

ILMS Coalition ([www.ilms-coalition.org](http://www.ilms-coalition.org))

## International Land Measurement Standards

*Global Consistency in Land and Real Property  
Transaction(s) Reporting*

**ILMSC SSC Exposure Draft  
May 2018**

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# Welcome to ILMS: Global Consistency in Land and Real Property Transaction(s) Reporting

The International Land Measurement Standards (**ILMS**) are international principle-based standards for recording and reporting information and material relevant to land and property transfers. The standards aim to reduce risks in the land transfer process by creating consistency of application and facilitating and supporting land governance, robust conveyancing, secure lending and land registration. **ILMS** supports global consistency by setting standards for classifying, defining, measuring, analysing, presenting and reporting land information which can be applied at a project, regional, state, national or international level. **ILMS** are therefore both standards and a framework for reporting.

The **ILMS Coalition** (hereafter the **Coalition**) agreed that **ILMS** should be strong international principle-based standards that serve the public interest. It is focused on key land information elements, as required to de-risk and aid the land and property transaction processes. It will assist by strengthening land tenure security and land rights, as well as promoting investment, growth in government revenue and economic development.

**ILMS** are:

1. A framework for reporting on land assets' and land asset transactions of people and legal entities.
2. A basis for collecting asset and transactional information to identify what is on the ground, what information is available and the quality of the available information, rather than what is legislated for or implied. This should also include recognition of gender specific issues.
3. A set of principles for transparency, integrity and consistency in land asset reporting in support of reporting systems such as the International Financial Reporting System (IFRS).
4. Flexible and non-prescriptive, so they can be adopted incrementally/partially in line with the fit-for-purpose land administration principles, thereby advancing best practice for reporting on land assets.
5. A due diligence process that informs the overall investment analysis. The process will draw on many sources of information and corroborate them so any unknowns can be found and risks assessed or costed.
6. A basis for determining fair compensation for the land asset.
7. A basis to implement an Open Data System (including for example Public Law Restrictions PLR).

**ILMS** are not:

1. A detailed technical specification for spatial measurement although measurement is integral to several **ILMS** elements (parcel identification, land area etc)
2. The basis for a new 'best' Cadastral or Land Administration system.
3. A replacement for any existing guidelines or standards, such as the FAO Voluntary Guidelines (FAO (VGGT)), Land Administration Domain Model (LADM) or Social Tenure Domain Model (STDM).
4. Instructive of governments for the development of new or revised legislation.
5. Designed to track national progress towards the UN Sustainable Development Goals.
6. Concerned with the collection of data to create or update national or international databases.

## Introduction

The International Land Measurement Standard Coalition (the **Coalition**) formed on 10th October 2016 at the UN's Food and Agricultural Organisation (FAO) headquarters in Rome, Italy. The **Coalition** is a non-governmental, not-for-profit coalition of land professionals, from over 30 not-for-profit professional organisations (as listed). The **Coalition** aims to bring about consistency in land and real property transaction reporting standards worldwide. This is to be achieved through the creation and adoption of **ILMS**. In practice the **ILMS** may be adopted systematically, i.e. by governments putting in place functioning LIS or sporadically on a transaction driven basis. **ILMS** sets out a structure for describing and reporting relevant land information for land transaction purposes.

The **Coalition** has not identified any existing land and real property transaction reporting standard that was clearly suitable for international adoption. For this reason, the **Coalition** has come together to create a shared standard. Following earlier discussions, at a meeting at the FAO Headquarters in Rome held in June 2016, **Coalition** members confirmed they were committed to promoting the implementation of **ILMS** to encourage world markets to accept and adopt **ILMS** as the primary standard for reporting land and real property transaction information from across different nations in a transparent and consistent way.

The **Coalition** accepts that standard setting is a continuous and dynamic process. It will be listening closely to a wide range of stakeholders and professionals. In particular, the geomatics and land specialists who will ensure necessary updates are captured for continued improvement in addition to preparing further editions of **ILMS** to enable more transparent land administration, transfer, investment and governance.

The **Coalition** members as part of their adoption and implementation strategy may choose to issue guidance notes to provide their members with further technical guidance on the adoption and implementation of **ILMS** within their local market(s).

The **Coalition** is beginning the important work of implementation by liaising with governments on a national, regional or state and local level to seek adoption of the **ILMS**. Many key stakeholders are being engaged in the process of implementation. A list of **ILMS**-supporting partners is given on the **ILMS Coalition** website ([www.ilms-coalition.org](http://www.ilms-coalition.org)) – these are organisations committed to the adoption of **ILMS**.

The **Coalition** members are as follows:

*Association of Authorised Land Surveyors (AALS – Malaysia)*  
*Asociación Española de Geómetras Expertos (AEGEX – Spain)*  
*Asia Pacific Real Estate Association (APREA – Asia Pacific)*  
*American Society of Farm Managers and Rural Appraisers (ASFMRA – USA)*  
*Belgium Union of Surveyors (OBGE – Belgium)*  
*Bund der Öffentlich bestellten Vermessungsingenieure e.V. (BDVI – Germany)*  
*Central Association of Agricultural Valuers (CAAV – UK)*  
*Colegio Oficial de Ingeniería Geomática y Topográfica (COIGT – Spain)*  
*Commonwealth Association of Surveying and Land Economy (CASLE – Commonwealth)*  
*Consiglio Nazionale Geometri e Geometri Laureati (CNG – Italy)*  
*Chamber of Surveying and Cadastre Engineers of Turkey (CSCE – Turkey)*  
*Comité de Liaison des Géomètres Européens (CLGE – European)*  
*China Land Surveying and Planning Institute (CLSPI – China)*  
*Fédération Internationale des Administrateurs de Biens Conseils et Agents Immobiliers (FIABCI – International)*  
*Fédération Internationale des Géomètres (FIG – International)*  
*Ghanaian Institution of Surveyors (GHIS – Ghana)*  
*Ingenieur Geometer Schweiz (IGS)*  
*International Federation of Housing and Planning (IFHP – England)*  
*International Valuation Standards Council (IVSC – Global)*  
*Malta Institution of Surveyors (MIS – Malta)*

*New Zealand Institute of Surveyors (NZIS – New Zealand)*  
*National Society of Professional Surveyors (NSPS – USA)*  
*Ordre Geometre Expert (OGE – France)*  
*Österreichische Gesellschaft für Vermessung und Geoinformation (OVG – Austria)*  
*Russian Cadastral Engineers (RCE – Russia)*  
*Real Estate Institute of Botswana (REIB – Botswana)*  
*Royal Institution of Chartered Surveyors (RICS – Global)*  
*South African Geomatics Institute (SAGI – South Africa)*  
*Society of Chartered Surveyors Ireland (SCSI – Ireland)*

*Union Arabe des Geometres (UAG – Lebanon)*  
*Union Mediterraneenne des Geometre (UMG – Mediterranean).*

The **Coalition** is proud to present the **ILMS** consultation document.

