

Property Boundaries and Boundary Markers in Finland

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Key words: Boundary, Marker

SUMMARY

There are more than two million properties and approximately 12 million boundary markers in Finland. The boundary markers include boundary stones, posts and signs, but new boundary signs are no longer made. Posts are also used on the boundaries of road and railway areas. The oldest boundary markers were made of stones or wooden posts. While these can still be used, most boundary markers used today are metal pipes or plastic posts. The boundaries between properties may be straight, curved or natural boundaries. For historical reasons, there are also previously undetermined boundaries in Finnish water areas and former road areas. New boundary markers are constructed during land survey operations. It is estimated that about 20% of boundary markers have vanished. When this happens, the boundary can be determined and the lost boundary markers replaced with new ones in a property determination procedure called demarcation. In order to preserve boundary markers, they should be marked in land use projects. Boundary markers will also deteriorate over time: stone will disintegrate, wood will rot and metal will be eaten by corrosion, so demarcation will also be necessary in the future. The National Land Survey of Finland is planning to switch to a coordinate-based cadastre over the next few years, which means that boundary markers may gradually become history.

TIIVISTELMÄ

Suomessa on yli kaksi miljoonaa kiinteistöä. Rajamerkkejä on noin 12 miljoonaa, joista 20 % arvioidaan hävinneen. Kiinteistöjen rajoja ja rajamerkkejä on säännelty seikkaperäisesti lainsäädännössä sekä viranomais määräyksissä ja ohjeistoissa. Kiinteistöjen rajat ovat tavallisimmin suoria. Asemakaava-alueilla voidaan käyttää myös kaarevia rajoja. Vesistöjen rannat ovat luonnollisia rajoja, jotka nykyisin kuitenkin kuvataan murtoviivoina. Historiallisista syistä Suomessa voi olla myös ennestään määräämättömiä rajoja vesialueilla ja entisillä tiealueilla. Rajamerkkejä ovat olleet rajapyykit ja rajaviitat. Rajan suuntaa on lisäksi voitu merkitä suuntakivin. Uusia rajaviittoja ja suuntakiviä ei enää rakenneta. Vanhimmat rajamerkit olivat kivistä tai puupaaluista tehtyjä. Niitä voidaan käyttää vieläkin, mutta rajojen merkinnässä käytetään nykyisin pääasiassa metallisia putkipyykkejä ja muovisia paaluja. Perinteisesti rajat on avattu metsämaalla silloin kun uusia rajoja muodostetaan. Nykyisin rajojen avaamisen suhteen ollaan maanmittaustoimituksissa varovaisia vaikka lainsäädäntö sitä edellyttääkin. Rajamerkkien säilyttämiseksi ne tulisi merkitä hyvin maankäyttöhankkeissa. Maanmittauslaitos suunnittelee siirtymistä koordinaattikatasteriin, jossa rajamerkkejä ei enää käytettäisikään.

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1. BACKGROUND

There are more than two million properties in Finland. There are approximately 12 million boundary markers, an estimated 20% of which have been lost. The proportion of forest of the land area of Finland is over 70%, which has strongly affected the need for boundary markers and also their loss. Property boundaries and boundary markers have been stipulated very specifically in the legislation, official regulations and guidelines.

The boundaries between properties in Finland are usually straight. Curved boundaries (picture 1) may also be used in areas covered by a town plan. The shores of water bodies are natural boundaries, but they are now measured and presented in broken lines. Earlier, roads were also considered natural boundaries, but small roads may be moved quite easily with today's efficient earth-moving machinery, so using boundary markers is the most reliable way to keep the boundaries clear along roads.



Picture 1. Curved boundary in town plan area. © Maanmittauslaitos, 2017

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For historical reasons, there may also be previously undetermined boundaries in Finnish water areas and former road areas. The boundaries in water areas are demarcated between villages in accordance with the centreline principle and shoal principle. According to the centreline principle (picture 2), the water area of a village with water rights is the part of the water area in a river or lake in front of the village that is closer to the village's shore than the opposite village's shore. The shoal principle is applied in sea areas and in open expanses of lake more than eight kilometres across. According to the shoal principle, the water area of a village with water rights extends to a distance of 500 metres from the point where the depth reaches two metres. Small islets are not taken into account in specifying the expanse of open lake, but bigger islands in a large open lake have their own water areas. According to the shoal principle, the parts of open expanses outside the water areas of villages are state water areas.



