

# Experiences of 3D Cadastre in Åre, Sweden Implementing a New Tool for the Property Market

Lars ÅSTRAND, Sweden

**Key words:** Property formation, 3D, three dimensional property, cadastral surveying, property market.

## SUMMARY

A new legislation for multi-dimensional real property formation (3D Cadastre) came into force in Sweden on January 1 2004. The act is considered to be the most important basic change that has taken place in Swedish cadastral legislation during the past 30 years. 3D properties are just like ordinary properties created in a cadastral procedure.

Åre has a long history as one of the main winter resorts in northern Europe. During the last years Åre has seen a boom in housing and commercial development unparalleled in its previous history.

In the spring of 2008 when this presentation is being prepared, there are seven 3D projects completed or in various stages of progress in Åre. All but one are situated in the town centre within a few hundred metres distance. This fact is mainly due to the intense development, steep terrain, high land values and importance of close access to service and infrastructure. Commercial developers have specifically requested 3D property formation in all cases. The seven 3D projects focus on new or renovated buildings. The purpose is usually to separate holiday apartments from commercial property. A common desire from developers is to have a clear division between commercial enterprise and private holiday makers.

Critical issues in cadastral procedures involving 3D property include allocation of boundaries, technical infrastructure, balancing the need for property regulations against less formal agreements, data conversion and editing and also communication in the process.

The opinions from involved developers and property owners so far are very positive. 3D property formation has been successfully introduced and has proved to be a useful tool to the commercial property market.

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## **INTRODUCTION**

A new legislation for multi-dimensional real property formation (3D Cadastre) came into force in Sweden on January 1 2004. The act is considered to be the most important basic change that has taken place in Swedish cadastral legislation during the past 30 years.

The legislation has now been in force for four years, coinciding with the still lasting peak in the property market. This paper will focus on seven projects that have been initiated in Åre, with the use of 3D property formation. Although they do not cover more than part of the scale of possible purposes for 3D, they still provide information about the benefits of the new legislation.

Åre is the main winter resort in northern Europe and has among other events hosted the 2007 world championships in downhill skiing. Åre has also been the site for a number of interesting development projects through the last years.

Whereas 3D has in many cases been mentioned as a prerequisite for implementing complex and costly building projects, the future benefits of separated ownership and responsibilities have been less talked about. 3D property formation gives the opportunity to divide the financial fundamentals as well as the responsibilities for maintenance. If such a division can be established it will contribute to a rational and effective property management for many years to come.

Recently an application has been submitted asking for a 3D property formation of two property units with existing buildings. Both contain a variety of businesses and apartments. In fact this development was used as an example when the new legislation was drafted. The application can be seen as a proof that also the long term benefits of 3D have now become commercially attractive to the market.

In this paper I will present information about the 3D cadastral surveys implemented in Åre so far, together with the views of some of the property developers and investors who have been involved. I will also show examples of legal solutions together with a graphic documentation of the properties and surveys.

## **1. LEGISLATION**

### **1.1 Cornerstones**

The Swedish cadastral system consists of the Land Law, the Real Property Formation Act, the Utility Easements Act, the Joint Facilities Act, the Land Survey Code and the Real Property Register, which includes the Land Register. The Swedish cadastral system is considered to be a well-functioning, straightforward, efficient and secure system for all concerned parties

### **1.2 The Cadastral Process**

The activities of the cadastral authorities are regulated by the legislation in the Real Property Formation Act, the Utility Easements Act and the Facilities Act. A cadastral surveyor carries out cadastral procedures. A cadastral procedure differs from a judicial procedure in that the cadastral surveyor, independently, has the task of investigating and taking decisions concerning the suitability of the measures to be taken. A cadastral survey starts with an application for a survey to be carried out. Normally, the survey will involve only a few persons but, in some cases, as many as several hundred persons may be involved. The process consists of following components:

- Application
- Investigation
- Meeting (negotiation)
- Field survey, measuring/demarcating boundaries
- Decisions (juridical, economic and technical)
- Registration

### **1.3 The Multidimensional legislation**

The regulations for the formation of multi-dimensional property units have been incorporated into the existing legislation, in particular the Land Law and the Property Formation Act. This means that multi-dimensionally defined property units will normally be formed through a cadastral procedure and will be subject to land policy requirements in the same way as other property units. Regulations concerning easements and other property-related rights will apply to them in the usual way. The intention is that only a few special regulations will be needed for this type of property unit. Formation and alterations will follow procedures similar to those that apply for other property units.