On behalf of the **ILMS Coalition Trustees**:

James Kavanagh – (Royal Institution of Chartered Surveyors) – Chair  
Maurice Barbieri – (CLGE) – Vice Chair  
Pedro J. Ortiz-Toro – (AEGEX) – General Secretary.

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## ILMS Standard Setting Committee

The **Coalition** set up a Standard Setting Committee to create **ILMS**. The standards are capable of being relied upon and prompts the integrity of the due diligence process carried out by all parties in whatever context the transaction is being conducted. Each 'land information' component as contained within **ILMS** can be used to facilitate Land Administration Standards, enable governance, enhance policy, support tenure security and help to 'benchmark' nations against each other in line with the World Bank 'Doing Business' index (Registration of Land/Property).

An independent Standard Setting Committee (the **SSC**) was formed in January 2017 to develop global standards for land and real property transaction reporting. The **SSC** includes technical experts from 18 countries and a combined expertise covering over 100 different markets. The **SSC** worked virtually and part of the SSC met in person at the World Bank Land and Poverty Conference in Washington DC (March 2017), the FIG working week in Helsinki (June 2017) and Berlin (September 2017).

The **SSC** will also monitor all related guidance notes to ensure consistency with the principles and intent of the **ILMS**. All local, regional or worldwide approaches will be documented to allow co-ordination, expansion and consistency of **ILMS**-related guidance whenever required.

Further to discussions, the **Coalition** asked the **SSC** to initially look at the creation of a Standard, which is deliverable within existing national legal frameworks and within the competences or skill sets of surveyors. The **Coalition** considered that most of these elements will initially lie within the area of land and real property transaction reporting, which can be defined as 'an international set of principles governing the collection, processing, storage and use of data pertaining to land ownership, usage, quality, location and change(s) over time.' In situations where a functioning LIS exists the standards will form the primary authoritative source for such information. In situations where a functioning LIS does not exist other verifiable documentary sources should be sought and original primary data collection may also be required.

The **Coalition** suggested that the **SSC** draft standards for reporting land and real property transactions that contain the following key elements of the land transfer process:

1. land tenure
2. land parcel delimitation and description (boundary)
3. site/land area
4. land use
5. services
6. building
7. land valuation.

The **SSC** comprises experts representing a wide range of professional and non-governmental organisations.

The **SSC** acts independently of the **Coalition** and its members.

This document setting out the provisions of **ILMS** is the first prepared by the **Coalition's** Standard Setting Committee (the **SSC**). The **SSC** members and co-authors of **ILMS** are:

Rob Mahoney (Global)	Chair
Duncan Moss (Global)	Vice Chair
Thomas Jacubeit (Europe)	Vice Chair
Alexander Aronsohn (Global)	Executive Secretary

Alexander González (Central America)  
Andy Smith (UK)  
Anil Kashyap (India/ SE Asia)  
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Tigistu Gebremeskel (East Africa)  
Tony Mulhall (UK).

## Part 1: Context

### 1.1 Land Acquisition



There is no clear and systematic approach to the provision of essential land information globally. It is estimated that approximately 70% of land in the world remains unregistered. Further, many land transactions take place within a weak legal and/or administrative regime that has inadequate and/or incomplete property information. This results in a high-risk environment for stakeholders, caused by an inability to verify all available evidence relating to a specific transaction. Often this increases the potential for dispute without any clear way of resolution. Consistent practice in reporting on land and real property transactions globally will therefore bring significant benefits to both mature and emerging markets. There is also a global need to recognise gender specific issues when reporting and documenting land information.

The issue of land transactions is important. It is part of the development process and it is susceptible to a lot of conflicts. For example, in a recent analysis of 289 land cases in India, 40% involved major land conflicts that affected 3.1 million people and more than \$178 billion of investment (Chandran 2016). This highlights the enormous economic, political and social cost of land conflict.

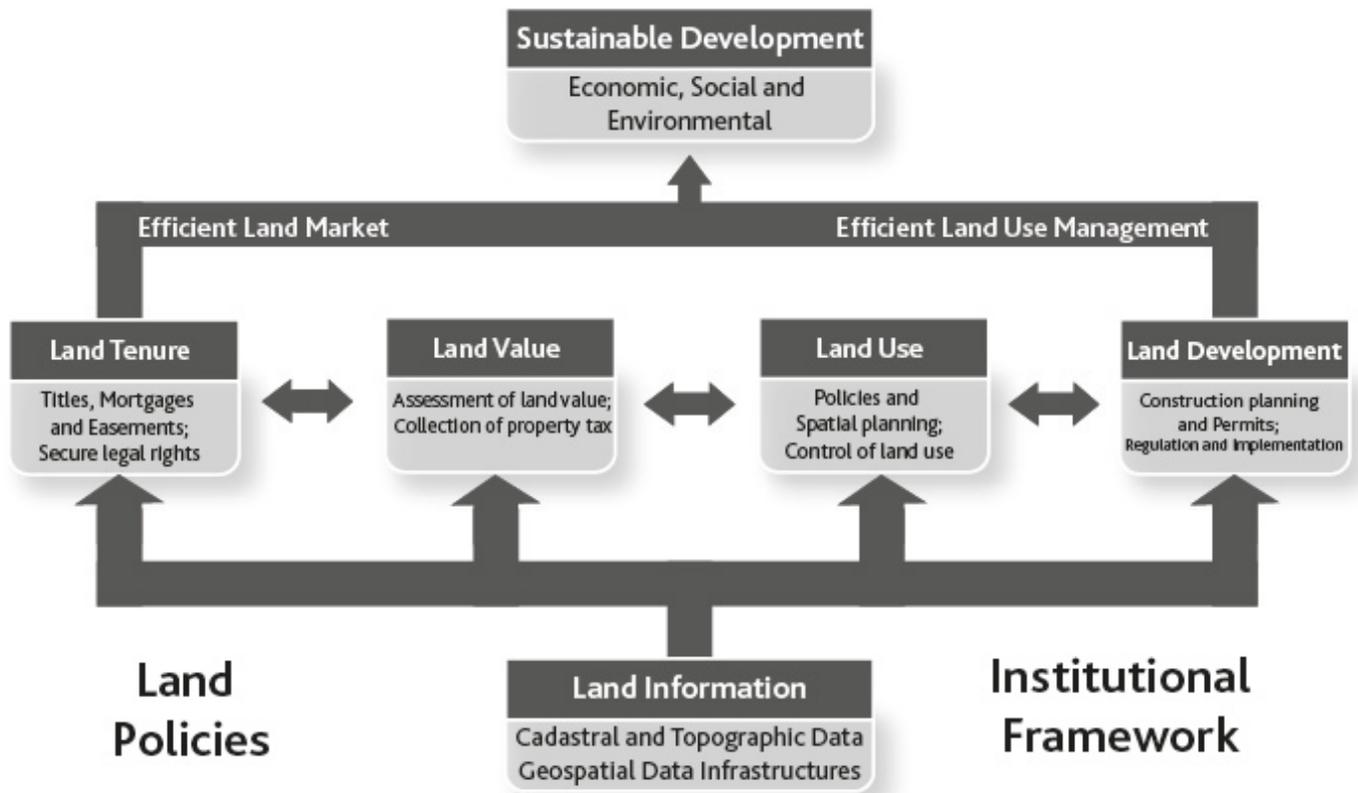
Large scale land acquisition issues are also top of the agenda for the United Nations Habitat ('UN Habitat'), UN FAO and the World Bank, especially since the adoption of the New Urban Agenda at Habitat III (an action-oriented document which is supposed to set global standards for achieving sustainable urban development). According to the World Bank, approximately 10–15 million people are displaced by development and infrastructure projects each year. With such large-scale displacement becoming increasingly common across much of the developing world, there is a need for a global standard that is transparent and robust.

