University of Southern Queensland
FACULTY OF ENGINEERING AND SURVEYING

Property Rights and the Littoral Zone in Queensland

A dissertation submitted by

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Abstract

In Australia, changes in social attitude to conservation and the environment over the past sixty years has demanded changes to property rights, restrictions and responsibilities. In Queensland, as in most jurisdictions in Australia, there has been an increase in controls and a gradual and progressive unbundling of traditionally held property rights as a response by governments to this social change.

This project investigated the property rights, restrictions and responsibilities of land owners in Queensland with property which adjoins the littoral zone. This gave an insight into the number and type of property rights, restrictions and responsibilities which are unique to property with a littoral boundary. The study also examined how these property rights, restrictions and responsibilities were spatially defined and how they were recorded for land administration. Field surveys were carried out at three sites to examine the spatial extent of rights, restrictions and responsibilities in a real world environment.

Results showed that while private property rights, restrictions and responsibilities were recorded under the current titling system, most publicly created rights, restrictions and responsibilities were not. The study also revealed problems with how rights, restrictions and responsibilities are defined spatially in legislation which lead to ambiguity in defining these rights, restrictions and responsibilities in the real world. Finally it was found that where information was available in relation to the spatial extent of rights, restrictions and responsibilities it was often inaccurate.

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Date

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Chapter 1 Introduction

1.1 Project Background

> *"Property is that which a man has a right to use and enjoy without interference; it is what makes him as a person and guarantees his independence and security. It includes his person, his name, his reputation, his chattels, the land that he owns and works, the house he builds and lives in and so on. These things are seen as his property in early law because they are seen as the reification of his will, as the tangible, physical manifestation of his work and his personality."* (Tay 1978 p.10)

Butterworths Australian Legal Dictionary defines *"real property"* in the following terms:

> *"Land and interests in land. The term originated in the forms of action available through the medieval common law courts. In a 'real action', the remedy was recovery of the subject matter of the dispute itself. In practice, the only property which came within the real actions was property in land, hence property in land became known as real property. In actions for recovering other forms of property, the defendant could elect either to return the property in dispute or pay monetary compensation".*

This concept of real property was derived from the feudal land system developed by the Normans following their 11th century conquest of England. Under the feudal system the conquering Norman King claimed ownership of all the land and private individuals derived their real property rights by way of a grant by the Crown.

The underlying principle of the feudal system was that nobody except the King owned land. Land was held by individuals as royal tenants in chief in return for fulfilling various public obligations, principally providing quotas of cavalry. A tenant in chief was able to amass his required quota by subletting his granted land to others on the proviso that they undertake military service as required. A tenant in chief who failed in his obligations with respect to meeting his cavalry quota forfeited his land to the crown.

Upon taking possession of the Australian continent in 1770 by Britain, all land was vested in the British Crown. Subsequently all titles in land issued in Australia have been derived from Crown grants. As a result of this the greatest interest an individual can have in land in Australia is an interest which is good and enforceable against every other individual except the Crown. This type of interest is known as a "*freehold title*" in land.

The word *"freehold"* is defined in *Butterworths Australian Legal Dictionary* as:

> *"A type of land-holding originating in feudal times, being land held by a freeman and subject to services and incidents thought to be appropriate to the status of a freeman. At common law, there were three types of freehold estate: fee simple, fee tail and the life estate. Freeholds are of uncertain duration, unlike leasehold. Historically, they were also unlike leasehold in that possession was recoverable under the real actions. The term is used in modern times simply to mean ownership of land."*

Freehold title is not one consistent type of tenure. The State retains the power to offer freehold title to which is attached different rights and duties applying to the titleholder. In Queensland for example, a number of early titles conveyed the rights to minerals which are ordinarily reserved to the Crown. At one time in Queensland some freehold titles did not convey

timber rights to the title holder (Holmes, 1996). In Queensland, freehold land held as fee simple is seen as being akin to outright or full ownership.

The term *"fee simple"* is defined as:

> *"The estate in land which is the most extensive in quantum, the most absolute in respect to the rights it confers of all estates known to law… and for all practical purposes of ownership, it differs from the absolute dominion of a chattel in nothing except the physical indestructibility of its subject"* (Nygh & Butt 1997)

The key feature of a fee simple interest in land is that it forms part of the estate of the owner and is able to be transferred at any time, or, upon the owner's death, be left to nominated beneficiaries by means of a will.

Fee simple ownership represents absolute ownership of real property but it is limited by the three basic government powers of taxation, compulsory acquisition and police power and can also be limited by certain encumbrances or a condition in the deed. It is the police power or the ability to enact legislation which has the effect of modifying property rights of land owners in Queensland.

In Australia, changes in social attitude to conservation and the environment over the past sixty years has demanded changes to property rights, restrictions and responsibilities. In Queensland, as in most jurisdictions in Australia, there has been an increase in controls and a gradual and progressive unbundling of traditionally held private property rights as a response by governments to this social change.

The Torrens titling system was introduced into Queensland in the mid 1800's in response to a need to simplify the old deeds system inherited from Britain. The Torrens system sought to provide greater security of tenure and lessen the degree of complexity of title transfer inherent in the

deeds system. One of the underlying principles of the Torrens system is to provide a freehold land register as a one stop shop where any person can go to examine the dealings or encumbrances affecting a parcel of land.

As governments continue down the path to sustainable development, the amount of legislation is continually increasing. These legislative restrictions which are designed to protect the land for all by imposing restrictions and responsibilities on landholders exist independently of the Torrens system. The freehold land register in Queensland no longer reflects all of these interests in land.

Queensland's coastal land possesses significant and increasing economic value while at the same time it also possesses significant environmental value. A number of competing rights, restrictions and responsibilities from private and public interests interact in and about the littoral zone. It is now virtually impossible to completely and accurately identify the property rights, restrictions and responsibilities affecting a parcel of land in Queensland.

To date, no attempt has been made to examine spatially the extent to which all Queensland legislation imposes restrictions and responsibilities on land holders with littoral boundaries. This is an important aspect as location is a key enabling attribute to many of the rights, restrictions and responsibilities enacted in the legislation. It is the spatial extent of the rights, restrictions and responsibilities affecting land with littoral boundaries which is the subject of this dissertation.

1.2 Project Aim and Objectives

1.2.1 Project Aim

This project aims to investigate the property rights, restrictions and responsibilities of land owners in Queensland with property which adjoins the littoral zone.

1.2.2 Project Objectives

- Research and collate a summary of relevant Queensland legislation which pertains to land with littoral boundaries.
- Examine how Queensland legislation defines the spatial extent of the rights, restrictions and responsibilities within properties with littoral boundaries.
- Identify four parcels with differing ecosystem and morphological characteristics and obtain access permission.
- Search suitable information repositories to identify rights, restrictions and responsibilities that attach to these parcels.
- Conduct field surveys of those parcels defining the relevant ecological features, the limits of various tide heights and the current cadastral boundaries.
- Compare the cadastral boundaries which define the extent of ownership with the boundary of rights, restrictions and responsibilities as defined in Queensland legislation.

1.3 Scope of Project

This project aims to define the property rights, restrictions and responsibilities specific to land which adjoins the littoral zone and examine the spatial definition of these rights restrictions and responsibilities.

To try to tackle the problem of defining all property rights, restrictions and responsibilities which existing in the state of Queensland is simply to larger undertaking for a study of one years duration. The choice to examine only land with a littoral boundary was an attempt to limit the study to that which would be manageable within the confines of a final year undergraduate project.

1.4 Justification

In Australia, changes in social attitude to conservation and the environment over the past sixty years has resulted in an unbundling of traditionally held private property rights. Coupled with this unbundling of private property rights there has been an increase from all levels of government in the number of restrictions and responsibilities imposed on the private property rights of land owners (Lyons et al, 2002a).

The current titling system, which is supposed to register all interests in land, fails to deal adequately with the volume and variety of rights, restrictions and responsibilities now imposed on land in Australia (Lyons et al, 2001), (Stanley 2006), (Bennett 2005). It is now considered virtually impossible to completely and accurately identify the rights, restrictions and responsibilities affecting a parcel of land in Australia (The Parliament of The Commonwealth of Australia 2001).

To date no attempt has been made to examine spatially the extent to which Queensland legislation imposes restrictions and responsibilities on land holders with littoral boundaries. This is an important aspect as location is a key enabling attribute to many of the rights, restrictions and responsibilities enacted in the legislation.

The problem statement:

> *"The current number and breadth of property restrictions and responsibilities imposed on land with a littoral boundary makes accurate identification of the rights, restrictions and responsibilities affecting a parcel of land by the average citizen difficult".*

1.5 Chapter Summary

This research aims to investigate the property rights, restrictions and responsibilities of land owners in Queensland with property which adjoins the littoral zone. This work will include both an identification of which

rights, restrictions and responsibilities are present on parcels which adjoin the littoral zone and will investigate the spatial aspects of these rights, restrictions and responsibilities.

Chapter two will present a literature review which will explain in detail the concepts relevant to this project and provide details and background on previous studies conducted in this area.

Chapter 2 Literature Review

2.1 Introduction

This chapter will serve as a review the literature on the subject of property rights, restrictions and responsibilities. This review will provide the reader with the necessary background information across several topics relevant to an understanding of this work. The literature review will also introduce the concepts which will be used throughout this dissertation.

This review will examine the evolution of, current understanding and classifications of property rights, restrictions and responsibilities. The underlying principles of the Torrens titling system will be examined, along with the current thinking in relation to the effectiveness of this system for managing modern property rights, restrictions and responsibilities. The Property Object concept will be outlined and background on the ecology and morphology of the coastal zone will also be provided.

2.2 Property Rights

2.2.1. Property Rights

Lyons et al (2002) believe the term “property rights” has many different definitions. Some authors believe the term to relate only to real property or definitions in particular legislation. Others view property rights as a generic term encompassing access rights, use rights or entitlement rights (Bennett 2006), (Henssen1995). Further still, some view rights as being solely restricted to rights and not to include restrictions and responsibilities (Bennett 2005). This confusion with what is or should be included within a definition of private property rights only adds to the problem of identifying what rights a land owner holds.

Common to most accepted definitions of property rights are three qualities as follows (Sheehan and Small, 2002):

1. Management power or the ability to exclude others;

2. The ability to receive income or benefits; and

3. The ability to sell or alienate the interest.

Many authors who define property rights use the concept that property rights comprise a 'bundle" of individual rights. The composition of the bundle varies according to the author; however, in general all include the three basic rights list above. Tan (2002) uses the bundled approach to defining property rights, maintaining that property is simply a legal entity and the property rights defines the relationship between a person and the resource in question. The belief that property rights are generated only by government is known as *legal positivism* (Sprankling, 1999). National Competition Council, (2001) has further expanded the legal positivism concept, it is now accepted that a property right only exists when the community supports and protects the exclusive use and enjoyment of that entitlement. Property rights are now considered legal statements that relate the three entities: the resource, the owner and the non-owners (Bennett 2005). This third entity, 'non owners', is important in relation to restrictions and responsibilities as it is the reason these restrictions and responsibilities exist. All property rights, restrictions and responsibilities are constructs of society, which are constrained through government. The same political structure which defines and protects property also constrains it through restrictions and responsibilities on the owner.

A property right therefore needs to be understood in the context of the broader set of laws, regulations, private contracts, and other formal or informal arrangements that affect the use or other actions in relation to the asset or resource (ACIL Tasman et al, 2004). Property rights can include any of the three basic rights identified by Sheehan and Small, while freehold ownership will typically entail all of them as well as many others.

The theory used to describe this varying level of property rights is known as Tenure Theory. There are four primary tenure types defined within tenure theory: private, public, communal and open access. These primary tenures can be further subdivided into sub classes with leases and

licenses being sub classes of private tenures. Table 1.1 illustrates how the bundle of rights held by an individual can vary according to the tenure position they hold. In Australia, a bundle of rights equating to ownership is registered and secured by the state government using the Torrens form of registration.

	Owner	Proprietor	Claimant (Tenant)	Authorised User	Authorised Entrant
Access	X	X	X	X	X
Withdrawal	X	X	X	X	
Management	X	X	X	X	
Exclusion	X	X			
Alienation	X				

Table 2.1: Bundles of rights associated with tenure position (Ostrom and Schlager, 1996)

Henssen, (1995) chose to classify property rights, restriction and responsibilities along the lines of whether they are created for reasons of security such as easements or mortgages or whether the right, restriction or responsibility was created through a desire to use or restrict the used of land in some way. Kaufmann & Steudler, 1998 used a similar approach to classifying rights restrictions and responsibilities they introduced the terms private property rights and public property rights to describe the difference in how the right was created.

2.2.2. The Torrens System of Land Titling

Butterworths Australian Legal Dictionary defines *"Torrens title"* as follows:

> *"A system of land title where a register of land holdings maintained by the State guarantees indefeasible title to land included in the register. The system gives title by registration, as opposed to old system title, which depends on proof of an unbroken chain of title back to a good root of title."*

The foundation of current freehold land administration in Australia was the introduction of the Torrens system into South Australia in 1857. The

Torrens system was subsequently adopted in Queensland in 1861 with the assent of the *Real Property Act 1861*.

