



Geodetic System

The Estonian Geodetic System consists of:

- Geodetic reference system - ETRS89
- Plane coordinate system - L-EST97
- Height system - EH2000
- Gravity system - EG2000

In Estonia, the European Terrestrial Reference System 89 (ETRS89) is used as **the geodetic reference system**. ETRS89 coincides with the International Terrestrial Reference System (ITRS) of the International Earth Rotation Service (IERS) on epoch 1989.0 and is fixed in a stable part of the Eurasian tectonic plate. The parameters of the international reference ellipsoid GRS80 are used to calculate the geodetic coordinates. In Estonia, the coordinates of ETRS89 and the coordinates of the World Geodetic System 1984 (WGS84) are considered identical.

ETRS89 is realized in Estonia through the points of the first order geodetic network and their coordinates. In Estonia, the three-dimensional Cartesian coordinates and geodetic coordinates of the realization of ETRS89 are marked with the abbreviation EUREF-EST97.

The plane coordinate system is L-EST97, the coordinates of which are calculated from the geodetic coordinates of EUREF-EST97 using Lambert's two-dimensional conical conformal map projection LAMBERT-EST and the international reference ellipsoid GRS80. The parameters for LAMBERT-EST are:

- Southern parallel BS = 58° 00' N
- northern parallel BN = 59° 20' N
- central meridian LO = 24° 00' E
- geodetic coordinates of the initial point: B0 = 57° 31' 03".19415 N, L0 = 24° 00' E
- plane coordinates of the initial point: x = 6 375 000 m, y = 500 000 m

The height system is the European Vertical Reference System (EVRS). EVRS is a kinematic reference system, which is defined by Normal Amsterdam Peil in Amsterdam, a solid Earth-based zero-tide system is used, and heights are expressed as geopotential values. When calculating normal heights of geopotential values, the normal gravity values of the reference ellipsoid GRS-80 are used. In Estonia, the heights of the EVRS is abbreviated as EH2000. The EH2000 normal heights on the epoch 2000 are based on a national height network, height values of which are based on the EVRS realization EVRF2007.

The Estonian geoid model is EST-GE0ID2017. The EST-GE0ID2017 model is used to calculate EUREF-EST97 ellipsoidal heights to EH2000 normal heights and vice versa, according to the accuracy requirements of the results. The EST-GE0ID2017 calculator is available in the Land Board's geoportal.

The gravity system is realized through a set of gravity values of the first order gravity network points EG2000. Gravity values of the first order gravity network points at the epoch 2000 are based on the gravity measurements performed according to the standards of IAGBN.

The Land Board, Republic of Estonia

The Land Board is a government agency operating under the jurisdiction of the Ministry of the Environment.

The Land Board is expert in land administration and provides the society with land information and spatial data.

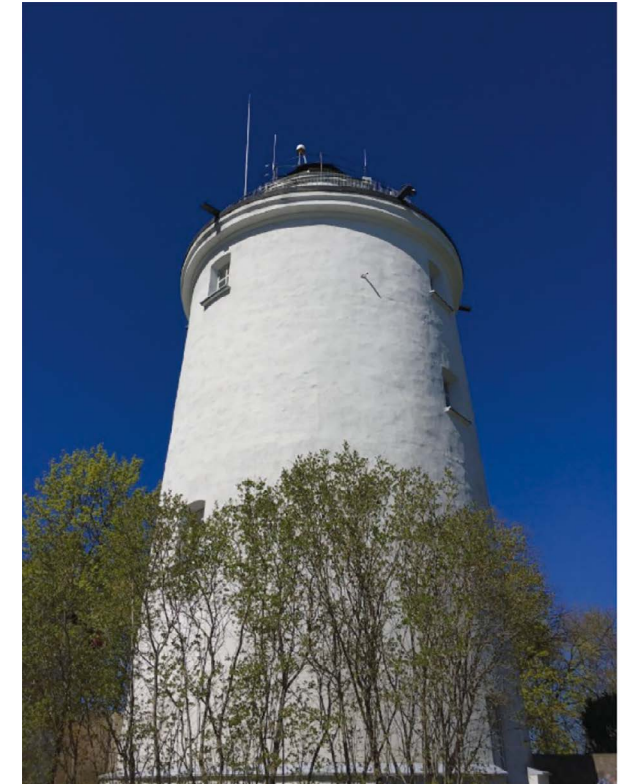
The task of the Land Board in the field of geodesy is to ensure the up-to-dateness of the national geodetic system and geodetic networks and the availability of geodetic data.

In the field of geodesy, the Land Board:

- manages, updates and specifies the geodetic system;
- maintains and updates the Geodetic Point Database;
- establishes and improves national and local geodetic networks;
- manages the GNSS permanent stations network;
- approves and conducts technical inspection of geodetic works;
- is responsible for the administration and protection of geodetic marks;
- is responsible for metrological assurance;
- maintains the geodetic archive.



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