure for spatial information to support Community policies that affect the environment. Therefore****, it is highly recommended to include at least the most detailed data of noise contours that correspond with the mandatory noise indicators and ranges defined for reporting of noise exposure data, as it is likely that such data exists****. This will ensure the complete set of strategic noise maps and harmonisation between noise contours and exposure data.*

SUMMARY OF EEA REPORTNET 3 REQUIREMENTS

Under EEA Reportnet 3 DF4_8 it is now mandatory to report noise contour data in 5 dB bands as either polygons or polylines.

It will be necessary to generate these noise level polygons or polylines using the grid receiver results and some type of interpolation process, discussed below.

3. Creating Receiver Grids

As discussed above, it is required to determine the area exposed to noise, and to produce noise contour areas or lines for a number of different noise sources and noise indicators. These values are based on calculations of receiver points in a grid. There is no specified methodology for setting out grids of noise level receivers, this section illustrates three options, and discusses where they may be useful.

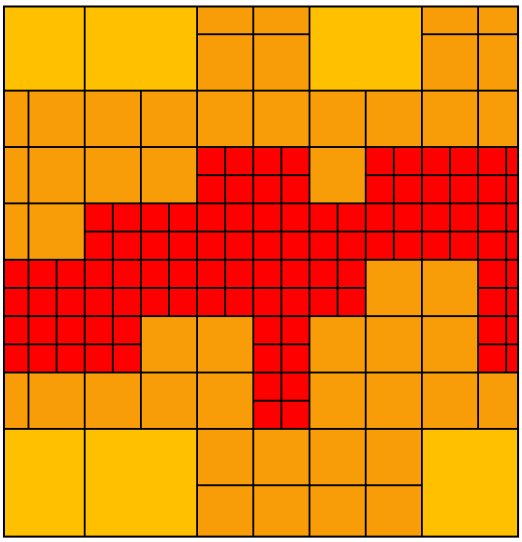
I. Regular grids

Regular spaced grids or receiver points generated across the area to be calculated with a regular interval in X and Y separating each adjacent grid point, for example: 10 m × 10 m; or 20 m x 20 m. Regular grids may be used for the purpose of calculating the area exposed, as the area represented by each receiver point is known, and they may also be used to create noise contour areas or lines, although they may result in “islands” along roads and railway lines as shown in Figure A2.4.

II. Variable grids

Regular grids of variable resolution can be used to cover the calculation area. They may be useful where higher resolution may be desirable near to noise sources, and where lower resolution is acceptable further away from noise sources. This could result in a reduction in the total number of grid points to be calculated across the model, compared to a regular grid spacing. These varying grid areas must not overlap, or leave gaps, between grids. An example of a variable resolution grid is shown in Figure A2.3.

Figure A2.3 Example of grid points (in centre of each square) that represent areas of 100m^2, 400m^2, and 1600m^2 without overlap of missing parts

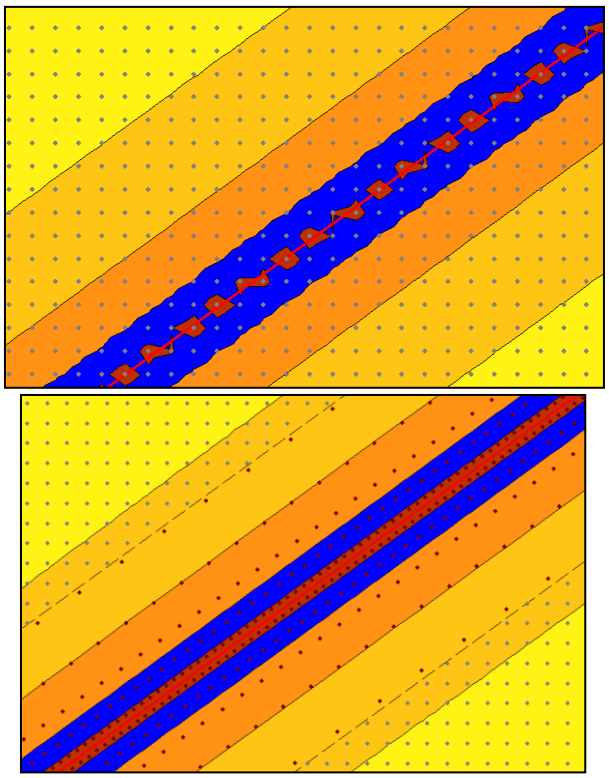


Variable spaced regular grids may be used for the purpose of calculating the area exposed, as the area represented by each receiver point is known, and they may also be used to create noise contour areas or lines, although they may result in "islands" along roads and railway lines as shown in Figure A2.4.

III. Irregular Grids

Figure A2.4 (top) illustrates how noise contours generated from regular spaced grids may result in "islands" of noise along the centerline of roads and railways. The islands in the figure on the left are due to interpolation between grid points very close to the noise source and a little further away. This may give rise to questions when presenting results to the public. In order to avoid this, calculations undertaken on irregular grids aligned with the geometry of the road and rail centerlines can be used to a smoother graphical representation, as shown in Figure A2.4 (bottom). Irregular spaced grids can be used for the purpose of creating noise contour areas or lines, however they do not support the assessment of area exposed due to the nature of the irregular grid spacing.

Figure A2.4 Contours created with a regular grid (top) compared to contours with an irregular grid parallel to a noise source (bottom)



4. Assigning Noise Levels Inside Buildings

It is common that noise calculation software does not calculate a result for a grid point inside a building, it may be that there is a grid point with a "no data" or *NULL* value, or special values such as -999, -200, 10.00, which results in an irregular grid of valid noise level results.

When identifying and assign the value from the quietest nearby receiver points outside the buildings, it is necessary to consider the following aspects:

- The process requires a spatial search to identify only *"calculated"* receiver grid point results outside buildings,
    - Not other grid points from inside the same or adjacent buildings which have previously been assigned a noise level;
- The position of the building polygon with respect to the receiver grid spacing may significantly affect the noise level calculated at the quietest grid point outside the building, see Figure A2.5; and
- The presence of small gaps between buildings may generate quiet results, but only if they align with the grid receiver points, see Figure A2.6.

Figure A2.5 Example of how the position of the building polygon with respect to the grid spacing may significantly affect the noise level calculated at the quietest grid point outside the building

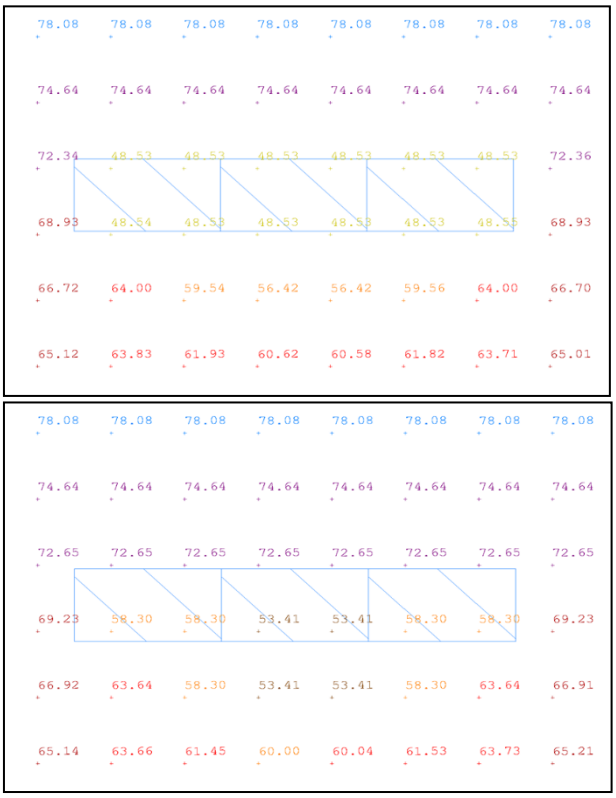
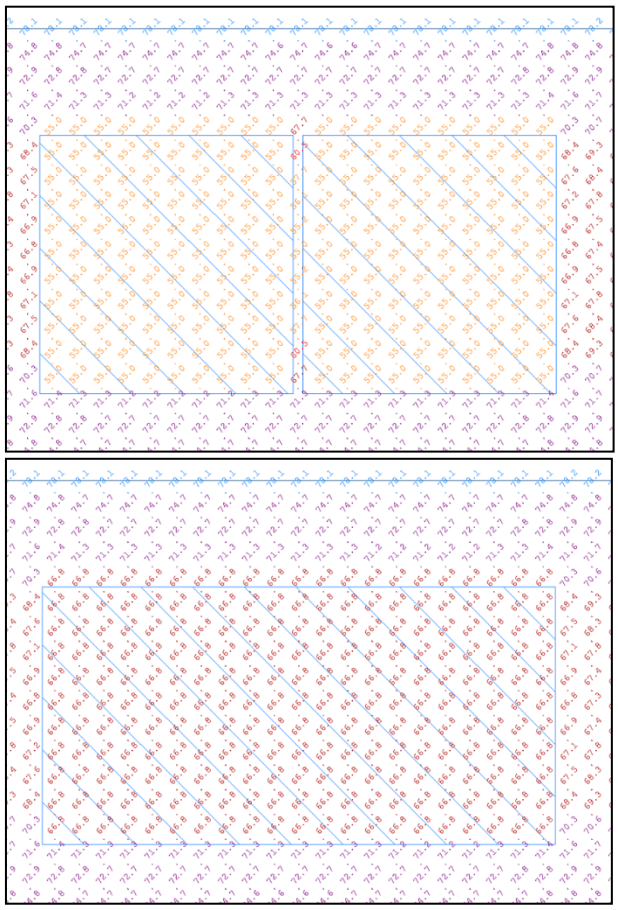


Figure A2.6 Example of how the presence of small gaps between buildings may generate quiet results, but only if they align with the grid receiver points



I. Methodology to assign the quietest nearby receiver levels inside buildings

The recommended methodology for assigning the quietest nearby receiver levels inside buildings is based on a spatial search which may be implemented in noise calculation software or GIS. The methodology is undertaken in the following steps:

- For each building create a buffer of 99.9% of grid increment (i.e., 9.99m);
- For each buffer, search for all calculated grid receivers within the buffer, excluding grid receivers inside any building, and determine the lowest value;
- If no receiver points are found, include receiver points inside adjacent buildings; Substitute all grid receiver points inside the building with this lowest value.

