



## **DETERMINATION OF AN OBVIOUS FACTUAL ERROR IN A CADASTRAL MAP**

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**ABSTRACT:** *The maps created of reinstated property after 1990 contain numerous errors. These errors have been transferred from the existing cadastral plans, comassation plans, land subdivision plan, aerial photo plans and a large-scale topographic maps created in the years 1964-1968. For the creation of maps of the reinstated property, the sources described above were used directly, without repeated aerial photography or deciphering of the objects as well as without the conduction of direct geodetic measurements [6, 8].*

*The presence of an obvious factual error is a relatively common phenomenon in the cadastral map. The same applies mainly to linear objects and it is quite possible to remove these errors. These errors can be corrected via separate projects for the specific errors, as well as via projects affecting a large part of land territory and even an entire land territory.*

**KEY WORDS:** *obvious factual error, the map of the reinstated property.*

### **1. Introduction**

Bulgarian ministry of agriculture, food and forests maintains the map of the reinstated property. The map of the reinstated property units holds data from the land subdivision plan, the map of the existing old real boundaries, the map of the recoverable old real boundaries of the farm land, which was created by order of the Property law in Bulgaria and the use of farm land and the map of the reinstated property of forests and forest land entirety which was created by order of the Law for restoration of ownership of forests and forest land entirety [6].

In 2015, the Concept for accelerated creation of a cadastral map and cadastral registers and speeding up the process of creating a property register was adopted.

The purpose of the concept is to speed up the process of the creation of a cadastral map and cadastral registers on the territory of Bulgaria. This is done by the creation of cadastral maps and cadastral registers for the non-urbanized areas using data from a map of the reinstated property.

In the practice of the Geodesy, Cartography and Cadastre Agency - in the process of the creation of the cadastral map and cadastral registers and the maintenance of the already approved cadastral maps and cadastral registers in an up-to-date condition, discrepancies are found in the non-urbanized area. These discrepancies have been transferred to the cadastral map and cadastral registers from a map of the reinstated property. When creating the cadastral map and cadastral registers, discrepancies are found only in the boundaries of the contact zone between the urbanized and non-urbanized territory. Their correction is legally regulated in [2] and in [3].

The latest amendment of the Cadastre and Property Register Act (from 22.07.2016) in § 1, p.9 of the additional provisions was introduced a new definition of "obvious factual error" and a new administrative procedure for its removal in the cadastral map were introduced. Two hypotheses are included in the concept – two different cases of inconsistency [2]:

1. „The contact zone“, which result from the combining of the sources for the creation of the cadastral map, when there is a difference in the common boundary between the sources for urbanized and non-urbanized area and as a consequence part of the reclaimed farm land or forests and forest land entirety is found to be wrongly restored in an urbanized area, or that there is an area that does not fall into either source [2];



Fig. 1 Contact zone map [5]

2. „Obvious factual error“, represents a wrong restoration of farm land or forests and lands in a forest territory, due to wrongly determined during the

restoration of the location fixed topographical objects of natural or artificial origin (roads, water bodies, etc.) existing on the locality (terrain). These objects should not have been part of the restored property under the Law for Restoration of Ownership of Forests and Forest Land Entirety and the Law of the Ownership and the Use of the Farm Land [1, 2, 3].

## **2. Professional results and discussion**

### **2.1. Obvious factual error**

An obvious factual error is found when the differences  $\Delta S_i$  according to Art. 18, paragraph (5), of the Ordinance RD-02-20-5 of 15 December 2016, between identical points of the property boundaries from the map of the reinstated property and those determined by geodetic measurements do not meet the accuracy requirements, which are [7]:

a) for points of permanently materialized boundaries of estates in land massive buildings and technical infrastructure facilities  $\Delta S \leq 60$  cm;

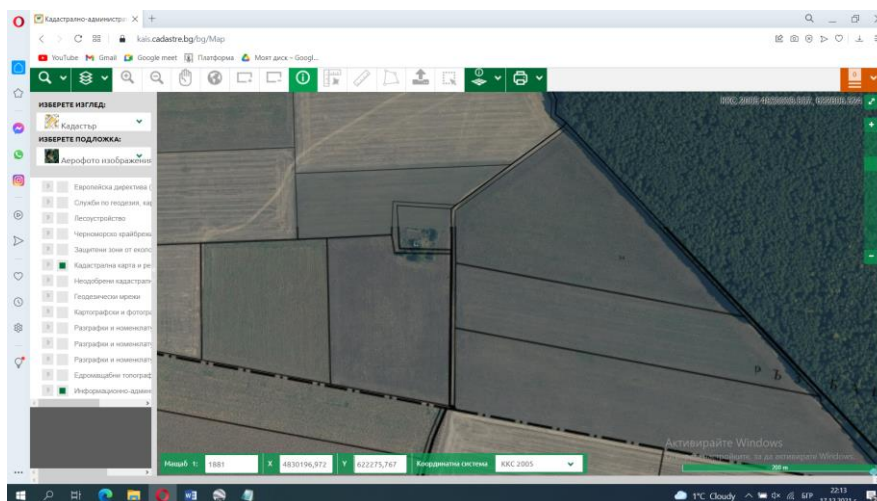
b) for points of non-permanently materialized boundaries of estates in land  $\Delta S \leq 120$  cm;

