

# **A New Way to Provide Strategic Competence at Lantmäteriet (National Land Survey of Sweden)**

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**Key words:** Cadastre, Education, Professional practice, Recruitment

## **SUMMARY**

This paper is made up of two parts. The first part is an overview presentation of cadastral activities at Lantmäteriet: the cadastral system and legislation, cadastral processes and the market for cadastral services, and against this background discusses the need for recruiting competence to replace staff who will retire within the next ten years and how the problem is being approached. The second part, which has been written by participants in the first training programme contains comments on its contents and implementation. The results of a questionnaire, prepared by the participants themselves to sound general attitudes and related to Lantmäteriet's ambition to recruit and retain cadastral competence, are presented and commented on.

The Swedish real property system, legislation, cadastral procedures and the Real Property Register are unique in an international perspective. The legislation (the Land Code, the Real Property Formation Act, the Joint Facilities Act, the Utility Easements Act and others) supports both the formation of new property units and the re-formation of properties and rights and is a powerful tool for procuring land in connection with infrastructural development, such as roads, railways, electric power transmission lines, telephone and water and sewerage pipes. Concerning the actual cadastral procedures only Finland has similar procedures. The difference between the Swedish system and systems elsewhere in the world is that in the Swedish system, legislation, technique, economy and real property registration are all handled in a single closely integrated process. The process is carried out in one authority and often by a single person, a cadastral surveyor. The Real Property Register is public and contains the land register and a national digital cadastral index map. Lantmäteriet has responsibility for both cadastral activities and for maintaining the Real Property Register. In almost all other countries responsibility is divided: one authority has responsibility for mapping activities, whilst a second has responsibility for the real property register. Cadastral procedures, which are often looked upon as being a technical activity, are normally carried out by private companies, whilst the legal aspects are handled by solicitors and courts of law. The Swedish system is considered to be both rational and legally secure.

In Sweden, building of housing has continued to increase strongly for several years at the same time as large government investments have been made in the expansion of the national infrastructure and, together, these activities have resulted in a sharp increase in the demand for cadastral procedures. Within Lantmäteriet the Cadastral Services Division is responsible for the full range of cadastral activities. The division has a staff of 900 at 70 offices throughout Sweden. During the next decade about 50% of the division's staff will reach retirement age! The age structure of our staff, together with an increased demand for our

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1/11

Tomas Andersson, Lars Jansson and Angelica Oscarsson

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services, has meant that the supply of competence has become our most important strategic issue. With the aim of attracting young, university trained land surveyors to Lantmäteriet and then, as quickly as possible, introducing them to qualified productive work we have started a specially designed training programme for cadastral surveyors. This is an 18-month programme and includes courses and seminars sandwiched between practical work led by mentors.

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## **PART 1**

### **1. THE SWEDISH CADASTRAL SYSTEM**

#### **1.1 The legislation**

At the beginning of the 1970s an almost entirely new legislation framework was introduced for the cadastral sector. The Land Code, the Real Property Formation Act, the Joint Facilities Act, the Utility Easements Act and the Adjudication and Legislation Act were promulgated after comprehensive preparatory work.

In the Land Code there are basic rules that define real property and fixtures to real property. The Land Code also contains rules pertaining to civil law that regulate agreements concerning purchases, exchanges and gifts as well as stipulations for easements, user rights and rents. An important stipulation in the Land Code requires that a person who has purchased part of a real property must apply for a cadastral procedure to be carried out within six months from the purchase date if the purchase is to be valid. Private land sub-division is not permitted in Sweden. In the Real Property Formation Act there are stipulations that regulate the formation of new properties, re-formation of properties and the actual cadastral process. Through changes to the legislation in 2004 multi-dimensional (3D) real property formation became possible in Sweden.

The Joint Facilities Act regulates, among other things, issues related to co-operation between properties. In 1987 a new Planning and Building Act was introduced which led to a clear shifting of responsibility in a number of respects, from public property developers to private. The municipalities' and local authorities' responsibility for planning – the planning monopoly - remained, however, unchanged.

As the result of a major reform of environmental legislation in 1999, a new Environmental Code came into force. The Nature Conservation Act, the Natural Resources Act and the Water Act as well as other Acts have been amalgamated in the Code.

