

# 3D Real Property Formation in Sweden

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**Key words:** 3D Real Property, Property Formation, Swedish Legislation, Ownership Apartments, Cadastre

## SUMMARY

A real property has by tradition been presented as a two dimensional property with boundaries on the ground. Three dimensional (3D) real properties was first implemented in the Swedish legislation in 2004. A 3D property can be below ground (for example a garage underground), or above the ground (for example a block of residential flats or a part of a building with office or retail premises). Since 2009 it has also been possible to form ownership flats, a 3D property consisting of one apartment. All these are examples of 3D properties.

Some of the advantages with 3D properties are for example that buildings and constructions in city centers can be used in a more efficient way. Extra floors can be built on top of existing houses, or residential flats, offices and retail premises can be built over areas with railroad or metro tracks.

Even in the country side 3D property formation gives opportunities for a more efficient use of properties that have different use in different levels. Examples are areas with unused rock shelters where the underground constructions can be subdivided to their own properties and used for instance for garage, storage or computer servers.

In order to form 3D properties the property must include a building or other construction or part thereof. It is also presumed that the 3D property will lead to a more suitable management of the building or that it is necessary for securing the financing or the construction of the building.

This paper presents the definition of 3D properties in Sweden, explains the need for 3D properties and its advantages. The paper also presents how 3D property formation is done, general rules for property formation in Sweden and special regulations for 3D property formation. Different ways of collaboration between the properties in a building are described, and also how the property formation is registered. Finally it will give a brief summary over how 3D property formation has been used since it was introduced in Sweden in 2004.

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## 1. INTRODUCTION

Lantmäteriet, originating from 1628, is the Swedish mapping, cadastral and land registration authority. The mission is to give support for creating an efficient and sustainable use of Sweden's real property, land and water. Lantmäteriet is also responsible for ensuring an efficient and legally secure real property subdivision and for maintaining a register containing information about real property, such as ownership and mortgages. There are three main divisions: Cadastral services, Land and Geographic Information services and Land registration. The cadastral service division has around 50 offices in Sweden, and around 900 employees (of which about 470 are cadastral surveyors). Additionally, there are 39 municipalities that have their own cadastral authority.

Lantmäteriet's Real Property Register contains approximately 3.2 million objects, which, together, form Sweden's greatest economic asset. The management of the system by Lantmäteriet is a guarantee for rapid and easy purchase, sale and mortgaging of real property.

A division into real property units can be changed through a cadastral procedure. This can involve creating or changing properties and rights – such as clarifying where boundaries are. Should an owner of several properties need to establish co-operation regarding joint needs, this can also be done through a cadastral procedure.

## 2. DEFINITION OF A REAL PROPERTY

All land in Sweden is divided into real property units. A real property has either horizontal or horizontal and vertical boundaries. A real property unit consists of one or several areas and historically a real property has been divided only in two dimensions, with boundary marks on the ground. Buildings, forest, water etc. can belong to a real property. Technical infrastructure is not by itself considered as real property (for example roads, water and sewage systems, electrical power lines etc.). All real properties have a unique designation.

Land Code Chapter 1

1 § “Real property is land. This is divided into property units. A property unit is delimited either horizontally or both horizontally and vertically. Special provisions apply concerning property formation.

Unofficial parcelling of land is null and void.”

### 3. 3D REAL PROPERTY

#### 3.1 3D properties

Three dimensional real property (3D property) formation was introduced 1 January 2004 and ownership apartments 1 May 2009. A 3D real property is a real property surrounded by borders both vertically and horizontally. It has to be a closed volume. It is possible to join a 3D property space to a regular 2D real property. A 3D property space is a space included in a property unit other than a three-dimensional property unit and delimited both horizontally and vertically

For example a 3D property can be a block of residential apartments or a part of a building with office or retail premises. A 3D property can also be a rock shelter or a tunnel for the metro or railroad etc. see figure 1 and 2.

An ownership apartment is a 3D property which is not intended to consist of anything else than one single residential apartment. Apartments are otherwise provided with tenancy (59 %) or tenant ownership (41 %) in Sweden (Statistics Sweden, 2015).

