

3D PROPERTY IN SWEDEN

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ABSTRACT

Three-dimensional (3D) property formation has been possible in Sweden since 2004 and in 2009 apartment ownership was added. The aim of this paper is to describe the system for 3D property in Sweden, the legislation and other rules regulating this form of property and how it is used.

3D property is defined as a property unit, which in its entirety is delimited both horizontally and vertically. It must relate to built constructions or other facilities and can be used to delimit and separate different facilities or floors within a building or in the ground. The apartment ownership form of 3D property is an apartment unit, which is a three-dimensional property unit intended to contain nothing but one single residential apartment.

The same regulations as for traditional 2D property will apply also to the 3D property, with only a few special regulations added. 3D property may only be formed if this solution is more suitable than other measures. The property must be provided with the additional rights that are needed for its appropriate use. An apartment unit can only be formed for accommodation purposes and in new buildings, or buildings that were not used for accommodation during eight years.

The Swedish legislation on 3D property is not very detailed in the sense that it does not regulate e.g. the location of boundaries between property units or forms of co-operation to provide rights of access to the common parts of the building, which means that such questions must be solved in the property formation procedure. The main forms of co-operation are joint facilities and easements. The joint facility is usually managed by an association formed by the owners.

During the first years of 3D property legislation, the interest in forming such properties has not been as great as was expected, although the number is increasing now when there is more awareness of the possibility and certain questions concerning management, co-ordination, etc. have been solved. As of October 2011, a total number of approximately 450 independent 3D property and 500 apartment units have been registered. The majority of these units are of the building type, while 3D properties for the purpose of rock cavities, tunnels, bridges or other facilities are less frequent.

The 3D property legislation has been working well so far and only minor changes are considered. More knowledge, awareness and experience of the building industry, the public and the cadastral authorities will probably help to promote the formation of 3D properties in the future.

Key words: 3D property, 3D cadastre, Sweden

1 INTRODUCTION

Three-dimensional (3D) property formation has been possible in Sweden since 2004. It is thus a rather new phenomenon. However, it has been investigated and required by the building industry for a long time. Since the introduction, a new form of 3D property has also been added to the existing use, namely apartment ownership, which was introduced in 2009. Both forms are not yet that widely used, but they seem to be spreading. The aim of this paper is to describe the system

for 3D property in Sweden, the legislation and other rules regulating this form of property and how it is used.

1.1 Methodology

As a background and theoretical framework, the 3D property as a form of 3D property right and its characteristics is presented. A description is made of the Swedish 3D property form and the legislation regulating it, how it has developed and might develop in the future, followed by a study on how 3D property is used in Sweden.

Parts of this paper are based on studies that were made in order to investigate how 3D property formation has been used in Sweden during the first years of its existence. The Swedish mapping, cadastral and land registration authority (*Lantmäteriet*) made its own evaluation of the first years' application with proposal for amendments (*Lantmäteriet* 2007). Two students' theses were also carried out as studies of the application of 3D property formation during a few years in use (*Berglund and Persson* 2007 and *Danneby* 2007). An analysis of these results is made together with more recent statistics of the 3D properties formed so far, provided by *Lantmäteriet* in October 2011.

2 FORMS OF 3D PROPERTY RIGHTS

When discussing 3D property rights, there does not seem to exist any internationally valid definition of 3D property (see e.g. *Paasch and Paulsson* 2011), but it usually refers to real property that is legally delimited both horizontally and vertically (*Paulsson* 2007, p. 31). However, it is possible to find a number of different forms of 3D property rights when searching internationally¹. Independent 3D property can be found in several countries, such as Australia and Canada, but it is not as common as the condominium type. The independent 3D property type refers to a volume of space that is subdivided and separated from the rest of the property. Often it is a larger unit, including several apartments or offices, or used for facilities and infrastructure, such as tunnels.