#### **1.2 The cadastral process**

Real property formation is a public sector responsibility and cadastral procedures are carried out by central and local government authorities. Real property formation including real property registration is a central government responsibility. There are 21 government cadastral authorities, one in each county, and they form part of the Cadastral Services Division's organisation. Municipalities and local government authorities that wish to, and which satisfy given criteria (competence, size and more), can make a request to the

government for permission to establish their own cadastral authority. Currently there are 38 such authorities.

It is the responsibility of the cadastral surveyor to investigate the legal pre-requisites and feasibility of carrying out a cadastral procedure, discuss the action to be taken with the property owners, consult involved authorities, attempt to strike a reasonable balance between public and private interests, carry out property valuation and finally carry out the necessary survey work. All decisions are recorded on the map and in documents and are included in the general part of the Real Property Register.

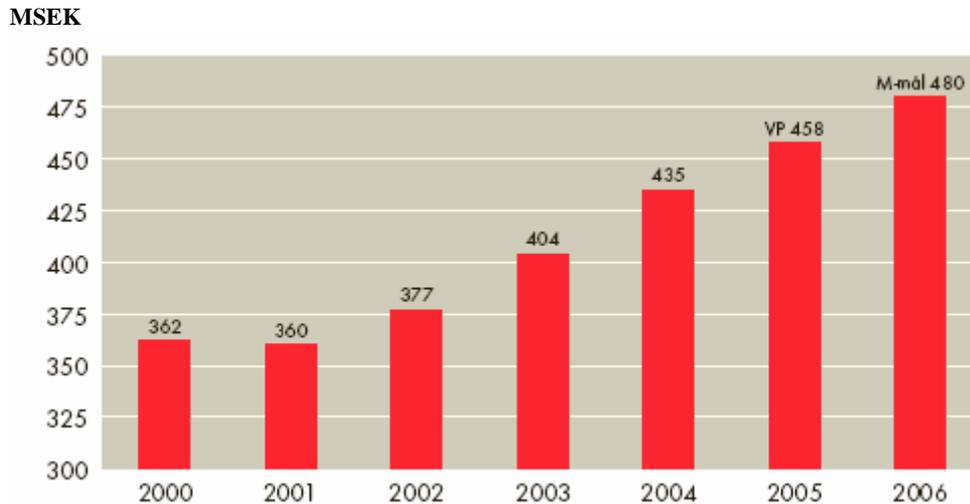
Decisions concerning real property formation can be taken contrary the landowners' wishes and cadastral procedures are often implemented to provide access to land for, for example, infrastructural projects. Such projects can involve the construction or re-construction of railways, roads, utility easements for electricity, telephones, water and sewerage pipes, gas, district heating and broadband. It is far more common to resolve land acquisition issues through cadastral procedures than by expropriation. The majority of all cadastral procedures are, however, carried out in full agreement with the involved parties. An example of this type of procedure is subdivisions for building development and reallocation based on agreements. The fact that the cadastral surveyor is personally responsible for carrying out all preparatory work for a procedure, combined with the possibility for the involved parties to be closely engaged in an informal way, the procedure is experienced as rational and legally secure.

At the end of the 1990s a new job process was introduced. Previously, under the leadership of the cadastral surveyor, the handling of a cadastral procedure could be divided between as many as 5-7 persons, each one a specialist in his/her own field. This process was replaced by a new way of working within which one or two persons are responsible for carrying out the whole cadastral procedure. The implementation of the new process required a comprehensive programme of competence development and large investments in technical equipment, such as management systems. The reform resulted in increased efficiency and a very significant rationalization of activities. There was a reduction in manpower needs of 25-30%. With the aim of further increasing efficiency, a programme for converting the contents of all cadastral archives to a digital format is currently being carried out. This will mean that a cadastral surveyor carries out all preparatory work – investigations and more – at his desk and will no longer need to search in archives which often are at a different locality. In a similar way, fieldwork has been rationalised by a wide-scale introduction of GPS.

## 2. THE MARKET

The demand for Lantmäteriet's cadastral procedures has shown a very positive development during the last few years as can be seen below.