In cases where a detail point of the boundary of an estate in land, determined by geodetic measurements and/or based on the data and materials provided by departments, municipalities and other legal entities, does not fall into or next to an identical detailed point of the cadastral map, but is near and clearly associated with a line element of the property boundary, the error in the absolute position of a detail point ( $\Delta S$ ) is determined according to Art. 18, paragraph (2), of the Ordinance RD-02-20-5 of 15 December 2016 [7]:

$$\Delta S = \sqrt{(x - x_0)^2 + (y - y_0)^2} \quad (1)$$

where:

- $x^0, y^0$  shall be coordinates of the point on the cadastral map;
- $x, y$  shall be the coordinates of the point obtained by control (repeated) determination by land survey measurement and calculation..



Фиг. 2 Combining of the layers visualizing the objects from the cadastral map with aerial images through KAIS for the sanitary protection zones „A“ in the land of Naum village [6]

Entering the alterations in the cadastral map and the cadastral register as a result of the obvious factual error are carried out upon application by the owner or, another person, when this is provided for by law, or officially received information from a department or municipality.

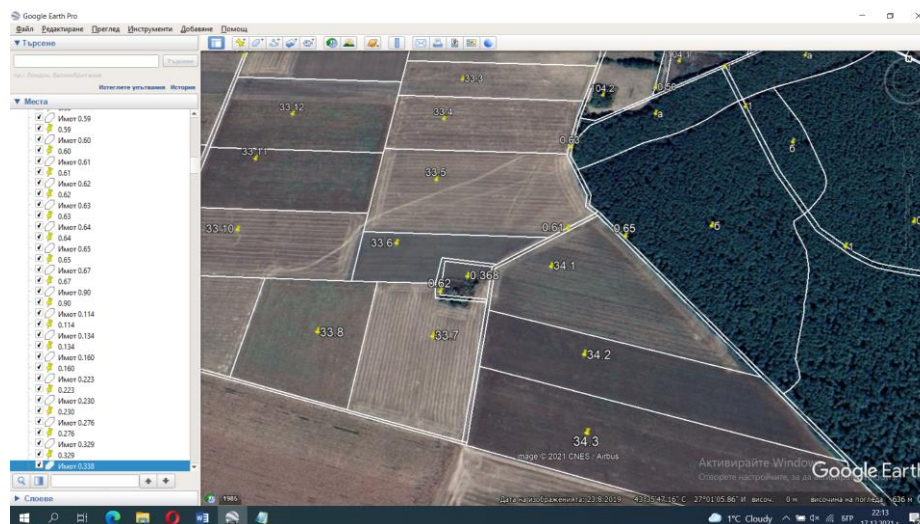


Fig. 3 Combining of the cadastral map with the satellite images provided by Google Earth for the sanitary protection zones „A“ in the land of Naum village [6]

When changing the boundaries of estates in land and buildings, in the reflection of new estates in land and buildings, as well as when supplementing

incompleteness or correcting errors in the cadastral map or removing an obvious factual error, geodetic measurements (Art. 51, paragraph 7 from the Cadastre and property register act) are carried out [2]. Geodetic measurements cover marked boundaries of existing and new cadastre objects within the range of the alteration, the project boundaries after tracing - in urbanized area. Measurements also cover boundaries of fixed topographical elements of natural or artificial origin in non-urbanized territory when they represent property boundaries (Fig. 4).

Geodetic measurements are carried out in compliance with the requirements of:

- Instruction № RD-02-20-25 of September 20, 2011 for the determination of geodetic points using global navigation satellite systems;
- Road Law;
- Water Law;
- Rail Transport Act;
- Law on Forests;

Figure 4 shows the position of the points of the objects reflected in the cadastral map and of the points of the same objects as a result of the geodetic measurements, in the section where the differences are the greatest. The objects and their marking in the cadastral map are shown in black color and numbered, and the corresponding ones from the measurements are in red.