### **1.4 Specific Conditions**

A number of specific conditions must be satisfied before permission to form multi-dimensional units is granted. One stipulation is that the property units must contain, or be destined to contain, a building or some other facility and not consist merely of air or rock.

A multi-dimensional property unit need not consist of a whole building or facility: it can also comprise part of a building or some other facility. This means that a building can be divided up into different, stackable property units always provided that these units, like other property units, are judged to be suitable for their stated purpose.

A mandatory provision is, however, that a 3D property unit must be assured of access to the ground surface. This access can be secured through the creation of easements when the property unit is formed or, when several property units are to have common access, through the formation of a joint facility. Examples of units which would not be accepted as suitable for the formation of 3D property units are a property unit consisting of a rock cavern with no access to the ground surface or the upper part of a building without access to a lift or a staircase.

An important limitation in the legislation concerns the possibility to form multi-dimensional property units for housing purposes. A property unit cannot be a space consisting of only one dwelling unit and therefore the legislation does not permit the creation of strata titles. A multi-dimensional real property unit for dwelling purpose can only be created if it comprises at least five dwelling units. This limitation may be revoked in the near future, see 7 Conclusions.

#### 1.4.1 Boundaries

Sweden has a system of fixed boundaries; boundaries are normally demarcated on the ground. The introduction of the new legislation for multi-dimensional real property has required changes to the existing legislation. It is now possible to choose whether the boundaries of a multi-dimensional unit should be fixed by X, Y and Z co-ordinates or, which will be more usual, be described with reference to walls, ceiling and roof and floor. A written description in the decision is often needed to ensure clear documentation.

#### 1.4.2 The Real Property Register

A property formation procedure is complete when the cadastral procedure has been entered in the Real Property Register. The same applies for the formation or re-formation of multi-dimensional property units.

Under the headline “3D-Information” is information telling us that the property unit either has one or more 3D spaces or that it is on the contrary hollowed by one or more such spaces.

Under the headline “Location” we will for a property unit containing 3D spaces find specific information for each space regarding type of space (sub-ground level space, building, bridge, tunnel, other), centroid coordinate, minimum and maximum altitude, horizontally projected area and identity of property unit that is hollowed.

Some new features have been introduced in the Real Property Register as well as in the cadastral index map, to identify multidimensional property units. The identity number has a backslash first and last, and the area of the unit projected on the ground is shown with parallel lines.

### 1.4.3 Tenure Rights

Holiday homes in Åre are subject to the same tenure rights as homes elsewhere. Individual ownership, owning a share in a tenant-owners association and rent are most frequent. Individual ownership is frequent for single family homes on the ground. A tenant owners association is under the present legislation the closest to individual ownership of flats available in Sweden. Renting a house or apartment is also frequent short or long term.

In the last few years there has also appeared a cross breed between hotels and tenant owners associations. The apartments adjacent to a hotel are owned separately by a tenant owners association, but the tenants have a mandatory commitment to use their apartments no more than a certain number of weeks each year. The rest of the year they are bound to let their apartments to the hotel. This construction is aimed to secure the hotels with customers for services but also provides the tenant with a financial return if the hotel is successful in booking guests. With this construction 3D property formation has been identified as a useful tool for developers.

## **2. ABOUT ÅRE**

Åre has a long history as one of the main winter resorts in northern Europe. Tourism in the Åre valley started already by the end of the 19th century, when the railway connected western Jämtland with the outside world. The first hotel in Åre opened 1895. People began coming to Åre for the air and water and for the mountains health bringing qualities. The funicular was built in 1910, when winter tourism and skiing first became popular. The first ski lift in Åre and Sweden was ready 1940.

