

Malaysian 3D Property Legislation: A Preliminary Approach

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Abstract. Malaysian land administration provides a variety of rights, depending on the traditions of the country but the legacy cadastre system and land law are still using 2D geometry in legal and law expression (2D legislation) for land and property tenure and not prepared in 3D property legislation. These entire binding and legal document do not give enough 3D property legislation information for 3D property in Malaysia.

This paper describes the overview of cadastre system for 3D purpose and the situation in Malaysia. Some cases on 3D property will be illustrated concerning the 3D property legislation in Malaysia. Throughout the paper is become clear that quite a lot of study will be needed to realise the 3D property legislation for 3D property in Malaysia.

Keywords: land administration, 3D, legislation, cadastre, property

1 Introduction

A systematic record of lands matters involving registration of the details of transaction such as transfer of land and interest, lease, charge, releasing of easement and change of condition of land is very important in the land administration, planning and development of land. As stated in ECE/HBP/96 (1996), land administration consists of Cadastral Survey and Mapping Registration System, and Land Registration System. Both systems contain different sets of records about land. These two systems are very important for the formation of a good cadastre system. A cadastre system is an information system consisting of a series of maps or plans showing the size and location of all land parcels together with text records that describe the attributes of the land. This 2D cadastre system is adopted by many countries in the world including Malaysia because the system provides essential

information about land and property such as ownership of the lot and land parcel for the country.

There is a need for a refined description of land because land is the most valuable resource for humans and it is the fundamental or base for all forms human activities. Land is the key to human needs as it is the source of shelter, labour, economy, business, food, finance and other resources as well as the basis for meeting the different kinds of societal needs of the community (Nordin, 2001). Without land, there would not be any human activities carry on in the world. This is due to the fact that land is both a physical commodity and an abstract concept of rights of ownership. However, depending on the jurisdiction, the definition of land may or may not include everything which is attached to it, such as building on the surface or vegetation growing on the land or minerals below the ground surface. A definition by Kaufmann (1999) mentioned that:

“As land is an important part of nature and the environment is the basis for nutrition, housing, energy production, resource exploitation, leisure activities, waste disposal, economic activities- in short for the maintenance and survival of humankind- cadastres are crucial aspect of sustainable development....”

One of the important issues with regards to land is the in adequacy of vacant land for development. There are many countries from all over the world including Malaysia who do have not enough vacant land on the ground surface to cater for the rapid development, particularly in big cities. In densely developed area and crowded cities, many of the real estate developments are either above or below the ground surface such as apartments and business complexes and engineering constructions which could be underground car parks, skywalks and buildings above road reserve. These new types of development not listed in the conventional developments are in need of a proper registration in land registry and cadastre system for 3D purpose. This is to make sure owners of those properties not subscribed by the conventional definition of ownership, could fully enjoy the ownership rights of their real estate properties. This is crucial to establish a more secure ownership and mapping facilities of real estate properties and objects in the cadastre system and land registry. Thus, more effort, attention and interest have to be put in to formalise the land registration meant for 3D purposes. Furthermore, the current cadastre system is not able to handle the registration of 3D property within the legislation and this problem in the system needs to be addressed and taken into consideration to avoid complications in the land registry system.

2 3D Cadastre & 3D Property

At present, there is a lot of development taking place that is not covered in the 2D cadastre system as there is a lot of interest in utilising land and space above and below the ground surface. Thus, there is a necessity to find a suitable cadastre solution for multilayer constructions. Therefore, the proposed 3D cadastre system should be able

to represent the actual real world situation and not the surface parcel. The traditional cadastre system and land registry based on 2D have not been prepared to register these utilisation of land in a 3D situation. The implication of these new ways of land use due to a high demand for ground space means that, there must be changes made to the 2D paradigm in law and legal aspects.

Today's property situations often occur whereby the third dimension play a significant role in determining the legal status of such property, especially in areas with multilayer use of space.

Examples of such property unit can be found in the following situations:

- a. Above surface constructions, such as apartments, constructions on top of each other, overhead infrastructure and utilities & Use of air space.
- b. Below surface constructions, such as underground constructions, infrastructure and utilities, region of polluted area & geological activities

3 Malaysia Situation

Peninsular Malaysia (hereinafter called as "Malaysia") land administration is traditionally based on the Malaysian land law and this provides a variety of rights that are dependent on the traditions of the country. In Malaysia, land use rights are often based on occupation of land over a long period and this is defined in the written law or set by traditions. As the context of land use is no longer confined to the conventional definitions, the application of Malaysian legalistic land law of Malaysian Cadastre System for property which consists of Land Registration System and Cadastral Survey and Mapping System using 2D geometry in legal and law expression for land and property tenure is no longer adequate.