An internationally more common type of 3D property is the condominium, or apartment ownership, which we can find in many European countries, but also in Australia, Canada, South America and other parts of the world. It is usually well defined and consists of three components, namely the ownership right to a part of a building, a share in the common property and membership in the owners' association. Most commonly, this type is used to subdivide a building into several apartment units, which are each owned by separate owners. The two main ownership types for condominiums are the condominium ownership model and the condominium user right model. In the condominium ownership model the apartment is owned independently like a piece of land and is regarded as a real property unit, while the land and the common parts of the building are jointly owned. The condominium user right model means that the building and the surrounding grounds are owned jointly by the condominium owners and the owner only has a

¹ For a more detailed survey of these forms, see *Paulsson*, 2007.

certain share in the common property, and to which an exclusive right to use a specific condominium apartment in the building is connected.

Other forms of 3D property rights are more indirect ownership forms, including the tenant-ownership (a common form in Sweden), where a tenant-owner association owns the apartment building and the land on which it stands and the members will provide capital for the right to use the apartment, and the limited company system (a common form in Finland), where a joint stock company owns the property and the residents by acquiring shares in this company obtain the right to exclusively use one of the apartments of the building.

3 3D PROPERTY LEGISLATION IN SWEDEN

3.1 Development of the legislation

All land in Sweden, and in principle all water areas, is divided into property units or joint property units, all of which are recorded in the Swedish real property register. The property unit (*fastighet* in Swedish) is registered in the real property register with a unique registration designation. Provisions concerning real property and its division are found in *Jordabalken*, the Land Code (SFS 1970:994). Another important Act is *Fastighetsbildningslagen*, the Real Property Formation Act (SFS 1970:988), which regulates the formation of property units and changes in the property division. Changes to property units are normally made through a cadastral procedure, which results in an official decision by the cadastral authorities.

Before the introduction of 3D property into Swedish legislation, real property was equal to land. In theory, traditional (2D) ownership of real property is considered as reaching to the centre of the earth and upwards into the sky, but in practice only as far as is reasonably possible to use (Julstad and Ericsson 2001, p. 177). No one but the property owner is entitled to use the space above or below ground for the construction of different facilities, unless given this right (Julstad and Ericsson 2001, p. 177). The traditional property is thus only two-dimensionally delimited, but with a three-dimensional extent. Even though 3D property was introduced into Swedish legislation, the traditional 2D property, of course, still exists as the main property type. The 3D property form was only added as a complement.

A demand for 3D properties had existed in Sweden for quite some time, including the possibility of dividing ownership of buildings or space below ground, so that there may be units owned by separate parties (Julstad and Ericsson 2001, p. 174). The building industry in particular was requesting it, mainly for the possibility of providing more accommodations in cities by adding an additional storey on existing buildings, obtaining a more rational use of publicly owned land, but also for implementing major infrastructure projects (Eriksson 2005, p. 12).

Before the possibility of forming 3D property units was introduced as a new element in Swedish real property legislation, other means were used to cover the need of using space within a property unit, such as establishing joint facilities², granting easements, utility easements and

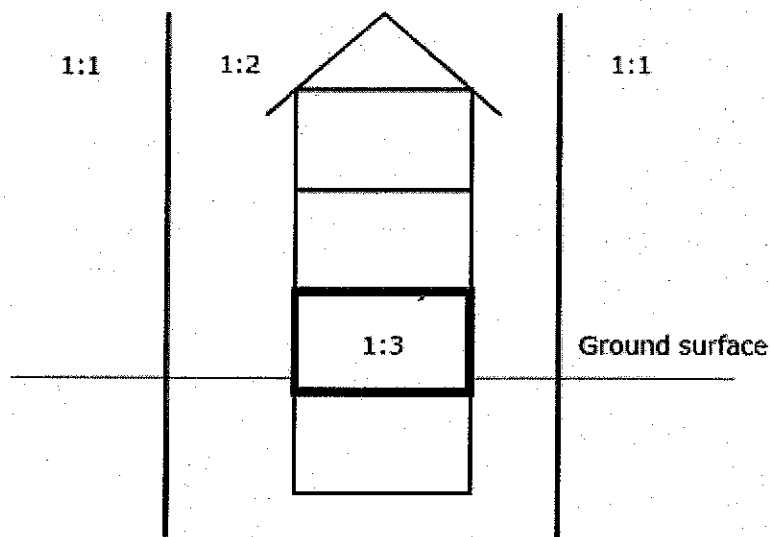
² A joint facility consists of joint property belonging to the two or more property units that are to take part in it, with a specific share for each property.