Major events in Åres alpine history are Sweden's first downhill race in 1921, the world championships in downhill skiing 1954 and of course recently in 2007.

The village today has a steady population of around 1000 inhabitants. The valley holds around 31 000 tourist beds and hosts 450 000 visitors each year. During the last years Åre has seen a boom in housing and commercial development unparalleled in its previous history. Architects and investors from other parts of the world have contributed to the growth of what is perhaps northern Sweden's most exciting construction site. The current vision states the aims for 2020, making of Åre "the most attractive European alpine all-year resort", whilst ensuring a strong, long-term financially sustainable development of the town and its overall offering.

The municipality of Åre has received awards and nationwide attention for its economic growth and business friendly environment.

## **3. CASE OVERVIEW**

At the time when this presentation is being prepared, there are seven 3D projects completed or in various stages of progress in Åre. All but one are situated in central Åre within a few hun-

dred metres distance. This fact is mainly due to the intense development boom, steep terrain, high land values and importance of close access to service and infrastructure.

### **3.1 Mörviken 1:118, Brf Björkhagen**

This was the first 3D development to be implemented in Åre and is still the only one initiated by individual persons instead of one or several companies.

The original property unit Mörviken 2:37 contained a large one family home that was traditionally owned by the director of the nearby Hotell Åregården, Åres first hotel dating back to 1895. The Lindquist family has left its involvement with the hotel but still owns and lives in the villa. They sought a way to utilise the undeveloped part of their property that would return them a restaurant without external financing.

The solution appeared in a joint development with the company Attacus. The available land within Mörviken 2:37 was developed with two buildings, one with only apartments and one with both commercial and housing space. This building has the restaurant on the ground floor with complimentary facilities for storage and personnel in the basement. On the first floor are three apartments.

The land was allocated in two units, each comprising the land around the single building. The unit with the six apartments also has a 3D volume comprising the apartments in the other house. The unit with the restaurant is accordingly hollowed by the unit with the apartments.

It can be noted that the land could also have been allocated differently, for instance by letting the restaurant unit consist only of 3D space. In this case as in several others it has been obvious that ownership of land is still important to all concerned parties. Bankers and other commercial actors prefer investing in land before in an entirely 3D unit.

### **3.2 Mörviken 1:126, Dähliehuset 1**

This development was initiated by Björn Dählie, norwegian ski champion who has taken up property investment, particularly in the winter resorts of Sweden and Norway.

The original property Mörviken 1:26 contained a one family home within an area of 1114 m<sup>2</sup>. This building was replaced with a four storey building containing commercial space on the ground floor and holiday apartments on the top floors. The building holds altogether 12 apartments within a total living area of 1009 m<sup>2</sup> and commercial space of 450 m<sup>2</sup>.

The development was delayed by complaints from neighbours regarding the building permit. For this reason the building had to be reduced by one floor in order not to affect the view over the lake from nearby buildings.

The allocation of land and space in the cadastral survey was done by forming a new unit for the holiday apartments entirely consisting of 3D space. All land was left with the original unit that also contains the commercial parts of the ground floor.

Technical infrastructure was as far as possible built separately for the two units. Ventilation, electricity and entrances were possible to separate entirely while for instance underground pipes still had to be shared. A joint facility was established as part of the procedure for jointly used parts of the ground floor and certain technical infrastructure. These were a maintenance entrance and waste and installation rooms at the back of the building, together with external service pipes for water and sewage.

The property unit with apartments was subsequently transferred to a tenant owners association. The financing for the owners of the individual apartments (shareholders) was as in most similar cases based on a high purchase price that together cover most of the investment. Only a marginal part of the cost had to be mortgaged. The association has only limited debts and shareholders pay a small monthly fee for what is mainly maintenance costs.

The commercial unit is still owned and managed by the developer. Long term lease contracts have recently been signed for a new police office and an insurance office.

### **3.3 Mörviken 2:66, Brf Mörviken 2:66**

This development is interesting as an example of 3D property formation mainly because 3D has been utilised to solve a technical issue rather than being a prerequisite for the project as such.