Traditionally, the Malaysian Cadastre System has different structures and authorisations whereby the jurisdiction for land registration is under the administration of the state government while cadastral survey and mapping is under the federal government. Both the systems deals with properties located on and above the surface level, as well as the ones below the surface level. Ahmad-Nasruddin and Abdul-Rahman (2006) has highlighted that each country has its own authority that is responsible for managing and monitoring the cadastre system and the cadastral objects can be either lot, or land parcel, or parcel which is held under separate Land Registry, i.e. strata title. However, the system practised in Malaysia is the parcel bounded system with a 2D nature only provides essential land and property information about the lots and land parcels (Hassan, 2008). This, however, does not include the 3D object registration and 3D rights as this current system only apply to the ordinary Land Administration System. For example, the digital cadastral map, registry title, content survey and mapping as well as textual record information about lots or land parcels are still using 2D natural for registration of 3D object rights is not comprehensive enough for 3D objects.

Furthermore, the utilisation of land for various purposes in Malaysia has not followed the process of the ideal Malaysian Cadastre System. It would be more

practical if the Malaysian Cadastre System includes relevant information such as foundation of buildings, underground utilities, skywalks, using of air space, transportation services, and underground construction or whenever a situation arises for the need of exploiting a lot or land parcel for different activities.

3.1 Related Legal Document

The present scenario is that the rights, restrictions and responsibilities of the proprietor of the surface parcel shall also apply to the proprietor of properties above and below the ground surface, however, it have not been fully regulated and legalised by the Malaysian Cadastre System. In order to comprehend further these related matters, the legal documents which are related to lot, land parcel and land registry such as Registry Title, Land Office Title, Cadastral Map, so-called Certified Plan (CP), National Land code, 1965 (Act 56) (NLC 1965), Strata Title Act 1985 (Act 318) (STA 1985), Survey Regulation 1976 (Peninsular Malaysia) (SRG 1976), Federal Constitution 1957, Survey and Mapping Director General Secular (PKPUP), Uniform Building By-Laws 1984, Street, Drainage and Building Act 1957, Building and Common Property (Maintenance and Management) Act 2007, Town and Country Planning Act 1976, Local Government Act 1976 and States Land Code, Act and Rule should be used to make the legislation feasible for all proprietors on the surface, above and below the ground surface.

3.2 Cadastre Registration System in Malaysia

There are two systems in the Malaysian Cadastre System namely Cadastral Database Management System (CDMS) and Computerised Land Registration System (CLRS) operated by the Department of Survey and Mapping Malaysia (DSMM), State Land and Mines Office (PTG) as well as District Land Office (PTD) but these two systems work separately in each organisation having different legal aspects which are still in 2D nature.

There is a rising demand for information based on 3D as it would be very useful to reveal explicit evidence that is related to ownership rights of a particular property in the real world. For example, strata parcel areas are based on 2D area after a final cadastral survey has been completed and it is then compared with the area given in architect plan and engineer plan. The information obtained does not give any volume information for strata objects. Traditionally, the value of strata area is based on parcel area (length x wide) without volume (height) calculation and the price of the parcel unit is based on the specific area and not the volume.

Thus, the existing cadastre needs to be extended, in order to reflect that situation. Abdul-Rahman (2006) asserted that:

“..., Current cadastre system in Malaysia has to be extended to three-dimensional (3D) system on the existing system is purely 2D and hardly able to provide with good, better and meaningful information”

3.3 3D Property Cases in Malaysia

In Malaysia, public road i.e. state roads and municipal roads belong to state government while federal roads belong to federal government. When a private property is constructed above the public road, the cadastre system should recognise two or more different owners at the same time. There are a few cases for 3D property above the ground surface of public road in Malaysia.

3.3.1 Building Over a Public Road

The most characteristic cases of private properties construct above public properties are the roads, as shown in Figure 1.



Fig. 1. Multilayer shop parcels above road reserve

3.3.2 Transportation Network Above Public Road

The most characteristic cases of public properties construct above public properties are the monorail, light rail train rail line and their station, as shown in Figure 2.



Fig. 2. Monorail

3.3.3 Overlapping Private Properties

The most characteristic cases of private properties construct above private properties are the townhouse type houses and shop houses as shown in Figure 3.



