

Making 3D Property Legislation Feasible in Malaysia

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Abstract – Land administration in Malaysia are based on National Land Code 1965, which consists of Land Registration and Cadastral Survey and Mapping Registration but the two system were put under separate organisation which then have different structures and authorisations. Land registration is under a State Government jurisdiction while cadastral survey and mapping is under Federal jurisdiction. Malaysian land administration provides a variety of rights, depending on the traditions of the country but the legalistic cadastre system and land law are still using 2D geometric in legal and law expression (2D legislation) for land and property tenure and not prepared in 3D property legislation. For example Survey Regulation (Peninsular Malaysia) 1976, Survey and Mapping Director General Secular, Strata Title Act 1985 (Act 318), National Land Code 1965 (Act 56) and so on. These entire binding and legal document do not give enough 3D property legislation information for 3D property in Malaysia.

This paper presents an existing institutional framework in Malaysia which explained how the seculars, regulation, act, code and others legal document related to cadastre system play an important role in land administration. This paper will then describe the importance of 3D cadastre and 3D property legislation. Some cases on 3D property will be illustrated concerning the 3D property legislation in Malaysia. The importance of the 3D property legislation will be highlighted especially for property above ground surface in Malaysia. Further, problems and constraints in current Malaysian Cadastre System for 3D property and the purpose of 3D property legislation will be discussed also in this paper.

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. Finally, conclusions and suggestions for future work are presented, in order to make the development of 3D property legislation feasible.

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 [1], 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.

2. THE CADASTRE SYSTEM FOR 3D PURPOSE

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 [2]. 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 [3] 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 inadequacy of vacant land for development. There are many countries from all over the world including Malaysia who do not have 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.

It is vital that everyone who is involved in land matter needs to have knowledge of the cadastre because it plays a very important role in Land Administration System where it should provide order and stability in society by creating security for everyone involved [4] that includes landowners, investors,

moneylenders, traders, dealers, and governments [1]. Furthermore, a good cadastre system in a country can lead to the stability of social, economic and environment management and development. There is a need to make changes to the present cadastre system in order to meet the changes in the modes of development as Valstard [5] highlighted the fact that traditionally, land has been described and registered into 2D and all cadastre systems of the world are in fact 2D nature.

2.1. 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. From an institutional perspective, land administration includes the formulation of land policy, the legislative framework, resource management, land administration arrangements, and land information management as well as entails organisational, i.e. both government and private initiatives.

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. THE SITUATION IN MALAYSIA

The cadastre system is adopted worldwide and Malaysia is one of the countries who adopted the system for its land management. 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 geometric in legal and law expression for land and property tenure is no longer adequate.

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. Legal documents related to 3D property in Malaysia

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, National Land code 1965 (Act 56), Strata Title Act 1985 (Act 318), Survey Regulation 1976 (Peninsular Malaysia), Federal Constitution 1957, Survey and Mapping Director General Secular, 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. The importance of 3D property legislation in Malaysia

Since late 1990s, the population of Malaysia has increased from approximately 21.80 million to 27.73 million in 2008 [6] and it is predicted to reach 31 million by 2020. Hence, an efficient 3D land use in real estate property especially for multilayer objects is directly linked to the socio-economic and environmental development in Malaysia. As highlighted by Forrai and Kirschner [7] who stated that the availability of land use for future further construction is both expensive and limited. 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 [8] 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 [4]. 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.

3.3. 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). The CDMS database store information about land attributes, spatial objects etc. while the CLRS database store land ownerships, land tenures etc., but these two systems work separately in each organisation having different legal aspects which are still in 2D nature. This means, there are no 3D object property rights as well as 3D cadastre rights within the CDMS and CLRS. Furthermore, it would be appropriate if these two systems could be incorporated for the registration form combining the present as well as advance and modern

technologies such as GIS, internet, web based and e-commerce applications for a better cadastre system.

Meanwhile, one of the three main organisations responsible for managing and maintaining the cadastre system in Malaysia such as the Department of Survey and Mapping Malaysia (DSMM) that deals with the cadastral survey and mapping is under the Federal Government. Their responsibilities include registration of cadastral objects, such as lots and land parcel boundaries, identification of location, size and dimension of the properties. These details are determined through a very accurate cadastral survey. Besides that, the organisation is also responsible for preparing, producing and managing the spatial data. On the other hand, the non spatial data, i.e. the land title registration is the responsibility of the State Land and Mines Office (PTG) and District Land Office (PTD) which are both under the State Government. Their duties also include ownership registration which is managed by the Registry Title and Land Office Title. Within this Malaysian Cadastre System, there are also many direct and indirect codes and acts as well as legal documents that relate to cadastral survey and mapping, and land registration for property ownership currently governing the land administration. All these issues need to be addressed and are important towards the implementation of a 3D cadastre for 3D property in Malaysia.

It is anticipated that for future urban developments, the alternatives to the land surface would be the space above and below the ground surface and the shallow underwater areas along the seashore which involves marine cadastral. Both, the above and below ground surface developments as well as marine development have increased in recent years. However, expensive and high costs of construction and the lack of legal and organisational aspects of right to property have always intimidated and made potential investors cautious.

