

# Land tenure management in a dynamic social, economic and environmental context

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## ABSTRACT

*The Bathurst Declaration on Land Administration for Sustainable Development* (FIG 1999) identified that the relationship of people with the land was causing increasingly serious problems. In Australia, the issues of native title, land degradation, vegetation clearing and water management are creating a more complex land management environment that, more often than not, results in competition between private and community interests. Land administration systems in Australia were not designed to address this additional complexity and are now experiencing increasing difficulty in managing the dynamic nature of property rights and responsibilities that are emerging.

This paper examines the current land administration system in Queensland with the view to proposing a more dynamic system of tenure management. Specifically, it identifies some recent legislative changes which have significantly affected rights and responsibilities of rural property owners. The implications of these changes on landholders and related stakeholders such as rural investors, valuers, banks and government departments will be discussed.

An adapted model of the *Cadastre 2014* vision is proffered as an alternative model for reform of the existing land administration system through the use of legal land objects as a mechanism to deal with increasingly dynamic nature of property rights. It is proposed that by utilising a system of legal land objects a clearer picture of the true value, rights and responsibilities associated with property may be established. The paper also suggests areas of research that will need to be pursued in order to meet the future challenges in resolving conflicts between the community interests in property and the rights of individual owners.

**KEYWORDS:** land administration, cadastre, rights and responsibilities, dynamic.

## Introduction

There are serious problems in the relationships of people with the land, according to *The Bathurst Declaration on Land Administration for Sustainable Development* (FIG 1999). In particular, conflicting interests between environmental conservation and land development raise the complex dilemma of balancing private rights in property against the rights of the community.

Historically, property rights were considered to be implicit and bundled within the title conferred to the landowner (Lyons et al. 2002). The concept of 'a man's home is his castle' has become the entrenched perspective of property rights for many Australians; however few would argue the need for sustainable management of all our resources for our future generations. Indeed, the issues of land title, land degradation, vegetation clearing and water management are now becoming publicly debated issues in the mainstream media (Anderson 2002a).

Australia's land administration and management system has remained largely unchanged over the past 100 years, apart from the inevitable computerisation of land records. It has served our governments and

individuals effectively during a period where property rights were considered to be implicit within the title and few demands were being made by the community with respect to their rights. However, as recognised in the *Agenda 21 Declaration on the Environment and Development* (UN 1992), it is critical that we work towards the sustainable development and management of our environment.

Initial literature research indicates that the traditional land administration and tenure management is still very much isolated from the mainstream areas of environmental management. Although many of the traditional state government agencies of land administration have now merged with departments of resources and environment, most of the basic land management functions still remain clearly separated. Efforts to integrate and reform the land administration sector have largely been stifled by the political and emotive nature of the debate on property rights. So, rather than approach the reform of the system holistically, governments have found it easier to legislate their way around the problems by regulating the rights of landowners in particular regimes.

This approach may provide a short term solution to the management of a resource such as water or vegetation, however it has the effect of creating secondary property administration regimes that are often not well linked or integrated with the traditional land administration systems. This paper examines some of these issues and advocates that the reform of our land administration systems is warranted. The concept of legal land objects proposed by the FIG Cadastre 2014 is explored as a way forward in reforming our land administration systems. The possible impacts on such an approach are discussed as we attempt to better integrate and balance the competing private rights and community interests.

## **Property rights—conflicts in perception**

There is a large body of research dealing with land administration and cadastre management issues particularly from a theoretical or philosophic point of view. Issues involving land and humankind relationships vary in complexity according to the societal types and community aspirations. Many researchers have sought to identify these problems and provide innovative solutions.

Ting and Williamson (1999) highlight these tensions and the need to balance the environmental, social and economic forces against each other as globalisation gathers pace. Their conclusion is that 'the human-kind-land relationship is a dynamic one' and that this dynamism can redefine and change previously accepted private and public rights over land. But change is not always brought about by consensus and more often than not is a result of conflict. This borne out in the current disputes involving water rights and salinity problems becoming issues of contention between landholders and the Queensland Government (Lewis 2002).

The dynamic nature of property rights is further supported by Reeve (2002). He puts forwards the view that property is regarded as 'an institution by which societies regulate the access of individuals and firms to land and natural resources' and that this type of institution, in common with others, changes over time. He further illustrates from Tan's (2002) work that the nature of property changes gradually and 'the fact that one person has property in an object does not prevent others also having property in that object'.