### Turnover for cadastral procedures

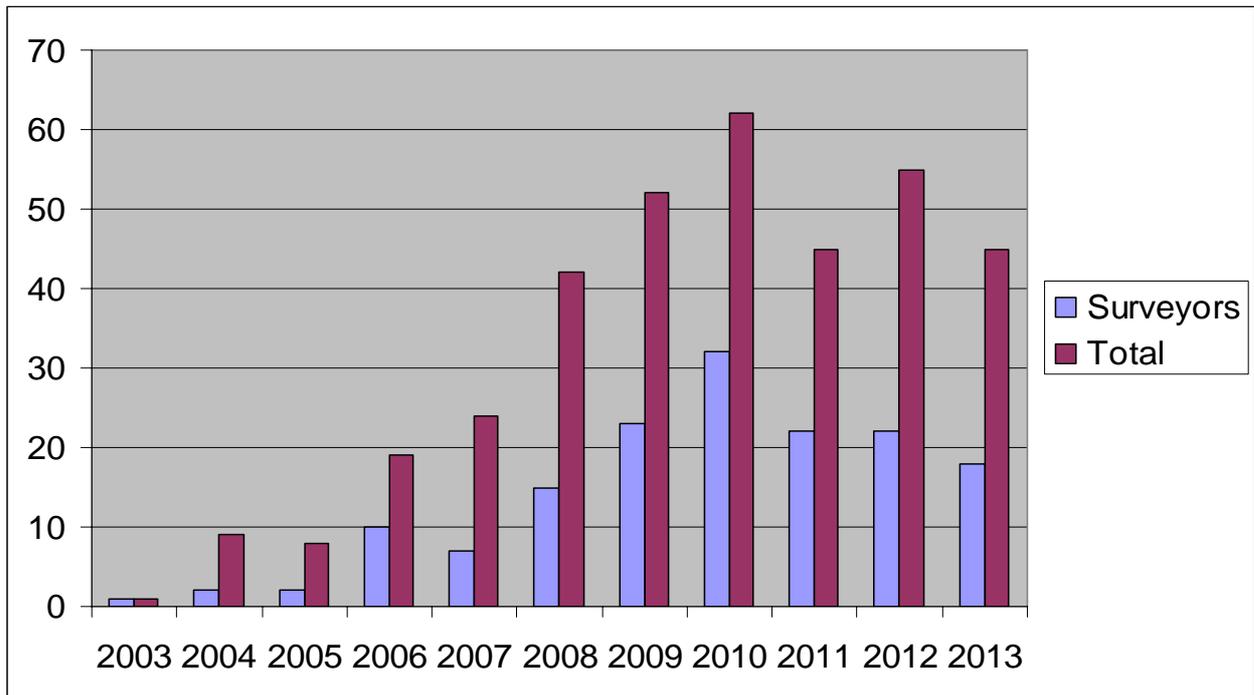


We anticipate a continued strong demand for cadastral procedures. For example, most electricity companies have decided on major investment programmes with the aim of increasing the reliability of their distribution networks, which will lead to an increased demand for the creation of utility easements. In the building and construction sector, the building of accommodation is increasing which has increased the demands for plan implementation and real property formation. Major initiatives directed towards rural development are also planned. Real property formation can contribute to the successful implementation of these initiatives. Multi-dimensional (3D) real property formation will increase when market players see the impact of the first completed procedures. Similarly, cadastral procedures in connection with the government's decision to protect areas of high natural value will increase. Programmes for new construction and improvement of existing road and railway networks will continue. These will entail the construction of central barriers to increase safety on major roads and tree clearing close to overhead contact lines on electrified railways. Cadastral procedures are an important tool for the implementation of the infrastructural developments that are planned to be carried out during the next few years.

## 3. THE HUMAN RESOURCES

The Cadastral Services Division has a staff of 900 of whom 50% will retire within the next ten years. The illustration below, which shows how many of the division's staff will retire with pension during the next ten years, is also an illustration of the age structure of the staff.

## Staff who will retire



The future need to recruit new staff members is steered by, on the one hand, by the development of the market for our products and services taking into account the possibility of further rationalisation and, on the other hand, by loss of staff through retirement, maternal and paternal leave and departure to take up other posts. Our prognosis is that the Cadastral Services Division will need to recruit 70 – 80 persons per year. To do so, in competition with other employers, it will be necessary to both create more places at the universities and to attract more students.