Picture 2. Border between villages in centerline of river. © Maanmittauslaitos, 2017

In addition, the closed pond principle is applied to closed ponds and ponds with streams where fish could not properly pass at the time of the Basic Land Consolidation. If such a pond was located in the area of one house at the time of the Basic Land Consolidation, it belongs to this house, unless otherwise decided during land survey operations. If such a pond was located in the areas of several different houses at the time of the Basic Land Consolidation, it is primarily a common area.

Former road areas are primarily incorporated into the adjoining estates according to the centreline principle. In detailed plan areas, the applicable town plan is taken into account in the incorporation and, therefore, a former road area may also be transferred to the municipality.

In forest areas, the boundary lines must be cleared when determining new boundary, and this has traditionally been done. Nowadays, this rule is not always followed during land survey operations; some boundaries are not cleared or are cleared after the survey meeting. According to the Adjoining Properties Act, a landowner may re-open a grown-in boundary later. The starting point of the Adjoining Properties Act is that the landowners clear the boundary together, but if one of them is not willing to do this, the other can do it independently after informing the neighbour. The costs shall be covered by the party who clears the border, and the felled trees belong to the party on whose property they were growing.

2. BOUNDARY MARKERS

Boundary markers have included boundary stones, posts and signs. In addition, direction stones were traditionally used near boundary stones to clarify the direction of the border. The oldest boundary markers were made of stones or wooden posts. The stone boundary markers could consist of five stones, a single stone or a quadrangular stack of stones. A single stone marker can be made of natural stone or reinforced concrete. A stone in the ground was marked with a number and circle to indicate it was a boundary marker (picture 3), or later with a piece of pipe or bolt.



Picture 3. Circle and number in ground stone indicate it boundary marker.

In a swamp, a quadrangular marker could be created by piling peat on a wooden platform and placing a numbered stone on the top (picture 4). The wooden platform could be supported by wooden posts at the corners. A marker consisting of five wooden posts could also be used in a swamp. The boundary stones and posts are clearly marked with the number with which the boundary marker is also marked on the survey map. In addition, the position of the boundary point can be further specified by making a hole in the boundary marker, possibly also placing a pipe in the hole.



Picture 4. Quadrangular marker in a swamp.

In the 1980s, pipes were introduced as boundary markers. They first consisted of plastic and metal, but the boundary marker regulations established metal as the material because of its higher durability in the snowy and frosty winter conditions of Finland. Most of the boundary markers that are used today are pipes. The visibility pieces of pipes used in forests are higher and, therefore, more easy to detect; they may be lower on plots and in fields. Pipes with no visibility pieces are often used in areas covered by a town plan. A short metal pipe with a visibility piece may be used in rocks and stones in the ground. The visibility pieces of pipes are bright red and can be easily detected in the terrain. In the winter, the boundary markers may naturally be covered by snow, but these pipes can also be found using a metal detector. The pipes are primarily numbered, but they may be left unnumbered in areas covered by a town plan. Metal pipes used as boundary markers are governed by the SFS 4940 standard and must have the VTT-C marking in accordance with the standard.

Many land survey students have summer jobs in earthwork projects or mines, where they do not learn about boundary markers. A boundary marker park has been built in the yard of Lapland

University of Applied Sciences at Rovaniemi, allowing students to familiarise themselves with all boundary markers in accordance with the current instructions. The boundary marker park (picture 5) is open to everyone, and brochures are also available.



Picture 5. Boundary marker park in the yard of Lapland University of Applied Sciences at Rovaniemi.

Boundary signs were earlier used on long forest boundaries to indicate the direction of the boundary. Boundary signs used in various eras have consisted of three or five stones on solid ground, three or five posts in swamps, ditches dug in soft ground, or marks cut or pipes inserted into rocks or stones in the ground. In the past decades, pipes were also used as boundary signs. Today, boundary markers are placed every 200 metres on forest boundaries longer than 300 metres. Boundary signs are also sometimes numbered.