In this procedure a building (administrative unit) is a considered as a single unit, where known, even if for the purpose of noise modelling it consists of multiple polygons.

5. Creating Noise Level Contours

The noise calculation process generates grids of receiver results which are to be used for the purpose of creating the noise level contour polygons or polylines, to be reported to the EEA under DF4_8.

I. Receiver grid points inside buildings

After the noise level calculation process, the grid receiver points inside buildings could have one of the following values assigned:

1. No calculated noise level result, i.e., “no data”, or special values such as -999, -200, 10.00 etc; or
2. Noise level result interpolated from calculated levels outside the building; or
3. Noise level result assigned from the quietest nearby noise receiver points outside building.

It is important that the grid with “low noise levels assigned inside buildings” is **NOT** used for the production of noise level contours. This is because the low levels within the building footprint will distort the process of developing noise contours, and result in unrealistic behaviour of noise contours in front of exposed building facades, as shown in Figures A2.7 and A2.8 below. Here the high exposure level outside the building rapidly changes to the low level inside the building and generates a cluster of noise level contours.
For this reason, it is important that noise contours are produced preferably from a receiver grid with no calculated noise level result inside buildings, or that any points inside buildings are ignored.

Figure A2.7 Grid with quiet points inside building results in 5 dB contours in front of building which is not realistic

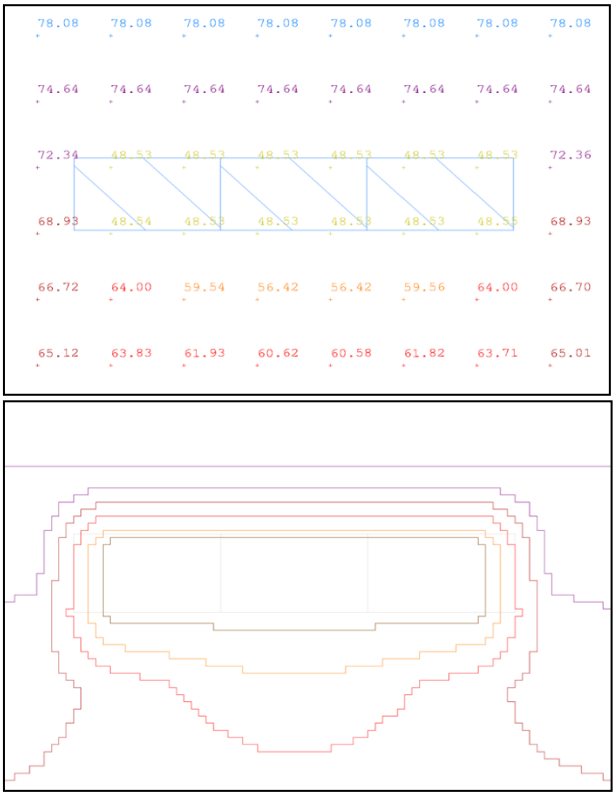
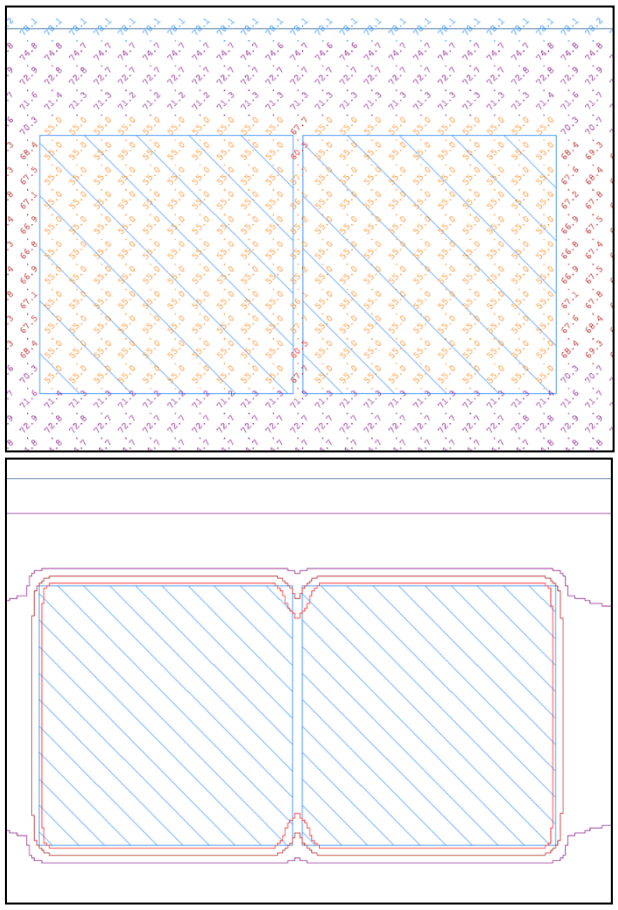


Figure A2.8 Grid with quiet points inside building results in 5 dB contours in front of, and behind, the buildings which is not realistic



II. Methodology to create contours from grids

The recommended methodology for creating noise level contours from grids of receivers is to use an approach based Delauney triangulation to create a triangulated irregular network (TIN) between the calculated grid receiver results. This process can work with both regularly and irregularly spaced grids, therefore “no data” empty grid points can be accommodated by the process.

The methodology is undertaken in the following steps:

- Receiver grid points inside buildings are removed or ignored;
- Delauney triangulation is used to create a triangulated irregular network (TIN) between the calculated grid points;
- Linear interpolation is run along each line in the TIN between grid points;
- Points along the lines with the same levels are connected to form contours.

This process may be undertaken in GIS software in the following way:

- QGIS
    - Process can be replicated using the "Generate contours" plugin
- ESRI ArcGIS
    - 3D Analyst Tools: “Data Management - TIN - Create TIN”,
    - followed by “Triangulated Surface - Surface Contour”.

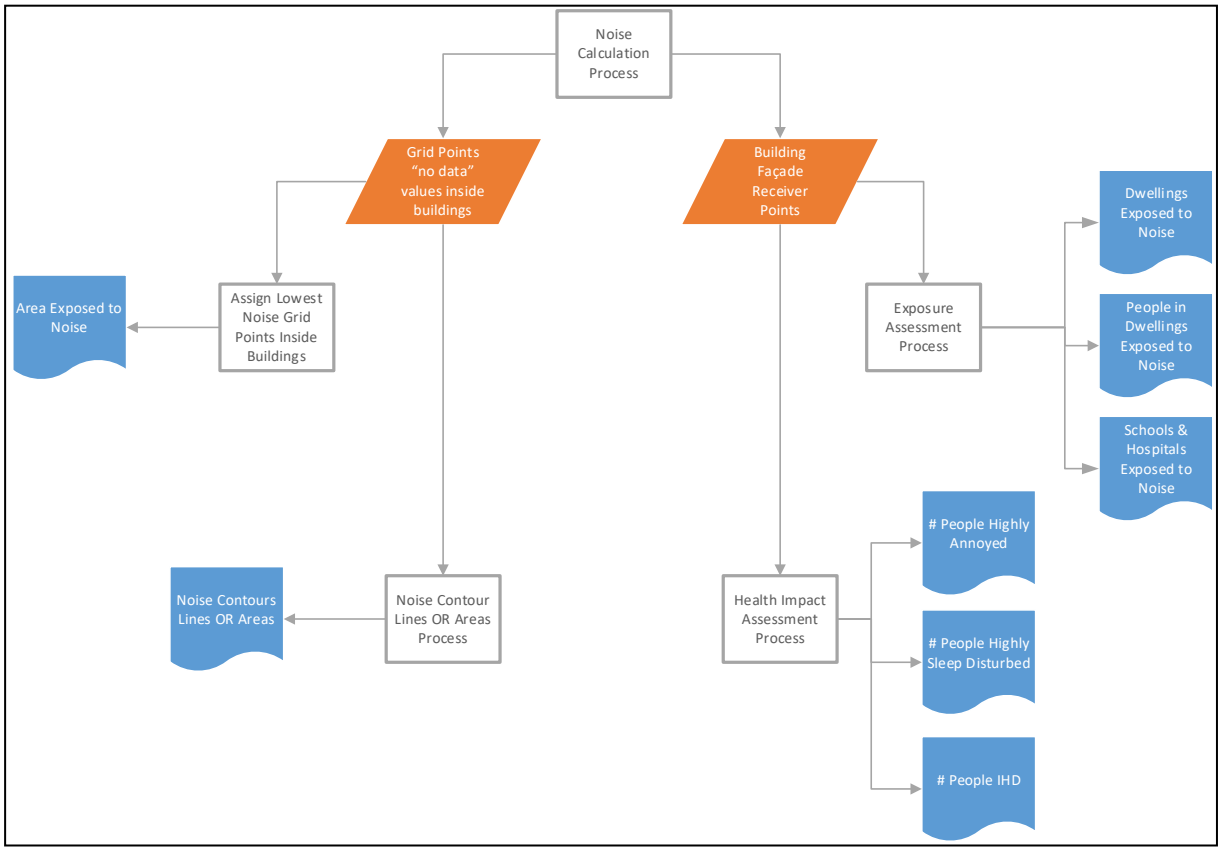
The process results in noise level contours such as those shown in Figure A2.9 below.