Within Lantmäteriet our plans include to:

- Act forcefully through strategic contacts to ensure that suitable university training possibilities are available.
- Encourage secondary school pupils to apply for places at the universities.
- Establish a fruitful relationship with the university students.
- Provide places for trainees and help arrange thesis subjects.
- Spread information that Lantmäteriet is an attractive employer.
- Give newly employed a well-planned introduction through, in the first place, a programme for cadastral surveyors. This can be complemented by a new introductory programme for both surveyors with a few years experience and technicians.
- Offer key staff special conditions of employment to encourage them to remain after reaching retirement age.
- Make Swedish society more aware of our profession.

In February 2005 we began the first training programme for cadastral surveyors. Twenty-four recently graduated students were given places. The interest for the programme was large with 10 applications for each place. Our experience so far is very positive and the participants have quickly become productive and at the same time Lantmäteriet has become a well-known employer amongst university students.

In the second half of this paper students from the first course present their experiences of the course and comment on its contents and implementation.

## **PART 2**

### **4. THE CADASTRAL SURVEYOR PROGRAMME**

#### **4.1 Background**

In January 2005, 24 newly graduated land Surveyors were employed at Lantmäteriet. We all have different backgrounds: some of us tried other kinds of employment before starting our land surveyor education whereas for some of us this is our first job. Almost all of us were educated in Sweden at one of the three universities in Lund, Stockholm and Trollhättan but one studied in Norway. The length of our university studies varied from three to four and a half years. We are all now working as professional cadastral surveyors. Every year between 50 and 100 land surveyors graduate from the three universities.

We are stationed at local cadastral offices all over Sweden. Our tasks include archive research, field survey and mapping, evaluation of the legal justification for carrying out cadastral procedures and holding cadastral procedural meetings with the involved parties.

Most of us chose to apply for the training programme because of the various day-to-day tasks and a complete set of courses that it offered. The programme also seemed to give us a portal to a professional career.

#### **4.2 Description of the programme**

##### **4.2.1 Mentors**

The programme lasts 18 months and is a mix of courses, seminars and work practice at local offices. We have all been assigned a personal mentor who has provided valuable knowledge and has been a great help when, for example, we have had problems with the cadastral adjudication. They have also been a great help and support in the every day office activities. The importance of a good mentor must not be underestimated. Most of the trainees were assigned a mentor who had a full understanding of the effort that is required to succeed in the role. Unfortunately, not all of us were fortunate. Lack of communication between headquarters in Gävle, the assigned mentor and the rest of the staff at the local office before the trainee arrived there resulted, in some cases, in misunderstandings and unnecessary clashes between mentor/staff and trainee.

Due to the age structure at Lantmäteriet, old habits and ways of working that do not reflect the contents of the courses held in Gävle are common at some local offices. An unwillingness to accept change and scepticism regarding new ideas resulted in friction and, at times, suspicion towards the trainees. These problems could, in some cases, have been avoided by providing better information about the programme to the selected mentors and, to some extent, also to the rest of the staff at the local offices. This is not a problem that is unique for this programme: it is a well recognised problem in the organisation as a whole, but it became clearer to us young surveyors when we met in Gävle and discussed our experience at our “home” offices. It should be emphasised that this is not a general problem, but we think that if it only occurs once it is still once too often. If Lantmäteriet invests a large amount of money on education and training courses and a trainee feels that he/she is not correctly treated at his/her local office, the investment is, to some extent, wasted. Lantmäteriet does now realise the importance of informing mentors and staff.

#### 4.2.2 The contents of the programme

During the first four months the programme comprised a large number of course activities and seminars in Gävle which resulted in the group becoming closely knit and there seemed to be no difference between phoning a colleague from the training course at his office 200 km away to discuss a problem and asking someone in the same room. A discussion page on the web where we can ventilate problems and ideas was opened.

During, and mostly after, the four very hectic first months there have been possibilities to use the knowledge acquired in Gävle. Most of us were given fairly simple cadastral procedures to handle, such as sub-divisions, so as to become familiar with procedures and legislation. By carrying out simple cadastral procedures, we have been given chances to focus on the routines and the very important contacts with the land owners and others involved in land transactions. During this period most of us have also assisted with larger, more complex cadastral procedures, such as joint property formation and disputes. After the first four months, the time spent in Gävle had lower priority as more time was spent at our “home” offices. At these offices we have had the opportunity to, at our own pace, mature and develop into professional cadastral surveyors with useful help from colleagues and mentors. During the final period we learned how to handle cadastral procedural meetings with the involved parties when there are conflicts of interests.