Fig. 3. Mix shop houses at below and residential houses at above

4 Issues Regarding 3D Property

The basic land code in land administration adopted by many countries includes special legislation governing the operation of the cadastre system and land registration system and the definition with regards to the nature of land and real property. Every country's land administration is aimed at ensuring an undisturbed performance of the ownership rights. Thus, the ability to fulfil this task demonstrates the extent of society's ability to organise the legal base for land ownership. In this regard, legal relations must be precisely defined in land law, and also in other laws which are related to a lot, parcel and land parcel as well as property that is above ground surface. As pointed out by Ossko (2005), multilayer objects property has its own Unique Parcel Identifier (UPI) and physical description which make it possible for the property to be registered within the land registry and cadastre system.

4.1 The Legal Context

In the present land registry system, there are difficulties to register the ownership and other rights of real estate objects above or below the ground surface. The implication is that public facilities such as roads, streets etc. as well as objects that have been constructed above or below the ground surface of public domains have not been included as a part of the land registry. Some examples of the developments are public utilities, underground tunnels, garages, metro stations, shopping complexes, business centres, skywalks, using of air space as well as the mining and marine rights. Furthermore, the delineation of surface parcels, spatial sub parcels and spatial parcels that are vertically layered require a spatial description that should include data defining the vertical and horizontal boundaries between these units.

4.2 Problem and Constraints in Current Malaysian Cadastre System for 3D Property

The current 2D Malaysian Cadastre System is insufficient to meet the changes brought about by the booming yet complex high density developments in urban areas. Furthermore, there is a growing interest and need for using space above or below the ground surface for construction real estate property objects especially in metropolitan areas. In such developments, some of the buildings have been built on top of each other or crossing boundary edge (Hassan, 2008; Hassan, Abdul-Rahman and Stoter, 2006; Chong, 2006 and Ossko, 2005), but the legal changes in the land registry has not been changed in accordance with the complexity of the developments that are taking place. The growing request for changes mentioned earlier is bogged by constraints and difficulties to register the ownership of real estate properties created above or below ground surface. These problems need to be addressed and there is a need for a legal registration status of such property, so that one would be able to define and manage the juridical situation satisfactorily. Thus, information based on 3D is becoming absolutely necessary for land administration in Malaysia.

The Malaysia legal cadastre system and land law are still using 2D legal and law expression for land and property tenure, for example in Strata Title Act 1985 (Act 318) and National Land Code 1965 (Act 56). As there is a growing need for ground space, the 2D paradigm in law and legal should be changed. But, the question is how does one determine and define the current legal practices meant for complex development situations. There is also the issue that the traditional cadastre maps, survey regulation and land registry which are still in 2D are no longer technically, legally and organisationally adequate to cater for these 3D situations.

The current legal registration process for 3D property in Malaysia is very slow. This is due to the problems associated with the legal registration process for 3D property. There is a possibility that they can be solved by adopting the approaches presented in Mariappan (2005), where he underlined the organisational, technical, data, legal and different working procedures and practices issues associated with the integration of the various systems and organisations. Therefore, the comprehensive decision making usually is more difficult because there are multi authorities involved.

The increasing number of multi- storeys and underground properties as well as other types of constructions has led to the urgency of implementing a 3D cadastre in Malaysia. Thus, this study on the institutional issue is urgently needed to be in tandem with the technical development issues. Furthermore, the implementation of a 3D cadastre for 3D property is not easy due to the different database compiled by the different organisations involved. Besides that the legal, survey and mapping part is also governed by different laws which makes the implementation of a 3D cadastre for 3D property much more complicated and this will be one of the aspects to discussed and debated further in this research.

4.3 Purpose of 3D Property Legislation

The main obstacle in adopting 3D cadastre is that the legal and organisational systems are slow to change. Some countries have made progress in this respect and recent laws, especially from Northern European, have made it possible to register properties in 3D situation. However, none of these laws defines 3D cadastre clearly because the law only accepts that volume parcel can be established both below and above the main surface parcel (Valstad, 2006). Because of these, we have to find elements and contexts which are common in different systems by creating new guidelines even through changing the law for those countries facing the problem of 3D registration in cadastres and land registries.