Plastic posts are used on the boundaries of road and railway areas. Earlier, boundaries on railways were also marked using pieces of rail. Although it did not meet the regulations, a one-and-a-half metre piece of rail was a durable sign that could not be carried away easily. In areas covered by a town plan, a boundary may be left unmarked if the use of boundary markers is not necessary. In water areas, it suffices to mark the boundaries on the map. A boundary may also be left unmarked at

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other locations, if there is a particular reason for this and the landowners agree. The boundaries of easement areas are marked similarly to those of properties.

If a boundary marker cannot be placed in the correct location, it may also be located on the side of the boundary point, or a pair of boundary markers can be used. Information about property boundaries and boundary markers can be discovered in land survey maps and documents and, today, increasingly also in the Land Information System of Finland.

3. DEALING WITH BOUNDARIES IN LAND SURVEYS

New property boundaries are mainly created by parcelling out land or dividing it into separate plots. Property boundaries change in land-for-land exchanges and reallocation of pieces of land as well as expropriation proceedings. Unclear boundaries and lost boundary markers can be determined in a property determination procedure carried out for demarcation. If boundary markers are known to be at risk of being lost during land use projects, they may be moved in advance to a location where they will not be lost.

According to the Real Estate Formation Act, the boundary of the property is at the location specified in the last demarcation. The factors taken into account when specifying the location of the boundary as per the last demarcation include the related survey maps, boundary dimensions, boundary markers and other indicators in the terrain.

Land surveys are carried out by the National Land Survey of Finland's survey engineers as well as the survey engineers of cities in areas covered by a town plan. The survey engineers have completed applicable land surveying studies at either a university or a university of applied sciences.

4. PRESENT SITUATION AND FUTURE

It is estimated that about 20% of the boundary markers of Finnish properties have vanished. The majority of these boundary markers are assumed to have been lost during ditching projects. Boundary markers are also lost during road and construction projects and other work involving machinery. In order to preserve boundary markers, they should always be marked in a visible manner. This is of utmost importance in land use projects, in particular. Wooden sticks or plastic ploughing signs can be used for this purpose (picture 6). The visibility of a boundary marker may also be increased by putting paint and a colourful band on or near it. Border markers and open border line are most important things to find border for people who are working in the forest.

If a boundary marker is known to be at risk of being lost during a land use project, it makes sense to have it moved to the side in advance in a transfer procedure, which will be cheaper than arranging demarcation after boundary markers have been lost. The costs of demarcation and transfer procedures are primarily paid by the landowners. In land use projects these costs are often paid as project costs. Boundary markers will also deteriorate over time: stone will disintegrate, peat will shrink, wood will rot above water level and metal will be eaten by corrosion. so demarcation will also be necessary in the future



Picture 6. This kind of marking is useful with snow too.

The National Land Survey of Finland has a vision of switching to a coordinate-based cadastre. This means that boundary markers would no longer be used; only the coordinates of the boundary points would be determined. Then, the coordinates would be the only thing specifying the location of the boundary. The coordinates could be determined without visiting the site, and even survey meetings could be conducted electronically over a video connection.

In forest areas, this raises the question of how landowners and forest workers would find the boundary in the future. If there are no boundary markers, specifying the boundary requires marking the coordinates in the forest or the use of advanced measurement technology. If the boundary line is not cleared in the forest when it is determined, it cannot be cleared later according to the Adjoining Properties Act, unless the all landowners agree on this.

Unclear boundaries will inevitably lead to conflicts in land use. Buildings might be constructed closer to the boundary than allowed by law or closer to the boundary than planned. In forest logging, trees may accidentally be felled on a neighbour's property (picture 7), or parts of the forest near the boundary may be left standing for reasons of caution. Ditches and roads might be constructed on the neighbours property. In all cases, a lack of clarity will cause harm and trouble and result in extra costs or financial losses.



Picture 7. Forest cutting has gone over border.

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