

# Determine the Cadastral Borders by Natural Shapes Instead of Border Marks? Why Not?

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## SUMMARY

Finnish cadastral system is based to a Nordic variation of German system. Finnish cadastre's fundamental part is on the border marks placed to the field. The border marks are more relevant than cadastral maps or coordinates when determine the true location of the border although the borders are fixed on cadastral map. Cadastral proceedings can be divided in two sections, the technical part and judicial part. Technical part includes the fieldwork, surveying and marking the border to the field. After the fieldwork the parcel is unambiguous to the new owner. The judicial part includes the cadastral meeting and registration of the proceeding. The accuracy requirements to the border marks are 0.1 m -0.5 m depending the value of the land. These requirements are made by National Land Survey of Finland. Because of huge amount of the inaccurate border marks, accuracy worse than 0.5 m, the proceedings include a visiting to the field in any case. Sending a professional land surveyor to the field is expensive. Sometimes the surveying of the parcel is more expensive than the value of the parcel. To reduce the costs of the field work the author of this paper tested different methods to determine new borders to the field and to cadastral map too. The demarcation of borders were made from orthophotos and lidar -data to the natural shapes such as ditches, roads, vegetation edges etc. Methods were tested on four different test areas and those areas were verified by field survey. The differences of results were compared in area only because the analysis of points and differences was irrelevant. The expenses were compared also. The results showed it is possible to determine new borders without going to the field with high accuracy and when using the combination of lidar -data and orthophotos the accuracy would be better. As a conclusion the border determination without field work is possible to adapt as a part of the modern proceedings. This method is suitable to use on rural areas, where the land value is low and the need of accuracy is lower; of course when determining the border to the natural shapes the border is unambiguous on the field and less accurate on cadastral map only. The method needs changes to the legislation and to the land surveyor's attitude too.