

# **Incorporating Governance, Sustainability, and Land Policy Issues into Land Surveyors Rules of Practice**

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**Key words:** Cadastre, legislation, FELA

## **SUMMARY**

Revision of professional practice rules related to cadastres and land administration is required to both upgrade the practice to take account of international standards and approaches and, at the same time, maintain a pragmatic approach given the culture and resource constraints of the country. Gradual upgrading and improvements are therefore necessary to allow both professionals and society to assimilate unfamiliar changes while incorporating characteristics that will redound to the benefit of all stakeholders.

The Trinidad and Tobago land surveyors rules had last been discussed and revised in 2012. Since then, the need for incorporating the LADM, SDGs, 3D cadastre, and fit for purpose requirements have become increasingly apparent. This paper charts the process of analysis, discussion and revision to the rules as the process began to be undertaken in late 2023. Existing pieces of legislation that depend on the land surveyors rules include the conveyancing, titling, and property valuation legislation. Therefore, the methodology used for the revision of the rules included looking at the requirements of these pieces of legislation and performing analyses by not only looking at the letter of these laws but at the spirit of these laws to determine what changes would be beneficial to the country and the society. The revision process also requires looking into international standards that have attempted to incorporate human rights concepts into technical survey standards. The revision process therefore requires building awareness of this intersection of concepts among professional land surveyors so that changes to traditional procedures could be readily adopted.

It was found that upgrading and updating rules did not necessarily mean increases in precisions for definition of parcels because of opportunities provided by advances in technology but instead could mean reducing precisions to make the rules fit for purpose. It also meant predicting the need for including some LADM standards like 3D parcel volumes on cadastral plans, while maintaining the low-cost 2D plans for visualising 3D parcels. This has been, therefore, a practical application of the Framework for Effective Land Administration where legislation and standards are concerned. It is anticipated that revision periods will need to be contracted to shorter periods in the future to take account of rapid changes in global perspectives as well as leaps in opportunities provided by technology. New rules include the incorporation of cheaper and more standardised demarcation of property and requirements for provision of improved accessibility of cadastral data to the public.

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## **1. INTRODUCTION**

While some of the fundamental concepts of cadastral surveying, are unchanging, larger worldviews provide perspectives for modifying the rules of practice. As an example, cadastral surveying focused for a long time on a strict concern for formal boundaries and specifically on the technical aspects of precision in measurement. With global thinking on human rights, informal and customary boundaries have gained legitimacy and are required to be defined or, at least, recorded. Land surveying is often stated to be the second oldest profession and practitioners hold on rigidly to traditional rules of practice, reluctantly modifying procedures when technology makes such procedures obsolete. The land surveying profession in Trinidad and Tobago, under the auspices of the regulatory body of the Land Survey Board of Trinidad and Tobago, embarked on a process to upgrade the land surveyors rules of practice, beginning in late 2023. The rules had not been updated since 2012 and many of the current ideas on governance, sustainability, and land policy had not guided the composition of the 2012 rules. This paper examines the broader thinking that must be engaged in to provide for rules of practice that go beyond the technical to seek effectiveness for addressing societal needs.

## **2. BACKGROUND**

Land surveying is traditionally thought of as being focused on precision of measurement and improvements in technology that allow for faster and more efficient acquisition, and maintenance of geospatial data. Revisions to rules of practice currently focus on including improvements to coordinate positions using GPS/GNSS equipment and reductions in time and labour by using UAV acquired LIDAR data to support precise boundary positioning. However, over the last few decades, greater and greater focus has been placed on research aspects of cadastral surveying that relate to its importance in social, environmental, political and economic issues (Silva and Stubkjaer 2002). The cadastre, as a vital part of the land administration, is now better known (Williamson et al. 2010) and the underlying reasons behind the technical measurements, such as integration and interoperability, resolutions, and specifications must be incorporated into the standards. Surveyors must now be concerned with human rights issues such as diversity, and sustainability, since the fundamental reason for the cadastre is to graphically describe all land tenure comprehensively over an entire jurisdiction. The professional must question whether the product that they present not only meets technical standards but also ethical standards and the rules of practice must reflect this. International standards that may be applicable in individual countries, but which have considered the

incorporation of human rights issues exist. International standards include the VGGTs, the ILMS, and the LADM.

