AN INVESTIGATION INTO THE LEGISLATIVE CHANGES AFFECTING TIDAL BOUNDARIES IN QUEENSLAND

A dissertation Submitted by

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Abstract

In 2005, a moratorium was established over the registration of certain survey plans containing tidal boundaries in Queensland. This moratorium, allowed the Department of Environment and Resource Management (DERM) to develop legislation in the area of ambulatory boundary determination for the State. There has been a long standing disparity between the Common Law definition of High Water Mark (HWM) and the Department’s opinion on the position of the extents of private ownership in the tidal zone. As custodians of land in Queensland it was DERM’s responsibility to develop a codified system for the definition and determination of tidal boundaries in the State. It was necessary for this system to effectively balance the public’s right to access and use beaches and other significant tidal areas, whilst upholding the private land owner’s interest in land that was legitimately granted, paid for and recognised by the Court of Law. The legislation that was developed adopted a feature based approach to tidal boundary determination and removed reference to the term HWM when dealing with tidal boundaries.

This project investigated the effectiveness of the legislation at producing outcomes for tidal boundary positions in Queensland that balanced the interests of both the public and the private land owner. It was found that the application of the legislation, through the use of the feature based methodology, delivered undisputable definitions of tidal tenure boundaries at law. Once a plan is registered under the new legislation, it will provide certainty over the limits of land ownership in tidal areas for both the individual land holder and the State. Substantial impacts were found to be associated with the implementation of the legislation, these included; an increased administrative overhead when pursuing the development of a site, the potential for loss of land without compensation especially on low lying lands and the potential for adverse effects on development timelines.
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Certification

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Chapter 1 Introduction

1.1 Project Background

Throughout history it has been convenient for tribes, kings, governments and individuals to demarcate the ownership of land by using the natural features of the landscape. The ocean and its tidal bays and tributaries, are but a cluster of features that have been used over time to define the limits of one’s ownership in land. Unlike the majority of other naturally occurring boundaries, the tidal boundary has an ambulatory nature that is influenced by tides, deposits and erosion. The true determination of the ambulating tidal boundary has been the focus of numerous court cases over the course of Australia’s history, and continues to be a greatly debated issue.

The new amendments to the Survey and Mapping Infrastructure Act 2003 (SMIA 2003), and the Land Act 1994, were the culmination of a four year moratorium on the registration of survey plans containing tidal boundaries that relied on common law precedent for their determination. These legislative changes sought to ‘provide an appropriate balance between the rights of individual landholders, and the public’s right to access the beach’ Department of Natural Resources and Mines (DERM, 2009). The call for the moratorium and the subsequent Act amendments, came after the Department claimed that approximately 250 plans of resurvey were lodged throughout Queensland showing ‘significantly greater land area’ (DERM, 2009) than the originally registered survey instruments. As a matter of fact, these plans of resurvey that triggered the implementation of the moratorium, where for the first time showing the true extent of land ownership that was legitimately granted and paid for by the land owners.

For many years there has been a clear divide between the rules and directions for the guidance of surveyors and over a century of common law rulings in tidal boundary disputes. ‘High Water Mark’ (HWM) has been used for centuries in the description of boundaries that adjoin the littoral zone, and a method for identifying where HWM is defined has developed through the
courts. The Department of Lands adopted a feature based approach in 1878, when defining the position of HWM in relation to tidal boundaries. The decision to disregard the description of HWM at common law, and accept this feature based approach, has filtered through unchecked and has established itself as a well known practice amongst the surveying profession over the last 100 years.

The concept of legal ownership of land up to high water mark was inherited by Australia from English common law. The use of HWM as a defining feature was enforced by the English case of Attorney General v Chambers (1854) 43 ER 486. From that point on, the meaning of this defining feature developed through Australian common law rulings. In 1999, the case of Svendsen v State of Queensland made an interpretation of the Land Act 1994 description of HWM as being ‘Mean High Water Springs’ (MHWS), and decided that title holders always held ownership up to this description of the boundary. This ruling allowed surveyors to describe ambulatory boundaries to their true extents as decided by the court. In some instances the extents of the tenure boundary which were aligned with the common law encompassed sandy beaches, dune systems and other significant tidal areas.