Such a standard will enable national governments and international agencies to provide fair compensation on land transfer and that those displaced parties receive their due compensation. When applied, such a standard will benefit this process and will help to ensure that all relevant facts and evidence are considered when valuing land and real property in the context of compulsory acquisition.

### 1.2 The Need for ILMS

Land is a vital and limited national resource. Yet in many countries there is currently a lack of transparency both in land rights, land interests and during the land transfer process. In many developing and developed countries, large tracts of land are held on an informal basis. Such a lack of transparency and formalisation facilitates the corruption of power and control in land transaction in some markets. The result can make it extremely difficult to achieve sustainable development goals.

Figure 1: Land Administration Framework



© Land Administration for Sustainable Development (2009) – Williamson I, Enemark S, Wallace J, Rajabifard A

Effective land administration is essential for the good governance of land. And Land Information Systems (LIS) are a key enabler of effective land administration. Ideally, these contain all of the information necessary for verifying land parcels, validating real rights, establishing land use and establishing tax obligations. A properly functioning LIS facilitates the capture and reporting of information material to this verification and validation process – particularly at the point where land and real property rights and interests are being transferred. However, in many parts of the world, functioning LIS simply do not yet exist or are not yet fully developed.

**ILMS** aims to resolve a number of these issues by establishing international best practice around what information needs to be compiled to enable an effective practical understanding of the requirements for land transfer reporting. **ILMS** are land measurement standards which support a sustainable future both for people and legal entities.

**ILMS** have been created to improve the reporting process for the parties to a transaction. It sets out a land and real property transaction reporting framework that will provide consistency by promoting transparency and standardisation. **ILMS** is recommended and capable of implementation irrespective of whether or not a functioning LIS exists.

This first edition of **ILMS** focuses on the information required for land and real property transaction reporting. Future editions of **ILMS** may address wider issues such as land administration, land governance, land policy, land reform and land tenure.

### 1.3 ILMS and Land Governance and Administration

The UN launched its sustainable development goals 2030 in 2015 and much has already been published in support of these goals. **ILMS** has direct relevance to several of these important goals. ‘Soft-law’ issues in relation to land governance and land administration, such as proposals for the effective registration of land title, have been recommended by the UN’s Food and Agricultural Organisation (FAO) in their publication *Voluntary Guidelines on the Responsible Governance of tenure of Land, Fisheries and Forests in the Context of National Food Security* (VGGT). Meanwhile, UN Habitat initiated the Global Land Tool Network (GLTN), committed to increasing access to land and tenure security for all.

Figure 2: UN Sustainable Development Goals



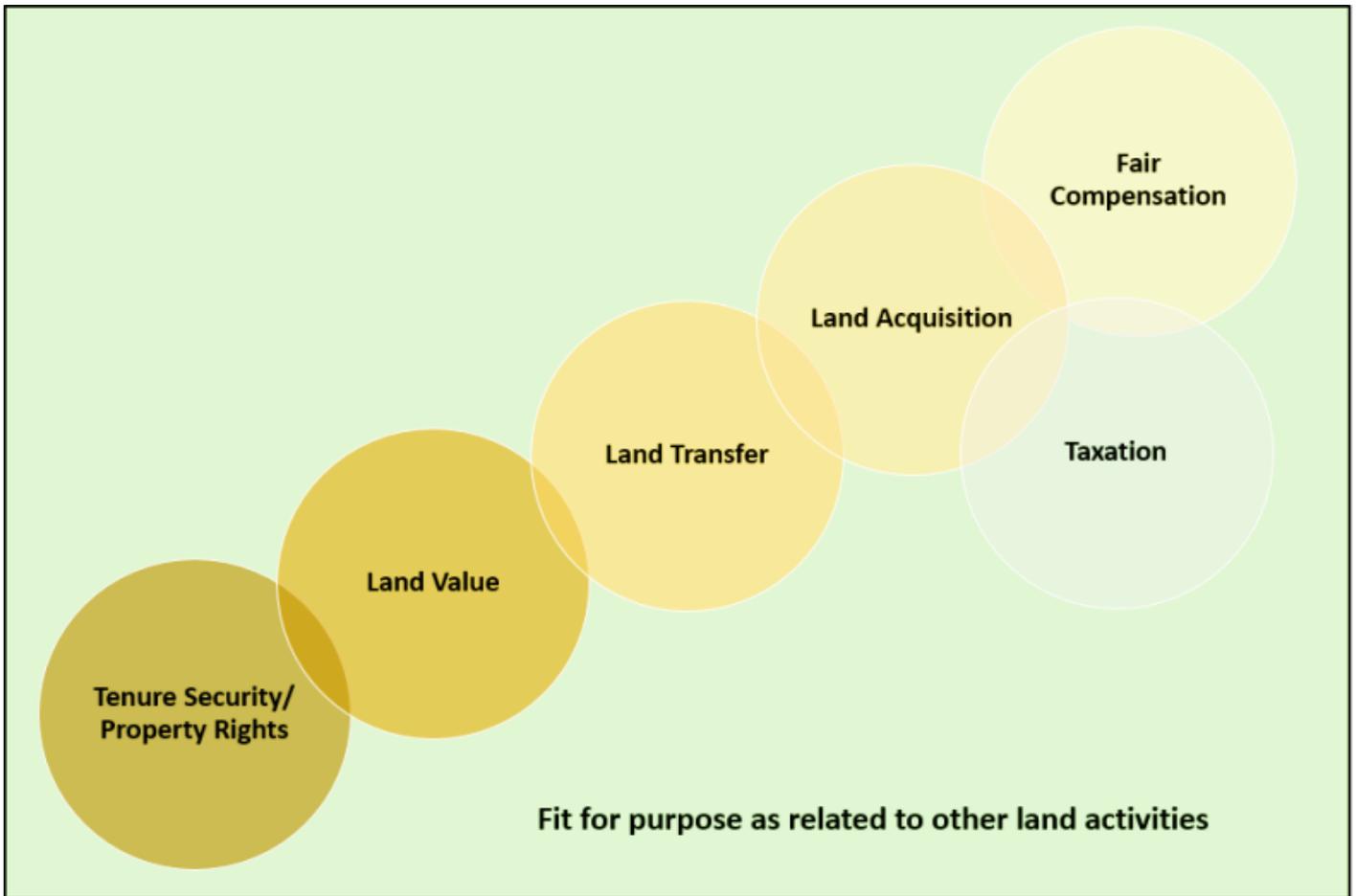
See <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication> for fuller explanation.