Figure A2.9 Example of noise level contour polygons generated using recommended methodology

6. Summary of Recommended Approaches

Figure A2.10 shows an example of the workflow from the noise calculation process for the production of grid and façade receiver results, through to the generation of the noise contour maps, noise exposure statistics, and health impact statistics to be reported to the EEA under Reportnet 3 DF4_8 and DF7_10.

Figure A2.10 Example workflow from noise calculation results to reporting datasets for EEA Reportnet 3 DF4_8 and DF7_10



I. Area exposed to noise

- The *'area exposed to noise'* is to be based on grid points inside buildings assigned the quietest nearby receiver level;
- Grid calculations should preferably generate a "no data" result inside buildings;
    - If grid calculations generate interpolated results inside buildings they should be identified;
- A common method for assigning the quietest nearby noise receiver points outside buildings to grid points that are located inside buildings is required;
- The recommended approach is based on a buffer of each of the buildings, followed by a query to find the lowest value within each buffer which is then assigned to each grid receiver point inside each building.
- It should be possible to use the recommended common method in noise calculation software or GIS.

II. Noise contours

- Noise contours should not be created using grids where points inside buildings have been assigned the quietest nearby noise receiver points outside buildings;
- Noise contours should be created using grids with "no data" values inside buildings,
    - If grid calculations generate interpolated results inside buildings these may be used only if they align with the common method;

- A recommended common method for creating noise contours from grid results with “no data” values inside buildings is presented which is based on Delauney triangulation and linear interpolation;
- It should be possible to use the recommended common method in noise calculation software or GIS.

Note: The area inside noise contour polygons will not be the same as the *‘area exposed to noise’* statistic which includes quiet areas inside buildings.

Annex 3. Recommendations for INSPIRE metadata for datasets of END strategic noise maps

The INSPIRE Directive sets conditions for several technical infrastructure components that are further defined by the legal implementing acts and technical guidelines. The main components are:

- metadata for spatial data sets and services
- interoperability of spatial data sets and services
- network services (discovery, view, download, transformation, invoke)
- measures for the sharing of spatial data sets and services between public authorities, including to public authorities of other Member State and to the institutions and bodies of the Community, and
- monitoring and reporting of the implementation and use of national infrastructures for spatial information.

The spatial data sets in the END reporting scope are designed to be compliant with the INSPIRE Directive and requirements for spatial data sets. In the INSPIRE Directive scope, spatial data sets are only one of the infrastructure components. To fulfil the INSPIRE Directive and make spatial data sets available, all other components must be provided.
This annex describes recommendations to support creating INSPIRE metadata for the reporting data sets of END strategic noise maps. The recommendations are based on proposed GeoPackage templates for providing data sets of END strategic noise maps. The data templates are designed to include spatial data of noise contours and the exposure population data.
The metadata documents that have been previously reported as part of the END reporting cycle can be easily mapped to the INSPIRE metadata elements. Thus, the recommendations in this annex are provided for a few INSPIRE metadata elements with aim to encourage a more harmonised description of END strategic noise maps. The recommendations are provided for the following INSPIRE metadata elements.

- Identification – resource title
- Identification – resource abstract
- Keyword
- Lineage
- Conformity.

Metadata will be mostly prepared in national and local languages. The following examples are provided in English language.

1. INSPIRE metadata for spatial data sets overview

The INSPIRE Directive sets the legal basis for creating metadata for spatial data sets, series and services as part of the infrastructure for spatial information in Europe. The INSPIRE Metadata Regulation further defines the metadata requirements. Specific metadata requirements are also defined in other INSPIRE implementing rules where applicable. The implementation of the complete metadata catalogue is described in detail in the INSPIRE Metadata technical guidelines.

The overview of the INSPIRE instruments and documents related to metadata is provided below:

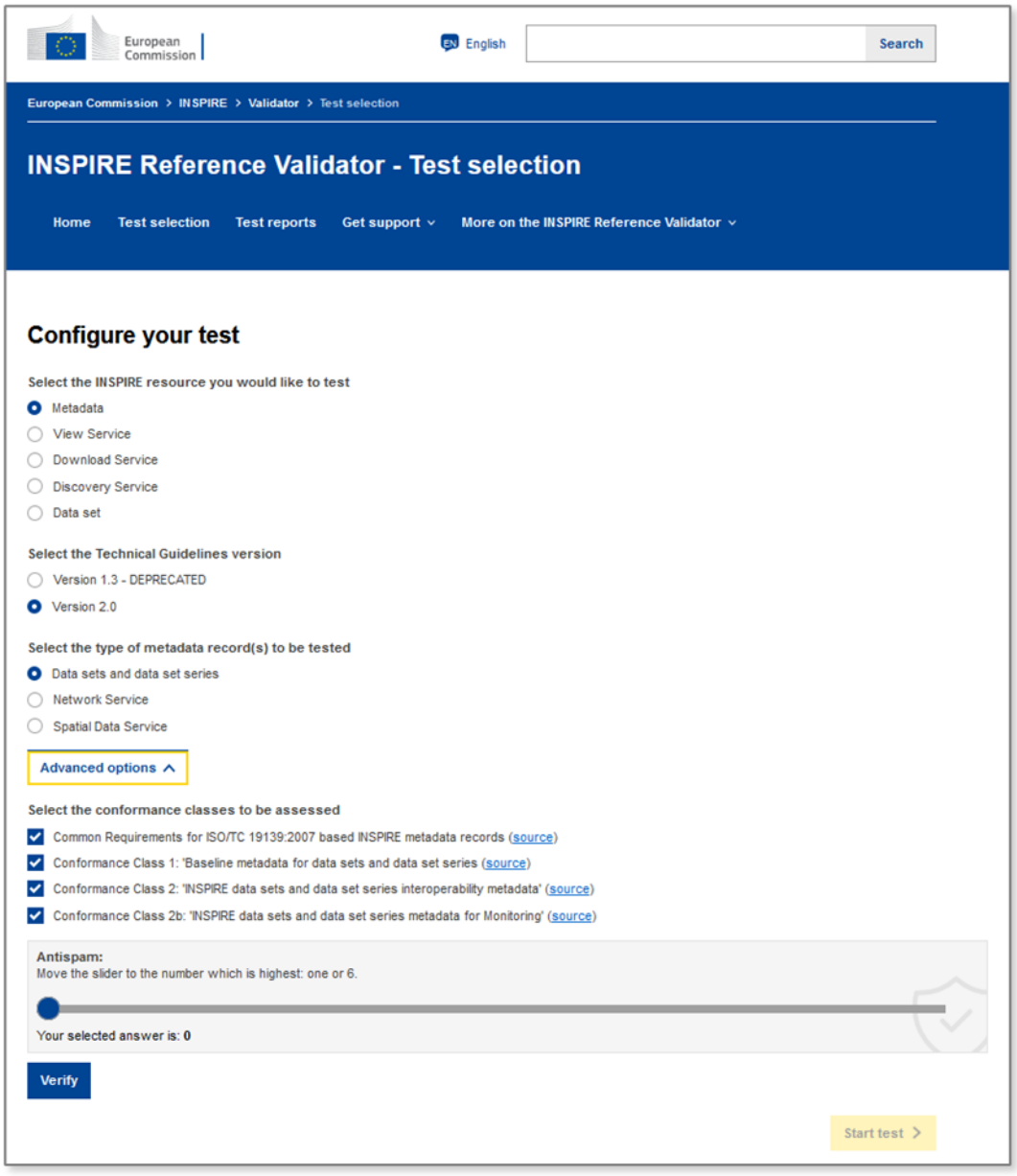
- The INSPIRE Directive[11] defines that Member States shall ensure that metadata are created for the spatial data sets and services corresponding to the themes listed in the Directive Annexes I, II and III, and that those metadata are kept up to date;
- The INSPIRE Implementing Rules for Metadata (Metadata Regulation) and its amendments[12] define requirements for the creation and maintenance of metadata for spatial data sets, spatial data set series and spatial data services;
- The INSPIRE Implementing Rules on interoperability of spatial data sets and services[13] define metadata requirements supporting the interoperability and specific thematic requirements;
- The new INSPIRE Monitoring and Reporting Decision[14] defines indicators for monitoring of implementation and use of national infrastructures for spatial information. The indicators are calculated using the metadata of the spatial data sets and the spatial data services. The Decision defines new indicators for monitoring of the availability of spatial data and services:
    - indicator which measures the number of spatial data sets that are already used by the Member State for reporting to the Commission under the environmental legislation (INSPIRE priority list of data sets for e-Reporting)
    - indicator which measures the number of the spatial data sets that respectively cover regional or national territory.
- The INSPIRE priority list of datasets for e-Reporting[15] is primarily focused on the data sets in the scope of the reporting obligations of the environmental legislation. Relevant data sets must be properly documented through specific keywords in metadata for spatial data sets. The keywords are provided from the INSPIRE priority data set code list[16];
- The INSPIRE Metadata technical guidelines[17] provide technical details for providing metadata for INSPIRE data sets and services in ISO/TS 19139 based XML format in compliance with the INSPIRE Implementing Rules.