## What is a property?

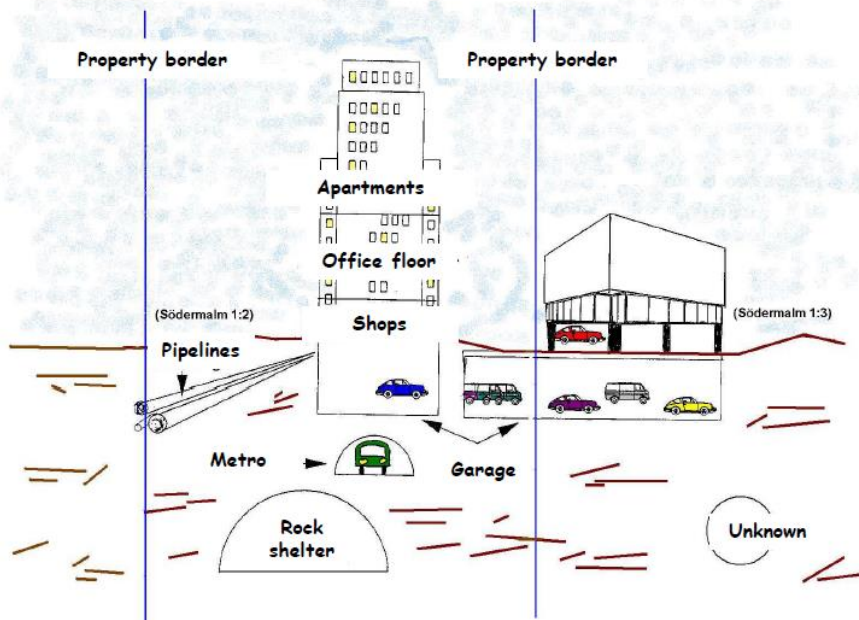


Figure 1: Different types of property  
Source: Lantmäteriet



Apartments

Offices

Shops

Figure 2: 3D properties are delimited both horizontally and vertically, which means that constructions or floors in the same building or construction can have different owners.

Source: Lantmäteriet

There are different kinds of 3D properties.

Figure 3 is an example of a 3D property unit over of a traditional property.

Figure 4 is an example of a traditional property unit with a 3D property space.

Figure 5 is an example of ownership apartments.