Other technical standards, such as ISO Land Administration Domain Model (LADM) and the Social Tenure Domain Model (STDM), are focussed on the data capture and the documentation of land parcel ownership, rights/obligations, tenure security and boundaries. It is envisaged that **ILMS** will operate in the space between the ‘hard’ data standards, such as LADM, and the ‘soft’ overarching guidelines as produced by FAO (VGGT).

The **ILMS** project follows the development of the International Construction Measurement Standards (**ICMS**) and the International Property Measurement Standards (**IPMS**). **ICMS** established standards for the construction costs of buildings and **IPMS** established standards for measuring the floor areas of buildings. For **ILMS** a key element agreed by the **Coalition** members was that the standards would be compatible and accord with **ICMS** and **IPMS**, also feeding into International Valuation Standards (**IVS**) and International Financial Reporting Standards (**IFRS**). This will ensure that **ILMS** is implemented in an ethical manner, which meets the standards contained in the International Ethical Standards (**IES**).

The **Coalition** initially reviewed the ‘fit-for-purpose’ continuum (Figure 3) to understand where the most pressing issues are and where **ILMS** can be most relevant and applicable.

**Figure 3: Fit For Purpose Land Continuum**



Land professionals work within a continuum of land-related processes from the establishment of tenure security to valuation, transfer (**ILMS**) and then into acquisition, compensation and taxation. Each process is reliant on the other but not necessarily sequentially. A land valuation and/or taxation receipt can be used to establish tenure security without the need for formalisation and titling.

## Part 2 Application of ILMS within a Functioning LIS Context

As described, **ILMS** are both standards and a due diligence reporting framework. The reporting framework is an important first step in achieving consistent land and real property transfer reporting within and between countries. **ILMS** works with existing international and national standards to provide the basis for improving existing processes, where necessary, and achieve greater transparency and consistency within and between standards.

It should be remembered that **ILMS** is not designed to be prescriptive and can be 'customised' according to whichever environment it operates in. A data-rich environment might allow all main elements and multiple sub-elements to be gathered, while a data-poor environment might only allow some main elements and no sub-elements to be gathered.

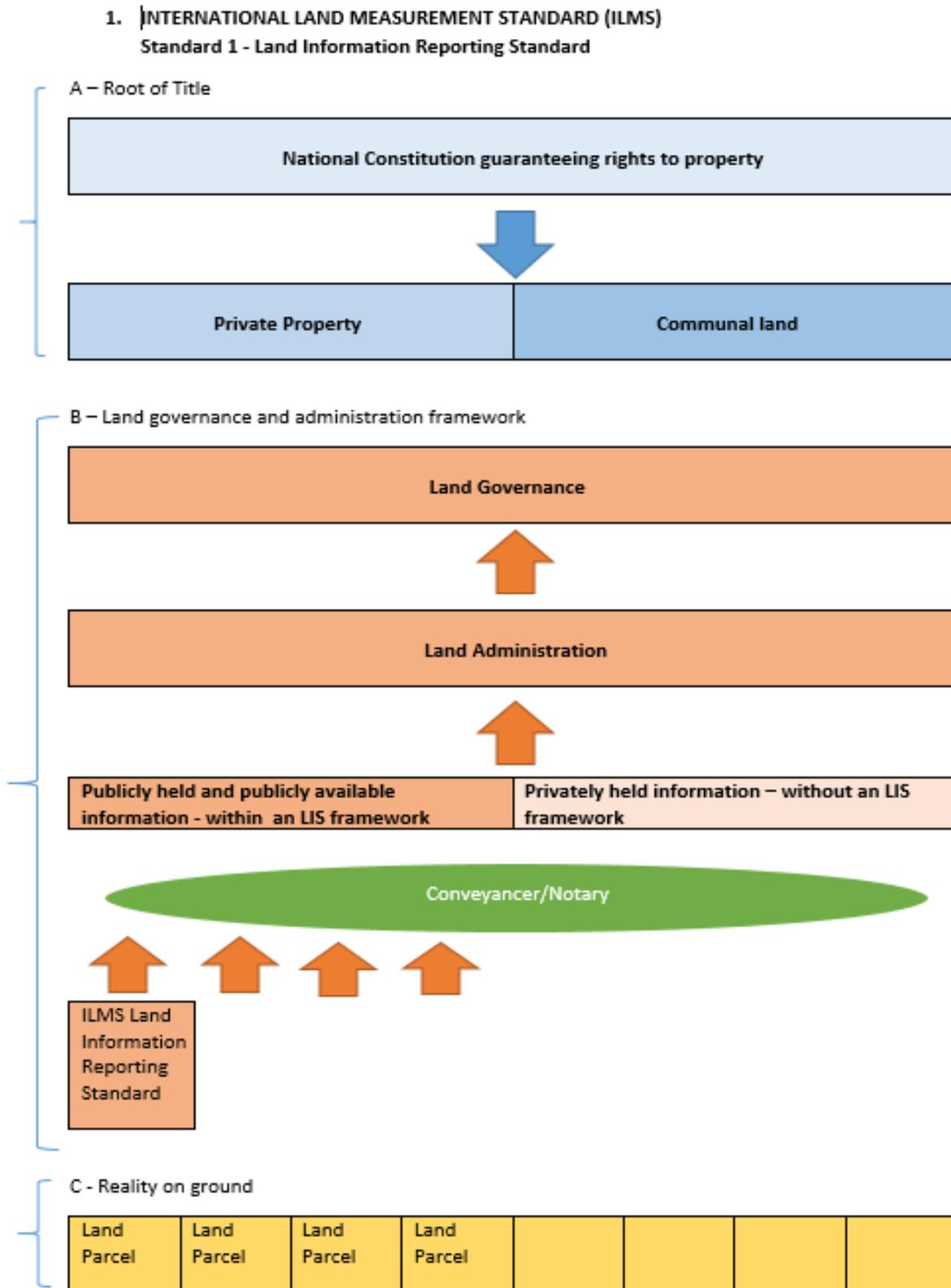
The following section describes the principles of **ILMS** reporting and provides the practical details for the application of the land and real property transaction reporting framework.

The ideal scenario for the implementation of **ILMS** is one in which a functioning and maintained LIS exists. This section describes how **ILMS** might operate in such situations. Section 2.3, however, also considers land and real property transaction reporting without a LIS framework.

### 2.1 Land Information Institutional Framework

Figure 4 shows the Land Information System Framework under which **ILMS** may operate. **ILMS** has been constructed to act as a reporting framework for land transaction. As such, it enables the flow and collection of information from the initiation of the land transaction to the formal or informal recording of its completion.