The Torrens system was a change to the then existing Deeds system inherited by the Australian colonies from English Property Law. Under the Deeds system the title to land was adduced by tracing the chain of title to the vendor who wished to pass on the interest in the land. The purchaser of the title drew their own conclusions as to the validity of the vendor's title according to the evidence provided through the conveyance.

The Torrens system aimed to overcome the five major problems of the English Property Law system. Namely it was too complex, too costly, too uncertain, too slow, and it created a low value of credit against the land.

Under the Queensland *Real Property Act 1861* and all subsequent Acts deal including the current *Land Title Act 1994, a* Register of Titles is to be maintained by the Registrar, whereby a separate Certificate of Title is created and maintained for each parcel of land. The Certificate of Title records details of the property description, the nature of the estate held in the land, the name of the registered proprietor, and a record of any dealings or encumbrances affecting the land.

This keeping of a freehold land register reflects one of the key principles enshrined in the Torrens system of land administration - as the *"Mirror Principle"* (Ruoff 1957). The "Mirror Principle" holds that a potential purchaser of freehold property need only examine the content of the freehold land register with regard to a particular property to examine the nature and extent of any dealings affecting the land. That is to say, the Certificate of Title reflects the rights, restrictions and responsibilities that burden the land. In addition to the *"Mirror Principle"*, there are two other key principles that underpin the Torrens system.

The *"Curtain Principle"* requires that the register is the sole source of information for intending purchasers. This then saves a person dealing with registered proprietors from the trouble and expense of going behind

the register, in order to investigate the history of title, and to satisfy themselves of the titles validity.

The *"Indemnity Principle"* provides that, if through human frailty (in the Registry), the mirror fails to give an absolutely correct reflection of the title and a flaw appears, anyone who thereby suffers loss must be put in the same position, so far as money can do it, as if the reflection were a true one (Law Reform Commission New South Wales 2001).

Due to the fact that the Torrens System emanated from within a society who's legal system was developed during a period when private law was dominant it is not surprising then that private property rights; those created through private contract are the rights, restrictions and responsibilities which have traditionally recorded in the freehold land register. The Queensland *Land Title Act 1994* includes provisions for the recording privately created rights in the register. These privately created rights, restrictions and responsibilities include; mortgages, easements, covenants and leases. This system for the recording of security rights has done and still does work very effectively in securing these rights for the owner or the benefiting party.

While the system for recording private property rights works well there is now a number of authors (Lyons et al, 2001), (Stanley 2006), (Bennett 2005) who believe that the existing titling system no longer achieves the aim of managing all the rights, restrictions and responsibilities that relate to a particular piece of land. It is in the area of publicly created rights, restrictions or responsibilities that there is a problem.

In general the spatial component of public rights, restrictions or responsibilities is widely publicised during the consultation process of a law-making. After the law is enacted however these documentation are kept within the government department administering the legislation. A search of the freehold land registry will generally not reveal the publicly created property rights, restrictions and responsibilities attached to a parcel of land. Interested parties must make additional inquiries to obtain

information about public property rights, restrictions and responsibilities. This is a clear example of having to go behind the 'Curtain' of the register to establish the true nature of all property rights attached to a particular parcel of land.

2.2.3. Queensland Regulations affecting Property Rights

The myth that ownership of land confers absolute powers is probably best summed up in the following quote

> *'The picture of the owner pointing both literally and metaphorically to the boundary of his property and stating that no one, individual or government, can cross this line without permission; within the boundary the owner is Ruler, free to do with the land whatever he wishes. Property thus becomes a powerful concept. It represents autonomy, control and freedom from interference. The owner is free to act in any way, in total disregard of the moral and social claims that those outside the property may have.*
>
> *This is an image full of rhetoric, but it is a false image. Even the holder of a fee simple estate, undoubtedly an owner, and the fullest ownership known to English land law, is not such a Ruler. His freedom to use the land is wide but not absolute. All sorts of limitations are placed upon land use, some specific to the particular land (for example, restrictive covenants and easements) and some general to all land (such as planning laws, tort laws, and environmental laws)'.(Bright 1998* pp530-531).

In Australia, changes in social attitude to conservation and the environment over the past sixty years has demanded changes to property rights, restrictions and responsibilities. In Queensland, as in most jurisdictions in Australia there has been an increase in controls and an

unbundling of traditionally held private property rights as a response by governments to this social change.

In order for governments to introduced new rights, restrictions and responsibilities under the system which supports the recording on the title of privately created rights, restrictions and responsibilities governments would be required to negotiate with each individual land parcel owner. The aim of these negotiations would be to create a private contract in the form of a covenant or easement which could would be recorded on the title in the freehold land registry. This system would clearly be cumbersome and relies on the willingness and consent of the property owner for it to work. Without some incentive for the owner it is highly unlikely that such a system would be workable.

In order to create a more workable system Governments began to use the power of the constitution to broadly designate zones where new rights, restrictions and responsibilities take effect. The boundaries of these areas are principally independent of the private property boundaries, but they do have significant impact on the use of the land (Kaufmann & Steudler 1998).

In Queensland legislation which is aimed at conserving the environment often has independent boundaries which are supposed to be related to the ecology or morphology of the area to be protected. These boundaries are often set from information collected at a small scale; satellite imagery and the like which is completely at odds with the scale and accuracy at which property boundaries are defined. It is this dichotomy of scales which can present a problem when trying to understand the spatial extent of the right, restriction or responsibility when they are identified in the real world.

Lyons et al (2002) found that in Queensland there are at least 188 separate pieces of legislation that define land related property rights or impact on their administration/management while there was a further 19 Federal Acts that could also have an important impact. Of the 188 pieces of legislation there are 24 major pieces of legislation affecting property

rights in Queensland. The 164 other pieces of legislation contain the fine details within the myriad of Regulations and range of “Directions” issued by “registering” Authorities that can also have an impact on property.

Queensland coastal land possesses significant and increasing economic value while at the same time also possesses significant environmental value. A number of competing rights, restrictions and responsibilities from private and public interests interact in and about the littoral zone making it unique with respect to complexity of competing interests.

Because of the reach and volume of the regulations, the current system is enormously complex, and has reached the point to which no one person or government authority is able to identify with any certainty, the property rights affecting a particular area of land. Freehold property owners probably have little idea of the restrictions and responsibilities that affect their property’s use and value. This is especially so with land with a littoral boundary where there is an increased number of rights restrictions and responsibilities in place.

2.2.4. The Property Object

The problem then is how do we best classify and understand property rights, restrictions and responsibilities. Bennett (2006) suggests the concept of the property object, a precise but flexible analytical framework capable of applying to all rights, restrictions and responsibilities whilst identifying their specific attributes. The property object framework is based on the concepts of the land object introduced by Kaufmann and Steudler in their paper Cadastre 2014 A vision for a future cadastral system. The property object permits a holistic treatment of all rights, restrictions and responsibilities, whilst allowing for meaningful contrast between rights, restrictions and responsibilities. It conveys the essential information needed by Government and citizens about land and resources in an appropriate administrative framework while delivering sustainable development objectives.

The property object concept of describing each individual rights, restrictions and responsibilities consists of five attributes: objective, action regulated, spatial extent, duration and people impacted Figure 2.1.

The objectives attribute attempts to understand the reasons why a right, restriction or responsibility has been enacted. In doing this it creates a clear picture as to the purpose of the right, restriction or responsibility for both the owner and non owner.

The action attribute defines the extent to which particular activities can be regulated or created by a right, restriction or responsibility with regard to land or a land resource.

Spatial extent refers to the area over which the right, restriction or responsibility exists. The spatial extent can be further classified as either parcel or non parcel which is further divided into specific, patchwork or blanket. Parcel extents can be categorised as any one of the following point/object, polygon, network or dynamic.

Duration refers to the length of time over which the right, restriction or responsibility is intended to apply. In the past, Legislation has tended not to define duration; this has meant that many rights, restrictions or responsibilities are no longer reasonable and relevant. The duration of a right, restriction or responsibility can be classified as either once, repeat, ad hoc or indefinite.

The people impacted attribute identifies the person or group of people affected by the right, restriction or responsibility. Each right, restriction or responsibility involves two groups, one benefiting from the right, restriction or responsibility and the other subservient to it.

While the property object concept is most useful for providing a framework to create well defined property rights, restrictions and responsibilities, the property object can be used to better understand and classify existing rights, restrictions and responsibilities applying to land.

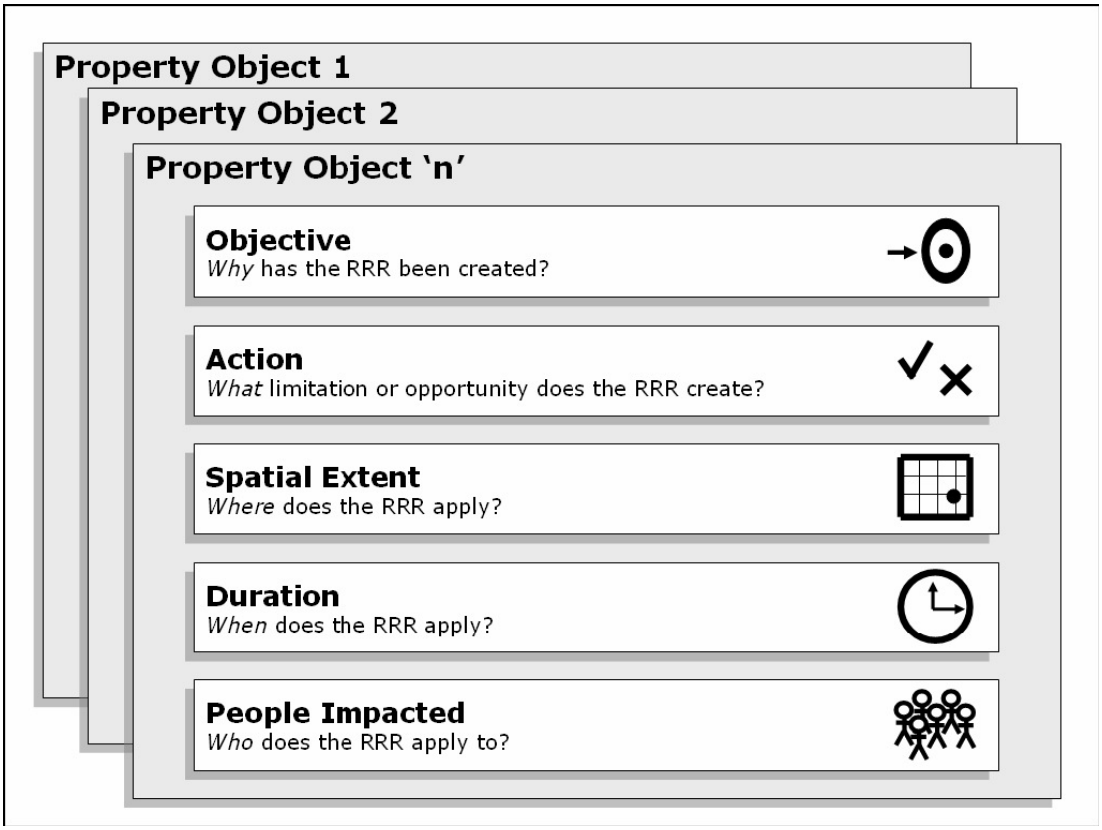

Figure 2.1 The five key attributes of a property object. (Bennett 2006)

2.3 The Coastal Environment

The coastal zone is defined as all coastal waters and all areas to the landward side of the coast, where there is a link to coastal processes (EPA, 2006). This study however is interested in land only with a littoral boundary, which is land which boarders an area of tidal land. The definition of the coastal zone for the purposes of this study only encompasses land as far as the extent of Highest Astronomical Tide (HAT).