Reeve (1999) argues that rights of land ownership can only have meaning when the owner is part of a society. He identifies that in society the perspective of property rights regimes has transitioned from the concept of social obligation in feudal times to more of an absolutist possession that has underpinned the rise of market capitalism and the industrial revolution. In both urban and rural Australia this latter perspective is very much alive and governments tread carefully in their deliberations on legislative intervention to restrict the rights of landowners.

Else-Mitchell (cited in Roberts 1985) also identifies that the perspective of exclusive or absolutist ownership is changing,

This old fashioned exclusive ownership is changing ...more and more people recognise that, in our modern complex society, an individualistic approach to property rights and land ownership is incompatible with the public interest, unless individual rights are restricted to the enjoyment and use of the land.

In his book on farming in Australia and social attitudes in the 1940s, Hugh Robertson (1945) identifies the issue of property ownership and exclusivity,

In Australian conditions there are no difficulties except custom and the idea that, because we bought the land, we can do what we like with it ... We don't buy the land. We buy the exclusive right to use the land, neither more nor less than that. We are the custodians of the land. The land is not for sale, it belongs to posterity.

In Australia, the recent debates on restriction of land rights have focused on the individual property regimes. The *Wik Case* and *Native Title* legislation in the early 1990s followed by the vegetation and water resource management legislation have been recognised by many rural landholders as being threats to their tenure rights and responsibilities (Hiley 1997). In Queensland, *Agforce*, a rural landholder/industry representative group, is continually developing policies concerning integrated resource management and land tenure issues (McGown & Bremner 2002). Counter to this are policies and discussion papers being developed by the state government and some environmental groups (NR&M 2001; WWF 2002a).

In reality, land has always been subject to restriction by the state. Mineral rights in Australia are vested in the state and have given way to the creation of mining tenures to ensure security during the exploitation of these resources and compensation for the affected landowners. Water rights have been approached from a different perspective. Rather than the state having ownership of water passing through or under a property the legal regime has been based on the State's right to use and control the water (Tan 2002). This has led to the public right to access water through the use of licenses and entitlements and in recent times the trading of water between users.

For land managers at regional to individual property level, the complexity of the task is how to manage land administration related problems caused by changes in the landscape and environment. In tackling similar problems, resulting from a change in primary industry practice, Hannigan & Farmer (1995), suggests altering cadastral land boundaries to 'facilitate beneficial adjustment in primary industries'. Land degradation was suggested as being a product of improper land sub-division from the time of first white settlement, which eventually resulted in a decline in viable economic living areas. This study appears have concluded that the problems began when large-scale property 'grazing runs' were reduced to small size agricultural farm blocks (Hannigan & Farmer 1995).

At the time of writing, the debate between landholders and government over legislative changes which are curtailing land activities related to environment sustainability is heating up (& Anderson 2002b; NFF 2002). The debates are centred on property rights being steadily eroded by legislation, without some form of compensation. While much of the debate concerns the southern states of Australia, there are local issues for Queensland rural landholders that have emerged from the implementation of the *Vegetation Act 1999* and the *Water Act 2000*.

To illustrate the perspective of rural landholders, the National Farmers Federation has taken the position that landholders should have clearly defined property rights and responsibilities and should be compensated if changes in legislation affect these rights and responsibilities (NFF 2002). This policy has gained high-level political support from the Australian Deputy Prime Minister, The Honourable John Anderson who is determined to use the 'National Competition system to require the states of the Commonwealth to recognise the legitimate property rights of farmers and their communities' (Anderson 2002b). In an article for the National Farmers Federation he laid out the principles for the federal government to deal with natural resource issues as being 'information, property rights, incentives and partnerships' (Anderson 2002a). This may reflect a view that holds to an ideal of absolute ownership of property commonly found in conservative groups in Australia and other countries (Reeve 2002).

Regardless of these arguments, the land administration system in Queensland is not well geared to meet the changes in the perception of property rights or to register them. Hence, there is a need to reform the system to accommodate the changing rights caused by dynamic changes in legislation. To aid reform in this area (Williamson 2002) has suggested a 'cadastre toolbox' as a means of benchmarking cadastre systems. That is

the availability of a wide range of options, which would be best fitted to the current status of cadastral systems in Australia.