The INSPIRE Metadata technical guidelines provide detailed description of metadata elements and their encoding in XML according to the ISO/TS 19139 Geographic information - Metadata - XML schema implementation standard. The complete INSPIRE metadata element catalogue is described in the Annex C, including legal basis, metadata element name, requirements (e.g. multiplicity and INSPIRE obligation) and details for implementation.

The INSPIRE Metadata for spatial data sets shall be validated with the INSPIRE Reference Validator to obtain clear information about the metadata conformance to the INSPIRE requirements. The recent validation of metadata for data sets and data set series shall be configured to use Technical Guidelines Version 2.0 and all conformance classes for metadata, as shown on the next figure.

[11] http://data.europa.eu/eli/dir/2007/2/2019-06-26
[12] https://inspire.ec.europa.eu/Legislation/Metadata/6541
[13] https://inspire.ec.europa.eu/Legislation/Data-Specifications/2892
[14] http://data.europa.eu/eli/dec_impl/2019/1372/oj
[15] https://github.com/INSPIRE-MIF/need-driven-data-prioritisation/tree/main/documents
[16] https://inspire.ec.europa.eu/metadata-codelist/PriorityDataset
[17] https://inspire.ec.europa.eu/Technical-Guidelines2/Metadata/6541
https://inspire.ec.europa.eu/id/document/tg/metadata-iso19139

Figure A3.1INSPIRE Reference Validator for metadata for spatial data sets



The following sections provide recommendations for some of the INSPIRE metadata elements from the point of view of data sets of END strategic noise maps, a reporting data flow END DF4_8.

2. Identification – resource title

A resource title is a characteristic, and often unique, name by which the resource is known.
The detailed description of providing resource title is in the INSPIRE Metadata technical guidelines, C.2.1 Resource title.

Recommendation for describing the reporting data sets of END strategic noise maps: The title could refer to strategic noise maps, noise sources, noise indicators and a reporting year for which the reporting data set was created, in accordance with the content of the data set.

For example:

- Strategic noise maps for noise sources in agglomerations, noise indicators Lden and Lnight, 2022
- Strategic noise maps for major airports, noise indicators Lden and Lnight, 2022
- Strategic noise maps for major railways, noise indicators Lden and Lnight, 2022
- Strategic noise maps for major roads, noise indicators Lden and Lnight, 2022.

3. Identification – resource abstract

A resource abstract is a brief narrative summary of the content of the resource.
The detailed description of providing resource abstract is in the INSPIRE Metadata technical guidelines, C.2.2 Resource abstract.

Recommendation for describing the reporting data sets of END strategic noise maps:
In addition to other summary information, it is recommended to include also information about the reporting obligation and the reporting year or reporting cycle for which this resource – reporting data set was created. The reporting information would include also the reference to the Reporting Obligations Database (ROD).

For example:
This resource is created for the Environmental Noise Directive (END) reporting obligation of DF4_8 strategic noise maps, ROD: https://rod.eionet.europa.eu/obligations/369.
The reporting year is 2022.

4. Keyword

Keywords describe spatial data sets. They are provided as the keyword value and the originating controlled vocabulary, if the keyword is described in such vocabulary. In case the vocabulary exists, the citation of the originating controlled vocabulary shall be provided with a title and a reference date (date of publication, date of last revision or of creation).
The detailed description of providing a keyword is in the INSPIRE Metadata technical guidelines, C.2.10 Keyword value and C.2.11 Originating controlled vocabulary.
The next sections describe three types of keywords for describing the data sets of END strategic noise maps:

- Keyword for INSPIRE spatial data theme, mandatory
- Keywords for INSPIRE priority data sets, conditional: mandatory if data set is included in the INSPIRE priority list of data sets for e-Reporting, therefore mandatory for END strategic noise maps
- Keywords for thematic domain of noise, recommended.

I. Keyword – INSPIRE spatial data theme

For each spatial data set in the INSPIRE scope, a metadata must include at least the keyword for the INSPIRE spatial data theme.

Recommendation for describing the reporting data sets of END strategic noise maps:
The spatial data sets of END strategic noise maps - noise contours are based on the INSPIRE data model for the INSPIRE spatial data theme Human health and safety (HH). The recommended keyword for INSPIRE spatial data theme is “Human health and safety” from the GEMET vocabulary.

The keyword and vocabulary are provided below.

Keyword	Originating vocabulary		
	Title and URL	Date	Date type
Human health and safety https://inspire.ec.europa.eu/theme/hh	GEMET - INSPIRE themes, version 1.0 http://www.eionet.europa.eu/gemet/inspire_themes	01.06.2018	Publication

II. Keyword – INSPIRE priority data sets

The spatial data sets of END strategic noise maps - noise contours are also included in the INSPIRE priority list of data sets for e-Reporting. **Therefore, metadata for data sets of END strategic noise maps – noise contours shall include also corresponding keywords for INSPIRE priority data sets.** The keywords are provided in the vocabulary INSPIRE priority data set code list, and details for implementation are provided in the INSPIRE priority data set implementation guidelines[18].
This information will be also used to calculate the INSPIRE monitoring indicator to measure the number of spatial data sets that are already used by the Member State for reporting to the Commission under the environmental legislation.
The INSPIRE priority data set code list is organised into a hierarchical structure from an originating legal act (e.g. directive or regulation) to a more detailed description of each data set. The keywords for describing the END strategic noise maps – noise contours are organised into four hierarchical levels, per noise source and noise indicators Lden ("day-evening-night") and Lnight, as shown in the following table.

Table 10.1 Keywords – INSPIRE priority data sets and strategic noise maps – noise contours

Keyword – level 1	Keyword – level 2	Keyword – level 3	Keyword – level 4
Directive 2002/49/EC	Environmental noise exposure (Noise Directive)	Agglomerations - aircraft noise exposure delineation (Noise Directive)	Agglomerations - aircraft noise exposure delineation day-evening-night (Noise Directive)
			Agglomerations - aircraft noise exposure delineation - night (Noise Directive)
		Agglomerations - industrial noise exposure delineation (Noise Directive)	Agglomerations - industrial noise exposure delineation day-evening-night (Noise Directive)
			Agglomerations – industrial noise exposure delineation - night (Noise Directive)
		Agglomerations - noise exposure delineation (Noise Directive)	Agglomerations - noise exposure delineation day-evening-night (Noise Directive)
			Agglomerations - noise exposure delineation - night (Noise Directive)
		Agglomerations - railways noise exposure delineation (Noise Directive)	Agglomerations - railways noise exposure delineation day-evening-night (Noise Directive)
			Agglomerations - railways noise exposure delineation - night (Noise Directive)

[18] https://github.com/INSPIRE-MIF/priority-datasets/blob/main/documents/Implementation-PDS-Tagging.pdf

Keyword – level 1	Keyword – level 2	Keyword – level 3	Keyword – level 4
		Agglomerations - roads noise exposure delineation (Noise Directive)	Agglomerations - roads noise exposure delineation day-evening-night (Noise Directive)
			Agglomerations - roads noise exposure delineation - night (Noise Directive)
		Major airports noise exposure delineation (Noise Directive)	Major airports noise exposure delineation day-evening-night (Noise Directive)
			Major airports noise exposure delineation - night (Noise Directive)
		Major railways noise exposure delineation (Noise Directive)	Major railways noise exposure delineation day-evening-night (Noise Directive)
			Major railways noise exposure delineation - night (Noise Directive)
		Major roads noise exposure delineation (Noise Directive)	Major roads noise exposure delineation day-evening-night (Noise Directive)
			Major roads noise exposure delineation - night (Noise Directive)

Note: The keywords «Agglomerations - noise exposure delineation (Noise Directive)», «Agglomerations - noise exposure delineation day-evening-night (Noise Directive)" and "Agglomerations - noise exposure delineation - night (Noise Directive)" refer to noise contours of combined levels of road, rail, aircraft and industrial noise inside agglomeration.

Recommendation for describing the reporting data sets of END strategic noise maps:

Metadata for data sets of END strategic noise maps – noise contours should include also corresponding keywords for INSPIRE priority data sets. The vocabulary for the keywords is the INSPIRE priority data set. The keywords from all levels can be included in metadata. Although the requirement is fulfilled by providing one keyword from any level, it is recommended to provide at least the following:

- the keyword referencing the legal instrument (level 1), and
- all applicable keywords that describe a spatial data set in most details (level 4).

The recommended keywords for the INSPIRE priority data sets for the END strategic noise maps – noise contours and information about the originating controlled vocabulary are provided below.