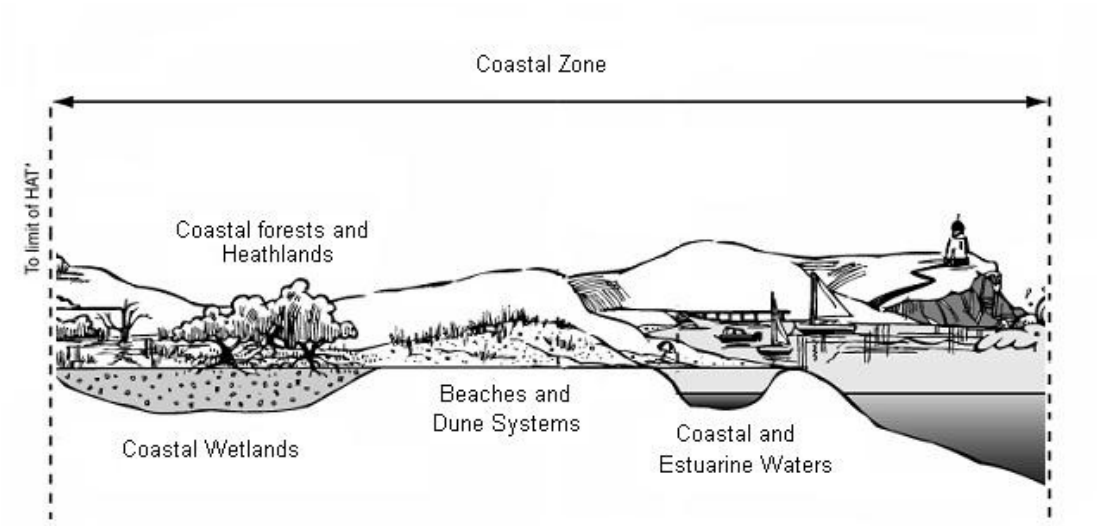

Figure 2.2 Queensland's coastal zone (modified from EPA, 2006)

The coastal zone depicted in Figure 2.2 is made up of a number of component ecosystems with differing morphological characteristics. The South East Queensland Regional Coastal Management Plan identifies 12 coastal resources, however not all are relevant to this study due to the aforementioned succinct definition of the coastal zone used in this study. For example, the Management Plan identifies coral reef systems as one such coastal resource, however these areas by their nature are found offshore and not bordering the littoral zone. Using the classifications with the plan four major ecosystems can be identified.

2.3.1 Beaches and Dune Systems

Most beaches are backed by vegetated sand ridges called dunes, built up by dry beach sand blown inland and trapped by plants and other obstructions. As sand accumulates, the dunes become higher and wider.

Plants play a vital role in this process, acting as a windbreak and trapping the deposited sand particles. Vegetation on the beach and dunes tends to occur in zones, according to the degree of exposure to harsh coastal conditions. Closest to the sea on the foredune are generally colonised by Sand Spinifex Grass (*Spinifex sericeus*) and Goat's Foot (*Ipomoea pes-*

caprae). Close behind these plants on the frontal sand dunes, Coastal She-oaks (*Casuarina equisetifolia*) are commonly found.

Beaches and dunes provide an important physical barrier against the impacts of coastal erosion and extreme weather events. Beaches backed by vegetated sand dunes are very effective coastal protection features. They absorb the erosive energy of waves generated by cyclones and storms and they are reservoirs of sand that replenish the beach during periods of wave erosion.

2.3.2 Coastal Wetlands

Coastal wetlands include a range of terrestrial, tidal and freshwater wetlands, as well as low-lying estuary systems encompassing mangrove forests and their associated saltmashes and sedgelands. Mangrove refers to many different species of trees and shrubs that grow in the intertidal zone. These plants have the ability to tolerate varying amounts of salt in soft muddy soil which is often devoid of oxygen.

Saltmashes occur as a band at the landward edge of the mangrove zone. They are usually very salty as they are only inundated by high spring tides which leaves salt deposits behind as the water evaporates. Saltmashes typically have a meadow of salt couch at the uppermost area of tidal inundation. Towards its seaward edge fleshy plants like the Australian Seablite and Common Sapphire dominate. Sedges and rushes may form a band at the landward edge of the mangrove/saltmarsh zone where salinity is lowered by good freshwater drainage.

2.3.3 Coastal Forests and Heathlands

Heathlands and shrub lands are characterised by low growing multi stemmed shrubs with herbs, grasses and sedges. The vegetation in heathlands is generally low growing less than two metres with the occasional small emergent tree. Heathlands and shrublands are found on poor sandy soils and can be exposed to salt laden winds. Heathlands and

shrublands plants often extend as an understorey into adjacent Melaleuca (paperbark) forests.

2.3.4 Coastal Rivers and Estuarine Waters

Estuarine waters comprise sheltered coastal bodies of water where the mouth of a river meets the sea. These areas are typically shallow due to the silt deposited from the outflow of the rivers. Estuarine waters can extend significant distances inland as far as the influence of tides. These areas are environmentally significant as they are typically characterised by high rates of biological productivity and are important in the lifecycle of a number of terrestrial and marine species. These areas are typically characterised by a thin mangrove along the banks of the rivers which sometimes extend inland as coastal wetlands. The species composition of the mangrove strip is very much dependent on the distance upstream from the river mouth and the amount of salt in the water.

2.4 Chapter Summary

The review of literature revealed that there has been a growth in the amount of legislation which creates new public property rights, restrictions and responsibilities. These public property rights, restrictions and responsibilities are rarely recorded in the freehold land register and separate searches need to be undertaken in order to establish the existence of these rights, restrictions and responsibilities. The review also revealed that the spatial component to these rights, restrictions and responsibilities are generally supposed to relate to ecological or morphological features on the ground. Further publicly created rights, restrictions and responsibilities rarely relate specifically to cadastral boundaries which form the spatial foundation of our titling system.

Chapter 3 Methodology

3.1 Introduction

Essentially this project is in three phases. The first phase is a desktop study of current Queensland legislation which contain rights, restrictions and responsibilities. The second phase is the selection and field survey of four parcels of land with littoral boundaries. The third and final phase is the office reduction and analysis of the field data, the production of plans and the publishing of the results.

3.2 Research and Analysis of Queensland Legislation

Queensland littoral boundary legislation review.

This phase of the research was conducted as part of the literature review process. A summary of Queensland legislation which was current in 2002 was contained within Lyons et al (2002). This previous summary formed a start point from which to examine the current legislation which affects property rights, restrictions and responsibilities. Additional legislation to that which was identified during the 2002 study i.e. legislation passed post 2002, was examined to establish the effect, if any, on property rights, restrictions and responsibilities. If the legislation was found to have an effect on property rights, restrictions and responsibilities the nature of this effect was characterised in order to identify whether the rights, restrictions and responsibilities effected were of significance to properties with littoral boundaries.

The results of the list of legislation compiled during the above review process were cross checked using the Integrated Development Assessment System (IDAS) Assessment Checklist. This checklist forms part of the application process for development approvals granted through the IDAS process. The purpose of this checklist is to ensure an applicant has correctly identified which approvals are necessary for a proposed development.

The IDAS checklist establishes which Queensland Government Departments are triggered either as advice agency or as concurrence agency under the *Integrated Planning Act 1997* (IPA).

The assessment of whether an agency is triggered as an advice agency or concurrence agency is important to this study as only concurrence agencies have a statutory approval to issue. Therefore only concurrency agency Departments administer legislation which imposes restrictions or responsibilities upon the land.

Examine how Queensland legislation defines the spatial extent of the rights within properties with littoral boundaries.

Legislation identified as having an effect on the rights, restrictions and responsibilities of property with a littoral boundary were critically assessed to using the property object framework established by Bennett et al (2006). A summary table was produced for each individual property object.

3.3 Field Survey

Identify four parcels with differing ecosystem and morphological characteristics and obtain access permission.

The property objects identified during phase one of the project were examined and the object of each was assessed to establish its critical rights, restrictions and responsibilities effected. This examination resulted in a list of ecological and morphological characteristics which if present on a site resulted in a right, restriction or responsibility being imposed.

Conduct field surveys of those parcels defining the relevant ecological features, the limits of various tide heights and the current cadastral boundary.

It was originally proposed to undertake field surveys of four individual sites with littoral boundaries. These four sites were selected and permission was obtained to undertake the field component of this study. However the owner of the fourth site decided to withdraw their permission. There was

then insufficient time to find an alternative fourth field study site for inclusion in this study.

Field surveys of the three lots were conducted using a Trimble ™ 5600 robotic total station. Australian Height Datum (AHD) was used in all instances and was derived from the nearest appropriate Permanent Survey Mark. Ecological and morphological features of each lot were identified and located with particular attention paid to Remnant vegetation or marine plant community boundaries.

3.4 Office Reductions and Analysis

Search suitable information repositories to identify the rights, restrictions and responsibilities that attach to those parcels.

Data was outputted as comma separated values and imported to civilCAD® for initial data checking of point stringing. An initial Digital Terrain Model (DTM) was formed and checked for completeness with long or erroneous triangles removed. Data was then imported to Civil 3D® for further manipulation and drafting. Tidal planes for mean high water springs (MHWS) and highest astronomical tide (HAT) were constructed using tide data published in the 2007 Official Tide Tables and Boating Safety Guide.

Compare the cadastral boundaries which define the extent of ownership with the boundary of rights, restrictions and responsibilities as defined by the various pieces of legislation.

Cadastral boundaries were then drafted for each of the subject lots and overlayed on the detail plots. The ambulatory boundary was plotted by producing by intersecting the tidal plane for MHWS and intersecting it with the DTM to form the lot boundary. Plots were then prepared and exported for inclusion in the final dissertation.

3.5 Chapter Summary

This chapter has set out the methodology which was used in this study to establish the nature and extent of rights, restrictions and responsibilities which relate to three study sites with littoral boundaries.

Chapter four sets forth the results of this study. Chapter four includes the results of the review of Queensland legislation including the summary property objects for the individual rights, restrictions and responsibilities. The results of the field surveys conducted as part of this research are also included in the following chapter there are number of plans which were produced to examine and compare the boundaries of the rights, restrictions and responsibilities identified.

Chapter 4 Results

4.1 Coastal Management Legislation

There are 988 pieces of legislation (Acts and Regulations only) currently enacted in Queensland, of these, 560 are Acts and the remaining 428 are the associated regulations. There are over 200 separate pieces of Queensland legislation which define property rights restrictions and responsibilities. Lyons et al (2002) identified 24 as being major pieces of legislation effecting property rights in Queensland. Since 2002 a number of new pieces of legislation have been enacted, the total now stands at 27 separate Acts.

At the end of the review process four individual pieces of legislation were identified as having an effect specific to land with a littoral boundary. These are the:

1. *Coastal Protection and Management Act 1995*
2. *Fisheries Act 1994*
3. *Vegetation Management Act 1999*
4. *Wild Rivers Act 2006*

The last two pieces of legislation do not deal specifically with the coastal zone. The legislation does however contain rights, restrictions or responsibilities which relate to processes or ecosystems which occur only on land which borders the littoral zone.

4.1.1 *Coastal Protection and Management Act 1995*

The *Coastal Protection and Management Act 1995* has four objectives.

1. To provide for the protection, conservation, rehabilitation and management of the coast.

2. To promote the principles of Ecologically Sustainable Development (ESD) in the use of the coastal zone.

3. Provide a coordinated and integrated management and administrative framework for the ecologically sustainable development.

4. To encourage the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone.

These objectives are achieved through providing a legislative framework which enables the formulation of Coastal Management Plans, declaration of coastal management districts, coastal build line and key coastal sites.

The *Coastal Protection and Management Act 1995* uses a complex system to define the spatial extent of the rights, restrictions and responsibilities it imposes on land. The various property objects created in the legislation use differing spatial classifications to define their extents.

Section 35 Coastal Plans

Coastal Plans are a statutory instrument under the *Coastal Protection and Management Act 1995*. This gives coastal plans legal weight to guide relevant decisions by State and local governments and the Planning and Environment Court. Coastal Plans also have the effect of State Planning Policies under the *Integrated Planning Act 1997* (IPA). IPA requires such policies to be addressed in assessing development applications, when preparing or amending planning schemes and when land is designated for community infrastructure.

Coastal Plans are defined spatially based on a combination of local government areas and natural boundaries. Coastal Plans are therefore non parcel specific polygons which can incorporate part parcels at the natural boundary of catchments Figure 4.1.

The South-east Queensland (SEQ) Coastal Plan applies to all coastal waters and all areas to the landward side of the coast where there is a link to coastal processes in SEQ. In SEQ the coastal zone includes the area between Maroochy Shire to the north and the Queensland-New South Wales border in the south. The western boundary of the plan is defined by the landward edge of the coastal river catchments.