The development involved two property owners, one being a developer and one being Årehus, the municipal housing company. They each owned one conventional property unit. Mörviken 2:66 was owned by the developer and entirely rebuilt with new structures. Mörviken 2:83 is owned by Årehus and contained existing commercial and housing structures. The new buildings were connected with the existing apartment building that in the same process was added with two more floors of apartments.

The development also brought about transfers of land between these two and three other adjacent properties. The fundamental prerequisites for land allocation were provided by a municipal plan. The detailed allocation of land was done in cooperation between the property owners and the surveyor. Land was priced up to 3400 kr per m<sup>2</sup> in these transactions.

It can specifically be noted that in this case as in many others the utilisation of 3D property formation is not regulated or even mentioned with a single word in the municipal plan.

The proposal was to link the two buildings with a wedge shaped structure in five storeys. As the first plan went the two first storeys should be utilised for an elevator connecting a restaurant kitchen in the old building with additional restaurant space in the new building. This idea was however abandoned while the construction went forward. The bottom floor of the wedge was instead used to make room for ventilation equipment serving the new building. The upper floors were used as complimentary living space (a small bedroom) to the apartments in the older building.

The 3D space that was established in this survey accordingly consists only of one floor of the wedge of approximately 8 m<sup>2</sup>.

A complementary easement was issued for a vertical shaft through the wedge, containing water, sewage and ventilation pipes.

The cadastral survey was completed on schedule in November 2006, while the development was delayed considerably by disagreements between the developer and the construction companies.

### **3.4 Mörviken 2:120, Hotell Åre Granen**

The restoration and redevelopment of the classic hotel Åre Granen is a nice example of 3D as a means of providing long term benefits. Åre Granen is one of the oldest hotels in Åre, originally built 1927 next to the funicular that runs up the mountain slope from the central square. During the last decades of the 1900-ds the hotel suffered a period of decline, and was mainly used as a restaurant school.

The restoration included an addition of new apartments on both wings of the original building together with a new building containing apartments and maintenance space. Altogether 14 holiday apartments were added. These were allocated to a new property unit consisting of 72 m<sup>2</sup> land with part of the new building together with 3 separate 3D spaces containing the rest of the apartments.

The new building structures are very efficiently planned in order to avoid mixed use of facilities between the property units. Access to all apartments is provided separately from the hotels entrance and very few indoor spaces are affected by the property formation. Joint facilities are limited to parts of the basement with technical installations, and shafts for technical infrastructure.

The new apartments have been transferred to a tenant owners association and all apartments have been sold successfully. The association cooperates with the hotel by regulations that oblige the owners to let their apartments to the hotel during 42 weeks per year. In return they receive a share of the hotels income from booking external guests. It can be noted that the hotel has been especially successful in booking guests during events held in low season.

This case is also a good example of cooperation between the developers, the architect and the property formation authority. A clear graphic documentation was supplied to the surveyor at an early stage and consistent discussions during the process enabled a rational and simple property formation.

### **3.5 Hårbörsta 2:152, Hotell Copperhill**

The Copperhill Mountain Lodge development is probably one of the most spectacular developments in Åre during the last years. The construction of a new hotel on Förberget was started in early 2006 to be completed by the end of October 2007. The site is previously undeveloped land that was only now made accessible by a new road to the top of the mountain. The hotel consists of a structure in six and seven stories with hotel facilities on the first two floors, comprising over 21 000 m<sup>2</sup> space.

The cadastral procedure was brought to a preliminary decision in August 2007. The decision included the formation of a 3D unit for the intended 89 apartments on the 3-7 floors of the structure. The completion of the development has since then been considerably affected by financial problems on the developers side. A recent change of financial backing and ownership in the company has also affected the original plans for the management of the hotel. It has yet to be identified how the cadastral solution can be adjusted to the new prerequisites.