Hopefully, after participating in the programme, we now have both the knowledge and the capability to handle, if not all cadastral procedures, most of them. We feel that we are now capable of handling larger cadastral procedures and, most important, we know where and to whom we can put our questions.

### **4.3 Questionnaire**

We decided to prepare a questionnaire which we asked our colleagues on the training programme to complete, so that we could find out how satisfied they were with the programme and how they saw the future.

#### 4.3.1 Satisfaction

The answers to the questionnaire showed that participants in the training are very satisfied with the programme, especially with co-operation with colleagues at their home office and the support they were given in the transfer of knowledge process. They were given an average grade of 4.4 out of a possible 5. We are also very satisfied with the entire concept of the programme and our mentors.

The questionnaire also contained questions regarding the content of the programme and relations with the head office in Gävle and their decisions and supervision. The answers showed that the trainees are somewhat less satisfied in this respect and gave an average grade of 3 out of 5.

The programme has given the trainees a very good overview of the different areas of work at Lantmäteriet and its organisation.

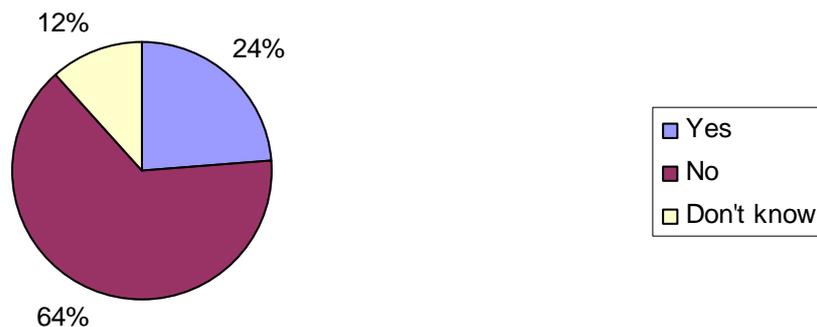
Against this background we can state that the programme has been a success.

#### 4.3.2 The future

What will the future hold for the trainees? Will the training programme that we have just finished influence us to stay and work at Lantmäteriet? No one knows for certain, but after studying the results of the questionnaire we can make a good guess.

The answer to the question "Do you think you will still be working at Lantmäteriet in three years time?" indicated that most of the trainees probably will not. (See figure below)

#### **Do you think you will still be working at Lantmäteriet in three years time?**



The single most important reason for not working at Lantmäteriet is the salary. Lantmäteriet cannot pay salaries as high as those paid by companies in the private sector. A second important reason is uncertain personal development prospects.

Here, the trainees think that prospects are poorer if one stays too long at one place and feel that it is necessary to try to work at other places in order to achieve goals and continue to develop in the direction that one wants. Those who answered that they probably will still be working at Lantmäteriet in three years time, cite type of work and personal development prospects as reasons for staying. They want to continue working as a cadastral surveyor and honing their skills by carrying out more difficult and complex parts of the cadastral process and carry out valuations of land.

The programme itself will not affect the decision to stay or not to stay at Lantmäteriet, but the development of a valuable contact network that it has provided and the fact that Lantmäteriet is committed to employing young surveyors is important for their decision.

#### **4.4 Conclusions**

The programme gave us a unique opportunity to start our working careers. It has been a major success and applications for places far exceed the available places. Several articles about the programme have been published in the press and technical journals. We all agree, despite some problems, that we all are fortunate to have been given this opportunity, but the questions remain: was the programme only a springboard in our careers and has Lantmäteriet understood the situation and what steps will be taken in future programmes?

For those of us who are planning to stay at Lantmäteriet, the future looks bright with opportunities to work abroad for Swedesurvey, chances of working in other parts of the country and the security of working for a government authority. But is this enough to counteract the attraction of the private labour market? The programme is new and, hopefully, Lantmäteriet will be willing to further develop it and challenge influence from the private labour market. If this is done, Lantmäteriet will have a powerful tool for recruiting a talented generation of young surveyors and keep them at Lantmäteriet for many years to come.

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