Figure 4: Land Information System Framework



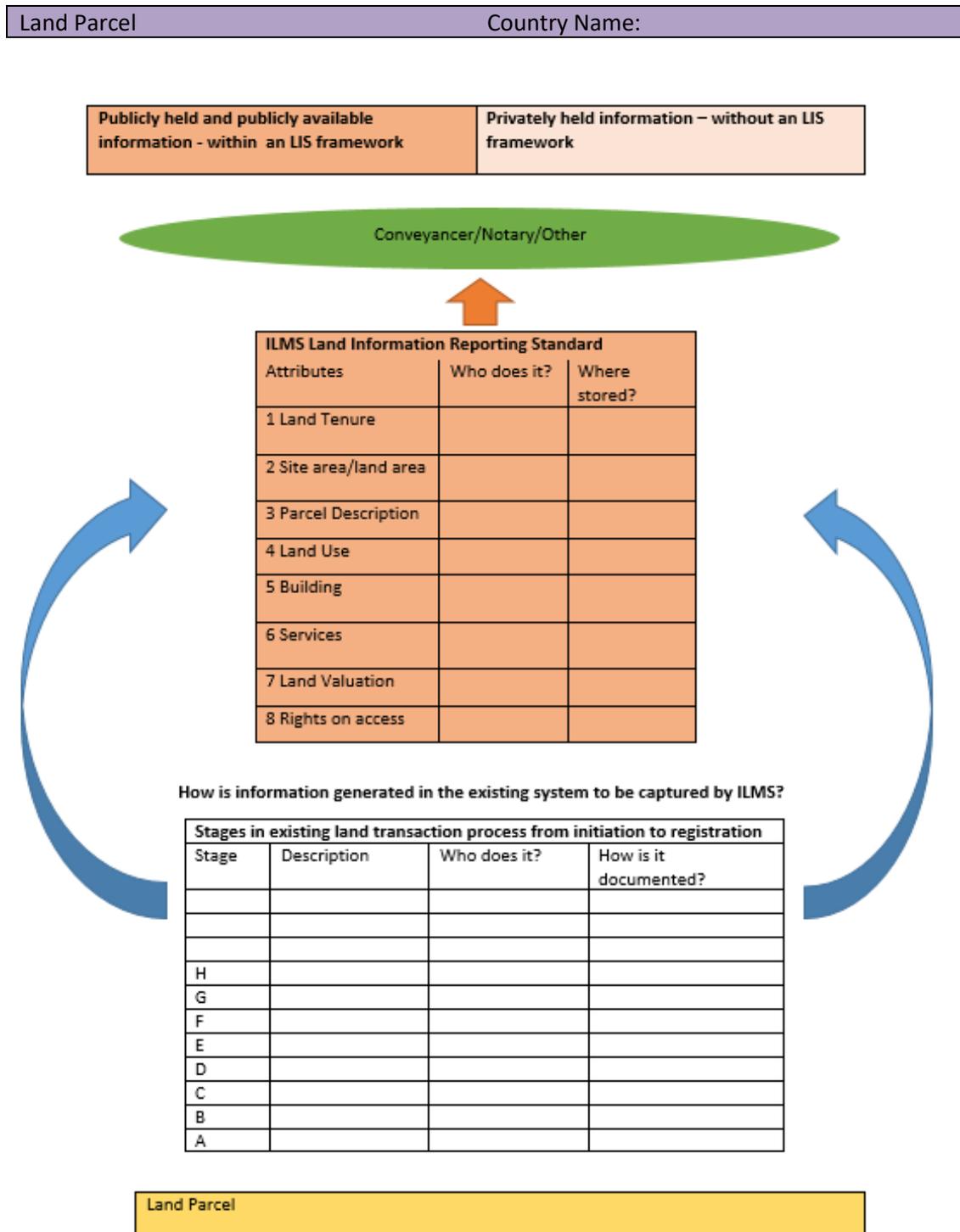
## 2.2 Land and Real Property Transaction Reporting within a Land Information Systems Framework

**ILMS** may operate within existing LIS, land administration and land governance contexts. Where this is the case, it will help to improve global consistency in land information reporting.

In some instances, the information required to complete and update the relevant LIS components may be derived from numerous different sources, which should be validated as part of the due diligence process by the appropriate professionals. Further details on the process are shown in Figure 5.

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Figure 5: Reporting Proforma



## 2.3 Requirements for Applying ILMS

All land transfers should, if possible, comply with the following requirements in relation to the relevant land parcel. The following information should be retained on file or in the report, subject to the necessary due diligence, together with references including date of creation, author, method of creation and any limitations:

- purpose of the land transfer
- date of the land transfer
- name of the parties to the land transfer
- form of *tenure/ownership* (including information on gender specific issues)
- *site/land area* together with the date of verification
- parcel identification including *boundaries* and identification of the measurement standard adopted
- *land use* at the time of the land transfer and pre-transfer if subject to any variation
- any existing rights of access that affect the land
- any probable right of access that may affect the land but are not recorded elsewhere
- independent inspection of any associated *building* together with a condition report
- measurement methodology adopted (e.g. total station, GNSS, imagery or tape measure)
- scale of any plans used
- statement of measurement accuracy (section 2.5)
- services servicing the land parcel or site (i.e. electricity, sewerage, water)
- land valuation
- if **ILMS** is not used, state the reason for departure
- unit of measurement and conversion factor, if applicable (e.g. acres to hectares) and
- signature, complete with date, of the person responsible for compilation of the **ILMS** report
- academic qualifications/professional qualifications and licence/registration number (if applicable)
- appendix containing information used, referenced or relied on including author, date, purpose and methodology.

## 2.4 Land and Real Property Transaction Reporting without a Land Information Systems Framework

**ILMS** is also designed to operate in countries without any existing or functioning LIS framework. Where this is the case it will still provide the parties to the transaction and their professional advisers with standards around the land and real property transaction information that needs to be collected, verified and disclosed.

In some instances, the information required to complete and update the relevant **ILMS** components may be derived from multiple different sources or may not be available. The information should be validated and qualified as far as possible as part of the due diligence process by the appropriate professionals.

## 2.5 Accuracy of Parcel Measurement

It is the responsibility of **ILMS** users to adopt appropriate measuring and computing processes to satisfy the requirements of clients, users and national (including nationally developed) regulations and legislation where these exist. Requirements range from a very broad approximation for some temporary purpose to a precise calculation for land transfer or other reasons.

Practitioners must consider the following parameters when evaluating the level of accuracy that could be expected from a measured survey – one that is both achievable and acceptable.

- What is the purpose of the measurement exercise?
- What are the client's requirements and expectations in terms of accuracy and confidence in measurement?
- What are the building or site conditions at the time of survey that would influence how measurements are undertaken?
- What are the time/cost elements involved in the measurement and reporting?
- What would the consequences be should the level of accuracy be deemed insufficient for the purpose?

Consideration of these issues should identify the necessary working tolerances to be adopted throughout the various stages of measurement and area calculation. The measurement tolerances must be specified in the scope of work and report.

As a means of delivering final area figures to an expected or agreed level of accuracy, operational survey procedures and workflows should help to ensure that:

- the linear site dimensions recorded are within the necessary tolerances
- procedures, processes and equipment checks are in place to support accuracy of measurement
- there is sufficient redundancy of recorded dimensions to mitigate against errors
- there are software check routines for the area calculations
- there is an appropriate quality assurance regime whereby checks are undertaken and audited.