### **3.6 Totten 2:43, Hotell Tott**

The most recent proposal for a 3D cadastral survey is another distinguished hotel in Åre. The Tott hotel has been expanded and restored several times during the years. A recent property formation has separated one part of the hotel containing apartments by a traditional 2D boundary. Now the idea is to rebuild a large bulk of the hotel rooms into apartments and transfer them to a tenant owners association with the same prerequisites as for instance hotel Åre Granen.

The issues to address in the cadastral formation procedure will be to establish a 3D unit for the new apartments but also to clarify the existing vertical boundary that cuts the building in two. Spaces on all floors of the building are used across this boundary which creates some confusion regarding who actually is responsible for what. 3D property formation will probably be necessary also here.

The process was initiated during February 2008 and is still at an early stage. The developer has engaged consultants especially qualified in cadastral surveying which is an interesting concept. In this case the consultants will probably be responsible for producing the graphic documentation for approval from the surveyor. If the result is satisfactory this method can reduce the input of hours considerably on the cadastral authority's behalf.

### **3.7 Mörviken 1:13, Brf Mitt I Åre**

The last case is probably the best proof of the advantages of 3D property formation so far. Two adjacent properties Mörviken 1:13 and 1:107 were developed during the 1980-es, containing both commercial space and holiday apartments. The development has a number of interesting ingredients.

- A jointly used elevator through one of the buildings
- A five storeys tall apartment building on top of a parking deck within Mörviken 1:107 but belonging to Mörviken 1:13.
- A ski bridge and slope running within Mörviken 1:13 but managed by the ski lift company. The slope encumbers as well as connects to several other properties.
- Maintenance problems resulting from mixed use of the facilities.

At the time of the development 3D property formation was naturally not an option. All of these issues were resolved by joint facilities and easements. The graphic documentation had to rely on construction blueprints and photocopies. There has over the years been a great deal of discussion regarding the legal responsibilities between the property owners. These discussions have now come to a critical point when a grocery store in one building was rebuilt into a budget ski hotel. This change brought about new demands for services and infrastructure on both properties.

The property owners have made an application for a 3D property formation in November 2007. They have specifically asked for solutions that will clarify ownership and responsibilities. Initial discussions have been held in Åre and the cadastral surveyor is presently investigating the current situation in order to come up with a tentative proposal.

#### 4. CRITICAL ISSUES

Some conclusions can be drawn based on the experiences from the cases in Åre. The solutions implemented by the author may not be suitable for cases elsewhere but should be seen as examples.

##### 4.1 Boundaries

Demarcating a 3D property is naturally different from creating a traditional boundary. Generally speaking you can still use quite the same criteria. The new boundaries should preferably be as few and short as is possible, they should be easily interpretable if not always visible, and they should minimise the need for interaction between property owners.

A 3D property shall by legislation always be defined as a closed volume. This demand enables boundaries to be seen in two categories. The first type of boundary is where something frequently happens on the other side, as for instance a wall or a joist. The second type is where something is less likely to happen on the other side, as for instance outside a façade or roof.

The standard solution to the first category has so far been to allocate the boundary to the centre of the wall or joist, provided there are no pipes, wires or other facilities inside. If the wall or joist is made of concrete as is most common in new buildings, each property owner will have the opportunity to furnish and maintain his property independently of the other.

The standard solution to the second category has been to allocate the boundary either to the surface of the building or at some specified close distance from the surface. In a digital environment it is possibly easiest to use the surface itself. In the case of Dähliehuset one of the vertical boundaries for the 3D unit was for practical reasons aligned to the existing conventional boundary.

The issue of how the property owner shall gain access to the outside of a 3D property for maintenance is in most cases resolved by the new regulations in the 3 chapter of the Land Code. These regulations give a property owner access to an adjacent property if there is none or little impact on that property. The regulations also deal with responsibilities and economic compensation as well as rights to interfere when one owner creates a dangerous situation for the other by failing to maintain his property.

## **4.2 Technical Infrastructure**

Technical infrastructure is here used as a general description of necessities supplied by an external part, such as water, sewage, electricity and heating. The supplier is most often the municipality or a company in public ownership. The supplier is responsible for his distribution network and the individual property owner for the pipes or wires on his side of the established connection point. The supplier's network is frequently secured by a cadastral procedure according to the Utility Easements Act, or sometimes by easements according to the Land Code.