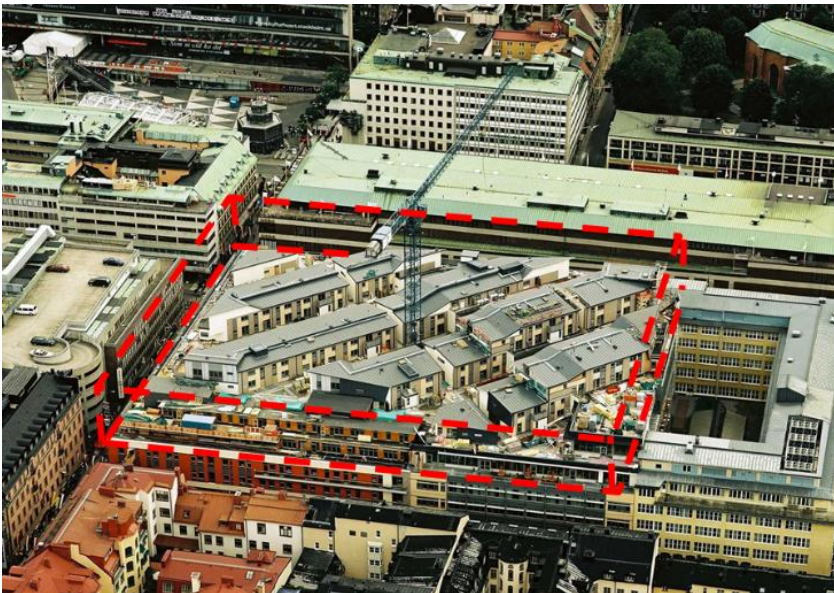


Figure 3: Example of a 3D property

Source: Lantmäteriet, Picture Lennart Johansson InfoBild

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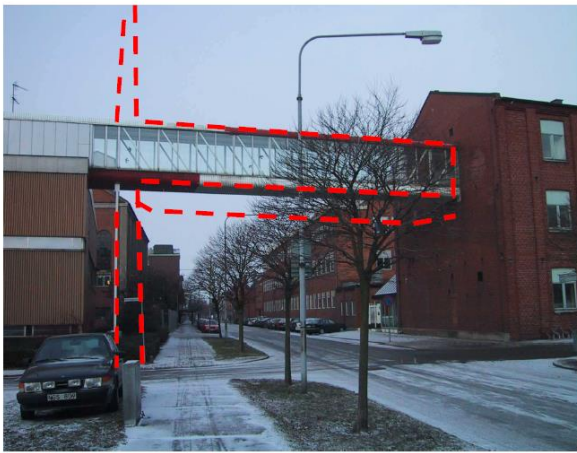


Figure 4: Traditional property unit with 3D property space  
Source: Lantmäteriet, Picture Cecilia Adolfsson

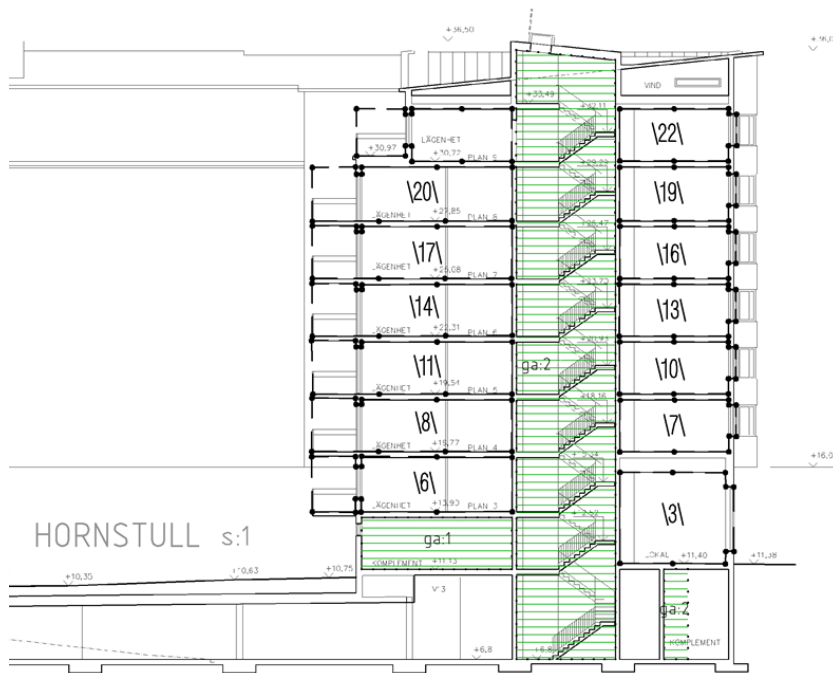


Figure 5: Example of description of ownership apartments,  
Source: Lantmäteriet

### 3.2 Ownership apartments

Ownership apartments means increased self-determination because the person owns the apartment and apply for registration of ownership according to the same rules as for other kinds of property. The apartment is fully in the owner's disposal, and can repaint, change kitchen, rent it out etc. Just like for the owner of a detached house or a townhouse it is possible to get a lien or mortgage or to sell the property.

Ownership apartments are formed through a cadastral procedure. During the procedure it is decided how the ownership apartments are delimited and which parts of the building that are common facilities (for example roof, facades, elevators, certain pipes). For common areas a joint property unit is formed, which every ownership apartment in the house owns a share in. For common facilities a joint facility is established and every ownership apartment owns a share in it.

The joint property unit and the joint facility are managed by the ownership apartment's owners through a special association called a joint property management association. The owners are members in the association. The association is required to fund money for the future maintenance of the common property. The running costs for the common areas and facilities are shared between the owners.

It is only allowed to form ownership apartments if: it is a united unit of at least three ownership apartments, and the apartment area has not been used as a residential apartment during the last eight years. This means that ownership apartments only can be formed at new production of residential houses and when commercial or office premises are rebuilt to residential apartments.

Figure 5 is an example of a part of cadastral description for ownership apartments.

The need for maps and descriptions has to be judged from case to case. For simple cases one map or description can be enough, for more complicated cases several plans might be necessary. Every floor is named from the level where the entrance to the ownership apartment is located.