different kinds of leaseholds. However, there are certain disadvantages with these solutions. For example, the disadvantage with granting user rights for the purpose of using space is that rights of use constitute personal property and cannot be separately registered or mortgaged in Sweden as real property can be. (Julstad and Ericsson 2001, p. 174-179) The lack of possibilities to form 3D properties has also led to some solutions that are rather unusual and not always suitable for its purpose (Mattsson 2003).

A government committee started in 1994 to investigate the possibilities of solving problems with coordination of different kinds of activity within complicated building structures (Dir. 1994:82). The initial purpose was to include both 3D property formation and apartment ownership, but after supplementary directives the part on apartment ownership was excluded (Brattström 1999, p. 104). There were both legal and political reasons for not introducing apartment ownership in Sweden (Brattström 1999, p. 15, p. 44). When 3D property formation was introduced in Swedish legislation in 2004, it was regarded as the most important basic change in Swedish cadastral legislation during the past thirty years (Eriksson 2005, p. 7). The introduction of apartment ownership in 2009 added one more form of 3D property to the variety of such rights in the Swedish legislation. Internationally we can see the possibilities of several forms of 3D property rights, and the combination of them, and tenant-ownership is a form that already existed in Sweden since 1930 (SOU 2002:21, p. 46) and still is the main way to obtain individual rights to a specific apartment without any independent 3D property or condominium rights. It has been a common form of tenancy and is, in many respects, similar to apartment ownership.

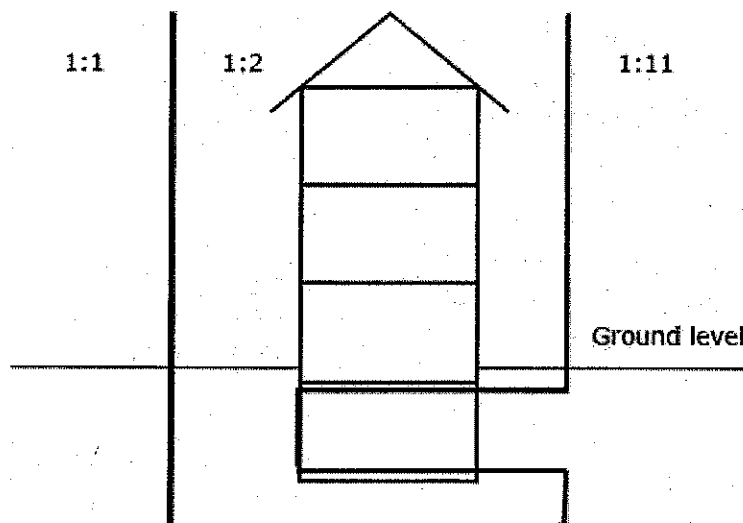
3.2 Legal characteristics

The 3D property is defined as a property unit, which in its entirety is delimited both horizontally and vertically (Swedish Land Code, Chap. 1, s. 1a). The 3D property units that are formed must relate to a built construction or other facility. The property unit does not have to consist of a whole building or facility, but can comprise only a part of it. It can be used to delimit and separate different facilities or floors within a building or in the ground also in depth and height. The Swedish 3D property, in comparison with certain other countries, may also extend over or under several ground parcels, and is thus not bound to be located within one two-dimensionally delimited property. An illustration of 3D property can be found in picture 1 below, where the 3D property unit 1:3 is located in a building within the space of the 2D property unit 1:2.