In the last couple of decades, there has been a demand in urban areas for dividing ownership in buildings so that different owners can own different parts or can own a delimited space below ground, a demand which the existing legislation is unable to amend (Julstad, 1994 cited in Julstad and Ericsson, 2001). Questions and problems associated with 3D property ownership will arise whereby one part is used for commercial activities, e.g. shops and another part of the same building is used for housing purposes such as service apartments in Malaysia. In addition, use of underground surface for different types of activity, which have no connection with the use of the ground above surface, will complicate matters further. According to Onsrud (2003), land below the level of any surface property is call 'no man's land'. The issue at hand is that these tunnels, storage halls or other underground constructions are made without subdivision and formal registration in the cadastre and in the land registry. In fact, in most cases, the above or underground constructions have been considered an extension and are enclosed to the adjacent surface land and considered as cross boundaries objects.

Different countries have different solutions to solve the registration of 3D ownership of volumetric parcels, but in most cases the actual parcel is not registered as a separate entity, but is linked to the surface parcel in a descriptive way (Valstad, 2006). Thus, this solution to the registration is not sufficient to satisfy the 3D structures owners because volumetric parcels might not be the same as the surface parcel. Furthermore, the owners of the 3D structures want their ownership registered in a proper way as constructions above or below the ground surface. The need for a change in the law is of course due to the demand for 3D property use, coupled with the impossibility of forming property units which are 3D defined (Julstad and

Ericsson, 2001). Hence, the first attempt should start from the legal registration of 3D property units in the cadastre system and land registry meanwhile underground tunnel, using of air space and others will follow suit.

Malaysia adopts a title registration system where the register contain info about the proprietor, encumbrances, express conditions, implied conditions, restrictions in interest, caveats and prohibited orders if any. However, not all imposed conditions and restrictions are stated clearly in the register as there are some that are provided by law and have to be complied by the proprietor. Meanwhile, the land register can be considered as the pillar of the record machinery in the Malaysian Registration System. The hardcopy land registry is now replaced by computerised land registry which enables the proprietor to transfer, lease and change the land or grant rights of easement.

The rights associated with this registration would be clear in the registry titles issued as well as that provided for under legislation. For example, Strata Title Act 1985 (Act 318) (Strata Title Act, 1985) allows land to be subdivided into parcels or land parcels based on the area occupied. Besides that in National Land Code 1965 (Act 56) (National Land Code, 1965), air space is permitted up to a maximum of 21 years only, and there are still a lot of arguments about the surface under different categories of land use, subdivision, partition, amalgamation as well, because all these are still in 2D nature. However, these arguments would clearly be different if they are used in the case of 3D property alienation, although the mode of registration being quite similar. It is important to note the fact that there is provision of volumetric parcel alienation, in particular for underground land alienation under the said legislation.

An example of the situation, this overlap multilayer construction causes interdependence among these objects which must be taken into account for the land management and cadastral survey of above and below the ground surface which should be included in the 3D cadastral registration. Furthermore, these construction are not necessary be uniformed and many of these are buildings or parcels built on top of the road reserve make the situation more complicated.

5 Questions Need to be Addressed

The current Malaysian Cadastral Survey and Mapping Registration System and Land Registration System are based on Strata Title Act 1985 (Act 318) (STA 1985) and National Land Code 1965 (Act 56) (NLC 1965). Although these two documents have provisions for the survey of any property on and above ground surface parcel in 3D situation but there are still using parcel area instead of volume as the basis for property dealings as well as delimited 3D property vertically respectively. Therefore, changes in the legal and organisational aspects enabling 3D cadastral survey and mapping as well as registration by Department of Survey and Mapping Malaysia, State Land and Mines Office and District Land Office are essential. The implications would mean that vertical extensions of ownership that have not been concretely established by law would need to be defined further.

In order to propose a comprehensive 3D property cadastre system in relation to the specific problems discussed earlier, this study seeks to answer the following major research questions and their sub-questions from legal and organisational aspects which is part of a 3D cadastre system:

- What are the problems from legal and organisational aspects in order to implement Malaysian Cadastre System for 3D property and how to address them?
 - What are the new 3D property regulations and practices information needed in STA 1985 and NLC 1965?
- What are the changes needed in the current cadastral and land practices in order to achieve the succession implementation of Malaysian Cadastre System for 3D property in Malaysia?
 - How could information about the new 3D property regulations and practices information be collected, structured and presented that would propose a 3D cadastre in Malaysia?
- What are the contents in the relevant legal documents that have to be amended in order to translate the legal and organisational expression from 2D to 3D for implementation of Malaysian Cadastre System for 3D property in Malaysia?
 - What kind of framework or criteria is needed to establish and implement these new legislations and how would it affect the cadastre practices of the 3D property?