#### **4. ADVANTAGES OF 3D PROPERTIES**

Following are some practical examples of when 3D properties can be needed:

- 3D properties can be used for more efficient use of properties within city centers, for example extra floors can be built on top of existing buildings, apartments or other buildings can be built over railroad or areas, and the purpose of a building can be partly changed.
- 3D properties can lead to more efficient use of public owned land through underground constructions, such as garages, archives, and community centers.
- 3D properties clarifies the ownership and rights between different actors on stations, travel centers, port terminals and tunnels, for example between the Swedish Transport Administration, companies, the state and the municipalities.
- 3D properties are also useful for:
  - Transformation of tenant owner associations that also owns business premises.
  - Using unused rock shelters for other purposes.
- Securing extensive systems for electronical or telecommunication technology and underground constructions.
- Division of ownership for city center properties to stimulate new activities or business in the town.

Following are some advantages of 3D property formation:

- A larger supply of building rights will lead to pressure on prices and to decreased building costs.
- Increased building in city centers gives better possibilities to use existing schools, public rooms and infrastructure.
- Increased opportunity for positive development of the real estate market, which can lead to releasing of large real estate values.
- Opportunity to divide building projects in to several smaller projects makes it possible for more actors to dare to invest venture capital.
- Implementation of larger road and rail road projects is facilitated.
- With several different forms of tenure in the same building the options increase.
- It facilitates construction projects under larger areas of land.
- It facilitates financing of infrastructure projects, and might lead to lower interest rates.
- Easements and agreements is replaced with ownership through real property formation. It increases opportunities for mortgages and loans.
- It refines activities (housing/offices).
- It clarifies responsibilities for common facilities.
- It is a modernization of real estate law.

## **5. IMPLEMENTATION**

### **5.1 Property formation for 3D properties**

The cadastral surveyor who carries out the cadastral procedure is an impartial investigator and decision maker who will do the best to help parties come to a mutual agreement. In some cases, however, it may be necessary to take decisions without parties having reached an agreement. Real property owners, buyers, rights holders and other persons involved in a cadastral procedure are referred to as interested parties. The interested parties, the local building committee and, in some cases, the county administrative board have the right to appeal against a decision in a court of law. The cadastral procedure includes legal, technical and economic measures. The normal rules concerning property formation are applied. There are also certain special rules for formation of 3D properties.

The process starts with a written application from a property owner to Lantmäteriet. 3D properties are formed and reformed with a cadastral procedure. There are rules about suitability and special regulations. The cadastral surveyor have contact with the property owners, have discussions with the municipality and other relevant authorities. The cadastral surveyor conduct necessary research, concerning legislation and older cadastral acts etc. The applicant's and other interested parties' rights are checked. The size and type of the involved real properties, easements and other rights and joint properties are investigated. Existing approved land use plans and other regulations affecting the use of land are also checked. If there are mortgages that affect the involved real properties, it may be necessary to take measures.



Sometimes a formal meeting with the interested parties is held to inform about the procedure, legislation, let property owners bring claims, give them an opportunity to discuss with the surveyor and each other, negotiate and reach agreements and to present a draft of the final decision.

It is often necessary to inspect the area to demarcate and survey new boundaries before making the cadastral plan. Sometimes also appraisal or other investigations has to be done. The cadastral surveyor writes all necessary documents (usually Cadastral Plan, Description and Record) and decides in the case. The cadastral plan shows new, changed and removed properties, easements and boundaries. All new boundary marks have to have coordinates and distances between the marks. The cadastral description describes changes on all of the involved properties, for example acreage change and new, changed or removed easements. The cadastral record describes the whole cadastral procedure, the application, research made by the cadastral surveyor, the reasons for the decisions and the decisions made by the cadastral surveyor and information about how to appeal. Part of the decision is for example when the construction shall be ready if it is not an existing construction or building.

The involved parties can appeal the orders within four week from the day of decision. When the procedure gains legal force it gets registered in the Real Property Register and in the Digital Cadastral Index map. A cadastral procedure is a legally secure procedure in which all parties have an opportunity to participate.