Traditionally each property unit has had its own access point for technical infrastructure. Each property owner has been an individual customer to the supplier. Some exceptions from this model also exist, where for instance a development of single home properties will be jointly connected to water and sewage by an internal network maintained by a joint property association.

With the introduction of 3D property formation new solutions have become more frequent. When an existing building is expanded and divided by 3D it is not rational to build new and separate connections for water and sewage. Instead the original property owner (customer) can become secondary supplier to the new (3D) property owner. Access to jointly used main pipes can be secured by easement or as a joint facility. The simple solution is often the best one.

Heating and electricity networks are usually owned by the supplier all the way to a meter inside the building. For these necessities secondary supply is not practised. The documentation in the property formation should preferably clarify how responsibilities are divided between suppliers and property owners.

### **4.3 Regulations and Cooperation**

Professional property owners have a tradition of cooperating through more or less formal agreements. Flexibility and simplicity are the key words. Both better and worse examples of such agreements have been found in the course of cadastral procedures.

There is a clear demand by legislation that a 3D property must have a legally established right to access to the ground and to infrastructure. On the other hand there is a choice within the process to establish rules for division of maintenance costs (in a joint facility) or to leave this issue to the property owners (easements).

From the authors point of view joint facilities should be kept at a minimum level, where there is a long term sustainable use of the facility in question that is also easy to measure. One example is the clearing of snow and dust from a parking lot that can be easily divided by the number of parking spaces used for each property. For certain other facilities like pipes there is little or no maintenance cost in the short term but possibly a large cost some time in the future.

Maintenance of a roof or supporting pillars on a building has always been accepted as the obligation of the owner of that property where this part of the building is located.

It is obvious that no matter however detailed the regulations are stated in the cadastral procedure, there will still be a need for practical agreements between the property owners. Owners of commercial properties will for instance need clarification about responsibilities if there is a loss of income on either side.

### **4.4 Data conversion and editing**

The most time consuming and challenging part of 3D cadastral procedures has at least for the author been collection, conversion and editing of graphic data regarding buildings. When new buildings are constructed there is always an abundance of digital plans in cad format. The problem is still that of selecting the relevant information and processing it into a sufficient number of cadastral plan.

#### **4.4.1 Georeferencing a 3D unit**

The first task for the cadastral surveyor is to present the proposed 3D unit in a cadastral plan that can subsequently be used to update the cadastral index map. For this purpose the building with the 3D unit must be placed in the plan with correct coordinates. A building under construction can be surveyed in the field, which is the most reliable method. Strictly speaking such a survey should not be necessary as the developer most times already has a base map to support the construction of the building.

In the process of obtaining a building permit the developer is required to produce a site plan, a map of the property showing the proposed building. But it is not unusual that the architect is

either unaware of which coordinate system that is being used, or else that he for some reason has changed the existing coordinates to suit his own needs.

Åre is particularly blessed with two to three different coordinate systems of various age that are still used simultaneously. Also when it comes to vertical measuring there are two systems in use. It is vital to establish which system that is being used before starting to edit the information.

When the building is correctly georeferenced it must be connected with the drawing of the inside that is used to define vertical boundaries. If the 3D unit covers one or more entire storeys of the building it will of course be sufficient to use the representation of the buildings exterior.

#### 4.4.2 Documenting the 3D unit

The next step is to utilise horizontal plans, vertical sections and façade plans to show how the properties are demarcated. It is not unusual to have ten different cadastral plans based on digital drawings of the building from different angles. These plans will not be georeferenced but merely show the building with boundaries, easements and joint facilities.

#### 4.4.3 Formats and Software

The state cadastral authorities use APC for editing geographical information, production of cadastral plans and updating the cadastral index map. APC (Autoka-PC) is an internally developed software, now around twenty years since the first release. APC uses the transfer file format, which is different from the formats commonly used for GIS or Cad software. The National Land Survey is presently introducing ArcCadastre, which is based on ArcGIS. However it will still be some time before ArcCadastre has been developed to suit 3D property formation.