Another alternative in resolving conflict in land rights has been the use of fuzzy set theory in determining aboriginal land rights in Canada. This was applied in circumstances where there were zones of overlapping rights in land recognised as aboriginal servitudes (Hunter & Ballantyne 2000). The application of this theory may be useful in establish extended property rights in land objects, but may not be applicable in the majority of cases of conflict.

Although the authors suggest that rights, similar to easement rights, could be applicable, the main drawback is that it would require intensive as well as expensive examination of land parcels to tease out the land objects in question from physical landforms. A question here would be delineation on the ground as well as in the data model of land objects within fuzzy theory.

The case for reform and refocusing of land administration systems in Australia is put forward by Lyons et al. (2002). The authors identify that the drivers for reform of the land administration systems include the need to improve land and environmental sustainability, the push for expanded and more flexible property markets and the pressure on governments to reduce expenditure whilst increasing efficiency. They argue that a holistic approach to property rights management and administration is necessary to achieve the maximum benefits.

## **Land administration in Queensland**

In Queensland, like other Australian states, there has been the tendency to unbundle the traditional property rights such as water, vegetation etc, so that they can be controlled and managed separately. In the case of water, its separation from property provides the opportunity to trade the rights in water independently of the land.

Currently in Queensland there are at least 188 separate pieces of legislation that define or impact on property rights or their administration (Lyons et al. 2002). Many pieces of legislation focus on the restriction or management of a particular property right and have necessitated the establishment of separate administrative regimes to manage the impact of this restriction or right. These administrative systems are often isolated or removed from the traditional land property administrative system which continues with its traditional land administration functions.

### **The traditional land administration system**

The traditional land administration functions in Queensland are managed through the department of Natural Resources and Mines (NM&M). Its division of Land Registry Services maintains a range of registries including:

- Freehold Land Register (*Land Title Act 1994*)—including approximately 3.1 million indefeasible titles
- Register of Powers of Attorney (*Land Act 1994 and Land Title Act 1994*)—approximately 111 000 powers of attorney
- State Leasehold Land Register (*Land Act 1994*)—approximately 41 000 leases
- Register of Reserves and Trustees of Trust Land (*Land Act 1994*)—over 26 000 reserves
- Register of Licenses and Permits (*Land Act 1994*)—13 000 road permits
- Register of Easements over Unallocated State Land (*Land Act 1994*)
- Register of Harbour Board Leases (*Land Act 1994*)
- Register of State Housing Leases (*Land Act 1994*)

- Foreign Ownership of Land Register (Foreign Ownership of Land Register Act 1988)
- Register of Dealings Under Part 18 Of Property Law Act (*Property Law Act 1974*)
- Administrative Advice File (*Land Title Act 1994*)—including advices on contaminated land, heritage listings (NR&M 2003).

Nearly 73% of Queensland is held under State leases. These include: leases for:

- pastoral, grazing, commercial and industrial uses
- tourism complexes
- housing estates
- land below high water mark
- reserves
- road licences (allowing temporary use of land for other purposes when a road is closed)
- permits (to occupy a specific parcel of unallocated State land, e.g. a road reserve or stock route).

For mining tenures, 95 per cent of land in Queensland is available for exploration and mining. Exceptions include land gazetted as national and conservation parks (about 4 per cent of the State), World Heritage Areas, defence training areas and land close to improvements (buildings and infrastructure). All land available for exploration must comply with Native title legislation. Some additional land categories are 'constrained', with access possible under specific conditions. The *Petroleum Act 1923 (Qld)* and the *Mineral Resources Act 1989 (Qld)* provide the framework for accessing land in the State. A number of registers exist to record these interests in mining tenures.

#### ***Water tenure management***

Water entitlements in Queensland have been traditionally tied to land however the pressure to activate unused allocations resulted in experimental trading of allocations in the 1980s (Bjornlund & O'Callaghan 2002). The *Water Act 2000* provides the potential for trading of water entitlements, however these can only take place after a comprehensive basin-wide resource plan has been approved. To record these allocations and the trading thereof, a Water Allocations Register has been established.