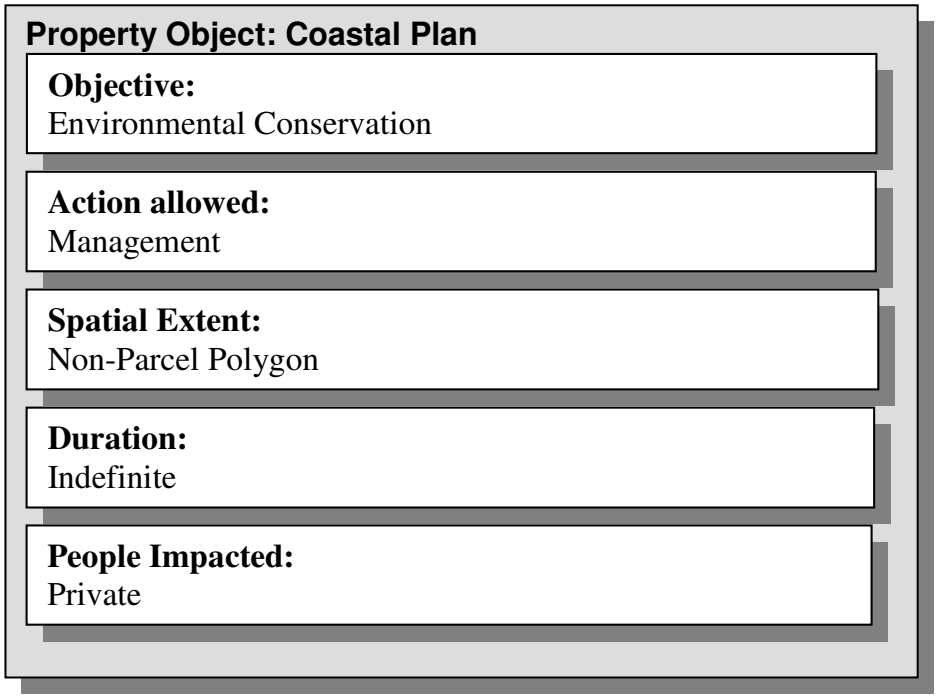

Figure 4.1 Coastal Plan Property Object

Section 54 Coastal Management Districts

Coastal management districts identify the area where the EPA has a statutory role (i.e., concurrence agency or assessment manager) under the IDAS process. Existing property use rights are maintained on land within a coastal management district. Section 150 of the Coastal Act states that the landowner may apply for compensation for any prohibition of an existing right that is imposed by a coastal management plan or the declaration of the coastal management district. Coastal management districts become relevant for persons if they apply to develop their land and a development approval is required.

Coastal management districts are spatially the most complex of the property objects created under the *Coastal Protection and Management Act 1995*. These objects are defined spatially based on a combination of 12 separate descriptors:

1. Lot
2. MHWS +40m
3. MHWS +100m
4. MHWS +140m
5. HAT
6. Revetment wall +10m
7. Wetland
8. Dunes
9. Road
10. Coastal side of Road
11. Transition
12. 40 m landward from the seaward boundary of the lot

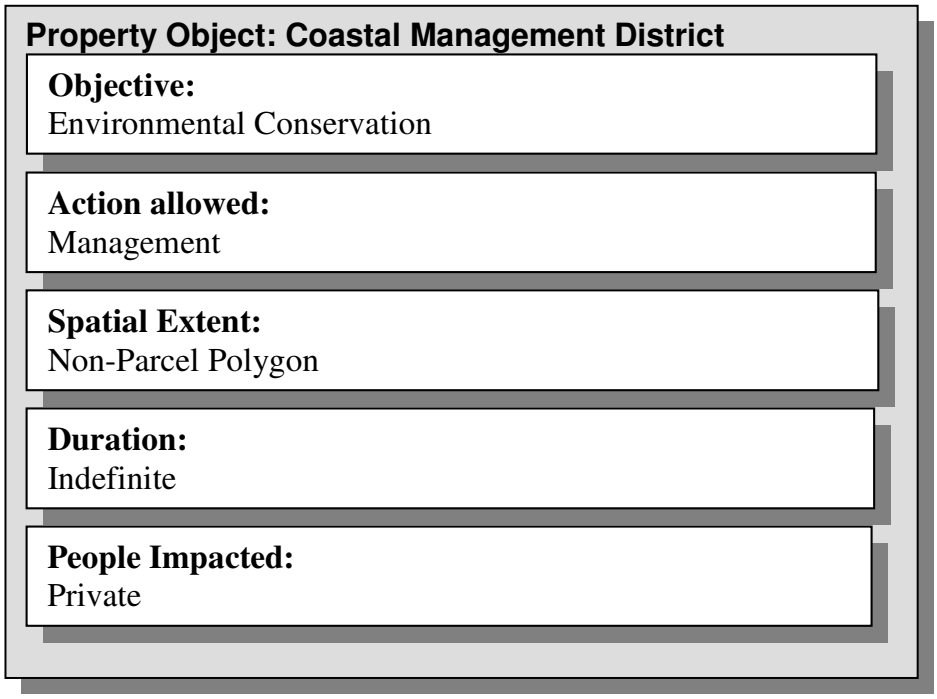

Figure 4.2 Coastal Management District Property Object

Coastal Management Districts are classified as non-parcel specific polygons, which commonly incorporate part parcels. The Coastal Management District property object is shown in Figure 4.2.

Section 66 Coastal Building Line

The Coastal Building Line is used to regulate building work in areas prone to erosion in a Coastal Management District. Coastal Building Lines are declared under the *Coastal Protection and Management Act 1995* and are fixed by regulation or notice. The coastal building lines exist to limit the encroachment of permanent works into erosion prone areas where coastal processes can occur naturally without the need of property protection works.

Coastal Building Lines are defined spatially based on a declared set distance from parcel boundaries. Coastal Building Lines are parcel specific boundaries which apply to only a small number of properties within a particular geographical area The Coastal Building Line property object is shown in Figure 4.3.

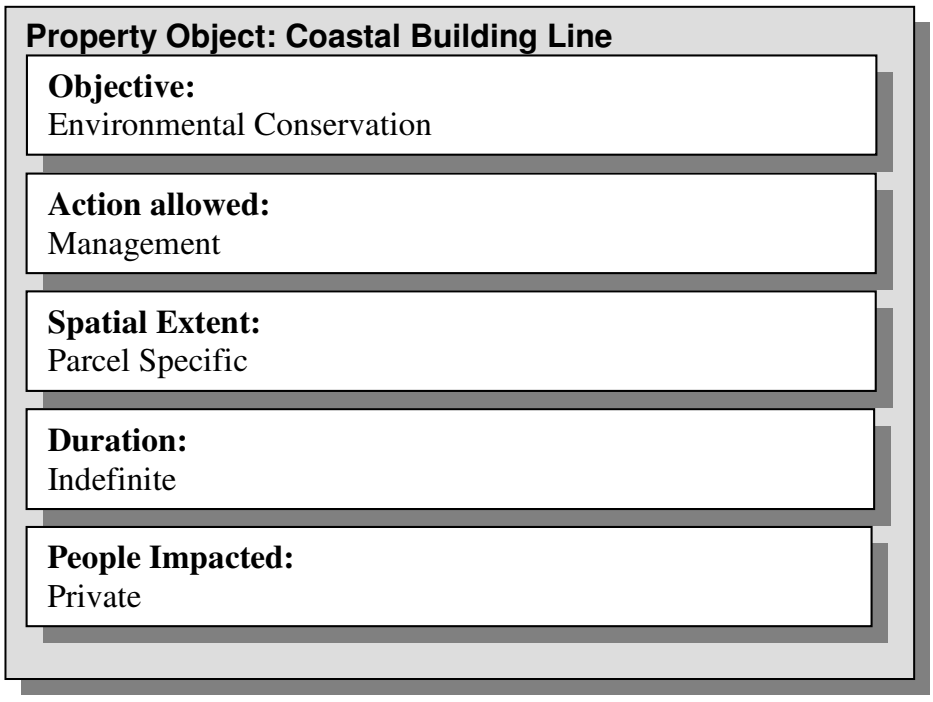

Figure 4.3 Coastal Building Line Property Object

Key Coastal Sites

A key coastal site is an area of high ecological value where an integrated planning approach needs to be developed to ensure special coastal management needs are addressed. In identifying a key coastal site, the particular coastal management issues affecting the area are identified and desired coastal outcomes are provided. Information provided for the key coastal site should be read in conjunction with the relevant regional policies (EPA 2006).

Key Coastal Sites are defined spatially by arbitrary administrative boundaries which loosely follows a number of natural feature criteria. Key Coastal Sites are therefore non-parcel specific boundaries which forms an administrative polygon. The Key Coastal Site property object is shown in Figure 4.4.

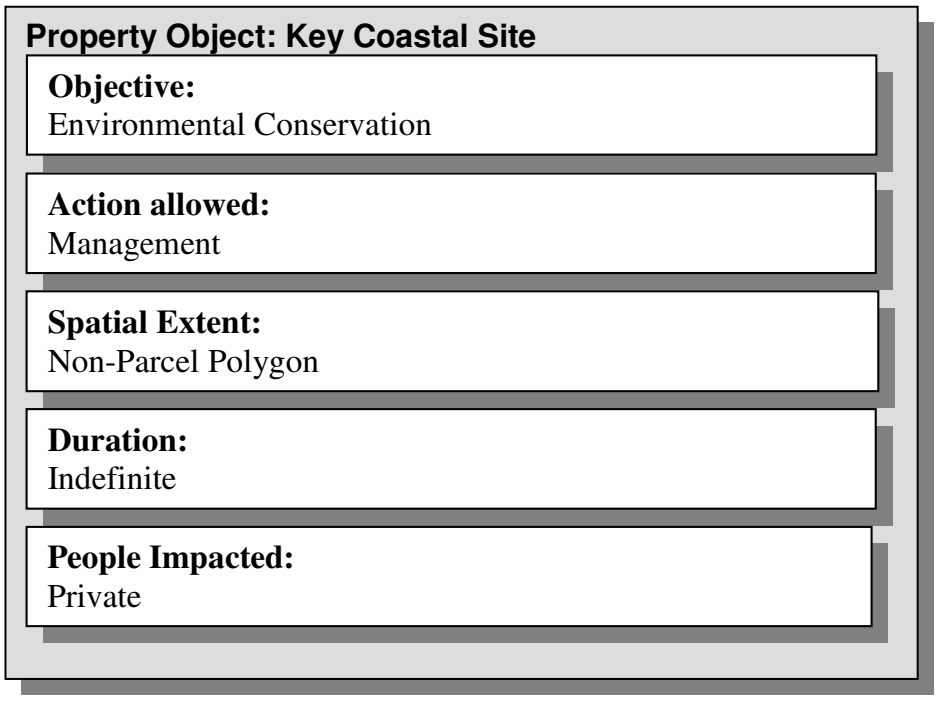

Figure 4.4 Key Coastal Site Property Object

4.1.2 *Fisheries Act 1994*

The main purpose of the *Fisheries Act 1994* is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats. The area of significance to land owners with littoral boundaries within the *Fisheries Act 1994* is in how the act seeks to manage and protect fish habitats.

To this end the *Fisheries Act 1994* section 123, provides protection to all marine plants by making it unlawful to remove, destroy or damage a marine plant; or cause a marine plant to be removed, destroyed or damaged.

A marine plant is defined under section 8 of the *Fisheries Act 1994* as a plant or plant material that usually grows on, or adjacent to, tidal land, whether it is living, dead, standing or fallen; but does not include declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002*.

Tidal lands is defined as being lands below the level of Highest Astronomical Tide (HAT), which is the highest level that can be predicted to occur under average meteorological conditions and any combination of astronomical conditions. This level will not be reached every year, and is less than the extreme levels that can be caused by storm tides.

Marine plant protection areas are defined spatially by a combination of natural features including the species of plant and the extent of tidal influence, defined as HAT. Marine plant protection areas therefore do not apply uniformly across all parcels but are parcel specific boundaries that form a spatial patchwork. The Marine Plant property object is shown in Figure 4.5.

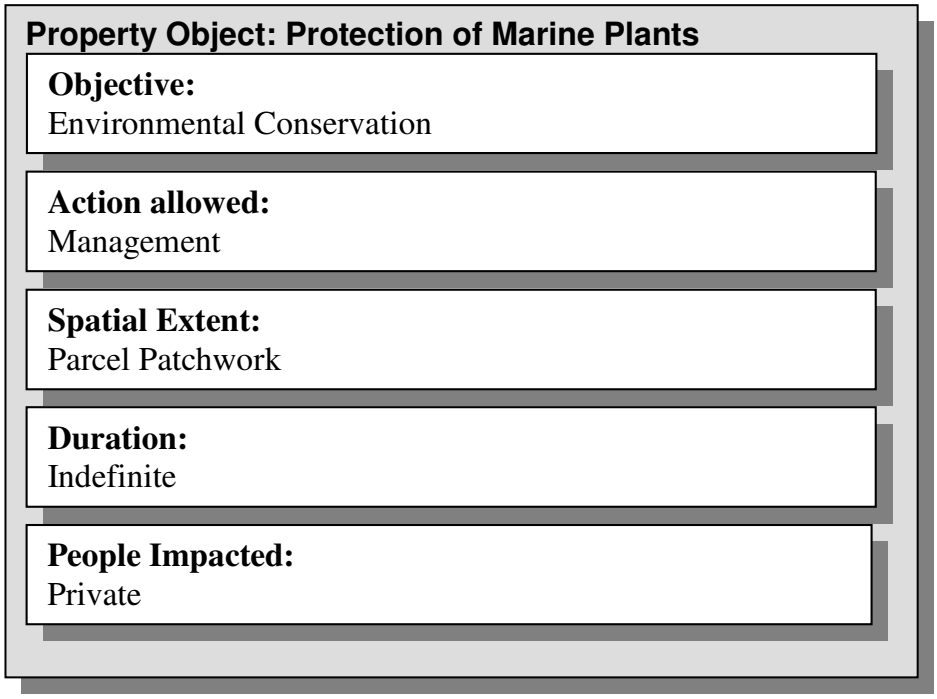

Figure 4.5 Marine Plant Property Object

4.1.3 *Vegetation Management Act 1999*

The purpose of the *Vegetation Management Act 1999* is to regulate the clearing of vegetation in a way that conserves vegetation variously classified as:

- remnant endangered regional ecosystems
- remnant of concern regional ecosystems
- remnant not of concern regional ecosystems.