DF4_8 strategic noise maps for agglomerations - noise contours

The selected keywords shall describe the content of the data set of END strategic noise maps – noise contours for noise sources in agglomerations, thus selecting all keywords that correspond to noise contours of noise sources and noise indicators Lden and Lnight included in the spatial data set. The recommended keywords are from levels 1 and 4 of the INSPIRE priority data set code list.

Keyword	Originating vocabulary		
	Title and URL	Date	Date type
Directive 2002/49/EC	INSPIRE priority data set http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset	04.04.2018	Publication
Agglomerations - aircraft noise exposure delineation day-evening-night (Noise Directive)			
Agglomerations - aircraft noise exposure delineation - night (Noise Directive)			
Agglomerations - industrial noise exposure delineation day-evening-night (Noise Directive)			
Agglomerations – industrial noise exposure delineation - night (Noise Directive)			
Agglomerations - noise exposure delineation day-evening-night (Noise Directive)			
Agglomerations - noise exposure delineation - night (Noise Directive)			
Agglomerations - railways noise exposure delineation day-evening-night (Noise Directive)			
Agglomerations - railways noise exposure delineation - night (Noise Directive)			
Agglomerations - roads noise exposure delineation day-evening-night (Noise Directive)			
Agglomerations - roads noise exposure delineation - night (Noise Directive)			

Note: The keywords «Agglomerations - noise exposure delineation day-evening-night (Noise Directive)" and "Agglomerations - noise exposure delineation - night (Noise Directive)" refer to noise contours of combined levels of road, rail, aircraft and industrial noise inside agglomeration.

For example: In the END reporting scope, the pre-defined GeoPackage template for data sets of END strategic noise maps for agglomerations offers a straightforward mapping between the noise contours layers and the INSPIRE priority data set keywords, as shown in the next table.

Table 10.2 Mapping GeoPackage template noise contours for agglomerations layers and INSPIRE priority data set keywords

GeoPackage template for strategic noise maps – noise contours layer	INSPIRE Priority data set keyword
NoiseContours_airportsInAgglomeration_Lden	Agglomerations - aircraft noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_airportsInAgglomeration_Lnight	Agglomerations - aircraft noise exposure delineation - night (Noise Directive)
NoiseContours_industryInAgglomeration_Lden	Agglomerations - industrial noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_industryInAgglomeration_Lnight	Agglomerations – industrial noise exposure delineation - night (Noise Directive)
NoiseContours_allSourcesInAgglomeration_Lden	Agglomerations - noise exposure delineation day-evening-night (Noise Directive)

GeoPackage template for strategic noise maps – noise contours layer	INSPIRE Priority data set keyword
NoiseContours_allSourcesInAgglomeration_Lnight	Agglomerations - noise exposure delineation - night (Noise Directive)
NoiseContours_railwaysInAgglomeration_Lden	Agglomerations - railways noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_railwaysInAgglomeration_Lnight	Agglomerations - railways noise exposure delineation - night (Noise Directive)
NoiseContours_roadsInAgglomeration_Lden	Agglomerations - roads noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_roadsInAgglomeration_Lnight	Agglomerations - roads noise exposure delineation - night (Noise Directive)

DF4_8 strategic noise maps for major airports - noise contours

The selected keywords shall describe the content of the spatial data set of END strategic noise maps – noise contours for major airports, thus selecting all keywords that correspond to noise contours and noise indicators Lden and Lnight included in the spatial data set. The recommended keywords are from levels 1 and 4 of the INSPIRE priority data set code list.

Keyword	Originating vocabulary		
	Title and URL	Date	Date type
Directive 2002/49/EC	INSPIRE priority data set http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset	04.04.2018	Publication
Major airports noise exposure delineation day-evening-night (Noise Directive)			
Major airports noise exposure delineation - night (Noise Directive)			

For example: In the END reporting scope, the pre-defined GeoPackage template for data sets of END strategic noise maps for major airports offers a straightforward mapping between the noise contours layers and the INSPIRE priority data set keywords, as shown in the next table.

Table 10.3 Mapping GeoPackage template noise contours for major airports layers and INSPIRE priority data set keywords

GeoPackage template for strategic noise maps – noise contours layer	INSPIRE Priority data set keywords
NoiseContours_majorAirportIncludingAgglomeration_Lden	Major airports noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_majorAirportIncludingAgglomeration_Lnight	Major airports noise exposure delineation - night (Noise Directive)

DF4_8 strategic noise maps for major railways - noise contours

The selected keywords shall describe the content of the spatial data set of END strategic noise maps – noise contours for major railways, thus selecting all keywords that correspond to noise contours and

noise indicators Lden and Lnight included in the spatial data set. The recommended keywords are from levels 1 and 4 of the INSPIRE priority data set code list.

Keyword	Originating vocabulary		
	Title and URL	Date	Date type
Directive 2002/49/EC	INSPIRE priority data set http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset	04.04.2018	Publication
Major railways noise exposure delineation day-evening-night (Noise Directive)			
Major railways noise exposure delineation - night (Noise Directive)			

For example: In the END reporting scope, the pre-defined GeoPackage template for data sets of END strategic noise maps for major railways offers a straightforward mapping between the noise contours layers and the INSPIRE priority data set keywords, as shown in the next table.

Table 10.4 Mapping GeoPackage template noise contours for major railways layers and INSPIRE priority data set keywords

GeoPackage template for strategic noise maps – noise contours layer	INSPIRE Priority data set keywords
NoiseContours_majorRailwaysIncludingAgglomeration_Lden	Major railways noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_majorRailwaysIncludingAgglomeration_Lnight	Major railways noise exposure delineation - night (Noise Directive)

DF4_8 strategic noise maps for major roads - noise contours

The selected keywords shall describe the content of the spatial data set of END strategic noise maps – noise contours for major roads, thus selecting all keywords that correspond to noise contours and noise indicators Lden and Lnight included in the spatial data set. The recommended keywords are from levels 1 and 4 of the INSPIRE priority data set code list.

Keyword	Originating vocabulary		
	Title and URL	Date	Date type
Directive 2002/49/EC	INSPIRE priority data set http://inspire.ec.europa.eu/metadata-codelist/PriorityDataset	04.04.2018	Publication
Major roads noise exposure delineation day-evening-night (Noise Directive)			
Major roads noise exposure delineation - night (Noise Directive)			

For example: In the END reporting scope, the pre-defined GeoPackage template for data sets of END strategic noise maps for major roads offers a straightforward mapping between the noise contours layers and the INSPIRE priority data set keywords, as shown in the next table.

Table 5 Mapping GeoPackage template noise contours for major roads layers and INSPIRE priority data set keywords

GeoPackage template for strategic noise maps – noise contours layer	INSPIRE Priority data set keywords
NoiseContours_majorRoadsIncludingAgglomeration_Lden	Major roads noise exposure delineation day-evening-night (Noise Directive)
NoiseContours_majorRoadsIncludingAgglomeration_Lnight	Major roads noise exposure delineation - night (Noise Directive)

III. Keyword – additional thematic keywords

In addition to the keywords for INSPIRE spatial data theme and INSPIRE priority data sets, other thematic keywords can be included to describe the content of a data set. If the controlled vocabulary exists, it is recommended to select keywords from that vocabulary. In other cases, a keyword can be provided as a free text.

Recommendation for describing the reporting data sets of END strategic noise maps:

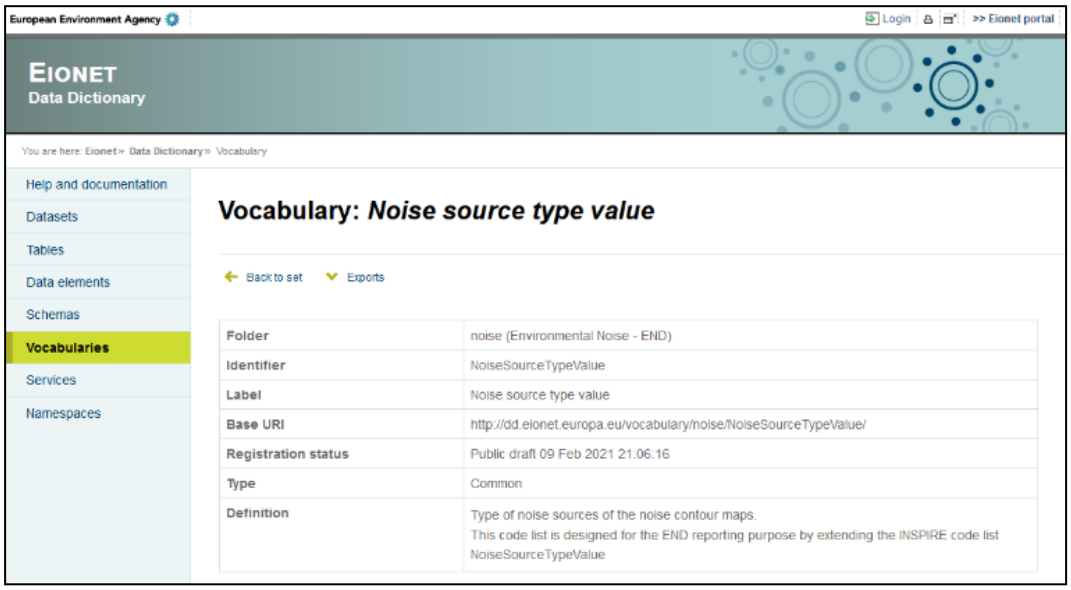
It is recommended to include the following thematic keywords from the controlled vocabularies into metadata for data sets of END strategic noise maps that include noise contours and exposure data, e.g. that are provided according to the pre-defined GeoPackage templates for the END strategic noise maps:

- **Noise map**: describes noise contours more precisely; vocabulary: GEMET
- **Noise pollution**: related to exposed population, dwellings, schools and hospitals to environmental noise in the END reporting scope: vocabulary: GEMET
- All applicable noise sources from the vocabulary in the Eionet Data Dictionary established for the END reporting data flows and used to categorise a noise source in noise contours, i.e. Noise source type value:
  - **Aircraft noise inside agglomeration**
  - **Industrial noise inside agglomeration**
  - **Railway noise inside agglomeration**
  - **Road noise inside agglomeration**
  - **Noise from all sources inside agglomeration**
  - **Major airports including agglomerations**
  - **Major railways including agglomerations**
  - **Major roads including agglomerations**

The keywords and vocabularies are provided below.