Accuracy values may be stated in various ways and **ILMS** includes a Survey Accuracy Band Table in Appendix B.

## Part 3 ILMS Land Information Reporting Framework

### 3.1 Introduction

Please note that in all circumstances whereby a third-party verification and/or document(s) is relied on or referenced in the Land Information Reporting Framework, **ILMS** require that the date of creation and creator be explicitly referenced. If known, its original purpose should also be stated. The referencing of all third-party data is to enable future users to identify exactly what data was used and/or relied on to compile the current property assessment. If any changes have occurred since the date of such report(s), these too should be articulated where possible.

In circumstances, whereby data such as images, classifications or otherwise are acquired for the purpose of assessing the property as it currently exists, the **ILMS** require that the date of acquisition be stated within the Land Information Systems Reporting Framework.

### 3.2 Reporting Framework

This framework is a high-level summary sheet linked to the Land and Real Property Transaction Reporting Example Worksheet (Appendix C). The steps to complete this sheet are as follows.

- 1) Complete the sub-components for which you have relevant information within the Example Worksheet. Enter the details, date of recording and highlight whether the information obtained is formal or informal, whether there is any documentary support and, if so, what form this takes.
- 2) Complete any additional comments in relation to the sub-component, e.g. information based on verbal evidence.
- 3) Review all the sub-components within each overall component, e.g. Land Tenure and if the majority of that information is undocumented then the **ILMS** status will be classed as informal.
- 4) Review all the sub-components for how accurate/reliable the information is within that overall component and then use a traffic light system to report the risk status. This is a general indication of the possibility that information relied on within the framework may differ from an objective assessment, or may have questionable content or come from a source that is difficult to verify.

Examples of the types of risk assessment evaluated within the framework may include the following:

- financial risk, e.g. exposure to costs/liability
- title security
- collapse of the transaction, i.e. it does not complete
- prejudice the ability to raise a mortgage
- risk of dispute.

(Green = least risk; yellow = medium risk; red = most risk.)

- 5) Repeat this process (1 to 4) for each component.

## Land Information Reporting Framework for Use

Property Address/Identifier:							
	Component	Basis	Date (dd/mm/yy)	Conveyancer Verification (Formal/Informal)	Documentary Support	ILMS status (Y/N)	Risk Status (Green/ Amber/Red)
1	Land Tenure						
2	Parcel Identification (Boundaries)						
3	Site/Land Area						
4	Land Use						
5	Services						
6	Building						
7	Land Valuation (Transfer Price)						

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## Part 4 ILMS Components

The **ILMS** component sections below are listed in framework order and are considered to be of equal importance.

- The flexibility of fit for purpose land administration principles should apply.
- Report the data available to the highest practicable standard.
- Explanation of difference between standard and available information.
- The bullet points within each component are examples only. High income/data rich geographies may allow every data element to be captured, while informal and other data poor geographies may not. The listing is not prescriptive or exhaustive and there is an understanding that different geographies and purposes will require different levels of data.
- Complete as much of the reporting framework as possible to the highest practicable standard and if you cannot fill in all the data then this will increase the element of risk (see Appendix A).

The 'fit-for-purpose approach' is designed to meet the needs of society today and can be incrementally improved over time. Its key concepts are that it is:

1. **Flexible** in the spatial data capture approaches to provide for varying use and occupation.
2. **Inclusive** in scope to cover all tenure and all land.
3. **Participatory** in approach to data capture and use to ensure community support.
4. **Affordable** for the government to establish and operate, and for society to use.
5. **Reliable** in terms of information that is authoritative and up-to-date.
6. **Attainable** to establish the system within a short timeframe and within available resources.
7. **Upgradeable** with regard to incremental improvement over time in response to social and legal needs and emerging economic opportunities.

Each of the seven key land information components listed below can incorporate 'fit for purpose' principles which can mean a very basic level of information or in some cases a high level of data availability. Fit for Purpose needs to be contextualised within the geography that it is applied to. Indeed, every national land transfer and administration system should be 'fit for purpose' independent of its allocation of resources and/or wealth.

### Land Tenure Component

Where practicable and in line with local market practice **ILMS** would recommend that Land Tenure is documented, and recorded and held as a publicly accessible record. Normally a documented and recorded tenure can contain all the following:

- Type of Land Tenure (i.e. ownership, occupational right, interest, etc.)
- Name of Owner(s) (individual, joint, communal, other)
- Record of gender of owner(s)
- Name of Occupier (individual, joint, communal, other)
- A narrative Description of Land (including recorded documentation and boundaries)
- Unique parcel identifier for each individual land parcel: where applicable, an official designation
- Length of Tenure
- Rights, restrictions and responsibilities.
- Other rights and restrictions (public and/or private) in relation to the land (e.g. *easement, covenants, encumbrance, lien, license*)
- Other rights associated with the land and not forming a part of the actual land parcel itself (e.g. commonage, turbary rights)

- Condominium rights.

### **Parcel Delimitation and Description (Boundary) Component**

The boundaries of the overall land parcel and any unique parcels therein should be described in detail to allow the overall area to be identified in an unambiguous manner. It should include the following:

- Unique parcel identifier for each individual parcel: where applicable, an official designation
- Physical site inspection and or verification
- Satellite or aerial ortho-image of the overall land parcel together with any unique parcels therein and with all boundaries indicated, where possible, an adequate scale to allow visibility
- Coordinates of each boundary corner or pivot point in WGS 84 UTM. Where a National coordinate system is in existence it should be used.
- Where the land parcel is restricted in the third dimension (aerial/underground), these restrictions must be clearly stated. Where a National Datum is in existence it should be used. The extent of any known legal claims that exist in relation to the land parcel and or parcels therein should be identified (e.g. Public Legal Restrictions). The extent of any probable unverified claims that may exist but are not evidenced in writing should be identified where possible to do so
- Dimensions of each boundary line or arc in length and grid azimuth, as recorded at the time of survey. If obtained in any other manner specify same and state limitations and restrictions
- Any known differences that exist between documented boundaries, legal boundaries and physical boundaries should be identified where possible to do so
- Area/volume of parcel complete with a statement of area where possible stating any limitations or restrictions
- Site plan of the overall land parcel complete with each individual parcel (Cadastral or Index or whatever is used Nationally) therein
- Cadastral or Registered Index Map(s) of the topological relationship of all parcels visualised at adequate/appropriate scale for parcel size.