The decision handed down in the Svendsen case was contrary to the Lands Department Rules and Directions for the Guidance of Surveyors 1878 which stated that, ‘Lands having frontage to the sea or tidal waters are to be bounded by high water mark; sandy beaches, mangroves and bare mud flats are to be deemed to be below high water mark...’ The ruling in the Svendsen case placed pressure on the DERM to take action on behalf of the public, so that title holders could not restrict the access or the use of public beaches and other significant tidal areas. As a result the Department proceeded to establish a stay over the registration of some plans with tidal boundaries. This stay was implemented on the 8th November 2005.

In recent times, public land rights and the notions of sustainability, environmental protection and intergenerational equity, have come to the forefront of land planning in Queensland through the application of the
Sustainable Planning Act 2009 and the previously repealed Integrated Planning Act of 1997. Before the application of the moratorium in 2005, there was no significance placed on the interests of the public in defining tenure boundaries in the littoral zone. Now that the new legislation has been implemented, it is possible to see that these broader administrative objectives to land management have crept into tenure boundary determination.

The legislative amendments that were enacted on the 7th of May 2010, proposed a solution to the divide between common law and past Surveyor Directions, and also sought to prevent private ownership of beach areas that are commonly viewed as having public rights attached to them. As this legislation was kept relatively confidential up until its enactment, there was minimal time for the surveying profession to assess the challenges and impacts of its implementation on land owners and developers. This project deals primarily with the potential impacts on these land holders when the new legislation is applied to determining a tidal boundary.

### 1.2 Project Aims and Objectives

#### 1.2.1 Project Aims

This dissertation provides an analysis of the legislative amendments made to both the Survey and Mapping Infrastructure Act 2003, and the Land Act 1994 and their impact on tidal boundary definition in Queensland. The new legislation sought to:

- ‘Create a permanent solution to the problem of private ownership of beaches and significant coastal land.
- Introduce a feature based methodology to resolve uncertainty in determining the location of ambulatory boundaries.
- Create certainty about ambulatory boundaries in the minds of landholders and the state.
- Allow for greater clarity in tidal boundary determination; and
• Achieve tidal boundary consistency throughout the state with regards to the public interest.’

[Keywords: Clarity, Certainty, Consistency]

(HANSARD, 2010)
The new legislative amendments will be assessed against the above mentioned objectives through the use of three case studies conducted throughout South East Queensland. The paper also investigates the impact that changes to Queensland legislation will have on the redefinition of tidal boundaries, and the subsequent effects these changes will have on landholders, developers and other interested parties.

1.2.2 Project Objectives

• Research the history of legislative and common law tidal boundary definition in Queensland.

• Research and define the Public Interest as it relates to the littoral zone.

• Identify proposed changes to the Survey and Mapping Infrastructure Act 2003 and other relevant legislation effecting tidal boundaries.

• Conduct 3 case studies on parcels of land with morphologically differing tidal areas and investigate the potential effects that the new legislative amendments will have on their boundary definition.

• Evaluate the effect new legislative amendments will have on land owners, the state and the public in light of the results of the case studies.
• Evaluate the significance of public interest and the impact this will have on tidal boundary location, freehold land owners and future development of land.

1.3 Scope of the Project

This project does not seek to be an exhaustive text on the new legislation, but has been developed as a resource into the field of current tidal boundary policy in Queensland.

Act amendments that relate to the field of non tidal boundary reinstatement are outside the scope of this project. This paper does not concern itself with the technical field methods associated with tidal boundary reinstatement.