Picture 1. Example of 3D property (Eriksson and Adolfsson 2006, p. 7).

Three-dimensional property space is space that belongs to a property unit other than a 3D property, and which is delimited both horizontally and vertically (Swedish Land Code, Chap. 1, s. 1a). It contains thus a delimited space that is located within the space of another 2D property unit than to which it belongs. The difference from an actual 3D property unit is that it is not a separate property unit, but is included in another 2D property unit. An illustration of 3D property space can be found in picture 2 below, where 3D property space belonging to property unit 1:11 is located within property unit 1:2.

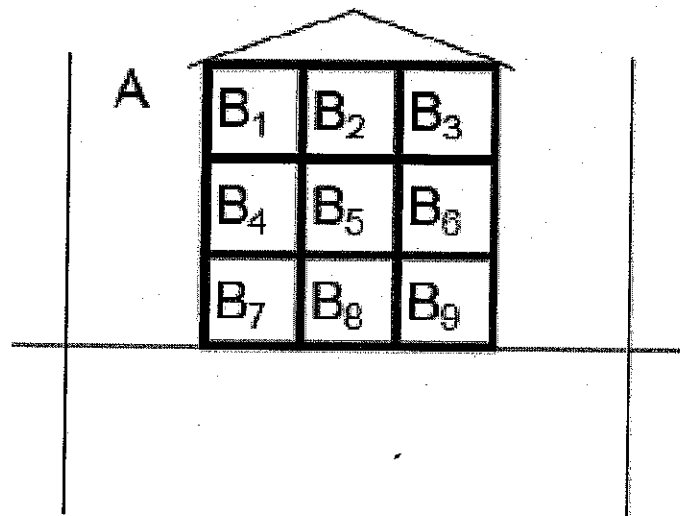


Picture 2. Example of 3D property space (Eriksson and Adolfsson 2006, p. 9).

The 3D property is, from a legal point of view, in principle the same as a traditional 2D property (Mattsson 2003), and the same regulations for property-related rights will apply also to the 3D property, e.g. the requirements for forming a property unit in the Real Property Formation Act.

There are only a few special regulations added for 3D properties, designed to reflect the particularities connected with that specific property type. One of these regulations is that a 3D property may only be formed if this solution is found more suitable than other measures for obtaining the purpose, which means e.g. that it is not a choice of the property owners what type of property they prefer. The 3D property formation must lead to better management of the construction or facilitate its financing or construction. Formation of a 3D property is only allowed if the 3D property accommodates, or is intended to accommodate, some kind of construction, such as a building or other facility or a part of the same. To avoid empty 3D property units in the air without any construction surrounding it, the 3D property may only be formed if the facility is already constructed, unless it is done to guarantee financing or the construction of the facility, but then only for a transition period (Swedish Real Property Formation Act Chap. 3, s. 1a). The 3D property unit must also be assured of the additional rights that are needed for its appropriate use (Swedish Real Property Formation Act, Chap. 3, s. 1a). This involves e.g. rights for access to the property and to different facilities needed for the functioning of the property, such as water and sewage, electricity, stairs, etc. If the 3D property is formed for residential purposes, it must comprise at least three apartment units (Swedish Real Property Formation Act, Chap. 3, s. 1a). This requirement was previously limited to five apartment units, but an amendment was made in connection with the introduction of apartment ownership.

The Swedish apartment ownership form of 3D property is an apartment unit, which is defined as a three-dimensional property unit intended to contain nothing but one single residential apartment (Swedish Land Code, Chap. 3, s. 1a). It is thus also a form of 3D property, but with the specific purpose of being used for just one apartment. An illustration of apartment ownership can be found in picture 3 below, where a building within the space of the 2D property unit A has been subdivided into apartment units B₁-B₉.



Picture 3. Example of apartment ownership (Eriksson and Jansson 2010, p. 7).