## **2.1 Voluntary Guidelines on Governance of Tenure (VGGTs)**

The Voluntary Guidelines on Governance of Tenure (VGGTs) (FAO 2012) promote concepts of transparency, simplicity, and accessibility of the land administration data to ensure that all citizens benefit from the country's most precious resource of land. The VGGTs suggest for the voluntary application of states that:

- States should provide some form of land administration system;
- The systems provided should be appropriate to the particular society, and its resources;
- The systems should be inclusive for all citizens from all groups, especially vulnerable and marginalised groups in the society;
- The systems should be simple, therefore low cost, and understandable by all;
- The systems should be available, public, and transparent to minimise corrupt practices

These guidelines prioritise effectiveness of the system for supporting equitable rights as opposed to precisions, and technical sophistication.

## **2.2 International Land Measurement Standard (ILMS)**

The International Land Measurement Standard (ILMS) (ILMS Coalition 2019), was developed by the International Land Measurement Coalition comprised of professional surveyors representing international organisations and regions. The standard reflects the need for minimum requirements to be recorded in order to support individual legitimate land tenure, which in turn would provide for the attainment of the Sustainable Development Goals (SDGs). However, the ILMS standards concede that what is possible in a data rich environment in a developed country may not be attainable in a data poor developing country. It has been acknowledged that one standard may be too rigid for some countries, while being too lax for other developed nations (Grimsley and Kavanagh 2018). The ideal standard, according to the ILMS therefore sets out the minimum specifications required for a survey including:

- purpose of the survey
- date of the survey
- name and address of the parties to the survey
- unique identifier of land parcel/location (address, parcel coordinates or other unique identifier)
- unit of measurement and conversion factor, if applicable (e.g. acres to hectares) and coordinate system used
- signature, complete with date, of the person responsible for compilation of the information
- academic qualifications/professional qualifications and licence/registration number (if applicable, or appropriate competency/experience)
- appendix containing information used, referenced or relied on including author, date, purpose and methodology

The ILMS also recommends that the list of minimum specifications may be modified to suit the particular society in which it is being implemented. The value of the standard, however, is in its ubiquity in all surveys in the jurisdiction to de-risk the transaction that is being supported by the survey. The purpose of the de-risking is to protect the poor, and vulnerable in the land transaction.

These standards, relating to the attribute information and metadata to be acquired in a cadastral survey are more specific and rules based than more general guidelines for land administration such as the VGGTs (FAO 2012). The ILMS does not go into the details of measurement although it specifies what is to be measured or reported on, in general. It is by comparison of land surveyors rules with these guidelines and standards that it can be demonstrated that the product of the practice of land surveying is not only accurate in its measurements of distance and azimuth but also accurate in the security of tenure and protection from discrimination and fraud that it provides.

### **2.3 Land Administration Domain Model (LADM)**

The ISO standard for the Land Administration Domain Model (LADM) (ISO 2012) is even more specific than the ILMS and at its most specific, can only be adopted by the very developed systems of some countries. The LADM states that the minimum specification for a parcel or spatial unit are:

- area
- dimension
- external address
- label
- reference point
- spatial unit identifier
- surface relation
- volume.

Again, the ideal is that there is complete coverage over the cadastral fabric.

These standards should be incorporated into professional practice rules so that inclusiveness of all land is achieved.

### **2.4 Sustainable Development Goals (SDGs)**

Many of the SDGs relate to land, as has been discussed by many land based institutions. However, most of the SDGs and their targets specify the need to achieve tenure related goals rather than the measurement related goals focused on by land and cadastral surveyors. Particularly in land administration systems with clear separations between the tenure registry and the cadastral boundary institution. SDG indicator 1A, 1B, and 1C, for example, relate to the presence of legal frameworks to secure land tenure that support equality of allocation by

sex. Indicators 2A, 2B, 2C1 and 2C2 also relate to legislation, budgets, and programmes supporting agricultural production. Indicator 2C1, does monitor land distribution by size. Cadastral surveyors measure and record areas of parcels. Cadastral organisations can therefore ensure that the area of parcels is clearly recorded and presented in transparent and accessible databases to allow monitoring of equitable distribution of land and establishment of reform programmes to adjust for problematic disparities.