1.4 Justification

The new legislation is an attempt to rectify a problem in relation to the private ownership of sandy beaches and other significant tidal areas throughout Queensland. As DERM is the custodian over land in Queensland, it has been their responsibility to develop a system of tidal boundary definition that protects the public interest in these significant tidal areas. Unfortunately, the system that has been developed brings to the surface a wave of uncertainty with regards to ownership of land that abuts the littoral zone, and it directly challenges previous court decisions that have ruled on the extents of land ownership in these areas. The uncertainty over tidal boundary position, and the implications of reverting back to original natural features, has brought to the forefront a number of issues that will immediately impact land owners and developers alike. A lack of necessary directions on how to operate under the new system and a lack of openness and communication to the public, land owners and the profession has fuelled this uncertainty. It is therefore necessary to examine the issues raised by the new legislation, so that the profession can swiftly adjust to the changes and advise clients accordingly.
1.5 Chapter Summary

This project examines how successfully the new legislation achieves a balance between ownership rights of the State and individual landholders along tidal boundaries, and the ability for the legislation to protect the public’s access and use of beaches and foreshores throughout Queensland. This research will use three case studies with differing morphological characteristics, and will investigate the relationship between land under tidal influence and the tenure boundary.

The following chapter is a literature review that considers the fundamental areas of study for this paper. Focus will be placed on the history of common and legislative law in Queensland, the intended limits to land ownership and the public interest as it relates to the littoral zone. This review will form the foundations for the study into the impacts of legislative changes on tidal boundary reinstatement in Queensland.
Chapter 2 Literature Review

2.1 Introduction

‘In dealing with a freehold property that has an ambulatory boundary such as the sea or a tidal stream the final position of that boundary is, as is the case in positioning any freehold boundary, a matter of law.’ (Enever 1993, p1). It is the responsibility of the surveyor to work in conjunction with this law, and the directions that guide surveyors to provide clients, the Crown and the public with a fair and justifiable determination of property boundaries. Unfortunately the rules and directions for the guidance of surveyors, the intention of the Deed of Grant and the common law rulings by judges have not always been in agreement. In 2005, a moratorium was placed over the registration of survey plans with tidal boundaries. This moratorium allowed for a system to be developed that would attempt to solve the issues of private ownership of tracts of land that the public had previously enjoyed access to and use of. This moratorium ceased on May the 7th 2010 and was replaced by new legislation that would endeavour to clear up the determination of tidal boundaries as a matter of law, and subsequently put an end to the ambiguity and debate over the littoral boundary.

Before an investigation can be made into the impact of these legislative changes and the effects on landholders and other interested parties, it is necessary to gain an understanding of the history of the law and the definition of important phrases pertaining to the littoral zone.

2.2 Intended Limits to Land Ownership

Enever (1993, p2) conveys that ‘it is the intention of the parties to which the fullest effect must be given’ when reinstating boundaries. In this instance the intention of the limit of land ownership must be sound. The perception of what is or is not desirable or sought after land has changed over time. Land was initially granted to individuals with certain obligations attached.
Christensen et al. (2008 vol. 15, p55) believe ‘grantees were required to cultivate the land, thus providing provisions to support not only the grantees but the colony at large’. This puts emphasis on the type of land viewed as suitable for cultivation, and the resulting expectation that areas such as ‘swamps, beds of sand or shingle, sandy beaches etc. would be specifically excluded by surveyors’ (Fergusson 1976, cited in Enever 1993, p.11) when surveying tidal boundaries.

Even when Queensland separated from New South Wales in 1859, and the perception of land was changing into one of an ‘object of commerce’ (Buck 1995), there would have been no desire to purchase unusable land because there was still a ‘reliance upon land as a sustaining construct for agriculture’ (Buck 1995).

The rules and directions for the guidance of surveyors published in 1878 must have considered to some degree land in its intended capacity to be farmed. Clause 18 conveyed that land abutting tidal waters should be defined by high water mark, but it decided that ‘sandy beaches, mangroves, and bare mud flats’ (non usable land) (cited in Enever 1993, p.19) generally fell below high water mark and should be excluded from the deed of grant. The published direction was an attempt to couple high water mark with naturally occurring features in the littoral zone, at a time when there was no existing definition for HWM in the Land Acts. This appears to have occurred even though a definition for HWM had been determined in the common law of the day. This implies that the positions of tidal boundaries shown on survey plans were in accordance with the rules and directions set down by the Department, but not consistent with the position of the boundary as a matter of law.

Enever (1993, p12) suggests that ‘there has always been a body of opinion among surveyors that areas shown on original surveys of grants with water boundaries, indicated only the area of usable land within the grant’. Brown (cited in Enever 1993, p13) from a similar viewpoint proposes that ‘perhaps the parcel of land that is defined by the “Deed of Grant” consists of the “grant” being that area of productive land agreed as appropriate to the
application and the “allowance” being that area not immediately usable but a natural attachment to the “grant”. Perhaps in “the area computed” we are talking about the usable land allocated to the grantee (the land that he paid for)...

Ultimately, the intended limit of land ownership is what was explicitly communicated by the parties when the land was originally granted; not what is construed by others. ‘Where parties enter into a written contract for the sale of land and describe the parcel of the land sold by its survey description, the hypotheses is that the boundaries of the parcel are fixed in accordance with that description and not by reference to boundary fences, survey pegs or other topographical features’ Pukallus v Cameron (1982) 180 CLR 447. However ‘the hypothesis may be rebutted by proof that the parties agreed upon the parcel of land to be sold by reference to such fences, pegs or other precise topographical features.’ Pukallus v Cameron (1982). This indicates that the intended limit of land ownership in the tidal area is what is clearly identified in the Deed of Grant or shown on a map or plan that is contemporaneous with the Deed of Grant.

This shows that there are two individual schools of thought on the matter of intention of the deed of grant. One being a more pragmatic argument based around usable and non usable land, and the other rooted in the legal definitions of the bounds of land and the qualification that ‘land is known by the land to which it abuts’ Enever (1993, p13).

### 2.3 History of legislative and common law

It is necessary to look at the history and definition of words relevant to the littoral zone, in both case law and statute, before an assessment can be made on the current state of tidal boundary location in Queensland. The following is a brief investigation into the development of these laws.
2.3.1 Legislation

Although the common law had ruled that tidal boundaries would be defined through the use of HWM in the 1854 case of Attorney-General v Chambers, the parliament in Australia was slow to enact a piece of legislation that would define what HWM actually was. The Fish and Oyster Act of 1914 defined the term ‘high water ...(as) the mean height of the higher high water at spring tides’. This description was the first in relation to ‘high water’ but was not a specific description of high water mark. The term high water mark would not be defined until the Harbours Act of 1955 described it to be ‘ordinary high water mark at spring tides’. Due to the absence of appropriate legislation in the realm of tidal boundaries in Queensland, Brown (1980, p133) suggested that where ‘any boundary is expressed to be the high water mark of tidal waters, the boundary remains as it is defined by the common law – that is, the line of the medium high tides’.

It was not until the creation of the Land Act in 1994 that a statute relating to the land was able to define what high water mark really was. Section 9 of the Act stated that:

‘all land below high water mark, including the beds and banks of navigable rivers –

a) Is the property of the state, unless the land is inundated land or a registered interest in the land is held by someone else; and

b) May be dealt with as unallocated state land.’

Land Act (1994)

The Land Act 1994 then went on to define HWM as ‘the ordinary high water mark at spring tides’.

There was a lack of suitable statute to enforce the determination of tidal boundaries in Queensland throughout the years. Once a piece of legislation was created that tackled the definition of HWM it was challenged by a land holder who obtained a common law ruling that defined HWM tidal
boundaries as Mean High Water Springs. This was a precedent set by the common law that was then applied to other tidal boundary determinations.

### 2.3.2 Common Law

The introduction of British common law into Australia occurred with the passing of the *Australian Courts Act of 1828*. The development of common law as it relates to tidal boundaries dates back to the publication of *De Juris Maris* by Lord Matthew Hale in 1666 (cited in Hargrave & Butler 1794, p.443), which stated that “the soil between high water mark and low water mark at ordinary tides or neap tides belongs to the King.” English common law concurred with this assessment and clarified its meaning in the case of *Attorney-General v Chambers (1854)*. This case developed the principles of Lord Hale and was the first ruling to clearly identify High Water Mark as the limit of the shore where ‘for about three days it is exceeded, and for about three days it is left short and on one day it is reached. This point of the shore thereof is about four days in every week, ie., for the most part of the year, reached and covered by the tides.’.


The land in question in the case was flat coastal land in the Keppel Bay region of Queensland, where any alteration in tidal plane height would significantly alter the area of land ownership. Mr Svendsen sought clarity in the description of his tidal boundary that was defined in the deed of grant as being the “high water mark of a mangrove swamp”. Mr Svendsen argued that this descriptor should be interpreted as ‘the mean of all the ordinary high tides, both spring and neap’. An investigation ensued into the history of the common law as well as the tidal plane that should be used to determine HWM. Both the State and the Registrar of Titles argued that HWM should be determined by the Highest Astronomical Tides (HAT) which is “the highest water level that can be predicted under average meteorological conditions and any combination of astronomical tides”. *1993 Tide Book (pg 175)*. The
plaintiff reasoned and proved that the mean between the springs and neaps was a better determination for HWM. Following an in depth analysis into the intention of the deed of grant, the survey directions of the day, the common law as it stood at the time and the consideration of section 9 of the Land Act 1994 it was decided that ‘wherever the words “high water mark” appeared in the description of the lands, they mean the ordinary high-water mark at spring tides’. The judge was satisfied that ordinary high-water mark at spring tides was the ‘long term average of the heights of two successive high waters during those periods of 24 hours when the range of tide is greatest at full and new moon’. Svendsen v State of Queensland (1996)

The resulting decision allowed survey boundaries with a HWM descriptor to be resurveyed to the line where the land intersects the tidal plane of mean high water springs, regardless of whether the survey plan showed HWM attached to a natural feature. This decision would move the tidal boundary as it is shown on the survey plan towards the common law interpretation of the Deed of Grants limit of ownership. This common law interpretation of the tidal boundary in some instances was well towards the ocean and would impact on the access and use of beaches, sand dunes and other tidal areas.

2.4 Public Interests / Rights in relation to the Littoral Zone

The littoral zone is an area where a number of competing rights, restrictions and responsibilities from private and public interests interact Breddin (2007, pg 4). The public interest can be defined in Butterworths Australian Legal Dictionary as:

‘An interest common to the public at large or; a significant portion of the public in which may or may not involve the personal and proprietary rights of individual people’.

The subject of public interest is further developed by Bozeman (2007, pg 132), who describes “public values” as those things ‘providing normative
consensus about (a) the rights, benefits, and prerogatives to which citizens should (and should not) be entitled; (b) the obligations of citizens to society, the state, and one another; and (c) the principles on which governments and policies should be based.’.

This concept of public interest in the littoral zone challenges the three qualities of property rights that are indicated by 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.

Breddin (2007) drew attention to this fact, and noted that changes of social attitude to conservation and the environment over the past sixty years has demanded changes to property rights, restrictions and responsibilities in the littoral zone. This view of increased environmental protection over coastal land is endorsed by the Sustainable Planning Act 2009, which looks to the short term and long term effects of development on the environment, and provides for the application of the precautionary principle and intergenerational equity when developing land. The South East Queensland Regional Coastal Management Plan also seeks to ensure the safe public access to the coast and the management and conservation of coastal resources.

Lawless (2006, p 40) study into the definition of non-tidal riparian boundaries signalled that ‘the rights people have in riparian land are becoming more of an issue than determining the correct alignment of a riparian boundary’. Although this study is focused on the non-tidal environment, the point made is definitely note worthy and relevant to the realm of tidal boundary reinstatement. It poses the question of whether a change in tidal boundary position in these environmentally significant areas, is going to have any worth if these areas are protected and the owner can’t enact the private rights outlined by Sheehan and Small.

The legislative amendments to the Survey and Mapping Infrastructure Act 2003 rely heavily on the “public interest” for the determination of tidal tenure
boundaries. The application of the public interest test in this Act, is a
departure from the administration of rights and restrictions that we see in
coastal protection legislation, and instead appears to focus its powers on the
resumption of land in the littoral zone. The public interest casts a broad net
and encapsulates the cultural, environmental, heritage, land protection,
planning, recreational, social and strategic interests of the public.

2.5 Chapter Summary

The conflict over intention of the limit of ownership in the tidal zone is one of
the key precursors for the development of new legislation in this area. This
chapter has revealed that there have been two main schools of thought over
the position of boundaries in the littoral zone:

1) The precedent of common law over time has expected the tidal
   boundary to be determined to the physical water line as described by
   high water mark. This concept had been loosely supported by small
   amounts of legislation throughout the years of Queensland’s history.

2) The Lands Department through the Rules and Directions for the
   Guidance of Surveyors 1878 decided to deem natural features such as
   sandy beaches, mangroves and the like to be below high water mark.

These two conflicting opinions of where the tidal boundary should lie have
been cause for the creation of the new legislation that was passed in May of
2010. The new legislation appears to align itself with the Lands Department
Rules and Directions by nominating natural features as the defining feature
for HWM, and goes further by introducing the concept of the “public interest”
when determining tidal boundaries. The investigation indicated that there
could be potential impacts to landowners and developers when reverting back
to an original natural feature. The implications of applying the public interest
test when determining tidal boundaries is also largely unknown at this time.
Chapter 3 Methodology

3.1 Introduction

To ascertain how well the new legislation met its own objectives of tidal boundary clarity, certainty and consistency and to investigate the impacts on landholders, it was necessary to break this project’s study into three main pieces of work. Section one was used to identify and research the amendments made to the Queensland Legislation. Section 2 reported on case studies that tested the application of the legislation in differing scenarios. Finally section 3 used the research from section 1 and the field data from section 2 to gauge the effects of the legislative changes on land owners. Once these stages were complete it was possible to scrutinize the new legislation against its own objectives, and discuss the implications of the new directives on land owners, developers and the public.

3.2 Identify and Research Amendments to Legislation

This stage was separated into two distinct sub-sections, because to understand tidal boundary definition today it is necessary to be familiar with laws, directions and intentions of the past. This research into the history of tidal boundary definition in Queensland was conducted as part of the literature review and formed a foundation for the investigation into the new legislation.

The two pieces of legislation affecting tidal boundary determination in Queensland are the previously mentioned Survey and Mapping Infrastructure Act 2003 and the Land Act 1994.

The SMIA 2003 amendments inserted a new part 7 that deals specifically with tidal boundary and non-tidal boundary determination. The sections pertaining to non-tidal boundaries were not investigated as they fell outside of the scope of this project. During the research phase of this project the explanatory notes and the Legislation proper were the only two documents
that could be relied on to interpret the intentions of the State. Implementation guidelines in the form of Cadastral Survey Requirements were only available in a draft form from the 1st June 2010 and this was thanks to the Spatial Industries Business Association (SIBA).

### 3.3 Field Survey Identification and Methods

Three case study areas with differing morphological features were chosen throughout South East Queensland for this dissertation. After the analysis of the new legislation it was possible to determine the areas that would highlight common conditions that surveyors may face with regards to tidal boundary determination, public interest concerns and potential impacts on clients. Once the sites had been identified permission was sought to access the individual sites so that field work could be undertaken.

Cadastral surveys were then completed on all three sites; reinstating the boundaries. Tidal boundaries were then determined using procedures that were common prior to the stay on the registration of plans in 2005, and procedures in line with the commencement of the new legislation. The comparison of tidal boundary positions over these two epochs helped identify the impact on land title, highlight the impacts on owners, developers and the public and aided in assessing the legislation against its own objectives.

It is necessary to outline the background of each of the individual case studies, as the intention and desired outcomes of the parties involved had a bearing on the field methodologies adopted. The following is a brief synopsis of the three case study sites.
3.3.1 Case Study 1 – Beachmere (Lot 11 on RP89329)

This site was located in Beachmere approximately 55 kilometres North of Brisbane. Case study 1 was a hypothetical scenario as the owner of the property had no intention of subdividing the property.

Lot 11 on RP89329 is located on the intersection of Falcon Street and Bishop Road; it is also bounded by Deception Bay to the East and has an adjoining residential lot on its southern boundary. The tidal boundary to the East shares itself with a white sandy beach that slopes down into the shallow sand flats of the bay. (Refer: Appendix B) A distinctive characteristic of this wide open bay is that any slight fluctuation in tidal height causes a large displacement in the horizontal position where the water meets the land.

The original title plan of 1957 ‘RP89329’ (Refer: Appendix C) defines the tidal boundary as HWM and makes no reference to an original natural feature on the face of the plan or in the field notes that were obtained. The Lands Departments - Directions for the Guidance of Surveyors 1916 (clause 81) was the guiding principle of the time and stated that ‘sandy beaches, mangroves,
bare mud flats, and salt swamps are generally to be considered as being below high water mark’.

This site was chosen as it represents a coastal property with an ambulatory boundary that would be affected by the new legislation if the owner chose to develop the land. As previously stated a reinstatement was completed to fix the right line boundaries of the property. It was also necessary to complete a contour survey of the tidal zone for the determination of the tidal portion of the boundary, both prior to the stay on tidal boundary surveys and upon commencement of the new legislation. This contour survey was completed on AHD that had been transferred from a permanent mark on the corner of Phillip Street and Bishop Road. The tide gauge used for the MHWS determination was located at Caboolture River in Beachmere approximately 4km from the subject site.

3.3.2 Case Study 2 – Kangaroo Point (Lot 325 on SP138356)

Figure 2: Locality Plan for Case Study 2 - Kangaroo Point, QLD

The subject property, named “Yungaba”, is located between Anderson Street (North), the Storey Bridge (West) and Wharf Street (South) in Kangaroo Point, and abuts the Western bank of the Brisbane River. (Refer: Appendix D)

The property contains a heritage listed building that formerly functioned as an immigration depot and military hospital. The tidal boundary has been affected by large amounts of human activity throughout its history so evidence of an original natural feature in the tidal zone does not exist. In this instance, it was necessary to register a first new plan of survey under the new legislation that could be utilized in the progressive development of the site in the coming years.

This site was chosen as it offers an example of river front land with an ambulatory boundary that had a plan registered over it only three years prior to the stay. Developers had purchased this land under the impression that ownership of their land was described by the HWM tidal boundary on the old plan of survey registered in 2002. (Refer: Appendix E)

The field survey requirements for this case study took the form of a thorough investigation into the definition of the tidal boundary throughout the lands history, and the justification of a tidal boundary position in accordance with the new legislation.
3.3.3 Case Study 3 – Hope Island (Lot 308 on RP81555)

This subject site is situated in the central Gold Coast precinct of Hope Island approximately 26km North of Surfers Paradise.

Lot 308 on RP 81555 is a 27.4 Hectare parcel of low lying land bounded by Broadwater Avenue (North), Halcyon Waters Retirement Village (West), Saltwater Creek (South) and is adjoined by low density residential lots to the East. Crescent Avenue provides the sole access to the site from the East. (Refer: Appendix F)

The tidal boundary to the South is approximately 1.4km in length and is partially vegetated by patches of salt tolerant shrubs, Mangrove, Sheoak and Gum trees. A small tidal inlet divides the site and is bordered by Mangrove trees.

RP81555 (Refer: Appendix G) defines the tidal boundary as Creek rather than HWM and makes minor reference to low lying tidal swamp along the southern end and mid sections of this boundary. There is no mention of the
small tidal inlet on this 1954 plan. It appears the surveyor of the day needed to use some discretion with regards to the application of The Rules and Directions for the Guidance of Surveyors 1916 (clause 81). The original plan of survey only depicted two swamp areas and the defined tidal boundary was on the landward side of these natural features.