### **Site/Land Area Component**

The site/land area measurement specification will be dependent on the purpose for which the measurement is being commissioned paying particular attention to survey detail accuracy in relation to boundaries. This component is mainly derived from the Parcel Delimitation and Description (Boundary) Component but also contains information on planning and development area (land measurement for development purposes). During land acquisition this site/land area component (along with the building component if applicable) can be critical for the establishment of non-physical compensation. It is recognised that in some locations there may not be the resources to support site/land area measurement to international standards. In these circumstances the land area should include the following:

- Site Land Area. Areas with limited/restricted use rights are to be defined and stated separately.
- Use/Purpose
- Written description of identified features
- Sketch Site Plan with basic measurements and orientation

## Land Use Component

All Land Use designations *must* be in accordance with specific legislative, planning, regulatory or other authoritative requirements and should include:

- Unique parcel identifier for each individual land parcel: where applicable, an official designation
- Land cover components (partial or whole)
- Land use
- Source of land use
- Quality of soil and gradation
- Legally binding land use plans
- Other characteristics (whether recognised, proposed or intended), e.g. National Park, UNESCO World Heritage, monument protection, historical sites
- Date of land use (approval and implementation)
- Change of land use/ land cover and its date
- Land development plans

## Services Component

The purpose of this Component of the Standard is to enable accurate reporting of the current factual status of any services, utilities and or other infrastructure that serve the property be it on or abutting the land or site being transacted up to and including the point of the transaction.

Services, utilities and or infrastructure services includes, but is not limited to, all items that form an integral part of the land or property. It also includes all third-party interests, which it is dependent on to maintain its current functionality and usability.

- Road access:
  - Status and quality
  - Access/Egress points (Vehicular and pedestrian)
  - Length of Road Frontage
- Potable water supply
- Waste water/sewerage disposal
- Drainage
- Electricity
- Gas
- Telephony/telecommunications
- Internet access
- Other Municipal Services (specify)
- Garbage Disposal
- Postal Service.

## Building Component

All *Building(s)* contained within the perimeter of the Land should be checked to ensure that the *Building(s)* complies with all the appropriate planning and other regulations and building codes. In instances where the *Building(s)* is ancillary to the authorised use of the Land, in addition to the above the following details, where available should be provided and if these are not available then this would just increase the element of risk:

- Unique parcel identifier for each individual land parcel: where applicable, an official designation

- Aerial Image including the date the image was created
- Photograph of the *Building(s)* façade and date the image was created
- Current use or, if dilapidated, the previous use of the *Building(s)*
- Record of current or previous Building occupation
- Statement on all buildings and structures whether authorised or unauthorised
- Perimeter measurements of the Building (IPMS 1)
- Percentage of Land Occupied by *Building(s)*
- Area of any ancillary hard surface
- Relevant Certification/Documentation (i.e. local government building and planning certificates)
- Number of floors
- Planning use/authorised use/unauthorised use
- Environmental issues (energy use/hazardous building materials/heat for example).

### **Land Valuation Component**

All *valuations should* be in accordance with national valuation standards. Where there is no established national valuation standard in place then practitioners should include the following within their *Land Valuation*:

- Unique parcel identifier for each individual parcel: where applicable, an official designation
- Identity of the valuer, client and other intended users
- Asset being valued and if part of a connected transaction
- Valuation Standard adopted
- Purpose of the Valuation
- Valuation date
- Nature and sources of information upon which the valuer relies
- Nature and extent of the valuers work, investigations made including limitations thereon
- Basis/bases of value used
- Valuation approach or approaches adopted
- Valuation method or methods applied
- Key inputs and assumptions made
- Conclusion(s) of value and principal reasons for any conclusions reached
- Valuation currency
- Date of the report
- Signature of the person responsible for the **ILMS** Report.

## Part 5 Key definitions

For the purpose of these standards the following terms are defined.

**Boundary:** A boundary is a line that marks the limits of an area. Boundaries can be physical and legal, and take many forms. This includes straight or curvilinear surfaces between known coordinated points, or physical boundaries based on physical features.

**Building:** An independent structure forming part of a property (see IPMS).

**FAO VGGT:** Food and Agricultural Organisation of the United Nations Voluntary Guidelines.

**Fit for Purpose:** The Fit-For-Purpose concept involves applying the spatial, legal and institutional methodologies that are most adequate and available for the purpose of providing secure tenure for that specific land parcel by addressing the current constraints. This allows for incremental improvement over time.

**LADM:** Land Administration Domain Model.

**Land:** A defined spatial area of the planet that can be uniquely identified in two or three dimensions by boundaries. **Land** includes all natural features and buildings, improvements and structures of aesthetic value in, on, under or over the **land**.

**Land Information System (LIS):** A tool for legal, administrative and economic decision making, and an aid for planning and development which is often described as consisting of a database(s) containing spatially referenced land related data for a defined area and of procedures and techniques for the systematic collection, updating, processing and distribution of that data. When we use the term LIS in an **ILMS** context, we are using it in a more abstract sense to make it universally applicable rather than limiting the definition to that of a particular implementation in a specific jurisdiction. LIS often comprises multiple systems and databases held by a number of organisations at the federal, regional and municipal level. Therefore, the reader may find it helpful to think of LIS as a system of systems rather than a single unified system.

**Land Use:** The formal designation by a governing authority of the use to which land may be put (e.g. designation of industrial, residential, commercial, retail, recreational and other uses under the master plan.) Land use can also be used to signify an existing land use separate from its formal designation.

**Land Valuation:** An opinion of the value of a land asset or liability on a stated basis, at a specified date. Unless limitations are agreed in the terms of engagement this will be provided after an inspection, and any further investigations and enquiries that are appropriate, having regard to the nature of the asset and the purpose of the valuation.

**Legal Boundary:** An intangible or invisible surface dividing one person's property from that of another. It is an exact line having no thickness or width. In fixed boundary systems, the coordinates of the boundary points are precisely established, often monumented on the ground and have precedence in law. Usually boundary surveys can only be carried out by licensed or publicly appointed surveyors who represent the state and may have quasi-judicial authority. In general boundary systems, the boundary is rarely identified with any precision either on the ground or in conveyances or transfers. It is not explicitly shown on topographic survey mapping, although in practice many topographic features are coincident with legal boundaries. Ultimately the exact position of a boundary, if disputed, can be determined only by the relevant courts in their jurisdiction.

**Land Parcel:** A portion of land variably described as a 'land parcel', 'immovable property', or 'real estate', etc., which becomes a 'land asset' when it is linked, through recognised ownership, right or interest of people and legal entities in that land. In describing the land parcel, efforts should be made to determine the extent to which

the 'skies above and the soil below' are included or excluded in that land parcel, as property law changes from country to country.

**Land Tenure:** The rules and arrangements connected with owning specified interests in the land. This can be defined as the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land and associated natural resources (water, trees, minerals, wildlife, etc.). Rules of tenure define how property rights in land are to be allocated within societies. Land tenure systems determine who can use what resources for how long, and under what conditions.

**Physical Boundary:** A physical feature that we can see such as a fence, wall or a hedge, which may, coincidentally, also follow the line of a legal boundary. The legal boundary may run within the physical boundary structure, but it might just as easily run along one particular side of the structure, or include all or any part of an adjoining roadway or stream. Living boundary structures, such as hedges, can be prone to a certain degree of movement. For example, if a hedge is left untended it might take root where it touches the ground and become very wide, making its original line hard to discern. So even if it is clear that the legal boundary ran along the hedge, identifying this boundary on the ground may become very difficult.