#### ***Vegetation tenure management***

The Queensland Government recently amended the *Land Title Act 1994* to allow profit à prendre to be registered on land titles. Investors in plantations can use this system to register their interest in trees established on someone else's land on the land title. Land holders can use this system to sell interests in trees without having to sell the land the trees grow on, and without having to fell the trees (Queensland Government 2000). The *Vegetation Management Act 1999* provides a framework for managing the remnant native vegetation on both freehold and leasehold land in Queensland. Currently (June 2003), all applications for land clearing have been halted as the state government continues to negotiate on funding with the federal government.

A number of other registers are also emerging to record permits, restrictions and obligations on land including for fisheries, pest control, contamination and environmental management. The result is an increasing complexity in the management and administration of these rights and restrictions across the many disciplines that have an interest in land. The complexity of the regulatory regime not only creates problems with the holistic management of property rights, but more importantly it is creating uncertainty with landowners, particularly in the rural communities.

In order to rethink a new perspective on land administration we need to look to the vision outlined in Cadastre 2014.

## Cadastral 2014—a view to the future

*Cadastral 2014* is a vision for the way that cadastral systems throughout the world should operate in the future according to Working Group 1 of FIG Commission 7 (FIG 2001). Instead of relying on traditional definitions of the cadastral, the working group expanded these and developed the concept of a land object as being 'a piece of land in which homogeneous conditions exist within its outlines' (FIG 2001, p. 13).

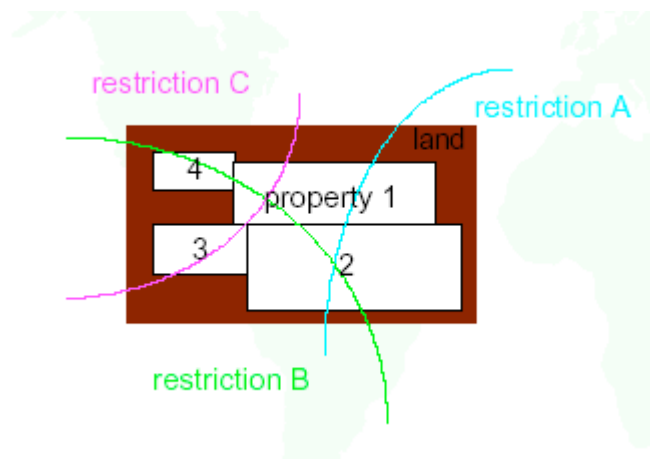
The underlying assumption is that land objects are defined in law. That is the same law which regulates the affairs of citizens. Those objects not able to be so defined by this means are said to represent physical land objects not covered by a legal characteristic. Examples of legal land objects according to FIG (2001) are:

- private property land parcels
- areas where traditional rights exist
- administrative areas such as countries, states, districts
- zones for protection over water, nature, noise, pollution and etc
- land use zones
- areas where the exploitation of natural resources is allowed.

The philosophy behind *Cadastral 2014* is an attempt to rationalise the traditionally separate administrative regimes of 'Land Registration' and 'Cadastral' into 'a comprehensive land recording system' (FIG 2001, pp. 14–5).

Using country responses to questionnaires received by the working group, six statements used as guidelines were developed to define *Cadastral 2014* (FIG 2001). These being:

- Cadastral 2014 will show the complete legal situation of land, including public rights and restrictions
- the separation between maps and registers should be abolished
- cadastral modelling will replace cadastral mapping
- physical paper based systems will have gone
- *Cadastral 2014* will be highly privatised. That means that the public and private sector will be working closer together
- *Cadastral 2014* will be cost recovering.



**Figure 1** Concept of Cadastre 2014 highlighting all rights and restrictions (source FIG 2014)

From this viewpoint, the significance of *Cadastre 2014* is that it is based on data modelling within a common reference system with various land objects organised according to legislation (FIG 2001, pp. 26–9).

In the Australian system, the effects of legislation on land objects such as vegetation and water have yet to be evaluated. Under the current regime of state based land administration and Torrens titling the state guarantees the titles that are issued. However, there are now many other interests in property which comprise various forms of tenure that cannot easily be guaranteed, for example a water allocation which is subject to variations in climate and supply.