As was discussed in the beginning of this section the effects of the *Vegetation Management Act 1999* are not specific to the littoral zone however, due to the conditions associated with the littoral zone much of the vegetation present in and about this zone is unique. Coupled with the historical development pressures and vegetation removal practices of the past, much of the littoral zone vegetation is now classified in one of the three categories mentioned above.

Vegetation Management boundaries are defined spatially based on natural boundaries. Vegetation Management boundaries are non-parcel specific polygons which can incorporate part parcels where vegetation only covers part of an individual parcel. The Vegetation Management property object is shown in Figure 4.6.

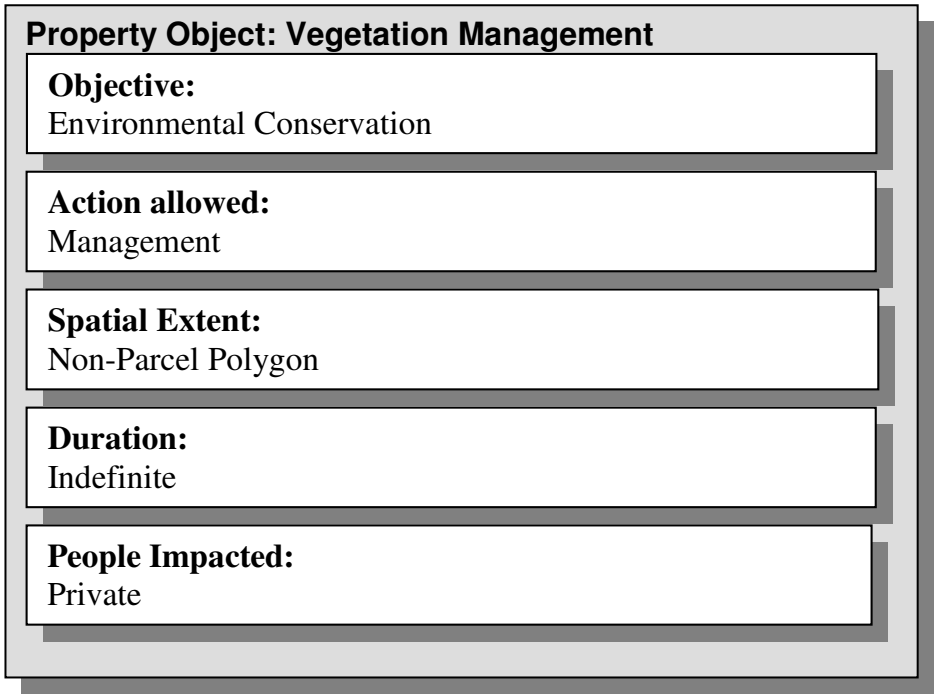

Figure 4.6 Vegetation Management Property Object

4.1.4 *Wild Rivers Act 2006*

The purpose of the *Wild Rivers Act 2006* is to preserve the natural values of wild rivers. It does this by regulating most future development activities within the Declared Wild River and its catchment area. A Wild River declaration outlines where certain types of new development can occur in the wild river catchments and under what conditions. Wild river requirements do not apply to developments existing at the time of declaration only to new proposed developments.

The following six Wild River Areas were declared in February 2007:

- Settlement River
- Gregory River
- Morning Inlet
- Staaten River
- Fraser Island Rivers and Creeks
- Hinchinbrook Island Rivers and Creeks

Wild River boundaries are defined spatially based on natural boundaries i.e. catchments boundaries. Wild River boundaries are non-parcel specific polygons which can incorporate part parcels where the extent of the catchment only covers part of an individual parcel. The Wild Rivers property object is shown in Figure 4.7.

None of the three field sites in this study were within a Declared Wild River Area.

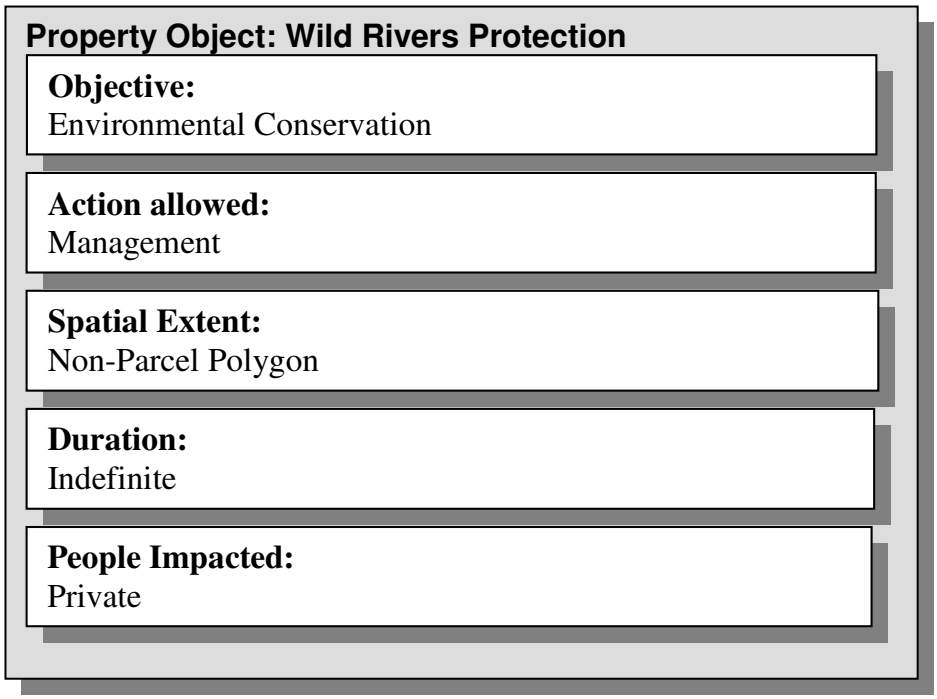

Figure 4.7 **Wild Rivers Property Object**

4.2 Field Study

4.2.1 Site 1 Lot 11 SP100663

This site is bounded by Siganto Drive to the North West, Hope Island Road to the North and Saltwater Creek to the East and South East. Saltwater Creek is a tidal tributary of the Coomera River with Lot 11 situated approximately 7 km upstream from its confluence with the Coomera River.

The total area of Lot 11 is 20.7227 hectares with approximately 1km of frontage to Saltwater creek. Lot 11 has an ambulatory boundary to Saltwater Creek with Mean High Water Spring (MHWS) tide defining this boundary. The creek bank in this area is characterised by a steep bank rising about 0.4 of a meter above MHWS along much of Lot 11's frontage. The creek bank is vegetated with a uniform strip of Mangroves mainly Grey Mangrove *Avicennia marina* and River Mangrove *Aegiceras corniculatum.* Immediately landward of the margin of the mangroves is an area of Casuarina open forest consisting of an upper storey of She-oak *Casuarina spp.* and an understorey of Saltcouch *Sporobolus virginicus*. In the northeast of the site is an area of saltmarsh with a variety of endemic salt tolerant native plants.

This site was chosen as it offers an excellent example of a coastal river and estuarine ecosystem and a coastal wetland community. Lot 11 is within the South East Queensland Coastal Management District (Nerang), Segment Number 2749, which is described on the plan as a boundary equivalent to MHWS + 40 m.

Parts of the site also contain Marine Plants as HAT inundates the north eastern corner. All vegetation below this level is included within the definition of a Marine Plant. There is also an area of marine plants towards the south east of the site which while having no apparent tidal connectivity to saltwater creek, contains; saltcouch which usually grow on or adjacent to tidal lands.

The plan produced from the detail survey undertaken is shown as Figure 4.7.

A current title search (Appendix C) of the Lot 11 SP100663 revealed that there are two interests in the land listed in the register. The first is the original deed which reserved rights to the crown and the second is an easement in favour of the Gold Coast City Council. No other rights, restrictions and responsibilities are revealed by a search of the register.

A search of the EPA Regional Ecosystem Database resulted in the map included as Appendix B. The search revealed two separate ecosystem types present on the site, a mangrove forest and a *Melaleuca quinquenervia, Casuarina glauca* open forest. Both ecosystems were listed as remnant not of concern. No restriction or responsibility under the *Vegetation Management Act 1999* is imposed on the land owner with regard to conserving these ecosystems.

The recording of the actual boundaries of the ecosystems present on Site 1 was carried out as part of the field survey. Three separate ecosystem boundaries were identified including a mangrove forest along the banks of Saltwater Creek, a Casuarina open forest landward of the mangroves and two separate saltpan communities. The three ecosystems are shown on the detail plan (Figure 4.7) as the green area (Mangroves), brown area (Casuarina Forest) and blue area (Saltpan communities). These areas which were identified during the field survey do not correspond to the boundaries depicted in the Regional Ecosystem Database Map.

The MHWS +40m setback which corresponds to the boundary of the coastal management district is shown in Figure 4.7 as the green dashed line. There were no morphological or ecological features which correspond to the Coastal Management District boundary apparent during the field survey.

The area of site 1 contained within the Coastal Management District equates to 3.8 ha or 18.3% of the total area of Lot 11. This area is subject

to restrictions and responsibilities due to its declaration as a Coastal Management District. In practice this has meant that no permanent development can occur in this area and the current owner is responsible for the maintenance of this area.

Highest astronomical tide, the red line in Figure 4.7, was calculated from published tide data and formed by placing a plane through the DTM at the calculated height of 0.99 AHD. This boundary is important for defining the extent of marine plants on the site and therefore the extent of the marine plant property object. A comparison between the red line and the green and blue areas in Figure 4.7 shows that there is a discrepancy between the extent of HAT and the boundary of what is normally considered a functional marine plant ecosystem. The definition of a marine plant as discussed earlier would mean that all plants below the calculated level of HAT are defined as marine plants regardless of the species of plant.

The identification of the extent of tidal inundation i.e. HAT and the extent of marine plants has resulted in 0.5525ha or 2.5% of the site being the subject of restrictions and responsibilities under the *Fisheries Act 1994.* This area is in addition to the area contained within the Coastal Management District.

In total 4.35 ha or 20.8% of the site is subject to restrictions and responsibilities which are imposed only on land with a littoral boundary. These restrictions and responsibilities are not identified through a current title search of the freehold land register.

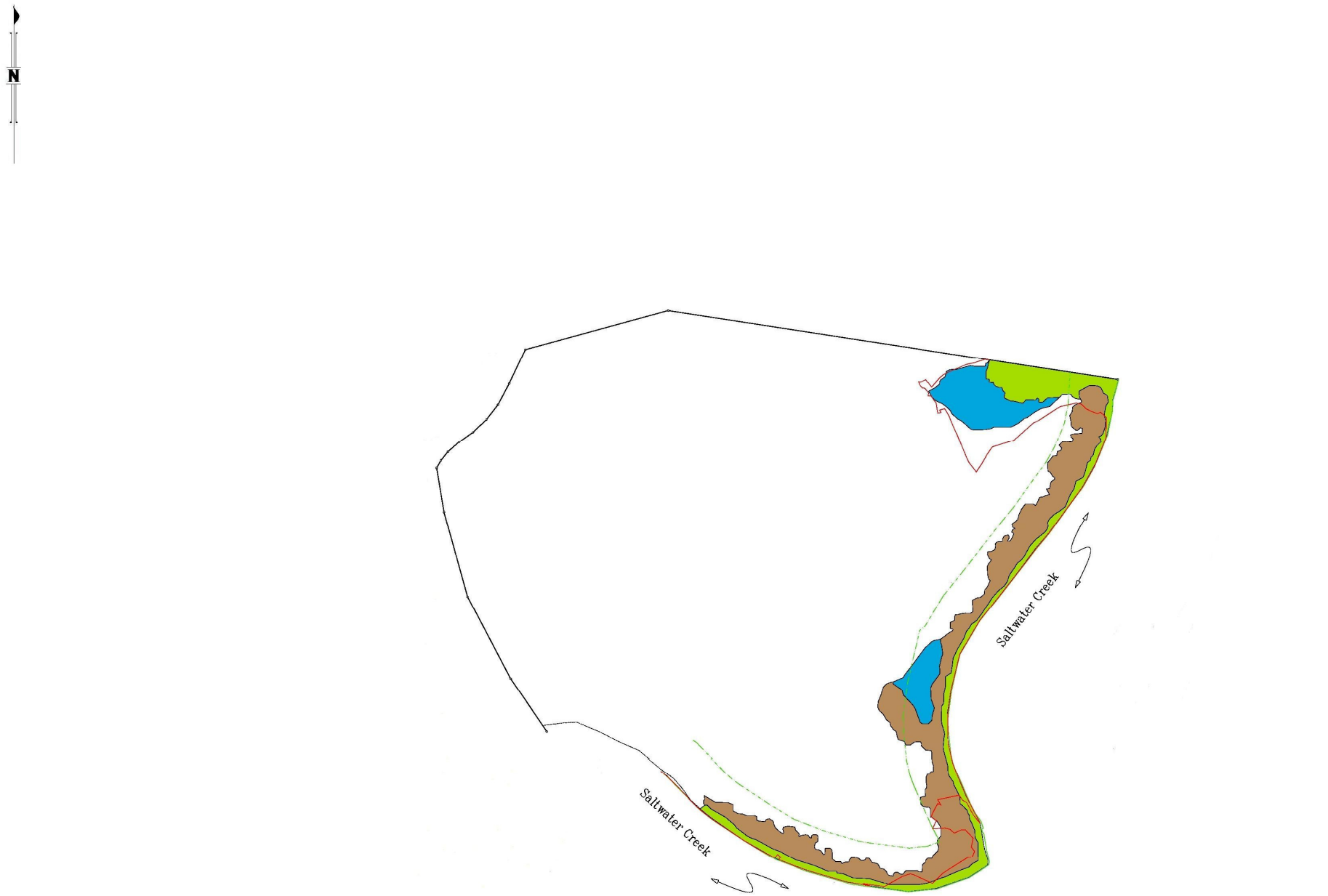

FIGURE 4.7
DETAIL PLAN
LOT 11 SP100663

PROJECT

RESEARCH PROJECT

LOCAL AUTHORITY

Gold Coast City Council

NOTES

- Extent of HAT - 0.99 AHDD
- MHWS 40 m Setback
- Saltpan Community
- Casuarina Open Forest
- Mangrove Forest