The Swedish apartment ownership form belongs to the condominium ownership model, in the sense that the occupant owns the actual part of the building that the apartment constitutes and, in

addition, has a share in the common property. Since it is a form of 3D property, it is in the same way regulated in the legislation for traditional 2D property units. In general, the rules for the 3D property are valid also for the apartment unit, but with some specific rules added. One of these rules is that such a property unit can only be formed for accommodation purposes. Apartment units for office or other purposes are thus not permitted, as is the case in some other countries. It may only be formed in new buildings, or buildings that were not used for accommodation during eight years before the property formation of the apartment units. There must also be at least three such apartment units closely connected to each other. Necessary additional rights must be provided, such as access and facilities, in the same way as it is required for other 3D property units.

When the 3D property unit is formed, the cadastral authority will evaluate whether all necessary conditions are fulfilled, both concerning general suitability and considering the special requirements that apply to 3D properties. The 3D property is then formed through one of the regular property formation measures, i.e. subdivision, partition, amalgamation or reallocation. It will be recorded in the real property register, defined by x and y co-ordinates, and z co-ordinates or other types of indication of its extent in the vertical dimension (Eriksson 2005, p. 7). In the register is also entered information on what 2D property unit or units that are affected by the procedure. Boundaries, rights and obligations are also determined in the property formation order. However, the Swedish legislation on 3D property is not very detailed in the sense that it does not give exact regulations, for example, on where the boundaries between property units are to be drawn or what forms for co-operation between property owners that should be used to give access to the common parts of the building. Even though there are guiding principles in the government bills and in the recommendations issued by *Lantmäteriet* on how to apply the law, the legislation is based on judgments regarding what is suitable in the specific case, which also gives the property owners the possibility of proposing solutions that would suit their individual needs.

Hence, it is not regulated exactly where to locate the boundary between two 3D properties, or between apartments and common property, but this has to be decided from case to case based on what is regarded as suitable. A solution that often is used is to locate the boundary to the centre of the wall and joists, and another solution is to make joint facilities for these structures. As a main rule the apartment unit should contain the space within the apartment and the surface of the separating structures. The boundaries can be described either with reference to walls, ceiling and floor, which is the usual case for buildings, or be fixed by x, y, and z coordinates for rock shelters, etc. (Eriksson 2005, p. 10). Although the 3D property must contain a construction of some sort, a certain amount of air around the building may also be included in the property to provide access for maintenance, or to allow for certain things protruding from the building, such as antennas, or for smaller future additions (Boverket 2004, p. 16).

If the needs of the 3D property unit, such as water and sewage pipes, stairs and load-bearing structural parts, are not fulfilled within the property unit, it has to be supplemented with facilities outside its own unit. These can either remain in private ownership within one of the property units involved, or be jointly owned by several property units if several property units will have a common need for a certain right. Like for the boundaries, the solutions for co-operation are not explicitly pointed out in the legislation and individual solutions will thus be decided in the property formation procedure. The main forms are joint facilities (*gemensamhetsanläggningar*), created under the Joint Facilities Act, and easements (*servitut*) (Proposition 2002/03:116, p. 141).

Cooperation between apartment units is preferably solved by the formation of a joint facility and/or a joint property unit³, which will include common property and facilities. The joint facility can be managed by an association formed by the owners, or by part-owner management⁴. The association management is the most common type of these two, especially for larger joint facilities. For the apartment unit, it is not regulated by law that an association must be created for the management in all cases, but if joint facilities or joint property units are formed, an association is compulsory, which means that this probably will be the solution in most of the cases.

The association also has the role of taking action against disturbances amongst the residents and creating clear rules for management. It is possible for the association to issue house rules for the use of the common property. The general rules for rights between neighbours are applicable also to 3D properties, but in addition there are some special rules concerning access to the adjacent property for repairs, construction work, etc. The law also provides protection from insufficient maintenance or damage from the adjacent property. If occupants of the apartment units cause disturbances to an extent that cannot be tolerated, the owner can be ordered under penalty that the disturbance should stop.