Architects and construction engineers commonly use cad software where dwg format is standard. This tool enables the operator to present information in layers that can be independently turned on or off. Accordingly huge data sets can be presented to suit the needs of the individual user.

The bridge between these two worlds fortunately exists, by the name of FME (Feature Manipulation Engine). With FME data sets can easily be filtered and converted between different formats. Having said this, there are still situations when external assistance is necessary to provide input for the cadastral plans.

#### 4.4.4 Judicial Consideration

The judicial considerations in a 3D cadastral procedure were at least by the author expected to demand more attention than what in reality has been the case. The legislation that was introduced in 2004 is written from a very moderate point of view. The possibility to implement 3D

formation is restrained by a number of regulations. It can only be implemented when certain prerequisites are at hand, and when other cadastral formation procedures are insufficient.

In practise the property owners have always provided convincing arguments supporting the need for 3D formation. The projects have most often depended on 3D to establish a rational management and sufficient financing. This impression has further been strengthened during later discussions with stakeholders.

An interesting point is that during the first contacts with stakeholders they have all asked specifically for 3D formation. The awareness of the legislation seems to be widely spread.

#### 4.4.5 The Property Formation Process

Taking part in a 3D property formation procedure for the first time is a challenging experience for everyone involved. The cadastral surveyor will need to communicate with people from different professions and with different cultures. A lawyer, a developer, an architect and a building constructor may have very different understandings of what boundaries and real properties stand for.

In the author's opinion the quality, speed and cost of the cadastral procedure largely depend on the interaction between the cadastral surveyor and the key persons in the development process. A close cooperation with one or two persons with good overall knowledge will contribute to a better result for everyone. If the developer on the other hand expects that a complex cadastral survey can be ordered over the counter he or she will most likely not be satisfied with the cadastral surveyor nor with the outcome.

## 5. STAKEHOLDER OPINIONS

### 5.1 Leif Lindquist, Mörviken 2:118

Leif is the owner of the first 3D property in Åre, case 1. He now owns and operates the commercial property with the restaurant Twins. He considers the main reason for utilising 3D to be the need to separate two users in the same building. Owning and operating his property was a vital issue. Being a commercial tenant to a tenant owners association would have meant cumbersome discussions and dealings with the landlord. He has had many warnings from colleagues about the hazards of renting commercial space from such associations.

Leif says that the 3D property formation is a good legal solution that prevents future conflicts. The documentation of the property division is clear and understandable. He uses the file as a reference in the management of the property. The day to day cooperation with the tenant owners association has been easy so far. He is very satisfied with the outcome.

### 5.2 Roger Hållander, Hotell Åre Granen

Roger is co-owner and manager of the hotel, case 4. Utilising 3D was in his case a matter of finance. The hotel was too small to support the services and the client network, as the hotel relies partly on conference guests. The development meant that the hotel can accommodate

150 guests instead of 70. The development also offered an attractive opportunity for the individuals who bought the apartments.

The apartment unit was granted access to technical infrastructure such as heating, water and sewage by easements but without regulations regarding division of fees. This solution was implemented by request from Roger and the other developers. He says that it is most rational to serve both units from the same access points. Measuring and separating the use of services would be difficult considering that the hotel is also responsible for most of the daily maintenance of the two properties. Instead the two owners will settle on a long term agreement that covers both division of costs and other responsibilities.

Roger sees 3D as a major step in the development process. By ordinary circumstances it is almost impossible to run an economically sustainable hotel business in locations that don't attract guests all year.

### **5.3 Helena Danielsson, Hotell Åre Granen**

Helena was deputy project manager for WSP Consultants during the development. The technical and architectural layout of the development was simple and efficient. The two properties were possible to separate to a large extent although they are located in the same building. Doing so was more of a practical issue than a request from the 3D regulations.

What made this project different from others was the need to work in close cooperation with the cadastral surveying authority. The dialogue with the authority went well and the formal parts of the procedure did not delay or encumber the development in any way. 3D property formation will probably be utilised also in other future projects.