ADDITIONAL MOTES

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built environment consultants

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COMPUTER FILE			
DRAWN	ISB	DATE	31/10/2007
CHECKED	ISB	DATE	31/10/2007
APPROVED	ISB	DATE	31/10/2007
PLAN NUMBER			

SCALE

4.2.2 Site 2 Lot 23 & 24 RP30494

This site is located at the western end of Duffield Road, Clontarf. The subject Lots are adjacent to Hays Inlet Conservation Area which is an internationally recognised coastal wetland under the RAMSAR convention for the protection of wetlands.

This site is bounded by the undeveloped freehold Lot 25 RP30494 to the North. To the East and South the adjoining lots are developed with light industry. To the West of the site is the unformed Littleford Street and Hays Inlet, a tidal wetland area which adjoins the mouth of the Pine River.

The area of Site 2 is 0.8094 hectares. The site is level on the western part with uncompacted fill covering the south eastern third of the site. The site is vegetated with terrestrial grasses on the portion which is above the level of HAT i.e. the eastern two thirds of the site. The remainder of the site is vegetated with clumps of the succulent perennial herb, Bead Weed *Sarcoconia quinqueflora*. A small portion of the western and northern part of the site is vegetated with Casuarina open forest consisting of an upper storey of She-oak *Casuarina spp.* and an understorey of Saltcouch *Sporobolus virginicus*.

This site was chosen as it offers an example of a coastal wetland community. Site 2 is within the South East Queensland Coastal Management District (Redcliffe), Segment Number 1082, which is described on the plan as having a boundary equivalent to the extent of HAT (Appendix D).

A current title search (Appendix E) of the Lots 23 & 24 RP30494 revealed that there are two interests in the land listed in the register. The first is the original deed which reserved rights to the crown and the second is a mortgage in favour of the ANZ Bank. No other rights, restrictions and responsibilities are revealed by a search of the register.

A search of the EPA Regional Ecosystem Database resulted in the map included as Appendix F. The search revealed two separate ecosystem types present on the site, a mangrove forest and a She-oak or *Casuarina glauca* open forest. The first ecosystem is listed as a remnant not of concern regional ecosystems with no clearing restriction or conservation responsibility imposed on the land owner under the *Vegetation Management Act 1999*. The *Casuarina glauca* open forest ecosystem identified on the site is a remnant endangered ecosystem and is protected under the *Vegetation Management Act 1999.* This places restrictions and responsibilities on the landowner to conserve this ecosystem.

The recording of the actual boundaries of the ecosystems present on Site 2 was carried out as part of the field survey. Two separate ecosystem boundaries were identified including a Casuarina open forest and a saltpan community. The result of this is shown on the detail plan (Figure 4.8) as the brown area (Casuarina forest) and blue area (Saltpan community). These ecosystem boundaries which were identified through the field survey showed good correlation with the boundaries depicted in the Regional Ecosystem Database Map.

The area covered by the remnant endangered ecosystem is 0.0333ha or 4.1% of the site. This area is the subject of restrictions and responsibilities. The result of these restrictions and responsibilities is that this area cannot be developed and a responsibility for management of this area falls to the owner.

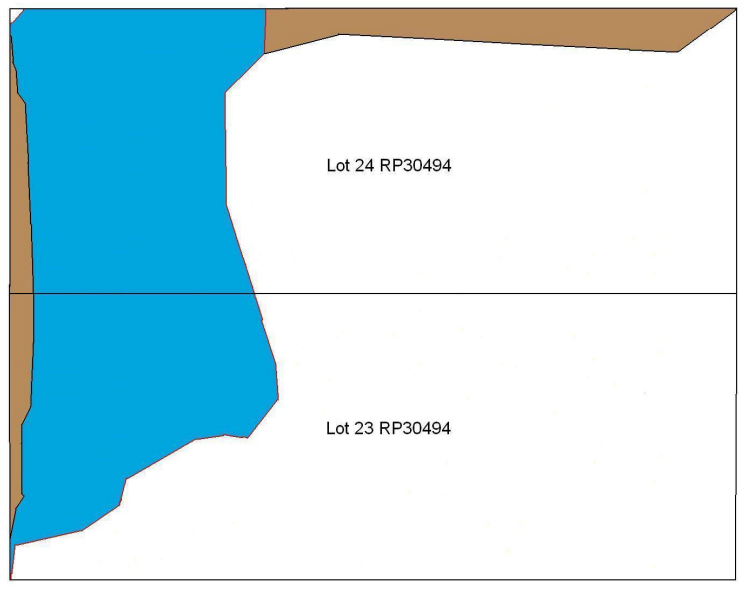
Highest astronomical tide, the red line in Figure 4.8 was calculated by placing a plane through the DTM at a height of 1.35 AHD. This line depicts both the boundary of marine plants and also the boundary of the Coastal Management District. A comparison between the red line and the blue area in Figure 4.8 shows that these correspond very well indicating that the marine plants identified on the site corresponds to the definition of a marine plant in the *Fisheries Act 1994*.

As indicated above the Coastal Management District Boundary in this area is the level of HAT. Interestingly however, the EPA Coastal Management District Map shows the Coastal Management District Boundary over 100 meters to the west of the site.

The area of Site 2 contained within the Coastal Management District and below the level of HAT equates to 0.1925 ha or 23.8% of the total area of Site 2. This area is subject to restrictions and responsibilities due to its declaration within a coastal management district. As with site 1 no permanent development can occur in this area and the current owner is responsible for the maintenance of this area.

In total 0.2258 ha or 27.9% of the site is subject to restrictions and responsibilities which are imposed only on land with a littoral boundary. These restrictions or responsibilities are not identified through a current title search of the freehold land register.

N



0 5 10 20 40
SCALE

FIGURE 4.8
DETAIL PLAN
LOTS 23 and 24 RP30494

PROJECT

RESEARCH PROJECT

LOCAL AUTHORITY

Redcliffe City Council

NOTES

Extent of HAT - 1.35 AHDD

Mangrove/Saltpan Community

Casuarina Open Forest

ADDITIONAL MOTES

LANDPARTNERS
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CHECKED	ISB	DATE	31/10/2007
APPROVED	ISB	DATE	31/10/2007
PLAN NUMBER			

4.2.3 Site 3 Lot 8 RP66157 41 Watson Street Currimundi

This site is located on the eastern side of Watson Street between Watson Street and Currimundi Beach. The area of Site 3 is 0.1085 hectares. The site is on the inland side of the coastal dunes with the eastern site boundary near the crest of the highest dune and extending westward to Watson Street.

The majority of the site is vegetated with terrestrial grasses and exotic plants and weeds. The eastern portion of the block is vegetated with a She-Oak *Casuarina Spp.* forest on the dune crest with an understorey of terrestrial grass species.

This site was chosen as it offers an example of a coastal dune ecosystem. Site 3 is within the South East Queensland Coastal Management District (Caloundra), Segment Number 425, which is described on the plan as having a boundary equivalent to the coast side of the road (Watson Street). This results in the entire site being within the Coastal Management District.

A current title search (Appendix G) of the Lot 8 RP66157 revealed only one interest, the original deed which reserved rights to the crown is listed in the register.

The site has a Coastal Building Line declared over part of the site. The boundary for this declaration is a line joining a point 21.258m west of the north eastern corner of the Lot 8 and a point 21.013m west of the south eastern corner of Lot 8. This boundary is shown as the red line in Figure 4.9. This boundary did not correspond exactly with either the crest or landward toe of the dune.

FIGURE 4.9
DETAIL PLAN
LOT 8 RP66157

PROJECT

RESEARCH PROJECT

LOCAL AUTHORITY

Caloundra City Council

NOTES

- Coastal Building Line
- Top of Dunes
- Landward Toe of Dunes
- Casuarina Open Forest

ADDITIONAL MOTES

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LEVEL ORIGIN	PSM 124231		
CONTOUR INTERVAL	N/A		
COMPUTER FILE			
DRAWN	ISB	DATE	31/10/2007
CHECKED	ISB	DATE	31/10/2007
APPROVED	ISB	DATE	31/10/2007
PLAN NUMBER			

Chapter 5 Discussion

This project was designed to examine the property rights, restrictions and responsibilities of land owners in Queensland with property which adjoins the littoral zone. The project stemmed from commentary by a number of authors who conclude that the Torrens title system used today does not serve the purpose for which it was originally designed. The general gist of these commentaries is that the titling system has essentially remained unchanged for some 150 years despite enormous changes in how contemporary society views land, the environment and sustainable development.

The project itself was essentially in two parts, that is, the identification of property rights, restrictions and responsibilities which exist over land in the littoral zone and an examination of where these rights, restrictions and responsibilities are recorded. Secondly, the project examined the spatial definition of these rights, restrictions and responsibilities in relation to a number of real world sites. While the two parts of this project are interlinked they are both unique problems with separate causes and effects.

The first problem to be addressed is how the Torrens titling system can better achieve its principles and provide interested parties with a clearer picture of all the rights, restrictions and responsibilities which apply to a particular parcel of land.

The second problem thrown up by this study deals with how government defines the spatial extent of the right, restriction or responsibility it enacts in legislation.

5.1 Accessing Rights, Restrictions and Responsibilities

The major responsibilities for land administration is laid down in a variety of State Acts administrated by the various government departments. Government departments tend to have groups within their structures responsible for the administration of a particular Act relevant to the

department. Much of this legislation is not recognised by either the wider community or those within government itself as legislation which involves the management of property and property rights.

This study identified some six separate restrictions and responsibilities across three Acts, administered by three Departments which are specific to properties with a littoral boundary. This study did not include those additional generic rights, restrictions and responsibilities which are imposed upon all property regardless of location.

None of the restrictions and responsibilities created by the legislation examined as part of this study were identified on a title search of the registry. There was however significant divergence in how easily one could identify the rights, restrictions and responsibilities imposed upon a parcel of land.

The degree to which rights, restrictions and responsibilities were accessible depended greatly upon which Department administered the Act creating the rights, restrictions or responsibilities. The Environmental Protection Agency (EPA) who administers the *Coastal Protection and Management Act 1995,* produced general maps at a scale of 1:25000 to indicate the boundary of the Coastal Management District. These maps included further descriptive information on the location of these boundaries.

In contrast to the EPA the Department of Primary Industries and Fisheries (DPI&F) produced no information on the spatial extent of either HAT or the location of Marine Plants. DPI&F relies on the definitions contained within the *Fisheries Act 1994* and publish information sheets on plant identification to inform the public as to the restrictions and responsibilities imposed by the *Fisheries Act 1994*.

Much has been published on the need to manage property rights, restrictions and responsibilities more holistically (Kaufmann and Steudler, 1998; Ting and Williamson 1998 and 1999; Ting 2002; Lyons et al, 2004;

Bennett, 2006). In practice the administration of the rights, restrictions and responsibilities on land tends not to be carried out holistically. This is due in no small part, to the way in which the wider community and more particularly those within government view their role.