Keyword	Originating vocabulary		
	Title and URL	Date	Date type
Noise map http://www.eionet.europa.eu/gemet/concept/15381	GEMET – Concepts, version 4.2.1 https://www.eionet.europa.eu/gemet/	01.06.2021	Publication
Noise pollution http://www.eionet.europa.eu/gemet/concept/5651			
Aircraft noise inside agglomeration	Eionet Data Dictionary, Noise source type value http://dd.eionet.europa.eu/vocabulary/noise/NoiseSourceTypeValue/	09.02.2021	Publication
Industrial noise inside agglomeration			
Railway noise inside agglomeration			
Road noise inside agglomeration			
Noise from all sources inside agglomeration			
Major airports including agglomerations			
Major railways including agglomerations			
Major roads including agglomerations			

Figure A3.2 Vocabulary Noise source type value



5. Lineage

Lineage is a statement on process history and/or overall quality of the spatial data set. Where appropriate it may include a statement whether the data set has been validated or quality assured, whether it is the official version (if multiple versions exist), and whether it has legal validity.
In the END reporting scope, information that has been reported as metadata documents in previous END reporting cycles can be included in the metadata element lineage.

Recommendation for describing the reporting data sets of END strategic noise maps:

The data sets of END strategic noise maps prepared on the basis of pre-defined GeoPackage templates will typically include noise contours spatial data and exposure data. Among other relevant information, the lineage could include the following information for noise contours and exposure data, such as:

- Information about the process of creating noise contours
- Method used for calculation of exposure data and potentially, constraints of that method
- Constraints on data, e.g. major roads inside agglomerations not used in exposure data calculation, how dwellings have been taken into account, etc.
- Temporal references of data used for creating noise contours and exposure data:
  - Census year of population data used for exposure data calculations
  - Year when traffic flow has been determined.

6. Conformity

According to the INSPIRE Metadata Regulation, a conformity of a spatial data set to the INSPIRE Implementing rules must be provided in metadata. Additionally, it is also possible to declare conformity to other specifications.

A conformity is described by providing specifications or user requirements against which data is being evaluated and by providing a degree of conformity as conformant, not conformant or not evaluated.
The detailed description of providing conformity is in the INSPIRE Metadata technical guidelines, C.2.19 Specification and C.2.20 Degree.

I. Conformity – to the INSPIRE Implementing rules on interoperability

According to the INSPIRE Metadata Regulation, it is **mandatory** to state the conformity of data to the COMMISSION REGULATION (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services.
The implementation details are provided in the INSPIRE Metadata technical guidelines C.2.19 Specification and C.2.20 Degree.
This information shall be included in the INSPIRE metadata for END strategic noise maps.
The technical validation of spatial data sets to the INSPIRE Regulation on interoperability (1089/2010) can be done with the INSPIRE Reference Validator. Validation of spatial data sets is available for the file format GML. In case, the END reporting authority would want to perform this validation, the European Environment Agency can help by providing the END application schemas in XML/GML that can be used to develop the spatial data in GML and test it with this validator.

II. Conformity – to the END Implementing decision and END data model

The END conceptual data model corresponds to the Commission Implementing Decision (EU) 2021/1967 of 11 November 2021 setting up a mandatory data repository and a mandatory digital information exchange mechanism in accordance with Directive 2002/49/EC of the European Parliament and of the Council (Text with EEA relevance)[19].

Based on the END conceptual data model, the data templates in GeoPackage are developed according to the END encoding guidelines for GeoPackage ensuring also the compatibility with the INSPIRE

[19] http://data.europa.eu/eli/dec_impl/2021/1967/oj

default encoding in GML. This establishes the line of compatibility among the END Implementing Decision, the END conceptual data model and the encoding format GeoPackage.

Recommendation for describing the reporting data sets of END strategic noise maps:

The data set of END strategic noise maps with noise contours and exposure data prepared on the basis of pre-defined GeoPackage templates should include information on conformity to two specifications:

- the END Implementing Decision 2021/1967, and
- the END data model documentation.

The conformity criteria and rules could be further developed in cooperation with the countries, however without increasing any additional burden for preparation of data. The validation of the reporting data sets is performed during the reporting process in the Reportnet platform with aim to validate data against the END reporting requirements. The degree of conformity to the END Implementing Decision 2021/1967 and the END data model documentation should be related to the validation status of reporting data. It is recommended to provide data according to the latest END data model documentation.
The conformity information can be provided as following:

Commission Implementing Decision (EU) 2021/1967

- **Specification – citation**:
  - Title: Commission Implementing Decision (EU) 2021/1967 of 11 November 2021 setting up a mandatory data repository and a mandatory digital information exchange mechanism in accordance with Directive 2002/49/EC of the European Parliament and of the Council
  - Reference date: 12.11.2021
  - Date type: publication
- **Degree of conformity**:
  - true if conformant
  - false if not conformant
  - null (with nilReason = “unknown”) if not evaluated.

END data model documentation

- **Specification – citation**:
  - Title: Environmental Noise Directive Data model documentation version 4.2, July 2022
  - Reference date: 08.07.2022
  - Date type: publication
- **Degree of conformity**:
  - true if conformant
  - false if not conformant
  - null (with nilReason = “unknown”) if not evaluated.

7. Good practices

I. INSPIRE Geoportal

The INSPIRE Geoportal is the central European access point to the data provided by EU Member States and several EFTA countries under the INSPIRE Directive. It harvests national metadata catalogues and provides different search mechansims.

The metadata describing spatial data sets under the Envionmental Noise Directive are already available in the INSPIRE Geoportal.
After the establishment of the new END mandatory digital information exchange mechanism, it is expected that data sets and metadata will be prepared according to the END reporting guidelines and available in the INSPIRE infrastructure. The metadata for the END strategic noise maps will be included in the national metadata catalogues and also discoverable trough the INSPIRE Geoportal.

II. EEA Spatial Data Infrastructure Metadata Catalogue

Another example that can serve as a guidance and motivation to prepare INSPIRE metadata for the data sets of END strategic noise maps is the European Environment Agency Spatial Data Infrastructure (EEA SDI) Metadata Catalogue. It includes INSPIRE compliant metadata for spatial data sets of European wide geographic area, e.g. European data set of noise contours, such as Noise contours data reported under Environmental Noise Directive (END) 2017 (vector) - version 2019, Oct. 2019.
In addition to metadata description, the EEA-SDI metadata guidance are available at https://taskman.eionet.europa.eu/projects/public-docs/wiki/Cataloguemetadata_guidelines. It includes references to the INSPIRE Metadata technical guidelines, XML encoding examples, additional information and the EEA SDI specific requirements.

Annex 4. Tables supporting data harvesting through INSPIRE download services

Geospatial data can be also imported from an existing INSPIRE download service. This alternative method includes a harvesting process that is included in the reporting dataset schemas of strategic noise maps for agglomerations, major airports, major railways and major roads. The harvesting process is supported by the following two tables:

- HarvestSource: This table contains the URLs from which to harvest the geospatial features needed for the reporting. In the serviceType field, the reporter indicates if the given URL points directly to a file to download, or to a WFS 2.0 INSPIRE service. For direct file download, the URLs point directly to the dataset file to download (e.g. no Atom feed). For WFS, the URL must provide the full WFS GetFeature request. For END reporting, only 'Direct file' in gpkg format is supported.
- WorkflowLog: This table contains log messages from the harvesting process. Messages can contain information about the harvested resources (e.g. number of features) but also information about errors occurred during harvesting.

In the reporting data flow of Strategic noise maps (DF4_8), the supported file format is GeoPackage with the expected table structure defined in the pre-defined GeoPackage templates. These thematic GeoPackage files could be provided through a download service (e.g. INSPIRE download service) that could be declared and used for harvesting in the reporting process.

Table HarvestSource

For this purpose, the table HarvestSource must include service(s) information. The table HarvestSouce has the following structure:

HarvestSource table overview

Mandatory/ optional	Name	Reportnet 3 Type	Code list
M	serviceType	Single select	
M	serviceUrl	URL	
M	operation	Single select	

The following tables includes detailed information of each field, i.e. description, type, format, use of code lists (where applicable), additional information of expected data or guidelines to prepare data, and data samples.