3.4. 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.

3.4.1. Building over a public road

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



(a)



(b)



(c)

Figure 1: (a) Multilayer shop parcels above road reserve, (b) Skywalk above road reserve & (c) Balcony, bay window or structure above road reserve

3.4.2. Transportation network over a 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 2a, 2b & 2c.



(a)



(b)



(c)

Figure 2: (a) Monorail, (b) Light Rail Train & (c) Station above public road

3.4.3. Overlapping private properties

The most characteristic cases of private properties construct above private properties are the townhouse type houses and shop houses that probably do not apply for strata title under Strata Title Act, 1985, as shown in Figure 3a, 3b & 3c.



(a)



(b)



(c)

Figure 3: (a) & (b) Type of townhouse and (c) 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 [9], 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.

The complexity of land management is intertwined within the legal system. The law and legal system comprised of a complex set of rules that have been developed gradually and naturally within each society. This is to ensure order and maintain peaceful behaviour of its members and this is stated in ECE/HBP/96 [1] that there are statutory law, customary law and common law. Furthermore, this is supported by Ossko [9] who highlighted that due to certain legal constraints, especially legal ones will result in creating difficulties to register objects such as properties constructed above and below the ground surface within the traditional 2D cadastre system and land registry. This is due to the fact that the legal system was meant for 2D space.

In a real world situation, issues of legal and organisational meant for 2D cadastre are insufficient and would not be able to cope with the advanced development of the country especially information concerning 3D constructions and developments. This is in addition to the fact, that land use is becoming so intricate whereby different types of land use and properties are being placed in complicated 3D situations. Therefore, there is an urgency to develop and implement a 3D cadastre system that would fulfil the legal, organisational and technical aspects. This would ultimately be used as a means to solve problems associated with 3D complex situations. Based on the scenario discussed earlier, it shows that there are many issues associated with the legal and organisational aspects of problems associated with the 3D cadastre which need to be investigated further. This proposed new system must also take into account that 3D situations need a good system that must clearly reveal the drawbacks of real work situations [10, 11].

4.2. Problems 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 [4, 12, 13, 9], 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 traditional paper based method of CP and Registry Title conversion to digital based method of registration includes all maps and titles comprising the legal status of parcel boundaries, land parcels and other objects registered for 2D space situation. As a result, problems will occur during the implementation of 3D cadastre because there would be difficulties with reference to legislation for registration of such objects into 3D situation although Strata Title Act 1985 (Act 318) [14] allows the registration of 3D property in 2D space situation. Furthermore, the 3D information is presented on paper or as a scanned image drawing in CP and Registry Title which is actually a 2D visualisation. Thus the information presented cannot be interactively viewed. This indicates that there is a flaw in such a presentation because the ability to present information and interpret the situation correctly in 3D may be very helpful in cases of complex volume parcels.

The aims of cadastre is to survey, record and follow by register rights and interests to land because the law recognises these rights and interests as a legitimate relation between a rightful claimant and a certain lot of land. Therefore, without law and legally defined, the mechanisms for acquisition, transfer, protection, restriction, creation as well as recording or registration of these rights and interests is meaningless in the cadastre.

The Malaysia legal cadastre system and land law are still using 2D geometric in the legal and law expression for land and property tenure. 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.

Finally, it seems that the problems associated with 3D property could be solved by proposing suitable legal and organisational methods. In Malaysia, there is a pressing need for a comprehensive legal, organisational and technical solutions required for the development

of a 3D cadastre for 3D property. This would entail changes in certain land laws and legal documents such as Survey Regulation 1976 (Peninsular Malaysia) [15], National Land Code (Act 56) [16], Strata Title Act 1985 (Act 318) [14] and Survey and Mapping Director General Secular are fairly essential.

4.3. The 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 [5]. 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.

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 [5]. 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 [17]. 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) [14] allows land to be subdivided into parcels or land parcels based on the area occupied. Besides that in National Land Code 1965 (Act 56) [16], 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.

In addition, heights reference is very important in defining the Z-coordinate and the absolute heights related to a datum or relative heights that related to the surface level should be used. Absolute heights are more stable and enable unambiguous definitions of 3D property nationally whereas relative heights between properties may be different. Height information only exists in CP for stratum objects [18, 19] and there is no height information in CP for strata objects [20].

5. CONCLUSIONS

In Malaysia, the main thing that hinders the progress has been the national legal system, because there are no provisions and there is a lack of proper Malaysia cadastre law to cater for the registration of legal and organisational aspects for 3D property in full 3D cadastre as described by Stoter (21). Therefore, the legal profession is always very conservative because they are attached to the old and traditional land registry law and legal changes generally take quite a long time to change.

Finally, within the availability of the latest knowledge and information technology such as hardware and software, I believe that Malaysia is ready to develop a 3D cadastre system to solve the problems from the technical aspects taking into consideration the complexity of cadastre registration of 3D property situations. On the other hand, the changes of the land law in legal and organisational aspects probably should come first, or later, or maybe concurrently with the technical aspect development will be the main issues for further discussion. An effective implementation of

3D cadastre inclusive of all institutional issues (legal and organisational) and technical aspect are equally important.

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