### **3. METHODS OF ASSESSMENT**

To revise the Trinidad and Tobago Land Surveyors Rules, it is required to first review the international land administration and cadastral survey standards, including the ILMS, the LADM, and the VGGTs to extract the characteristics that are listed as being necessary for a rights based cadastral or land administration system. The Rules are then reviewed for the presence of structures that support a rights based cadastral system. Changes are then proposed that would upgrade the cadastral system so that the new rules can take the cadastral system forward to a system that reduces conflict and increases security. Even as the proposed rules attempt to reduce conflict and increase security, care must be taken that informal structures on private land do not become targeted for removal. In this assessment, only the cadastral surveying rules are analysed. The separated registry is not reviewed but may be mentioned where the characteristics intersect.

### **4. THE TRINIDAD AND TOBAGO CADASTRAL CONTEXT**

The Trinidad and Tobago cadastre is comprised of a separated cadastral index and a land registry that stores both deeds and titles. The majority of the land parcels are held and transacted on using deeds. A minority of the parcels are held in a Torrens title system. There are a large but indeterminate number of parcels that are held under neither system as well as a large number of parcels that are informally occupied on both state and private land. This therefore means that the publicly viewed cadastral index does not display many legitimately occupied parcels and those that have been occupied for decades, with no fear of eviction. A recent assessment determined that there are more than 300,000 individuals in occupation of land without formal documentary security (Griffith-Charles and Sutherland 2020). The land surveyors rules very rarely impact on these parcels that are outside of the cadastre and registry unless the occupant wishes to convert his occupation to a title voluntarily, in which case a survey must be done of the occupied area and a lengthy legal process embarked on, lasting years in most instances.

There are approximately 100 registered cadastral surveyors who are required to follow the rules of practice when conducting cadastral surveys for transactions of sale or mortgage, redefinitions, and subdivisions. Each survey results in a submitted paper cadastral survey plan showing the parcel in question coloured pink and boundary markers circled in red. A rigid list of requirements for the plan representing the cadastral situation on the ground is enforced by detailed checking of the plan by land surveyors employed in the state survey and mapping department. Since the checking process is time consuming and therefore costly as large amounts

of state resources are expended in the exercise, justification is required for the importance of each of the rules to the overarching effectiveness of the mapped parcel framework.

## **5. INTERSECTION OF TRINIDAD AND TOBAGO'S RULES OF PRACTICE WITH RIGHTS ISSUES**

Cadastral surveyors are now required to bridge the gap between technical geodetic surveying and social science. They are required to understand the fundamental reasons for the measurements that they acquire so that not only legal boundaries but legitimate boundaries can be understood and recorded. This extends beyond the land boundaries into the international maritime boundaries that surround many of the countries of the region. In Trinidad and Tobago, the items of legislation that refer to the cadastral surveyor in the office of the Director of Surveys for determination of rules for definition and display of boundaries are the Registration of Title to Land Act 2000, the Land Adjudication Act 2000, the Trinidad and Tobago State Lands Act.

If the survey rules and cadastral system are compared against the VGGTs, it is found that the state does provide a cadastral system, as recommended in the VGGTs, although it is not comprehensive nor current. The rules can assist in creating comprehensiveness and currency by including all surveys performed and assigning resources so that a guarantee can be provided that surveys would be included in the cadastre within a stipulated time.

The systems are appropriate for the culture and society as the rules provide for various methods of orienting surveys, including observations to the sun, other than strict coordination on a national framework. The land registry has had to begin recording the sex of the rights holder to demonstrate its inclusiveness. The separated cadastre records all surveys performed but does not take responsibility for recording rights holders. While the cadastre can be accessed online, understanding how to interpret the data and access the individual plan details is restrictive to rights holders. The cadastral system is relatively simple but can be further simplified to reduce the cost and time required for the system to deliver services of approved plans for transactions of sale or mortgage or first registration. Rules should be adjusted to provide for this simplification.

When the rules are compared with the ILMS requirements it is found that the purpose of the cadastral survey, whether it is for mortgage, sale, or redefinition for construction is not noted on the plan nor is a full report required. The date of the survey is recorded on the plan but the name and address of the parties to the survey are not recorded. Parcels do not have a unique identifier so that is not recorded. Surrogates for identifying a unique parcel include the visual clues of the size, shape, and topology of the parcel as well as the county, ward, and street location. The authorised surveyor information is also on the plan as required by ILMS. The survey does not comply fully with the ILMS rules but does reflect 5 of the 8 requirements for de-risking transactions. This means that the vulnerable are somewhat protected. To include the additional information that would make the survey fully compliant would increase the complexity of the process and thus the cost. The rules can be expanded to include a more

comprehensive report that can provide support for rights, and inclusion. A parcel identifier should also be determined.