Field serviceType

Requirement	Mandatory
Description	The service type indicates whether the given service URL points to a direct file download or to a WFS service providing the INSPIRE features. For END reporting only 'Direct file' is supported.
Reportnet 3 type	Single select
Code list	Applicable code list values: - Direct file
Example	Direct file

Field serviceURL

Requirement	Mandatory
Description	In case of serviceType 'Direct file', serviceURL points directly to the dataset file to download. For END reporting, only GeoPackage (gpkg) is supported. A zip file containing the gpkg file is allowed.
Reportnet 3 type	URL
Code list	Maximum of 10000 characters
Example	https://projects.sadl.kuleuven.be/downloadfolder/eea_testdata/df4_8/MajorAirports-StrategicNoiseMaps-AT-LOWW-SpatialIndex.gpkg

Field operation

Requirement	Mandatory
Description	This field is used to indicate the type of operation – how to use the service: a) service will add data to the table, b) service will replace data in the table or c) service will not import data (Do not import) – service is omitted. Keep in mind that the thematic table(s) will be deleted **in its entirety** if one of the operations assigned to a service is "Delete all table data before import".
Reportnet 3 type	Single select
Code list	Applicable code list values: - Append to table data - Delete all table data before import - Do not import
Example	Append to table data

Table WorkflowLog

The table WorkflowLog has the following information:

WorkflowLog table overview

Mandatory/ optional	Name	Reportnet 3 Type	Code list
O	logTime	DateTime	
O	logType	Text	
O	logMessage	Text	
O	harvestSource	Text	

Field logTime

Requirement	Optional
Description	The date and time the system added the log message to the table during or after processing services. The logTime is given in local time, therefore it can differ from the time used in the harvestSource field.
Reportnet 3 type	DateTime
Format	ISO DateTime format YYYY-MM-DDThh:mm:ss
Example	2022-06-10T15:11:26

Field logType

Requirement	Optional
Description	The type of log message. This gives an indication on the importance of the message. LogType can be Info, Warning and Error
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	Info

Field logMessage

Requirement	Optional
Description	The detailed log message. This can contain general information (e.g. number of features) but also details about an error that occurred.
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	At the beginning of the process, 2022-06-10T14:12:32Z, there are 4 records inside HarvestSource table

Field harvestSource

Requirement	Optional
Description	The harvest source (web service) where this log message refers to. harvestSource is a composition of the UTC time of the start of the process and the URL of the service. Be aware this is the utc time, which can differ from the local time given in the field logTime
Reportnet 3 type	Text
Format	Maximum of 10000 characters
Example	2022-06-10T14:12:32Z https://projects.sadl.kuleuven.be/downloadfolder/eea_testdata/df4_8/MajorAirports-StrategicNoiseMaps-AT-LOWW-SpatialIndex.gpkg

Annex 5
Alternative solution implemented to mitigate Reportnet 3 errors that were preventing the import, validation and release of DF4_8 data

1. Introduction

Over the past months, there have been problems with the new reporting platform Reportnet 3. This mainly affected large data flows including the dataflow DF4_8 Strategic Noise Maps. These issues led to unstable system performance which for the reporters' caused difficulties in importing, validating, and releasing data.

In order to solve the reporting issues larger structural changes will be developed throughout 2023. In the meanwhile, until the platform architecture is improved, the EEA has developed a short-term solution which will allow countries to report noise data. This solution consists of importing the GeoPackage files but splitting them into tabular and spatial data. The tabular data will be kept in Reportnet 3 and the geometry will be imported directly into our database without going through Reportnet 3. This solution is expected to be used until the next reporting round of noise mapping. These changes only apply to DF4_8 and therefore the reporting of DF1_5 and the other dataflows remains unaltered.

This document aims at providing information for noise reporters on the new reporting process for reporting strategic noise maps (DF4_8).

2. New work around

An alternative solution has been implemented to solve the time-out errors that were preventing the import, validation and release of data. This solution consists of internally splitting the GeoPackage files into tabular and spatial data. The tabular data will be imported and kept in Reportnet 3 and the geometry will be imported directly into our database without going through Reportnet 3 (See Figure 1 and Figure 2). These changes only apply to DF4_8 data flow and therefore the reporting of the other dataflows remains unaltered.

Figure 1. Simple diagram of the new work around

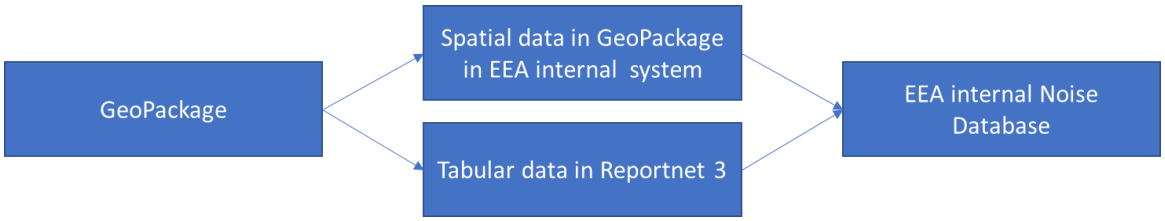
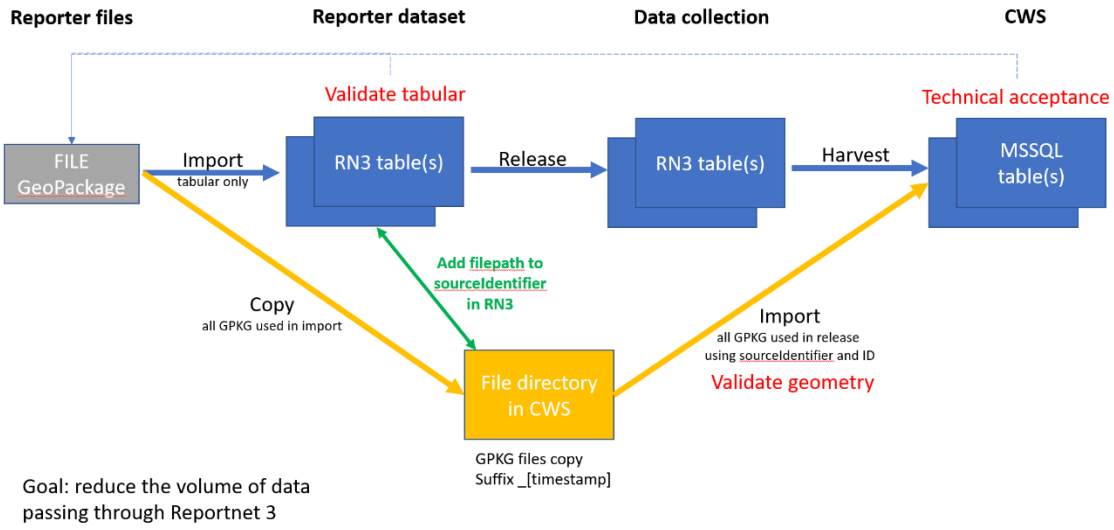


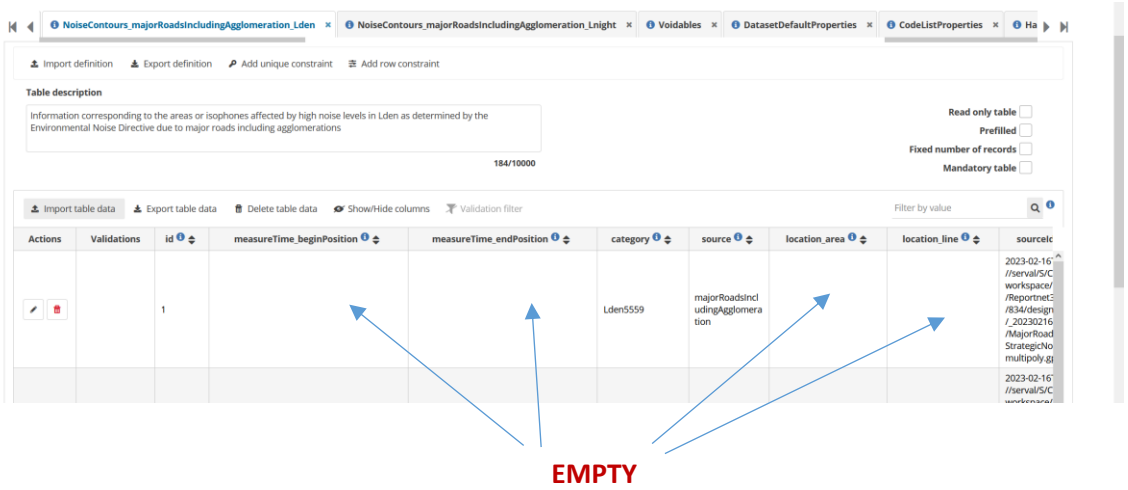
Figure 2. Detailed diagram of the new work around



The new work around has resulted in some minor changes for the reporter which mainly are the following:

- The geometry fields of the tables imported in Reportnet 3 will be empty.