It is commonly accepted that those individuals who work within the Department of Natural Resources and Water and who are responsible for administering the traditional freehold property would likely see themselves and be seen as “land administrators”. On the other hand individuals within the Environmental Protection Agency, responsible for administering restrictions and responsibilities flowing from environmental legislation would likely see themselves and been seen as, “environmentalists”, rather than land administrators who administer property rights, restrictions and responsibilities which have an environmental conservation objective.

What then to do about the divergent approach of the departments in the management of rights, restrictions and responsibilities? There is now a substantial body of literature which deals with the need to holistically managing rights, restrictions and responsibilities. This however contrasts markedly with the limited amount that deals with actually implementing a holistic land administration system.

Lyons et al (2002, 2004) have proposed a model which involves a large scale recentralisation of land administration. The proposed model however, does not consider the substantial costs of setting up such a system and does not address the fact that existing cadastral and property registration systems risk becoming overwhelmed by the sheer volume of rights, restrictions and responsibilities.

Bennett (2006) proposes that the existing land register be used to register important interests in land. He goes on to classify those interests that are important as those interests which are marketable, dynamic, easily defined spatially and can be held by private persons. This therefore leaves other interests which are non-marketable and less dynamic to be managed in some other way.

Bennett's approach somewhat oversimplifies the problem in that some rights, restrictions and responsibilities created in legislation, while not being marketable, do have significant financial and other implications for the land owner.

This study has shown that within the three sites examined over 20% of the site was significantly impacted by restrictions and responsibilities not apparent through a title search. These restrictions substantially limit the usability of this land for development purposes which undoubtedly has financial implications for the owner. It is therefore arguable that these rights, restrictions and responsibilities also need to be freely accessible within a land administration system.

It is apparent that despite the significant cost and difficulty the only real solution is a single point of Ministerial responsibility for all aspects of property rights. This approach to property rights management is along the lines of that proposed by Kaufmann and Steudler (1998) and further support by Lyon et al 2002. Both models propose that a composite of information on all rights, restrictions and responsibilities relating to individual parcels be easily accessible and at low cost.

The spatial industry is the sector which needs to take a leading role in the development of this model which should encompass emerging spatial technology particularly in the area of World Wide Web (WWW) enabled Geographic Information Systems (GIS).

This study found that the extents of Vegetation Management restrictions and responsibilities which are searchable through a web based GIS system proved to be most relatively reliable and very cost effective in aiding in the identification of these restrictions and responsibilities.

The Regional Ecosystem Database GIS system which is available to the public at no cost provided a reasonably accurate representation of the restrictions and responsibilities imposed on a parcel of land, given the scale at which the map was produced. Field surveys determined that

these representations were very accurate on Site 2 and indicted the presence of particular ecosystems on Site 1.

A government wide program of coordinating the spatial boundaries of all rights, restrictions and responsibilities for use in a WWW based GIS should be examined in order to determine the viability of such a scheme.

5.2 Spatially Defining Rights, Restrictions and Responsibilities

There has been very little discussion in the literature on the importance of the spatial component of rights, restrictions and responsibilities. The ownership right has always been very well defined spatially; however restrictions and responsibilities are not always spatially well defined.

This uncertainty which is created by the legislation hinders the ability of legislation to effectively govern property owner's activities. This study uncovered a number of examples of this phenomenon. The description 'wetland' is used when describing the boundary of Coastal Management districts in a number of places in South East Queensland. The *Coastal Protection and Management Act* 1995 does not contain a definition of a 'Wetland' but does have a definition for a 'Coastal Wetland'. A coastal wetland is said to include tidal wetlands, estuaries, salt marshes, melaleuca swamps (and any other coastal swamps), mangrove areas, marshes, lakes or minor coastal streams regardless of whether they are of a saline, freshwater or brackish nature.

This is clearly a broad definition which is very much open to interpretation both on paper and in the field. The dynamic nature of the ebb and flow of tidal waters coupled with the rise and fall of water during rainfall events results in a boundary which is very much dependant on tidal or meteorological conditions at the time.

The ambiguity in the boundaries defined in legislation is due in part to the fact many of the individuals who draft legislation do not have a comprehensive spatial knowledge nor do they consult with individuals or

organisations which have the relevant spatial knowledge. This lack of knowledge results in ambiguous spatial definition of rights, restrictions and responsibilities perpetuating not only through legislation but also through the many policies which purport to clarify legislation.

The lack of a holistic approach to spatially defining rights, restrictions and responsibilities sees the creation of a number of different boundary determinations for the one legal entity. For instance, various government agencies involved in the management of parcels with littoral boundaries have employed alternative and often conflicting practices to approximate the proper legal definition of Mean High Water Spring tides. It has been identified using interpretations of such approximations based on the following:

- Geomorphology
- Ecosystems
- Geography (i.e. from contour maps)
- Land and use
- Edge of vegetation

It is most likely that none of these approximations accurately represent the legal definition for MHWS (Fraser et al 2003). This ambiguity raises the obvious question of what definition does the approximations attempt to implement? This clearly leaves the landowner with a need to guess at what is meant by the definition or alternatively seek costly professional advice as to the definition of the boundary.

This study found that the Coastal Management District boundaries were an example of a boundary which was poorly defined. It was imposible to see in the field any difference in terms of ecosystem or morphology between one side of the boundary and the other. Site 1 for example had a Coastal Management District boundary which was set back 40 meters

from NHWS. This boundary did not appear to correspond to any ecological or morphological features present on the site. It appeared instead to be simply an arbitrary administrative boundary constructed in an EPA office. Site 3 had a Coastal Management District boundary which was defined as the coastal side of Watson Street with the exception of the bitumen street itself there was no obvious environmental reason for the boundaries existence at this location.

On Site 2 the Coastal Management District boundary was described in the Coastal Management Plan as the level of HAT. Highest Astronomical Tide was erroneously displayed on the accompanying plan at a distance of more than 100m from its true location. This results in the problem that restrictions and responsibilities exist in relation to Site 2 under legislation. However neither the administering government agency nor an interested party is able to quickly, accurately or cost effectively identify the extent of these restrictions and responsibilities without undertaking a full detail survey of the site.

One of the interesting aspects of this boundary is the fact that two separate maps produced from the one government agency display conflicting information for defining the boundary. On the one hand the Regional Ecosystem Database accurately mapped the extent of saltpan community which by virtue of the plants present represents the extent of HAT. Alternatively the Coastal Management District Boundary Map depicts HAT as being more than 100 meters to the west of the location shown on the Regional Ecosystem Database Map and its real location.

One solution to this problem of spatial definitions is that which was proposed in the previous section coordination of all rights, restrictions and responsibilities. Serious thought needs to be given to ensuring that all new legislation drafted includes coordinates for the boundaries of the rights, restrictions and responsibilities created. Along with coordination of new legislation a start should be made on coordinating all existing right, restriction and responsibilities contain in current legislation.

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Legislation

Coastal Protection and Management Act 1995 (Qld)

Fisheries Act 1994 (Qld)

Vegetation Management Act 1999 (Qld)

Wild Rivers Act 2005 (Qld)

Integrated Planning Act 1997 (Qld)

Appendix A

Project Specification

University of Southern Queensland

FACULTY OF ENGINEERING AND SURVEYING

ENG4111/4112 Research Project
PROJECT SPECIFICATION

FOR: Ian Breddin

TOPIC: Property Rights and the Littoral Zone in Queensland

SUPERVISOR: Glenn Campbell

SPONSORSHIP:

PROJECT AIM: To examine the rights, obligations and restrictions that attach to land with a littoral boundary under Queensland Law and their spatial extent

PROGRAMME: Issue A 13 March 2007

1. Research and collate a summary of relevant Queensland legislation which pertain to land with littoral boundaries
2. Examine how Queensland legislation defines the spatial extent of the rights within properties with littoral boundaries
3. Identify 4 parcels with differing ecosystem and morphological characteristics and obtain access permission.
4. Search suitable information repositories to identify the rights, obligations and restrictions that attach to those parcels.
5. Conduct field surveys of those parcels defining the relevant ecological features, the limits of various tide heights. and the current cadastral boundary.
6. Compare the cadastral boundaries which define the extent of ownership with the boundary of rights, obligations and restriction as defined by the various pieces legislation.
7. Prepare and submit a project dissertation.

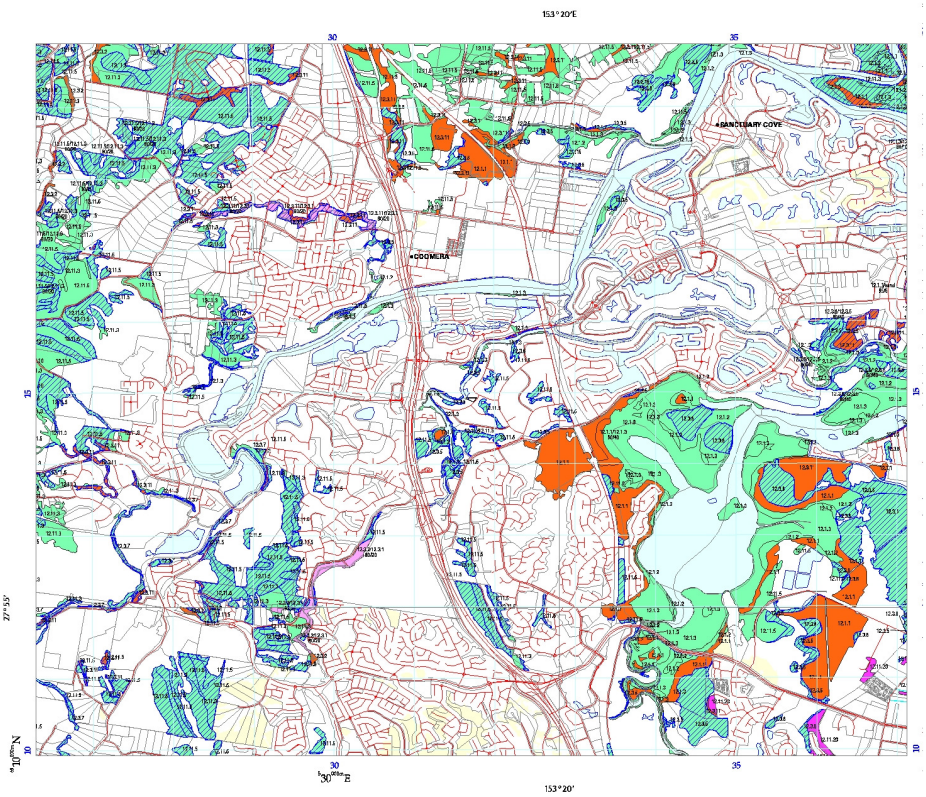
AGREED (student)

(supervisor)_____ _____

Date: / / 2007 Date: / / 2007

Co-examiner:_____

Appendix B



2003 REGIONAL ECOSYSTEM MAP

Based on 2003 Landsat TM imagery

Requested By: BREDDIN@BIGPOND.COM
Date: 19 Aug 07 Time: 14.43.09

Centered on Lot on Plan:
215 RP212640

This is a copy of the certified regional ecosystem map defined by the map extent for the purpose of the *Vegetation Management Act 1999*. Areas of property maps of assessable vegetation (PMAVs) are not shown on this map.

2003 Remnant endangered regional ecosystem
- Dominant
- Sub-dominant

2003 Remnant of concern regional ecosystem
- Dominant
- Sub-dominant

2003 Remnant not of concern regional ecosystem

Non-remnant

Plantation Forest

Dam or Reservoir

2003 Remnant Vegetation Cover (RVC)

Vegetation Management Act Essential Habitat
Area identified as essential habitat by the EPA for a species of wildlife listed as endangered, vulnerable, near threatened or rare under the *Nature Conservation Act 1992*.
For further information on VMA Essential Habitat, please see the attached VMA Essential Habitat map.

- Subject Lot
- Certified Map Amendment area
- Roads
  © MapInfo Australia Pty Ltd 2006
- Bioregion boundary
- National Park, Conservation Area State Forest and other reserves
- Cadastre line
  The maximum spatial error of parcels extracted for this map from the Digital Cadastral Data Base(DCDB) range from: 14m to 251m at a 95% confidence level. Property boundaries shown are provided as a locational aid only.
- Towns

Queensland Government

LOCALITY DIAGRAM

1000 0 1000 m

Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)

Defined map areas are labelled with the regional ecosystem (RE) code along with the percentage breakdown if more than one RE occurs within the area. Detailed definitions of regional ecosystems are available from www.epa.qld.gov.au/REDD. Defined map areas smaller than 5ha may not be labelled.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2003, depicted on this map is based on rectified 2003 Landsat TM imagery (supplied by SLATS, Department of Natural Resources and Water).

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Water, the Environmental Protection Agency and MapInfo Australia Pty Ltd, makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

All datasets are updated as they become available to provide the most current information as of the date shown on this map.

Additional information is required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrw.qld.gov.au/vegetation or contact the Department of Natural Resources and Water.