**Public Legal Restrictions:** A number of restrictions on land are a result of actions by government units. Many restrictions, however, are created by land developers. Such devices take several forms and can be either positive or negative in nature. They include defeasible fees, easements, equitable servitudes, and restrictive covenants.

**Services:** Services include all infrastructural services necessary to ensure the functional performance of the land as described. In urban areas this includes access to metalled roads, piped water, piped sewerage, electricity and telecommunications. In rural areas this will include access to metalled roads, access to water, electricity and sewage treatment facilities.

**Site/Land Area:** The total spatial area of land contained within the boundaries of a site or parcel of land. It is the area measured within defined boundaries, denominated in metric or imperial measurements. The accuracy of area measurements is dependent on the level of accuracy of the survey on which they are based and the purpose for which they are carried out.

**STDM:** Social Tenure Domain Model.

## Appendix A – Land Information Reporting Framework for Use

This framework is a high-level summary sheet linked to the Land and Real Property Transaction Information Worksheet (Appendix C). See Part 3 for the relevant steps to complete this framework.

Property Address/Identifier:							
	Component	Basis	Date (dd/mm/yy)	Conveyancer Verification (Formal/Informal)	Documentary Support	ILMS status (Y/N)	Risk status (G/Y/R)
1	Land Tenure						
2	Parcel Identification (Boundaries)						
3	Site/Land Area						
4	Land Use						
5	Services						
6	Building						
7	Land Valuation (Transfer Price)						

**ILMS Status:** Yes, complies with **ILMS**; No, does not comply with **ILMS**.

**Risk Status:** Traffic light system of red, yellow and green, where green indicates limited to no risk and red indicates high risk.

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## Appendix B – Topographic Survey Detail Accuracy Banding Table

Band	2 sigma (X,Y)	Accuracy hard detail (Z)	Example survey types/uses	Approximate legacy plot scale output required to achieve accuracy band	Min size of feature shown true to scale (not symbolised)
E	+/- 50mm	+/- 10mm	Scanned surveys, Measured building surveys, topographic surveys, boundary dispute surveys, area registration	1:100	50mm
F	+/- 100mm	+/- 50 mm	Low accuracy measured building surveys, topographic surveys, high accuracy utility tracing,	1:200	100mm
G	+/- 200mm	+/- 50mm	Topographic surveys, aerial imagery, LIDAR surveys, low accuracy measured building surveys	1:500	200mm
H	+/- 500mm	+/- 125mm	Low accuracy topographic surveys, infrastructure surveys, aerial imagery, LIDAR surveys, satellite imagery, urban cadastre surveys and parcel demarcation	1:1000	500mm
I	+/- 1000mm	+/- 500mm	National mapping, general boundary mapping, asset mapping, aerial & satellite imagery, rural cadastral surveys and parcel demarcation	1:2500	1000mm
J	+/-2000mm	+/- 1000mm	National mapping, wide scale asset mapping, parcel identification (rural), UN GGIM Cadastre master level 1, Fit for Purpose level 1	1:5000	2000mm
K	+/- 4000mm	+/- 2000mm	National mapping, state land mapping, national parks & reservations, UN GGIM Cadastre master level 0, Fit for Purpose level 0	1:10 000	4000mm

**Core Recommendation n° 8 – UN GGIM.**

**Core data should be captured based on datum WGS 84 or ETRS-89 in areas within its geographical scope, either using geographic or projected coordinates.**

**Absolute accuracy**

**Cadastral parcels should have in general an absolute accuracy of 1 metre or better in urban areas and of 2.5 metres or better in rural areas. In case of new surveys, it is recommended to use methods enabling absolute accuracy better than 50cm.**

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## Appendix C – Land Information Worksheet – For Real Property Transaction

This worksheet is a detailed summary, which can be used as a basis for completing the Land Information Systems Reporting Framework (Appendix A). In many markets, all the sub-component information may not be available or easily obtainable and in these instances practitioners should complete as much as possible. Where information cannot be provided the reasons should be clearly stated, including the steps undertaken to try to obtain the information or the alternative assumptions made. The steps to complete in this sheet are as follows.

- 1) *Complete as many sub-components as possible for a component within the Example Worksheet, e.g. Land Tenure, Complete the details and date for each sub-component and highlight whether the information obtained is formal or informal and whether there is any documentary support and if so what form this takes.*
- 2) *Complete any additional comments in relation to the sub-component, particularly any related to risk.*
- 3) *Repeat this process (1 to 2) for each component.*

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Property Address/Identifier:								
	Description	Details	Date (xx/yy/zz)	Conveyancer Verification (Formal/Informal)	Documentary Support	Comments	ILMS Status (Y/N)	Risk Status (G/Y/R)
1	Land Tenure Type of Tenure (i.e. ownership, occupational right, interest etc) Name of Owner (individual, joint, communal, other) Name of Occupier (individual, joint, communal, other) Land (including recorded documentation and boundaries) Parcel Identification (including recorded documentation and boundaries) Length of Tenure Other rights and restrictions in relation to the land Other							
2	Parcel Identification (Boundaries) Unique parcel identifier for each parcel Physical site inspection or verification Satellite or aerial ortho-image of all parcels (boundaries approximately indicated) Coordinates of each boundary corner (WGS 84 UTM/National coordinate system and in 3 dimensions) Any legal or other claims in relation to the parcel Dimensions of each boundary line or arc (length and grid azimuth) Any differences between documented boundaries, legal boundaries and physical boundaries Area/volume of parcel Graphical plan of each individual parcel Cadastral map of the topological relationship of all parcels Other							
3	Site/Land Area Site Land Area (areas with limited/restricted use rights are to be defined and stated separately) Use/Purpose Identification of Physical Boundaries Survey Coordinates Written description (incorporating clearly identified features) Photographic Records (identifying boundaries and key features) Sketch Site Plan (basic measurements and a north point) Identification via mobile phone technologies Other							
4	Land Use Identity of the parcel Land cover components Source of land cover Land use Source of land use Quality of soil and its valuation Legally binding land use plans Other characteristics ( eg. National Park, UNESCO World Heritage, monument protection, historical sites) Date of land use Change of land use/ land cover and its date Land development plans Rights, restrictions and responsibilities Other							
5	Services Access routes Potable water supply Waste water Drainage Electricity Gas Telephony Internet Access Municipal Services Other							
6	Building Aerial Image Photograph Current/Previous Use Authorised or Unauthorised Perimeter Measurements (PMS 1) Percentage of Land Occupied by Building(s) Area of any ancillary hard surface Relevant Certification/Documentation (i.e. Local government building and planning certificates) Other							
7	Land Valuation (Transfer Price) Identity of the valuer, client and other intended users Asset being valued and if part of a connected transaction Valuation Standard adopted Purpose of Valuation Valuation date Nature and sources of information Nature and extent of the valuers work (investigations made including limitations thereon) Basis/bases of value Valuation approach or approaches adopted (Market, cost, income) Key inputs and assumptions made Conclusion(s) of value (principal reasons for any conclusions reached) Valuation currency/ies Date of the report Signature of the person responsible for the land transfer Other							

## Appendix D – Bibliography

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