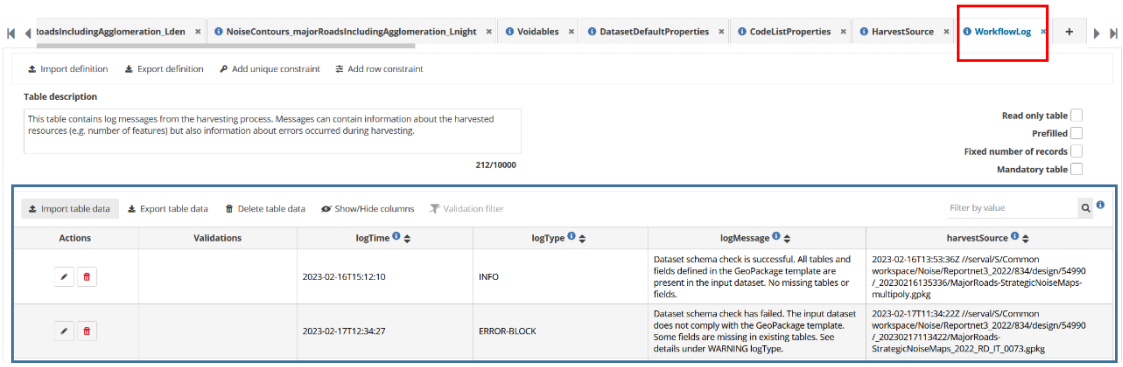
Figure 3. Geometry fields in Reportnet 3 tables are empty



- Information from the GeoPackage import process will be published in the "WorkflowLog" table [Figure 4].

- As regards to the geometries, the new import will only check if the geometry is in the acceptable coordinate reference system, if the geometry type is correct (polygon, multipolygon, line or multiline) and if geometry is empty or null. The geometry information or errors will need to be consulted in the "WorkflowLog" table as shown in the image below:

Figure 4. Using WorkflowLog table



For example: information INFO in the field logType indicates that dataset schema check was successful and tabular data has been imported into the Reportnet3 tables.
Some more complicated geometry tests will go to the technical acceptance process.

- The four schemas of the previous one combined dataflow have been split into four dataflows, i.e. Strategic noise maps for Major Roads, Major Railways, Major Airports and Agglomerations. Therefore, the reporters will have to release the strategic noise maps for each source separately. The submission declaration schema has been modified to be relevant to each dataflow.

The new dataflows to be used for reporting strategic noise maps can be found here:
https://reportnet.europa.eu/dataflow/870
https://reportnet.europa.eu/dataflow/871
https://reportnet.europa.eu/dataflow/872
https://reportnet.europa.eu/dataflow/873

3. Validations in the new import dataset data

The files can be imported using the custom import option of the data schema in “import dataset data”. There are two types of files that can be imported. A file with the .gpkg extension or a geopackage file that has been zipped. After the import has completed, the information about the import process and basic validation will be provided in the WorkflowLog table, as following:

- Information about schema check comparing the input GeoPackage file with the pre-defined GeoPackage template, e.g. passed schema check, missing tables or fields.
- Information on spatial data – geometries.

The validations on the tabular data can be seen in Reportnet 3 as before i.e. using “validate” and “show validations” tools available in Reportnet 3. Please note that the geometry fields of the tables imported will be empty.

The validation feedback of the geometries will be shown in the table “WorkflowLog”. The type of errors encountered will be shown in the fields “logType” and “logMessage”.

The following types or error in the field logType wil cause a validation BLOCKER on the imported datasets also preventing the release to data collection in the Reportnet 3:

- ERROR
- ERROR-BLOCK
- ERROR-SCHEMA

Figure 5. Import process and validation information in the WorkflowLog table

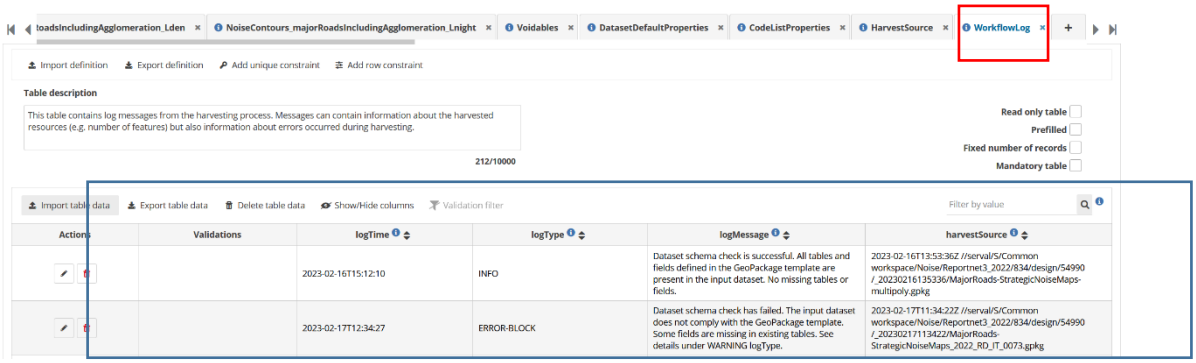


Table 1 presents an overview of the Error types recorded in WorkflowLog. An INFO message means that there are no errors found in the imported dataset. A dataset name (file name) and path to the internal storage are displayed in the field harvestSource.

You can also still use the current reporting dataflow DF4_8 for testing/validating **SMALL** sets of data. https://reportnet.europa.eu/dataflow/623

Table 1 Information about Error Types. File import errors are blue and geometry errors are yellow.

Information in logType	Information in logMessage	Additional comments
INFO	Dataset schema check is successful. All tables and fields defined in the GeoPackage template are present in the input dataset. No missing tables or fields.	This message is given if the schema matches the GeoPackage template (additional tables of fields are allowed).
WARNING	Missing attributes: @Value(missing_attr) The import is blocked because the missing attributes can cause workflow errors.	Warning is always connected to ERROR messages for instance "Some fields are missing in existing tables. See details under WARNING logType."
WARNING	Missing tables: @Value(missing_tables) The import is not blocked but there are missing tables that are not imported.	The import is not blocked because missing tables are just skipped, but all the other tables can be imported.
ERROR-BLOCK	The uploaded file has a wrong file extension, only .gpkg and zip are supported	The import was not successful. This error will appear if a file with the wrong file extension is imported.
ERROR-BLOCK	The uploaded zip file contains file(s) with a wrong file extension, only .gpkg is supported	The import was not successful. This error will come up if a file with the wrong extension in zip is imported (only gpkg allowed).

Information in logType	Information in logMessage	Additional comments
ERROR-SCHEMA	Dataset schema check has failed. The input dataset does not comply with the GeoPackage template. Some tables are missing. See details under WARNING logType	This error will come up if there is a mandatory table that is completely missing.
ERROR	Empty geometry detected in @Value(feature_type_name) at id @Value(id)	This error comes up if there is no geometry (but attribute values are present). If also no attribute values, this is just an empty record that is ignored)
ERROR	Wrong CRS detected in @Value(feature_type_name) at id @Value(id)	This error comes up if the coordinate reference system (CRS) is not in the following: EPSG 4326, 4258, 3035. Only the first 10 records are logged this way. After that, the error below is shown.
ERROR	More than 10 features with wrong CRS detected in @Value(feature_type_name),	This error will come up if there are more than 10 records with the wrong CRS. It means that it stopped logging the subsequent errors.
ERROR	Wrong geometry @Value(type) detected in @Value(feature_type_name) at id @Value(id)	Wrong geometry type (only Multi(Polygon),(Multi)LineString) allowed)
ERROR	More than 10 features with wrong geometry detected in @Value(feature_type_name), stopped logging these errors	Only first 10 features with errors are logged this way, after that a general message is provided.

Remember !

- ✓ Do not delete empty fields in the tables or empty tables from the GeoPackage templates. Keep all the tables and fields from the templates even if they are empty (otherwise this will cause errors).
- ✓ Consult WorkflowLog table after each imported dataset to verify if dataset has been imported successfully or errors have been detected in the dataset.
- ✓ Geometry errors must be corrected in the GeoPackage file itself.
- ✓ It is recommended correcting errors in tabular data in the GeoPackage file.

4. Steps to follow if a GeoPackage file cannot be imported

If a GeoPackage file cannot be imported this is due to a time-out error, i.e. the user session expires after assigned time slot. Reporters can know if the import has failed if after 30 minutes nothing has been imported. This is generally a combination of two issues:

- the files are too large to be imported in less than 30 minutes.
- there is a high number of users/processes in Reportnet at the time of import.

If this happens we recommend the following steps:

1. Try to import the files at another time/day.
2. If the import keeps failing, please reduce the size of the GeoPackage file by using the tips described in this quick guidelines that describe how to clean up spatial files https://www.eionet.europa.eu/reportnet/docs/noise/guidelines/end-spatial-data-guidelines_v1-0.pdf/view .
3. If after reducing the file size you still cannot import the file, please contact us.

From our testing, generally, files between 1 to 3 GB should be able to be imported if Reportnet 3 lads are not too high and internet connection is good. Please, check that your internet speed is adequate.

5. Steps after successful release of the data

The new import process will require moving some more complicated geometry tests outside Reportnet 3 as part of the technical acceptance process. As the technical acceptance checks are heavy and require some manual work, we ask reporters to not release the dataflow until a substantial amount of data is ready to be submitted.
The technical acceptance process is being developed now and it may take a few weeks until you receive feedback from your submissions. It is recommended not to make new data releases until the technical acceptance feedback is provided.

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