6 Objectives and Methodology of Study

6.1 Objectives

In view of the Malaysian Cadastre System that is based on the 2D cadastre system, this research proposes that changes be made in the legislation of cadastral survey and mapping as well as registration of a 3D property. To realise this, the objectives of the research are:

- To review literature associated with the execution and application for feasibly the legal status of the various 3D property real estate objects.
- To establish the fundamental principles in the field of 3D property legislation, and study such existing legislation in Sweden, Norway, Denmark and the Netherlands that was matched the need of Malaysian Land Law.
- To investigate and make recommendations for changes, if necessary of the Strata Title Act 1985 (Act 318) and National Land Code 1965 (Act 56) that would facilitate the Malaysian Cadastre System practices.

6.2 Methodology of Study

In order to answer the research questions and achieve the research objectives, this study took a quantitative and qualitative approach that attempted to make recommendations to change the 2D legislation to 3D legislation for property above ground surface. The following research methodologies will be used and the research design took the following format (See Table 1).

Table 1. Research Design

Stage	Process	Related Information
1	Secondary sources	<u>Local</u> - Strata Title Act 1985 (Act 318) and National Land Code 1965 (Act 56). - Electronic Strata Module which consists of Strata Lodgement Module, Strata Verification Module and Electronic Strata Survey Module from the Department of Survey and Mapping Malaysia will be used as a technical reference.
		<u>Oversea</u> - Land Acts, Codes, Regulations, Rules, Ordinances and Seculars from Sweden, Norway, Denmark and the Netherlands.
	Analysis	Specific contents of above legal documents will be identified and studied.
	Analysis method	Content Analysis.
2	Design an instrument	Open-ended and close-ended Questionnaires. (Quantitative approach)
	Pilot study	
	Pilot the instrument and primary data collection	- Field survey. - Respondents from State Lands and Mines Office, State District Land Office, Department of Survey and Mapping Malaysia, Department of Director General of Lands and Mines Office and Licensed Land Surveyors from Peninsular Malaysia.
	Data analysis	The feedback from respondents will be evaluated and compared with secondary sources by looking into the legal aspects.
	Analysis method	Frequency Analysis and Average Index Analysis.
3	Further refine the instrument and final data collection	The results and analysis from the questionnaire survey process will be used to improve the initial recommendations through an open-ended unstructured interview sessions. (Qualitative approach)
	Data analysis	The final recommendations made in the content of legal documents mentioned will be tested and checked through in-person interviewing method.
	Analysis method	Descriptive Analysis.

7 Conclusions

This research will focus on 3D property legislation for multilayer objects on and above the ground surface in Malaysia. The research will focus on two types of legal documents. The legal documents are Strata Title Act 1985 (Act 318) and National Land Code 1965 (Act 56). These legal documents are chose because they require the inclusive of 3D into the current 2D cadastre system for 3D property on and above ground surface and they are directly involved in the registration and cadastral survey of the multilayer property on and above ground surface. Besides, the Electronic Strata Module is chose because it gives the 3D technical registration, cadastral survey and processing as well as field checking methods. As part of the study, an internship programme in Royal Institute of Technology (KTH) at Sweden will be undertaken. This is to study some Europe countries such as Sweden, Norway, Denmark and the Netherlands Land Acts, Codes, Regulations, Rules, Ordinances and Seculars because they have been practising 3D cadastre system since the year 2000. The content of study will include the definition, registration, cadastral survey and processing methods from these foreign countries and will be used as a legal reference that would help transform 2D local legal documents in applicable documents meant for 3D.

The Department of Survey and Mapping Malaysia (DSMM), State Lands and Mines Office (PTG), State District Land Office (PTD) and Licensed Land Surveyors (LLS) are chose because they are directly involved in the registration, cadastral survey and processing for multilayer properties on and above ground surface. This research would focus on the interviewees and respondents comprises of State Director/Registrar/Land Administrator from PTG and PTD as well as Chief Surveyor from State DSMM. Last but not least, the LLS who have the license and practice in Malaysia will also be the part of the interviewees and respondents of the research.

Finally, this research would only focus on 3D property legislation for multilayer objects on and above the ground surface but not below the ground surface in Malaysia because the existing law and guideline for stratum which under Part Five (A), Disposal of Underground Land, Section 92A to 92I (National Land Code, 1965) and Federal Lands and Mines Director General Secular (PKPTG/1, 2008) are already in existence. However, no new technical development will be carried out and performed since this research will be using Electronic Strata Module as the technical reference. These methodologies adopted are study of secondary data as the basis for developing the instrument to transform 2D legislation to 3D legislation. Finding and analysis from the study will be used to refine the instrument furthers.

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