Digital regional ecosystem data is available in shapefile format, for Lot on Plans from www.epa.qld.gov.au/REDATA or from the Queensland Herbarium for larger areas.
Email: regional.ecosystem@epa.qld.gov.au

Appendix C

7

CURRENT TITLE SEARCH
NATURAL RESOURCES & MINES, QUEENSLAND

Request No: 113517354
Search Date: 17/05/2007 10:59 am Title Reference: 50224384
Date Created: 30/06/1998

Previous Title: 14988057

REGISTERED OWNER

Dealing No: 702747527 24/06/1998

LESLIE WILLIAM AYNSLEY

ESTATE AND LAND

Estate in Fee Simple

LOT 11 SURVEY PLAN 100663
County of WARD Parish of BARROW
Local Government: GOLD COAST CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10292224 (POR 9)

2. EASEMENT IN GROSS No 708207143 11/11/2004 at 15:40
burdening the land
COUNCIL OF THE CITY OF GOLD CAOST
over
EASEMENT A ON SP161819

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

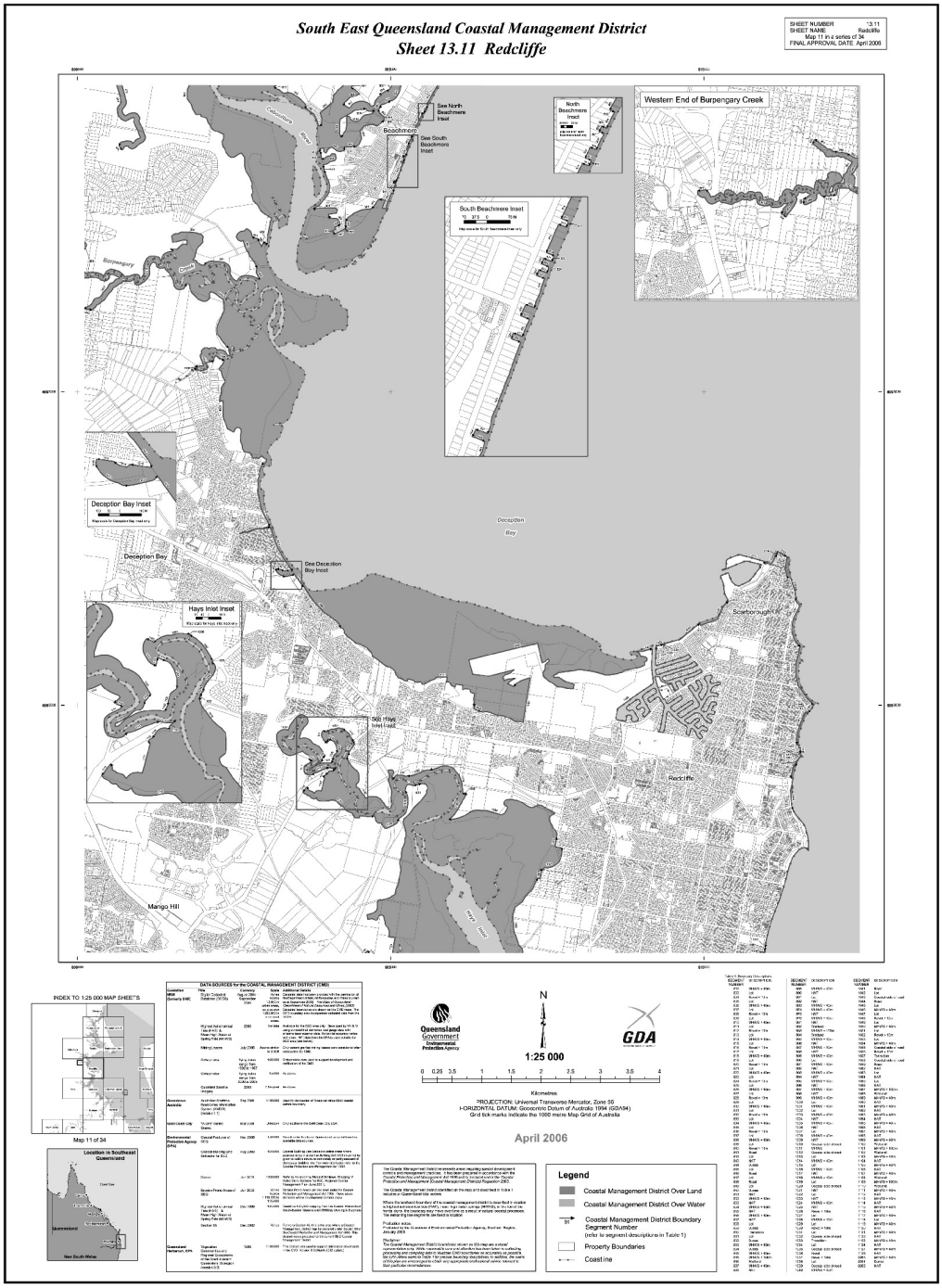
CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: ABR ONLINE

Appendix D


South East Queensland Coastal Management District
Sheet 13.11 Redcliffe
SHEET NUMBER 13.11
SHEET NAME Redcliffe
Map 11 in a series of 34
FINAL APPROVAL DATE April 2006
Western End of Burpengary Creek
North Beachmere Inset
South Beachmere Inset
See North Beachmere Inset
See South Beachmere Inset
Beachmere
Deception Bay Inset
Deception Bay
Hays Inlet Inset
Scarborough
Redcliffe
Mango Hill
INDEX TO 1:25 000 MAP SHEETS
Map 11 of 34
Location in Southeast Queensland
Queensland Government
Environmental Protection Agency
GDA
N
1:25 000
0 0.25 0.5 1 1.5 2 2.5 3 3.5 4
Kilometres
PROJECTION: Universal Transverse Mercator, Zone 56
HORIZONTAL DATUM: Geocentric Datum of Australia 1994 (GDA94)
Grid tick marks indicate the 1000 metre Map Grid of Australia
April 2006
Legend
Coastal Management District Over Land
Coastal Management District Over Water
Coastal Management District Boundary
Segment Number
(refer to segment description in Table 1)
Property Boundaries
Coast line

Appendix E

CURRENT TITLE SEARCH
NATURAL RESOURCES AND WATER, QUEENSLAND

Request No: 2258329

Search Date: 20/10/2007 11:08 Title Reference: 16259024
Date Created: 26/03/1982

Creating Dealing: 602629793

REGISTERED OWNER

Dealing No: 709516078 12/04/2006

HARDTIME PTY LTD A.C.N. 052 438 687
TRUSTEE
UNDER INSTRUMENT 709516078

ESTATE AND LAND

Estate in Fee Simple

LOT 23 REGISTERED PLAN 30494
County of STANLEY Parish of REDCLIFFE
Local Government: REDCLIFFE CITY
LOT 24 REGISTERED PLAN 30494
County of STANLEY Parish of REDCLIFFE
Local Government: REDCLIFFE CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 10285197 (POR 273)

2. MORTGAGE No 710263377 17/01/2007 at 12:51
AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED A.C.N. 005 357 522

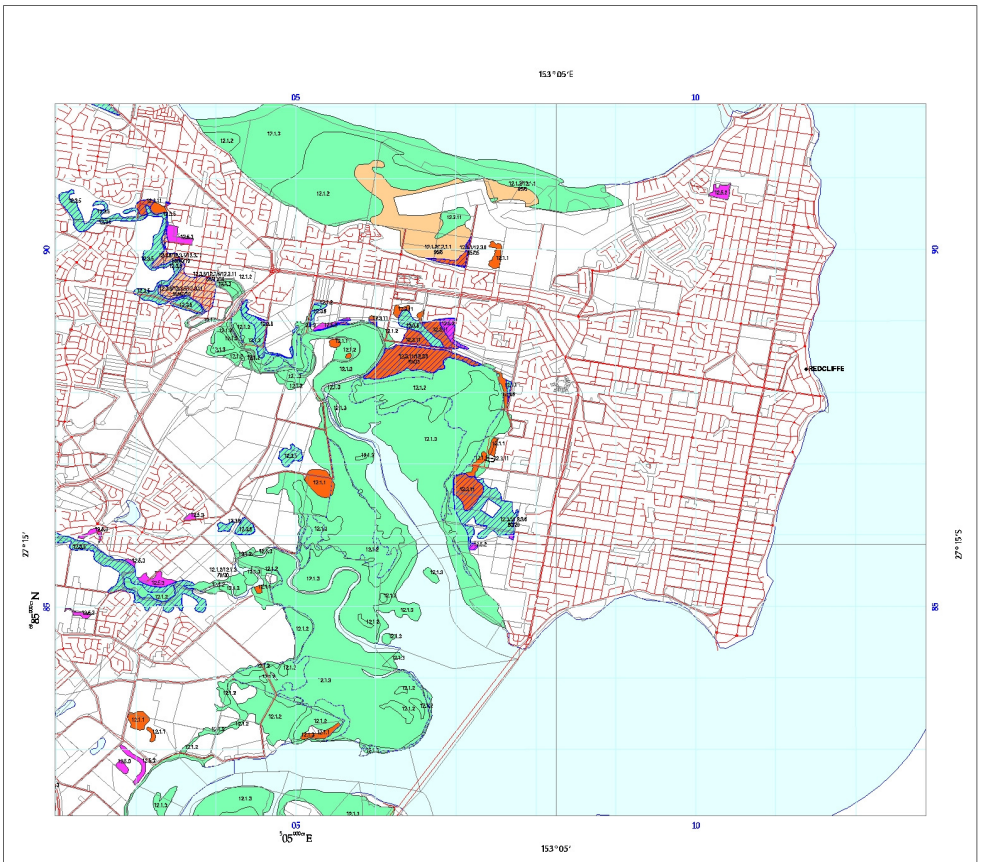
ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Appendix F



2003 REGIONAL ECOSYSTEM MAP

Based on 2003 Landsat TM imagery

Requested By: BREDDIN@BIGPOND.COM
Date: 19 Aug 07 Time: 13.24.01

Centered on Lot on Plan:
23 RP30494

This is a copy of the certified regional ecosystem map defined by the map extent for the purpose of the *Vegetation Management Act 1999*. Areas of property maps of assessable vegetation (PMAVs) are not shown on this map.

2003 Remnant endangered regional ecosystem
- Dominant
- Sub-dominant

2003 Remnant of concern regional ecosystem
- Dominant
- Sub-dominant

2003 Remnant not of concern regional ecosystem
Non-remnant
Plantation Forest
Dam or Reservoir
2003 Remnant Vegetation Cover (RVC)
Vegetation Management Act Essential Habitat
Area identified as essential habitat by the EPA for a species of wildlife listed as endangered, vulnerable, near threatened or rare under the *Nature Conservation Act 1992*. For further information on VMA Essential Habitat, please see the attached VMA Essential Habitat map.
Subject Lot
Certified Map Amendment area
Roads
© MapInfo Australia Pty Ltd 2006
Bioregion boundary
National Park, Conservation Area State Forest and other reserves
Cadastre line
The maximum spatial error of parcels extracted for this map from the Digital Cadastral Data Base(DCDB) range from: 14m to 251m at a 95% confidence level. Property boundaries shown are provided as a locational aid only.
Towns

Queensland Government

LOCALITY DIAGRAM

1000 0 1000 m

Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)

Defined map areas are labelled with the regional ecosystem (RE) code along with the percentage breakdown if more than one RE occurs within the area. Detailed definitions of regional ecosystems are available from www.epa.qld.gov.au/REDD. Defined map areas smaller than 5ha may not be labelled.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/-100 metres. The extent of remnant regional ecosystems as of 2003, depicted on this map is based on rectified 2003 Landsat TM imagery (supplied by SLATS, Department of Natural Resources and Water).

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All datasets are updated as they become available to provide the most current information as of the date shown on this map.

Additional information is required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrw.qld.gov.au/vegetation or contact the Department of Natural Resources and Water.

Digital regional ecosystem data is available in shapefile format, for Lot on Plans from www.epa.qld.gov.au/REDATA or from the Queensland Herbarium for larger areas.
Email: regional.ecosystem@epa.qld.gov.au

Appendix G

CURRENT TITLE SEARCH
NATURAL RESOURCES AND WATER, QUEENSLAND

Request No: 2258314
Search Date: 20/10/2007 11:04 Title Reference: 12621129
Date Created: 03/03/1952

Previous Title: 12567029

REGISTERED OWNER

BRUCE JAMES KENNEDY
AILSA ADELAIDE KENNEDY JOINT TENANTS

ESTATE AND LAND

Estate in Fee Simple

LOT 8 REGISTERED PLAN 66157
County of CANNING Parish of BRIBIE
Local Government: CALOUNDRA CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 10556049 (POR 44)

2. SUBSTITUTE TITLE No 601914834 (E901661) 19/02/1975
   A PROVISIONAL CERTIFICATE OF TITLE
   WAS ISSUED ON 04 APR 1975

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 04/04/1975 601914834 Certificate No. 1

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **