The Topographic database

The NLS Topographic database is a dataset depicting the terrain and covering the whole of Finland. The key objects on the map are the traffic route network, buildings and constructions, the administrative borders, geographic names, land use, waterways and elevation data. The positional accuracy of the Topographic database corresponds to that of scales 1:5 000 - 1:10 000.

The traffic road network and geographic names are updated constantly, buildings, constructions and administrative borders annually and the other elements approximately every 5–10 years. The Topographic database is available as a version covering the whole of Finland or as versions that cover a particular area or have specific data content. The Topographic database is a vector product.

The Topographic database is not available via the service interface.

The product is a part of the open data of the National Land Survey of Finland. More information: Acquisition of open datahttp://www.maanmittauslaitos.fi/en/opendata/acquisition.

Purpose:
The Topographic database is used as source material for map products. In addition, the database is applicable to be used, for instance, in various GPS-based applications for positioning, route search, data collection and maintenance. The Topographic database is also used in planning of buildings and land use and in different research and monitoring functions associated with environment.

Geographic location:
Entire Finland

Responsible party:
National Land Survey of Finland

Scale:
1:10000

Spatial representation:
Vector

Spatial representation info:
Full surface graph

Data content:
All the objects of the Topographic database are available in GML format and the Road network with addresses is available as a separate element. The other formats available of

the Topographic database do not contain address information.

Description of the Topographic database data content according to themes and a more accurate description of the element Road network with addresses:
http://www.maanmittauslaitos.fi/contents-topographic-database-according-themes

The Topographic database object model
http://www.maanmittauslaitos.fi/sites/default/files/maastotietokanta_kohdemalli_eng.xlsx

The Topographic database GML scheme (in Finnish)
http://xml.nls.fi/XML/Schema/Maastotietojarjestelma/MTK/201405/Maastotiedot.xsd

A more accurate description of the topographic objects (in Finnish)
http://www.maanmittauslaitos.fi/sites/default/files/maastotietokohteet.pdf

Maintenance:
Updating frequency: Constantly. The traffic road network and geographic names are updated constantly; and administrative borders annually. The annual updating information is received from the product Municipal Division in Finland. Also building information in some parts of the country annually The other objects are updated map sheet after map sheet in connection with the updating process every 5–10 years. A more detailed updating information is to be found here (in Finnish):http://www.maanmittauslaitos.fi/sites/default/files/maastotietokannan_ajantasaisuustieto.xlsx.
The maintenance work is carried out by the National Land Survey.

Quality information

Lineage:

Regarding positional accuracy, the Topographic database is the NLS' most accurate dataset depicting the terrain and covering the whole country. The positional accuracy of the Topographic database corresponds to that of scales 1:5 000 - 1:10 000.

The Topographic database quality model describes the factors that comprise the quality of the numerical topographic data. In addition, it describes how the different quality factors are measured. The quality model also provides the quality requirements amongst other things for the positional accuracy, the up-dating frequency, the descriptive feature information and the coverage of topographic data. It does not include quality requirements concerning geometry and topology.

Different objects of the Topographic database have different requirements for positional accuracy. For most man-made objects the requirement is 3 meters. The positional accuracy of the objects in the Topographic database is with a 95 percent probability in accordance with the minimum requirements stated in the quality model.

The up-to-date accuracy of the Topographic database depends on the object (see Maintenance).

The accuracy of descriptive information (feature information) varies depending on the object. For more accurate information, see descriptions of the different themes.

The size of coverage means the share of such objects that are missing from the database or that can be found in the database but not in the terrain. Different objects have different requirements for coverage.

The quality model (in Finnish):http://www.maanmittauslaitos.fi/sites/default/files/Maastotietojen_laatumalli

Conformity: 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, INSPIRE, INSPIRE Implementing rules 2010-12-08, 2011-09-28, 2011-09-28 The information product specification has not been published yet., INSPIRE Implementing rules 2010-12-08, 2011-09-28, 2011-09-28 The information product specification has not been published yet., INSPIRE related dataset, -- more information on the test -- false, 1, 1

Distribution and further information

Distributor: National Land Survey of Finland, customerservice@nls.fi

Retailers (in Finnish), http://www.maanmittauslaitos.fi/aineistot-palvelut/digitaaliset-tuotteet/hankinta-0

Conditions applying to access and use: The product belongs to the open data of the National Land Survey. Open data license:http://www.maanmittauslaitos.fi/en/en/national-land-survey-open-data-cc-40-licence . More information: Acquisition of open datahttp://www.maanmittauslaitos.fi/en/opendata/acquisition . The Topographic database is available as a version covering the whole of Finland or as versions that cover a particular area or have specific data content. The area definition is based either on map sheets or administrative borders or on the customer's own definition in case the order is made separately. Road network with addresses is a separate element. The Topographic database and the element Road network can be downloaded via the File download service or ordered from the NLS customer service as a delivery against payment. CAUTION: Not intended for navigational use. The Finnish Transport Agency has not checked the information in this product, and is not responsible for its correctness or amendments made to the product.

Limitations on access: The copyright and the other immaterial rights on the Topographic database are owned by the National Land Survey of Finland. The product is maintained by using data from municipalities. The Finnish Environment Institute and the Finnish Transport Agency have the copyright on the route information used in compiling the Topographic database. In addition, the Finnish Environment Institute has the copyright on the depth contour data used in the Topographic database. The data material is not confidential. Public access to the material is not restricted by the INSPIRE Directive.

Reference system: ETRS-TM35FIN

Distribution format: MAAGIS/XL, shape, MIF, GML

Contents of the Topographic database according to themes

Contents of the Topographic database according to themes

Specific entities are available of the data content of the Topographic database. These include individual objects, object groups and other combinations of data. One separate element is produced by default, i.e. Road network with addresses which is described below. No other separate elements are readily available.

The element Road network with addresses of the Topographic database as well as other data content are described below according to themes. More comprehensive and detailed information about the object group in Finnish:
http://www.maanmittauslaitos.fi/sites/default/files/Maastotietokohteet_2013.pdf

The element Road network with addresses of the Topographic database

The element Road network with addresses of the Topographic database includes drivable roads, streets, walkways, paths, railways, ferries and ferry boats. As for motor roads, the data concerning their middle lines and class amongst other things have been stored. The road and street names as well as address numbers are also presented as feature information. In addition, the element contains address points that are in accordance with the official address system of municipalities. The element Road network with addresses of the Topographic database is the most precise comprehensive dataset over Finland that covers the whole country.

Purpose:

The product Road network with addresses of the Topographic database is suitable to be used in different logistic and positioning applications and also as source data for map products. The address data can also be used in connection with the whole Topographic database.

Maintenance:

Updating frequency: Continous.

Quality:

The foundation for collecting data is the information that is the result of the National Land Survey's own operations and that which is received from partners. The positional accuracy of the data is approx. 5 meters. The control measurements performed in sample studies show that the positonal accuracy in the product Road network with addresses is approx. 3 meters.

The address data are feature data of the road lines of the element Road network with addresses of the Topographic database. The address numbers have been attached to the nodes of the roads lines so that they include

the address numbers that are nearest to them. When using the dataset the address

numbers that are not included in the node have to be calculated based on the distance.

Buildings

The Topographic database includes buildings, water towers, bell towers, airways, approach lights, masts, monuments, observation towers, piers, chimneys, wind power generator and other such buildings and definitions. The buildings are depicted with lines or as areas according to the ground location of their foundations. The feature data is stored in the reference point inside the figure.

Maintenance:

Updating frequency: Continuous. The data is updated map sheet by map sheet in relation to the updating process at regular intervals every 5-10 years. As for some municipalities the dataset is updated annually.

Quality:

The updating work of the data concerning buildings is done in cooperation with the municipal building authorities. In addition, the building and apartment register of the Population Register Centre is also used. The positional accuracy of the data is approx. 5 meters.

Transmission line connections

The Topographic database includes power lines, transformers,

transformer stations, high tension line poles and significant natural gas pipes and water pipes. Concerning urban areas, aerial power lines with 110 kW or more are included; in sparsely populated areas even airlines with 20-110 kW are included. Underwater cables with 20 kV or more are also included.

Maintenance:

Updating frequency: When needed. The data is updated map sheet by map sheet in connection with the updating process at regular intervals every 5-10 years.

Quality:

The updating process is based on cooperation with the organisations that own power lines. The data concerning the location and position of the natural gas pipes is drawn from the maps concerning expropriation proceedings.

The positional accuracy of the data is 5 meters.

Administrative borders

The Topographic database includes national boundaries, limits of marine territorial waters, straight territorial sea baseline, rear boundary of boundary zone, limits of inner and outer archipelago, Regional State Administrative Agency boundaries, regional borders and municipal borders. The product also contains municipal administrative centres and national boundary markers.

Maintenance:

Updating frequency: Annually in the beginning of the year when the changes of the administrative borders become known.

Quality:

The municipal, regional and Regional State Administrative Agency boundaries are based on the real property boundaries of the Land Information System in Finland (KTJ) that are updated continuously.

The municipal borders of the product are drawn from the database Municipal division.

Rocks and mineral soil areas

The Topographic database includes the following kinds of rocks and mineral soil areas: rocks, cliffs,

rocky areas, block fields, sand areas and gravel pits. Rocks and mineral soil areas have been stored as areas or dot symbols.

Maintenance:

Updating frequency: When needed. The data is updated in connection with the regular updating process of the Topographic database every 5-10 years.

Quality:

Rocky areas are exposed rocky areas that largely lack loose soil and tree stand and the diameter of which is at minimum 5 meters. Smaller exposed rocky areas are stored as dots.

Cliffs are steep rocky slopes or cuttings that form a clear barrier to move forward.

Minimum measures: height 4 m, slope 45 degrees and length 10 m.

Rocky areas are areas of at least 1000 m² (0.1 ha) in size where rocks and boulders nearly cover the surface of the ground. Areas with boulders or groups of boulders that make passage difficult have been described as sparse stone pits. The height of the individual boulders has to be at least 0.5 m and their distance from each other at maximum 5 m. The minimum diameter of the area has to be on 100 m.

Sand areas are areas in natural state covered by fine sand, sand or gravel that are almost treeless and without ground vegetation. Their minimum area is 1000 m² (0.1 ha).

The minimum size of a gravel pit in the Topographic database is 1000 m² (0.1 ha). Slopes and contour lines have not been stored concerning these areas.

Elevation

The Topographic database includes contour lines and depth contours as well as objects related to them (their height and depth values as well as gradient lines). The contour lines and their height values have been stored at 5 meter intervals as lines that close in. Auxiliary contours (at 2.5 meter intervals) have been stored in even areas and also elsewhere when needed to more precisely describe smaller elevation of the Earth's surface.The height accuracyof the contour lines is approx. 2 m. Contour line data are not stored in the areas of dumps, stone pits, mineral resource extraction and landfills.

Comprehensive depth contour data are not available and the distance between the depth contour lines somewhat differ from those of contour lines indicating elevation.

The Finnish Environment Institute provides depth data on the lakes where it has performed measurements. The depth contours and values by the Finnish Transport Agency are not included in the dataset.

The height values marked in the objects of the Topographic database as feature data have been produced from the product Elevation model 10 m concerning the whole of Finland.

Maintenance:

Updating frequency: When needed. The data is updated in connection with the regular updating process of the Topographic database approx. every 5-10 years.

Quality:

Depth contour lines (concerning areas where they have been available) have been stored starting from the mean water level 1.5 m, 3 m, 6 m, 10 m, 15 m, 20 m and then after every 5 meters if it has been possible on the strenght of the dataset. Otherwise only the depth contours 20 m, 50 m and 100 m are stored starting from the depth of 10 meters. The depth data of the Topographic database may not be used for navigation.

Geographic names

Concerning geographic names the Topographic database includes terrain names, settlement names and names for individual objects and well as their cartographic data. The attributes of these names include i.e. the reference point coordinates and the coordinates for the lower left corner of the text.

Maintenance:

Updating frequency: Continuous. The data is updated map sheet by map sheet in connection with the updating process at regular intervals after every 5-10 years. The information on changes received from various sources is updated continuously.

Fields

The Topographic database includes fields and meadows that have been cultivated at the moment of mapping.

Fields have not been classified e.g. according to their fertility.

Maintenance:

Updating frequency: When needed. The data is updated every 5-10 years in connection with the regular updating process of the Topographic database.

Quality:

Fields are areas with sowed or planted field plants. These plant include e.g. strawberry. The minimum area 1000

m2 (0,1 ha).

A new cleared patch is classified as field after is has been sowed or planted with field plants. Fields that are not used has been marked as meadows if they have not been overgrown with trees.

Swamps

The Topographic database includes swamps, wetlands and extraction areas for organic material. The minimum area of a swamp or a peat extraction area is 1000 m² and that of

wetlands is 5000 m². Swamp is classified as an area with swamp vegetation where the thickness of the peat layer is at least 0,3m, although as for Northern Lapland even swamps with a thinner peat layer are included.

Maintenance:

Updating frequency: When needed. The data is updated every 5-10 years in connection with the regular updating process of the Topographic database.

Quality:

In the Topographic database, cultivated swamps have been marked as fields and those with trees are marked with symbols for forest land. Swamps have been classified in those that are easy to traverse or difficult to traverse and also to swamps that are forested and treeless. Swamps that have been marked as difficult to traverse are difficult, dangerous and impossible to cross.

Waterways

The Topographic database includes sea areas, lakes, ponds, ditches, water pits and springs.

Maintenance:

Updating frequency: When needed. The data is updated every 5-10 years in connection with the regular updating process of the Topographic database.

Quality:

Water areas the size of which is at least 1000 m2:n (0,1 ha) are marked as lakes. A water pit means an area of standing water of less than 1000 m2 but more than 100 m2. Channels are also included in the class of lake water.

Rivers that are more than 5 meters wide have been stored as areas, smaller rivers have been marked with a line.

All watercourses of the width of at least 2 meters are included. Concerning forest land, the Topographic database also includes watercourses that are less than 2 meters wide, but as for agricultural areas, only such watercourses that are relevant to the continuity of the ditch network are included. Concerning watercourses, the information on the direction of their water flow is also stored.

The Finnish Environment Institute provides depth data from the inland water areas where it has performed measurements. This data is not comprehensive. The Topographic database does not include the depth data by the Finnish Transport Agency that concerns sea areas or lakes with commercial traffic.

The depth information of the Topographic database may not be used for navigation.