4 3D PROPERTY USE IN SWEDEN

During the first years after the introduction of the 3D property legislation, there was not as great an interest in forming such properties as was expected. Of the around 20 000 cadastral procedures carried out in Sweden each year, approximately 50 dealt with 3D property formation during the first year (Eriksson 2005, p. 7). Before the legislation was introduced, 200 3D property units were expected to be formed during the first year (Unknown author 2004). Some reasons for the slow start included hesitation about this new type of property and questions concerning management, co-ordination, etc. Usually, it will also take some time before new legislation is used, and examples of projects that work well are sometimes needed in order to get things started (Eriksson and Jansson 2010, p. 11). Since the process of development and construction of 3D properties did not begin until the legislation regulating it was in force, and since such development processes usually are long and complicated, it also contributed to the slow start of 3D property formation.

However, the number of 3D property units formed each year is increasing now, when more awareness of the significance and possibilities of the new 3D property legislation has developed and when building companies etc. have seen that this type of property formation actually is well-functioning. As of October 2011, a total number of 452 3D property units (the independent 3D property type) had been registered since the legislation was introduced, and 507 apartment units

³ A joint property unit is a delimited area of land or water, which is shared in fixed proportions between several property units (Julstad and Ericsson 2001, p. 175).

⁴ The association constitutes a legal person, where the frames of the management activities are defined by statutory provision, articles of association and decisions by meetings, and the operational costs are paid by each property owner. For part-owner management, all owners of the facility have to agree on all activities. (Julstad and Ericsson 2001, p. 178-179).

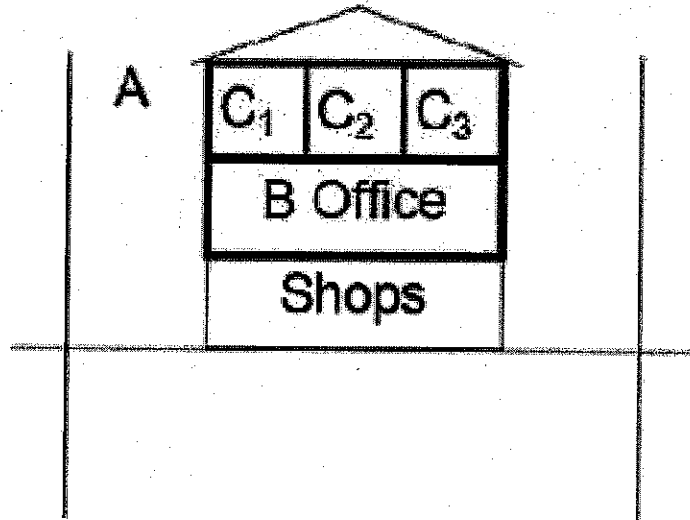
(according to statistics from *Lantmäteriet*). The formation of apartment units, just like the 3D property in the beginning, has also not yet been made to a great extent. As was stated in the government investigations concerning the introduction of apartment ownership in Sweden, the initial expectation for this form was that between 3 000 and 5 000 apartment units would be formed each year (SOU 2002:21, p. 225). The existing number of apartment units is concentrated to rather few projects and the first apartments units were mainly constructed in small-scale projects in smaller cities. Since the legislation is not that detailed in its regulations, some specific questions, such as insurance solutions and mortgage, were to be solved by the industry, but this was not done until after the introduction of the apartment ownership form. The financial crisis has also contributed to low housing production in general in Sweden during the first year of this legislation (Eriksson and Jansson 2010, p. 9). Another reason for the rather low number of apartment units is the already existing and well-established form of tenant-ownership, which has many similarities with apartment ownership.