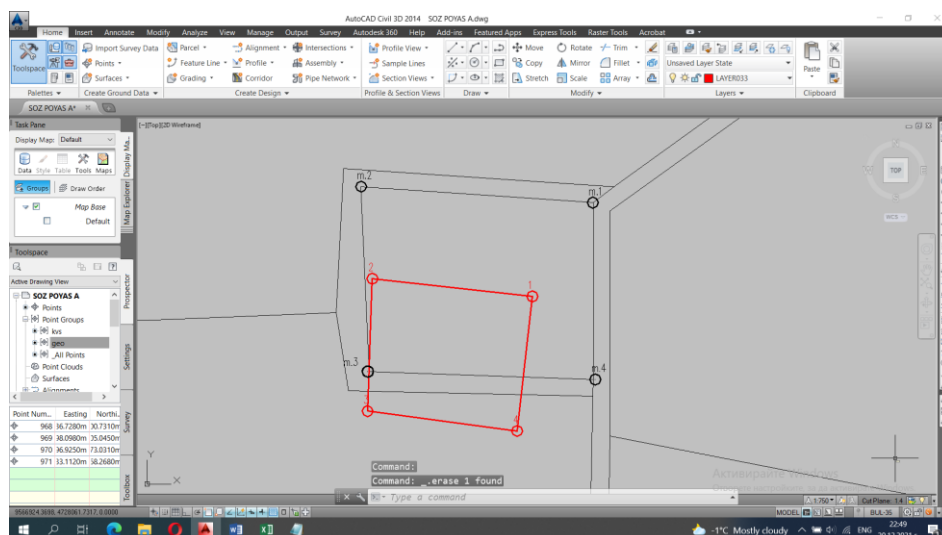


Fig. 4 The position of points of the objects marked in the cadastral map and the position of the points of the same objects obtained as a result of geodetic measurements [6]

To determine the exact boundaries in which the obvious factual error extends, a check up is made for the accuracy of the cadastral map according to the requirements of Ordinance RD-02-20-5 of 15 December 2016 on the content, creation and maintenance of the cadastral map and cadastral registers [7]. The project to correct the cadastral map and the cadastral register of real estates is drawn up for all estate in land affected by the established obvious factual error and missing objects on the cadastre.

The project for an alternation in the cadastral map and the cadastral register of real estates shall be developed for all estate in land affected by the obvious factual error found out. When several contiguous estates in land fall within the extend of the obvious factual error, a draft alternation is drawn up. The projects for an alternation in the cadastral map and the cadastral register, reflecting the proposal to correct the obvious factual error and the missing objects of the cadastre, are created in the adopted and defined for the country Bulgarian Geodetic System 2005 – Cadastral Coordinate System 2005.

In cases of obvious factual error, the contractor performs an analysis and proposes a way to eliminate obvious factual error for each affected property, preserving the area and relative location of the properties where possible;

The list of affected property also includes data from the analysis. It also contains: the differences  $\Delta S_i$  at the identical points of the property boundaries according to Article 18, para. 5 of the Ordinance RD-02-20-5 of 15 December 2016 [7], the identifiers (old and new) of the affected estates in land, the names and addresses of the owners, the established differences in the areas of the estates and data on the area for which compensation is due/not due, proposal for the procedure of compensation - on the basis of Art. 10 b, para. 1 of the Law of the ownership and the use of the farm land, respectively and under Art. 6 of the Law for restoration of ownership of forests and forest land entirety and § 8 of the Transitional and Concluding Provisions of the Law for restoration of ownership of forests and forest land entirety. compensation may also be due in cases of expropriation or if there is a basis for the proposal. Compensation may also be due in cases of expropriation as a basis for the proposal.

All materials are produced in compliance with the regulatory requirements related to the activities of creation, acceptance and maintenance of the cadastral map and cadastral registers; other legal acts, letters and instructions of the Geodesy, Cartography and Cadastre Agency; The amendments to the current regulations, which came into force during the execution of the contract and are

transmitted in the form according to Art. 12, p. 5 of the Cadastre and Property Register Act [2].

### **3. Conclusion**

In terms of accuracy, the general condition of the maps of the reinstated property produced and subsequently maintained by the structures of the Bulgarian Ministry of Agriculture, Food and Forests is not good. This is so because the ordinance of Art. 26 of Regulations for the Implementation of Law for restoration of ownership of forests and forest land entirety of Bulgaria to correct the same laws is applied in few cases only [1, 3]. This necessitated the adoption of regulations allowing the correction of errors in converted maps of the reinstated property and settlement plan in the cadastral map and cadastral registers.

An obvious factual error is a relatively common phenomenon in the cadastral map. It can be found using the software product Google Earth and KAIS of the Geodesy, Cartography and Cadastre Agency [6].

Before integrating the cadastral map with the map of the reinstated property, it is necessary to carry out geodetic measurements of permanent topographic objects. A leading role is played by objects that protect the material rights of users and represent municipal or state property such as roads, water bodies, forests, etc. [6].

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