## **5.2 General regulations**

New or changed properties have to be suitable for their purpose long term.

The cadastral surveyor is responsible for the basis of the decision and therefore that the questions about rights (easements etc.) are solved. Property formation have to be in accordance with existing plans and regulations. Public and private interests have to be considered.

## **5.3 Special regulations**

In addition to the general rules, some special regulations are also applied to 3D properties.

“A three-dimensional property unit or a three-dimensional property space may be formed or re-formed only if it is clear that this measure is more appropriate than other measures for achieving the purpose intended.”

Real Property Formation Act (1970:988) (RPFA) Chap. 3. 1 §.

A 3D property shall include a building or other construction of part thereof. It has to be ensured rights needed to be used in an appropriate way. If the property unit is intended for housing purposes it has to consist of at least 3 apartments. If there is no building or construction erected property formation is permitted if it is necessary in order to secure the financing or erection of the facility, and the property unit can be expected to be used for its purpose within the near future. The cadastral authority decides the time. If the building is not constructed or if it is destroyed the 3D property returns to the ground property. The special regulations apply also for forming or re-forming 3D property spaces. (RPFA Chap. 3. 1 a §)



For ownership apartments some extra rules apply:

It is only allowed to form ownership apartments if: it is a united unit of at least three ownership apartments, and the apartment area has not been used as a residential apartment during the last eight years. This means that ownership apartments only can be formed at new production of residential houses and when commercial or office premises are rebuilt to residential apartments. It should also be specially considered if a joint facility should be established according to the joint facility act. (RPFA Chap. 3. 1 b §)

#### **5.4 Planning regulations**

The building and planning act is not changed. Detailed development plans usually regulate the permitted use of the properties, not the division into property units. New detailed development plans are often made for three dimensions but old property formation plans can be a problem.

#### **5.5 Rules concerning the rights of neighbours**

Common rules concerning the rights of neighbours and rules about environment protection are also applied to 3D properties. For example access to neighbor property for construction work. There are also rules about protection against insufficient maintenance or not insignificant damage.

#### **5.6 Cooperation within the building**

Rights shall be created when needed. The property unit shall be assured of the rights necessary in order for its appropriate use to be possible. This can be done in different ways, for example by forming easements according to the Real Property Formation Act, or establishing joint facilities according to the joint facilities act. Funding is needed to ensure maintenance and renewal of joint facilities.

A joint facility can be established when several real property owners wish to jointly build or use a facility. It could for example be a road, a sewerage system, a broadband network, a facade or a roof. The construction, management and maintenance charges are regulated between the real properties through a participatory share. Note that it is the real properties and not the real property owners personally that are attached. Management is carried out through a part-owner management committee, which requires that part-owners are in agreement, or through a joint property association.

#### **5.7 Boundaries for the 3D property**

There are no specific regulations concerning how to specify the boundaries of the 3D property. If setting out and marking the boundaries can not be done in a suitable way, the boundaries shall be described with sufficient clarity on a cadastral survey map and in the cadastral records (description). (RPFA 4 Chapter 27 §) The boundaries are usually defined through the existing facility or building permit plan.

#### **5.8 Real property register**

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The Real Property Register is the official register that contains information about real property in Sweden. The Real Property Register is made up of five parts; a general part, an address, a part building part, a tax assessment and a registration of ownership part. Lantmäteriet holds the register.

In the written part of the register 3D property spaces are explained in this way: Norr 1:4 “with 3D property space” meaning 3D property that hollows Norr 1:2. Norr 1:2 “hollowed by 3D property space” meaning traditional property that is hollowed by Norr 1:4. In the digital cadastral index map, the same 3D property space is visualized with hatching and mark see figure 7 and 8. Figure 6 is a simplified example of how a cadastral description could be.