In the cadastral registers, the 3D properties are divided into six different types of use. These types are rock cavity, bridge, building, tunnel, other facility and apartment unit. The usual case for the building category is a building with different types of use, but also more special forms such as power stations are included (*Lantmäteriet* 2007, p. 31). The rock cavity properties were formed for e.g. residential parking and storage room (Berglund and Persson 2007, p. 34). The other facility category is used for 3D properties with a mixture of types with no dominant type (*Lantmäteriet* 2007, p. 31). Up to date, a majority of the registered 3D property units are of the building type. Even though the possibility for it has not existed for such a long time, the apartment unit is a common type, due to the fact that usually several or many of them are formed at the same time within one building complex. 3D properties for the purpose of rock cavities, tunnels, bridges or other facilities are not that many. Bridges are also included in 3D property space. (*Lantmäteriet* 2007, p. 31)

Hence, 3D property formation has a number of different possibilities of for what purposes it can be used. Some needs were mentioned in the investigations preceding the legislation (Proposition 2002/03:116, p. 31-32). One of these needs relates to large complex projects with a need for extensive funding, where these properties and facilities are better subdivided into separate properties for management and financial reasons. This need is particularly striking in cities where there is more intensive use of land and space and which has increased in recent years. Where there is lack of space in urban areas, space below and above ground has to be used for different purposes and a good solution for this is to separate the ownership through 3D property formation. The instrument of 3D property formation is a valuable tool for solving complicated problems within building projects and can be used for various purposes, such as adding more floors to building in the cities, covering railway areas with buildings for housing and offices and using space below ground for garages and archives. It is also used for dividing the ownership within different communication areas, terminals, bridges, railway stations, etc. Space above railway tracks or public space can thus be used to construct residential buildings on.

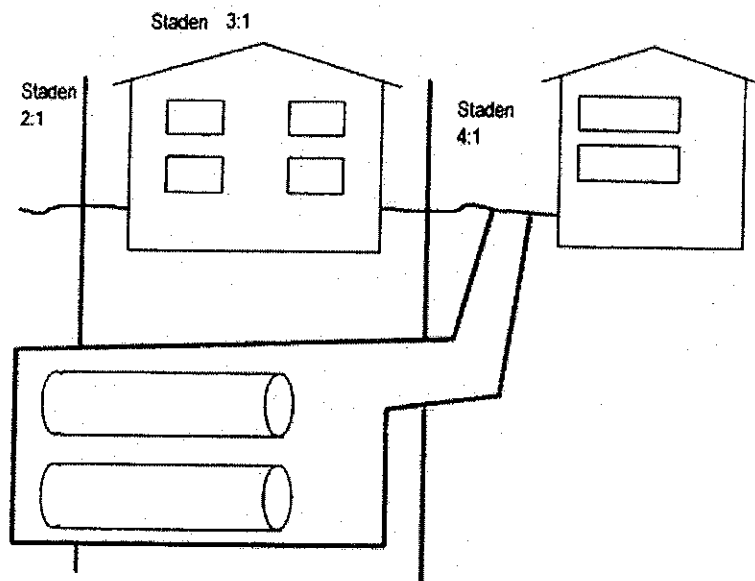
Buildings can be separated according to use, where different owners of properties for residential and commercial purposes are more specialised on managing just one type of property and not interested in owning parts with other types of use. It creates a possibility for tenant-owner associations to subdivide and sell as 3D property units the parts of the building that the members of the association do not have any interest in keeping, such as commercial premises. A main

purpose is to divide the ownership of different facilities and building parts for different activities within one building complex, such as forming one part for offices, one residential area, one part for retail, one for parking, etc. An illustration of this can be found in picture 4 below, where a building within the 2D property unit A is used for different types of properties. The top floor has been subdivided into apartment units C₁-C₃. The intermediate floor consists of a 3D property unit B for office purposes. The ground floor contains shops and remains within the 2D property A.



Picture 4. Example of mixed property ownership for different purposes within one building (Eriksson and Jansson 2010, p. 7).

The 3D property space can be used for delimiting space that is more suitable to add to another property unit than where it is located, for example a parking space under another property. 3D property formation is not just suited for densely built-up urban areas, but also for more rural areas. Communication purposes, such as road and railway tunnels and bridges are examples of purposes intended both for urban and rural areas. The Stockholm City lane, which will contain a new railway tunnel under Stockholm city, is a large project where four connected 3D property units for railway purposes are formed for the tunnels (Jarnestedt 2009, p. 2-3). Other possibilities are facilities underground, such as rock cavities that are not longer of any use for the owner of the land parcel. An illustration of 3D property formation for underground tunnels can be found in picture 5 below. The space containing the tunnels forms here a separate 3D property unit, which is situated within the ground space of the 2D property units 2:1, 3:1 and 4:1.



Picture 5. Example of 3D property formation for underground tunnels (SOU 1996:87, p. 136).

The first 3D property formation procedures mainly involved the subdivision of existing buildings into dwelling and commercial units (Eriksson 2005, p. 12). The two main purposes for 3D property formation that were found in the studies from 2007 were housing and parking/garage, but among the other purposes can be found sports, office, industry, business, business/garage, business/office, hotel, housing/office and culture (Berglund and Persson 2007, p. 35). The 3D property space has been used for purposes such as parking garages, basement and staff rooms, culverts, balconies and entrances (Lantmäteriet 2007, p. 34). In two thirds of the cases the 3D property formation was made in existing building constructions and in the remaining cases the 3D properties were formed before the actual building was constructed (Berglund and Persson 2007, p. 39).

There have been many cases of 3D property formation in Stockholm City and other major cities in Sweden, due to a shortage of available land there and the number of different interests to be coordinated within the same area. During the first 2.5 years after the introduction of the 3D property legislation in 2004 about 75% of the 3D properties or 3D property space was located in areas with strong pressure for development (Danneby 2007, p. 22), and 42% were located in the two largest cities in Sweden, Stockholm and Gothenburg (Lantmäteriet 2007, p. 27). There are, however, examples from all over the country, from the very north to the very south of Sweden (Lantmäteriet 2007, p. 26). The geographical distribution corresponds to a large extent to the distribution of the population (Danneby 2007, p. 24). There are only apartment units in some parts of Sweden so far (statistics from *Lantmäteriet*). The first apartment units that were formed were mainly small projects outside the larger cities, but now they are also introduced in the larger cities, where the building development projects usually have a longer implementation time.

When it comes to co-operation between property units, the use of easements is a rather common method. In one of the studies, easements were created mainly for the purposes of communication, access, pipes, space, facilities, building parts and land, of which communication and access were the most common ones (Danneby 2007, p. 42). The number of easements can vary up to 25-30

easements for one 3D property (Berglund and Persson 2007, p. 41). The use of joint facilities was not as common in the studied cases, but it still existed. Pipes were the most common purpose in the study for which joint facilities were created (Danneby 2007, p. 38).

5 CONCLUSIONS AND FUTURE DEVELOPMENT

During the first years of 3D property use, the legislation has been working well (Lantmäteriet 2007), but the development has not been as rapid as predicted. As mentioned, there are several reasons for this, but they are mainly not connected with problems concerning existing legislation. What can be criticized in the legislation is, perhaps, that it is not as detailed as in many other countries, leaving many decisions to be decided in the cadastral procedure, and implementation and practical details by the industry, a development which has taken some time after the actual introduction of the legislation. Another reason is the restrictions in the legislation. As mentioned, 3D property is an alternative method that should be used if no other methods are more suitable. The restriction for the apartment unit that it is not allowed to form such property within existing residential buildings will now be investigated by the government and it might thus be changed in the future. More knowledge, awareness and experience of the building industry, the public, and to some extent the cadastral authorities will probably also help to promote the formation of 3D properties in the future.

Even though the legislation is working well, it might be expected that in time it will have to be amended and further developed due to changes in society, as has been the case in other countries where 3D property legislation has existed for a longer time (see e.g. Paulsson 2007). However, at present there seems to be a well-functioning system for 3D property in Sweden.

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