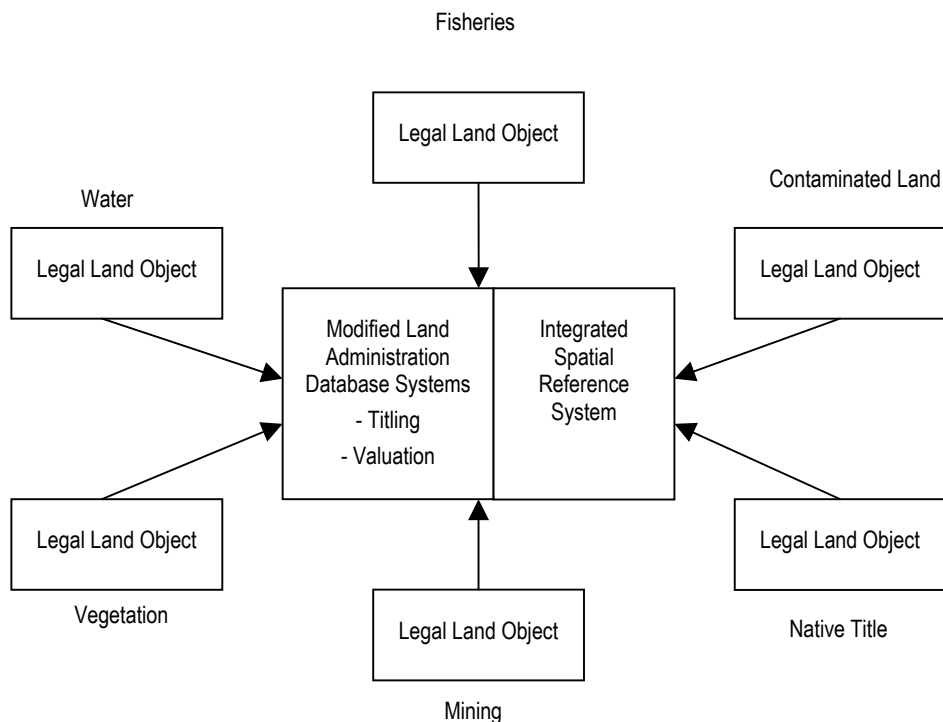
## Remodelling land administration using land objects

As identified by Lyons et al (2002), the issues of reform or refocusing of land administration and property rights will not be solved easily and if left unattended it will only become more complex to address for future generations. The concept of land objects as proposed by Cadastre 2014 (FIG 2001) is new in name, but perhaps not so new in concept. The modelling of spatial data in the form of a multi-purpose cadastre has been around for over 20 years; however its application has focused on data integration rather than administration.

Cadastre 2014 moves the thinking forward by the concept of legal independence to separate data layers (legal land objects) rather than the more simplistic classification by land use or resource. This has the effect of identifying the specific regulatory impacts (right or restriction) by individual layers. In addition another important concept is the relationship between land objects and the rightful claimants (Grise & Johnson 2003). The rightful claimant might have multiple interests in each legal land object and each legal land object may have multiple claimants. As emphasised in Cadastre 2014 the management of the legal land objects and those that have an interest in the land object becomes an exercise in spatial data modelling. So how could this concept be applied to a traditional land administration system such as exists in Queensland and other states.

Firstly, it should be noted that the existing land administration systems in Queensland, particularly the areas of land titling and registration, are highly automated and considerably advanced in comparison to other countries and hence provide a good starting point. However, like the land administration systems in other states around Australia, Queensland has remained reasonably insulated from the activities of the other state agencies in respect to the full range of property rights.

As can be seen in the conceptual model (Figure 2), the system establishes a linkage between the legislated right or restriction, the existing land titling system and the interested parties. Legal land objects would also generally be defined in space in the form of a conventional spatial object (point, line or polygon) in most situations. However, cases may arise where the spatial delineation of a legal land object may not be possible or appropriate e.g. a water allocation, in which case the right may be attached to the land where it originated.



**Figure 2 Conceptual model of modified land administration system**

Ultimately, this may well be achieved by the process of identifying key recognisable land parcel (and or land object) attributes affected by legislation and hence may also be considered as part of the cadastre. These attributes would in effect provide a clear picture of the true value, rights and responsibilities associated with a land parcel. That in turn would enable measurements in terms of economics, social and community values, and the environment to be more easily calculated and/or properly assessed.

It is envisaged these attributes could be updated and certificates to this effect issued periodically to reflect variations in property valuations, due to changes in legislation or when a land parcel is transferred during the conveyancing process.