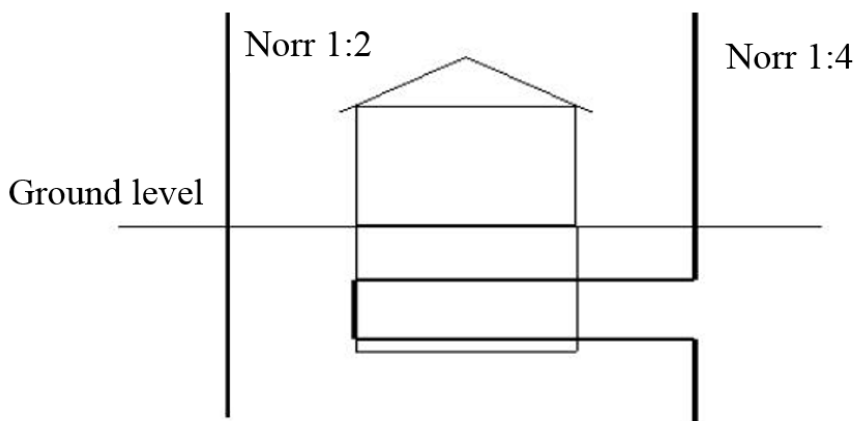


Figure 6: Cadastral description  
Source: Lantmäteriet

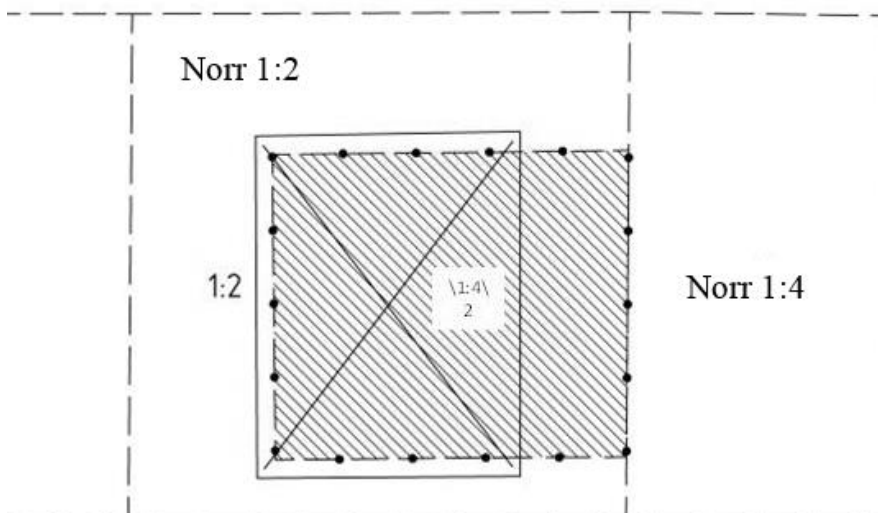


Figure 7: Digital cadastral index map  
Source: Lantmäteriet

Today 3D properties are only visualized in the register map with hatching and mark (see example in figure 7 and 8) but on longer term the plan is to have also horizontal and vertical information in the register map.

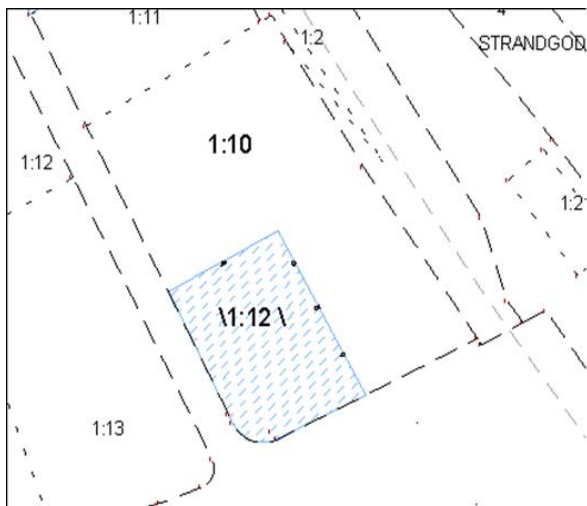


Figure 8: 3D property 1:12 in the cadastral index map  
Source: Lantmäteriet

## 6. 3D PROPERTIES IN SWEDEN SINCE 2004

### 6.1 Statistics from Lantmäteriet 2016

To increase the production of residential properties and construction in general, the possibility to form properties delimited both horizontally and vertically was created in year 2004. This enabled the combination of commercial and residential properties. In year 2009 ownership apartments was introduced to enable more people to own their own housing. (Lantmäteriet, 2017)

During 2016 Lantmäteriet has dealt with 11 3D property cases, which has resulted in 14 new property formations. Within the municipal cadastral authorities have formed 50 3D properties in 45 cases. Totally 56 cadastral procedures was finished in 2016, where it totally was formed 64 3D properties. In Sweden there are now totally 827 formed 3D properties. In 2016 Lantmäteriet has formed 17 ownership apartment properties in three cases. Within the municipal cadastral authorities 35 ownership apartments has been formed in five cases. In Sweden there are a total of 1066 ownership apartments formed. (Lantmäteriet, 2017)

The number of 3D properties in Sweden has increased from 49 in year 2005, 366 year 2010, 455 year 2011, 539 year 2012 to 611 year 2013 (all numbers from 31 December each year). (Lantmäteriet, 2015)

### 6.2 Ownership apartments

In Sweden apartments are normally provided with tenancy (59 %) or tenant ownership (41 %) (Statistics Sweden, 2015). Ownership apartments have not been a great success so far, about 1000 units (Lantmäteriet, 2017) have been formed since 2009. This may be because of the strong tradition of tenant ownership in Sweden and that existing residential apartments can not be

reformed to ownership apartments. There has also been an insecurity from banks about mortgage. In Norway and Denmark the ownership form for apartments is already established, while in Sweden the concentration of ownership apartments are largest in the county Skåne (in the south, with the city of Malmö), and Västra Götaland (in the west, with the city of Gothenburg). (Lantmäteriet, 2015)

### **6.3 Follow up 2005 - 2015**

After 10 years with 3D properties (in a follow up from Lantmäteriet year 2015), they have become natural in the larger cities of Sweden despite a slow start. In the countryside they are still an odd phenomena. In the capital Stockholm 3D property formation have become everyday life for the municipality, which are thinking in three dimensions already in the phase of detailed planning and in the work of the land development office. There are different reasons for forming 3D properties, often it is to make the management more efficient, so that a residential company does not need to work with business premises, which needs other competence. Another reasons for 3D property formation is to finance a new construction. It can be easier for two property owners in one building to get mortgage. But subdivisions of existing buildings can be complicated. (Lantmäteriet, 2015)

In Malmö, the third largest town in Sweden, there is great variety of the amount of 3D property formation procedures handled. About half of the cases are smaller cases, for example to subdivide a garage underground. The rest are very large, for example concerning a shopping mall or a complex combination of concert hall, hotel, conference center, residential units and offices. Large projects can be very complex with underground garage, retail premises, residential apartments or townhouses on the top. All properties will be dependent on common pipes, elevators and areas that are connected. There is large potential for 3D properties when new constructions are made, for example to build on top of existing properties. (Lantmäteriet, 2015)

Outside the regions of Sweden's three biggest cities, Stockholm, Gothenburg and Malmö, there are few traces of 10 years of 3D properties. In the county of Dalarna there are very few 3D properties, some are located in the town Borlänge and one is a newly constructed apartment block with residential and commercial units. In the whole county of Dalarna there are 8 3D properties, in Örebro county 10, in Norrbotten 17. This can be compared with Stockholm county with 232 3D properties and 125 in Västra Götaland county. When it comes to ownership apartments the situation is a bit different, for example in Stockholm county there where 26 ownership apartments in year 2014, but 200 in Skåne county, 342 in Västra Götalands county, 64 in Västernorrland county and 61 in Västmanland county. Several counties had zero ownership apartments (Södermanland, Gotland, Blekinge, Värmland, Örebro, Dalarna, Norrbotten). (Lantmäteriet, 2015)

Under Stockholm a new tunnel for commuter trains are built (Citybanan), consisting of four 3D properties. This has large advantages compared to a two-dimensional solution with easements. The ownership is clearer, and is decided in both plan, section and profile. It has been easier to handle the affected site leaseholds, and the management will be easier when it is clear who the owner is and there is no need to interpret easements. (Lantmäteriet, 2015)

## **7. CONCLUDING REMARKS**

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In Sweden 3D property formation has mostly been used in or near the larger cities. Even in smaller towns and in the country side 3D property formation gives opportunities for a more efficient use of properties which have different use in different levels.

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## BIOGRAPHICAL NOTES

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