### **5.4 Leif Wretblad, Hotell Tott**

Leif is a cadastral surveyor with many years experience from property formation and property management on the municipal level. He now works as a private consultant in related projects. The present development of Hotel Tott is an issue of refining a property that has suffered from consistent financial problems. The property needed some creative thinking and the investors have now chosen a three unit solution based on a commercial property with the hotel and two apartment properties. 3D is in this case utilised to convert unattractive hotel rooms into apartments. Apartments under a tenant owners association is considered to be a very attractive investment for individuals. The income from private buyers will finance a large part of the development and create an economically viable basis for the hotel business.

The building is complex and there is no overall knowledge about the technical solutions. There will possibly be a need to issue easements for technical facilities without a clear documentation of their whereabouts. As all major infrastructure is already in place Leif does not see a major problem here. The developers know nothing about property formation although they are very qualified in other fields. They see property formation as an obstacle and delay in

the process that needs to be managed. That is why there is a need for qualified consultants in property formation.

The apartment unit previously converted has been a success so far. Apartments have been sold at 30 000 kr per m<sup>2</sup> and resold for considerably higher prices. The owners have during the last year even had an overall income from their apartments due to the many events in Åre and high demands for accommodation. Ten of the totally 44 apartments in the present development are already sold. 3D property formation will be attractive also in the future, specifically when there is a need to separate commercial space from apartments in existing buildings.

### **5.5 Jan Lindahl, Dähliehuset and others**

Jan is a practising lawyer specialised in property and business related matters. He has assisted the developers both in case 1 and 2. Separating hotels and apartments is primarily in the interest of the investor. There is a business advantage in providing a service business with customers. The use of tenant owners associations with regulations to let apartments to the hotel ensures the hotel operator an opportunity to let the apartment when the owner is not using it. Apart from that it will also provide the buyer with a very nice calculation of future income. This calculation may be more or less correct in the long term.

In the case of Mörviken 1:118 the developers had been looking several years for possible solutions and financiers. The difficult issue was that the owner wanted to finance a restaurant property with undeveloped land. Jan had studied the new legislation but thought it would be too complex and cumbersome to implement in this case. He is very satisfied with the outcome and the services from the cadastral authority. The authority has a positive and proactive attitude that one hardly finds in a high court for instance. The costs for the procedure are also reasonable. Commercial property owners consider joint facilities and property owners associations to be a complicated and cumbersome tool for cooperation. They prefer more flexible solutions like agreements that can be revised. If problems should arise in the future there is a satisfactory backup system in the legislation that provides long term security

## **6. CONCLUSIONS**

The overall conclusion that can be drawn from implementing 3D property formation so far is that all involved stake holders are very positive. Although the legislation has been in place since 2004 it is little more than two years since the first application was submitted in Åre.

There seems to be a number of common denominators to all the cases and these happen to coincide in central Åre. High land values, high economic activity and professional developers have had an impact on all the projects.

Among the most challenging activities on the cadastral authority's behalf is to coordinate the cadastral procedure with the schedule for each project. The time factor has been obvious in all cases so far.

A draft for new legislation concerning individual ownership of apartments is presently being processed. The proposal is to make apartments subject to the regulations in the Real Property

Formation Act. Owning an apartment will by these prerequisites be equal to owning a house on the ground. The new legislation can come into force from 2009.

## **REFERENCES**

Eriksson & Adolfsson, GE CA, 2006, Experiences of the 3D Cadastre legislation

## **BIOGRAPHICAL NOTES**

The author has been an employee in Lantmäteriet since 1987 and has combined property formation with contributions to internal and overseas projects.

## **CONTACTS**

Mr Lars Åstrand  
Lantmäterimyndigheten Jämtlands län, Box 366, 831 25 Östersund,  
SWEDEN  
Tel. +4663-141019, +4670-3164785  
Fax +4663-141031  
Email:lars.astrand@lm.se  
Web site: [www.lantmateriet.se](http://www.lantmateriet.se)