## Discussion

The proposed conceptual model provides a starting point for the reform of a complex and entrenched bureaucracy that has limited structural change in over a century. The model acknowledges the recent trends to legislate individual rights, responsibilities and obligations over property and seeks to manage these more holistically. This approach might seem logical from a data modelling perspective, but it should also satisfy the business functions of the relevant organisations.

As with many areas of change, it is the institutional or organisational issues that present the greatest challenges to reform the system. The implementation of such a model would firstly require high level political support to recognise the social, environmental and economic benefits for such reform. Having recognised this imperative, it would follow that a portfolio be established to champion this reform. The key institutional obstacles may include:

- privacy issues
- entrenched bureaucratic practices
- custodianship of information



- loss of power
- cost of reform.

The model may also be assessed in terms of the benefits that might normally accrue from a good land administration system. Using the Land Administration Guidelines as defined by the working party on land administration of the United Nations Economic Commission for Europe (UNECE 2000) the following comparison can be made.

**Guarantee of Ownerships and Security**—As the basis for the model is a legal land object it could be assumed that placement of an interest on the register provides a legal record of rights, responsibilities and obligations. However, the increasing number of these registers and the varying degree to which each form of property right is established has the potential to decrease the integrity and security of the system.

**Support for Land and Property Tax**—Improvements in the identification and quantification of property rights should improve the efficiency and effectiveness of collecting property taxes. Whilst not all registrations of property rights would be subject to the imposition of taxes, the ability to quantify the total impact of multiple property rights should provide a better understanding of the net present value (NPV) of land. For example in the case of water, a tradeable water right will impact significantly on the farming potential of a property, hence on the property value and ultimately impact on the taxation base for state and local governments.

**Provision of Security for Credit**—Improved certainty in the knowledge of property rights is a substantial benefit of such a model. Financial institutions are more likely to provide credit on the basis of certainty facilitated by a more comprehensive land administration system.

**Develop and Support of Property Markets**—Through a comprehensive land administration system the identification and transfer of property rights should be achieved with speed and certainty and hence support the development of a more efficient property market.

**Protection of State Lands and Property**—In Queensland, with 73% of the land area under state management it is imperative that this land is carefully managed and controlled by the state. A system that clarifies the rights of all parties, including the state, will protect the state's resource in property.

**Reduction of Disputes**—Property cannot effectively enter the market whilst disputes are pending. Resolution of disputes and uncertainty can be facilitated through access to high integrity and comprehensive information provided by the proposed model.

**Facilitation of Rural Land Reform**—There is no doubt that rural Australia is hurting and that reform of some practices is required. The market driven approach proposed by some economists to the reform of some sectors of the property market can only be achieved through a more comprehensive and flexible land administration system to underpin the security and transfer of property commodities. A flexible but comprehensive model will identify the real value of land and its chattels and facilitate the equitable compensation for land owners, if appropriate.

**Support for Sustainable Development**—The provision of comprehensive and up-to-date information on property rights together with the social, economic and environmental data will support sustainable land use planning and control. The Wentworth Group (WWF 2002b) argues that clearly defined property rights, particularly with respect to water and vegetation, are fundamental to resolving the serious environmental problems faced in the Murray Darling Basin.

The reform of the land administration system in some ways parallels the ongoing development of a spatial data infrastructure (SDI) at local, state and federal levels. In many respects the creation of a comprehensive land administration system is dependent on the sharing and integration of spatially related data. A state based SDI would provide the basis for exchange of property related information and the spatial key to link rights to location.

## Conclusion

Land and property rights are becoming increasingly dispersed across all levels of government and further removed from the traditional land administration systems. The legislative environment has also changed dramatically and resulted in a more complex regulatory environment as governments strive to establish a sustainable framework for managing private and community interests. However, the current system of land administration in Queensland has remained relatively unchanged whilst enormous moves are being made in other property markets.

This disparity must be addressed before consumers begin to lose confidence in its effectiveness and integrity as the foundation of our property market. A remodelled and more dynamic system is required to restore this confidence and more effectively manage the key property resources of the state. A system legal land objects provides a logical approach to modelling and linking both the spatial and non-spatial representation of the rights, obligations and restrictions associated with property. If this concept is progressed, the role of the surveyor and spatial sciences professionals will become critical in recognising, measuring and recording these land related objects in legislative, temporal and spatial frameworks.

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