The LADM requires and the Trinidad and Tobago land surveyor rules complies with the statement on the plan of the area, approximate reference point, and dimensions of the parcel but does not give a precise address, spatial unit identifier, surface relation or any height information except for condominium cross sections, nor parcel volumes. Therefore, only 3 of the 8 requirements are met. The rules should therefore be amended to acknowledge the growing prevalence of condominium parcels and include some of these required pieces of information to support rights in 3D.

The separated cadastre in Trinidad and Tobago does not allow the land surveyor, who must focus on measurement, to make statements of tenure on the survey plan. To support the SDGs and the monitoring of the individual indicators, the rules must ensure that areas of parcels on survey plans and in cadastral databases is consistent, accurate, and one of the attributes identified in the databases that are accessible to all.

## **6. RULE CHANGES PROPOSED**

There are many contentious issues that engendered rich discussion but difficulty in concluding. One such issue is recording the party to the survey. While identifying claimants to the land or occupants on the survey plan can support legitimising rights of occupation, it is not within the authority of the land surveyor, whose role is primarily measurement, to make pronouncements on ownership or accruing of rights. The court was legally empowered to review evidence including the surveyor's determination of limits of occupation presented in the plan, and pronounce on rights. It was considered that a statement that the survey was done at the behest of an individual may be a statement of fact but may create an impression that the individual was the owner.

The following lists a few of the changes proposed to the rules and the rights based issue that they propose to address:

- An inclusion in the rules relates to requiring greater standardisation of marks. They will now be required to be composed of ferrous material. This addresses a rights issue as they simplify the recovery of marks with a metal detector. This reduces the need for land owners to resurvey at great expense.
- Boundary points are now required to be intervisible. This reduces conflict as landowners can determine direction of the boundary line using two intervisible marks. This is a rights issue as conflict over land and land boundaries are a drain on the court system, which is ponderously slow in Trinidad and Tobago.
- Rules now require the land surveyor to connect to visible, and prominent, physical features. This also allows land owners to be aware of boundaries, and borrows from the

positive characteristic of general boundaries, while in a fixed boundary system. However, this can be an additional step in a survey that would make the survey slightly more costly. This does not go far enough forward into promoting the use of general boundaries to implement a pending systematic adjudication and titling process (Griffith-Charles 2021).

- The Rules now propose for recording ‘The diameter and type of all utility pipelines where the reserves of these affect the allowable use of the land as defined by the planning authority, where applicable.’ This is in keeping with the LADM requirement for all Rights, Restrictions, and Responsibilities to be shown.
- The Rules propose that the following be added, specifically in condominium schemes:

‘All areas found to be occupied, with the approximate area of the occupied land if possible. This includes overhead and underground occupations and all such occupations shall be differentiated from the surrounding parcel by the addition of an area symbol.

- (1) A general plan which shall record the cadastral data including labels for all common areas, corridors, carpark, open spaces and with sufficient measurement data to be able to redefine the position of all structures and boundaries in accordance with the legal instrument.
- (2) Strata plans for all floors within the condominium scheme
- (3) Elevation plans showing each façade view.

This is in an attempt to introduce 3D cadastre components while retaining the traditional and low cost representation of 3D structures on 2D plans. Further amendments should be made to accept digital acceptance of 3D cadastral information but this can only be required if the state’s cadastral institution can accept 3D digital plans and is restructured and resourced to visualise, accommodate, and maintain such data.

## **7. CONCLUSION**

The Trinidad and Tobago Land Surveyors Rules are still in the process of revision. However, an attempt is being made to incorporate the ideals of rights based international standards in a situation that previously focused on typical measurement standards regarding precisions and accuracies. A quantum leap cannot be entertained if costs, time, and labour requirements obviate such drastic change. As the awareness of the professional cadastral surveyor and the public is built, demands may be made to take more drastic steps forward to ensure that human rights issues of tenure security, inclusivity, are addressed.

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## **BIOGRAPHICAL NOTES**

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