This site was selected as it represented the morphological features that commonly exist throughout the Hope Island region. To assess the impacts on this site it was necessary to undertake a detail survey that identified the vegetation and determined the lay of the land. The survey was completed on AHD which was derived from PSM111430 located near the intersection of Broadwater Avenue and Helensvale Road. MHWS and HAT were determined from a tide gauge located in the Coomera River approximately 2km from the site.

3.4 Analysis of the Effects of Legislative Changes

In this section an assessment of the three case studies took place against the objectives of the new legislation. These objectives were derived from Hansard documentation that recorded the proceedings of Parliament on the 9th, 23rd and 24th of March 2010. The three assessment questions (objectives) that were applied against the individual case studies are outlined below:

**ASSESSMENT AGAINST LEGISLATIVE OBJECTIVES**

- Does the legislation create a permanent solution to the problem of beach and significant coastal land being taken into private ownership in this scenario?
- Does the feature based methodology resolve uncertainty in determining the location of ambulatory boundaries?
- In this case does the legislation create certainty about the ambulatory boundary in the mind of the landholder and the State?

[Keywords: Clarity, Certainty, Consistency]
This analysis identified whether the application of the legislation to the three case studies provided clarity, certainty and consistency in tidal boundary determination.

In addition to the intentions of the law, it was necessary to identify and discuss the implications and impacts of the new legislation on land owners and developers. The potential for the loss of land is one such impact. An assessment of the amount of land lost in each scenario was completed to ascertain whether the concerns with regards to land loss were justified. This involved comparing the tidal boundary position based on the new legislative requirements, against the tidal boundary position defined under the laws prior to the stay on the registration of survey plans.

Other impacts specific to each site were also considered in the results section.

3.5 Chapter Summary

This chapter has identified the methodology that was applied to the three case studies in this research paper. This methodology produced results that allowed for the legislations affects on tidal boundary determination to be properly scrutinised and discussed.

The following chapter presents the results of the study into the amendments of the Land Act 1994 and the Survey and Mapping Infrastructure Act 2003. The research into the new legislation is presented in a systematic way and will highlight the fundamentals with regards to application and terminology under the revised Acts. The results of the three individual case studies will be presented along with relevant plans of survey that were produced to help examine the spatial relationship between old and new tidal boundary determinations.
Chapter 4 Results

4.1 Amendments to Legislation

On the 7th of May 2010 amendments to the Land Act 1994 and the Survey and Mapping Infrastructure Act 2003 took effect. This legislation is designed to prevent the registration of survey plans that allow title-holders ownership over beaches, and other tidal areas. The following is a synopsis of this new legislation.

4.1.1 Amendments to the Land Act 1994

The purpose of the amendments to the Land Act 1994 was to replace the term “High Water Mark” with “water that is subject to tidal influence” to circumvent the Svendsen v State of Queensland interpretation of the High Water Mark definition.

The term High Water Mark is defined in the Land Act 1994 as:

“the ordinary high water mark at spring tides”

This definition was interpreted by the court as meaning ‘Mean High Water Springs’ (MHWS). This decision subsequently allowed land holders to redefine their tidal boundaries to the intersection of the land with the tidal plane at MHWS.

Section 9 of the Amendments deals specifically with land adjacent to the tidal boundary and codifies the interest of the State in the littoral area. This is best described through reference to the following Figure 4.
In the above situation, lot 2 had a resurvey completed of the tidal boundary prior to the establishment of a stay on the registration of survey plans with tidal boundaries. The tidal boundary was defined by the common law ruling that HWM was identified by MHWS. Lots 1 and 3 did not resurvey the boundaries prior to the stay and therefore, have a tidal boundary that would be defined by the natural feature on a new plan of survey. Even though the new Act has commenced there is no compulsion for the owner of lot 2 to get the land resurveyed. When lot 2 eventually gets the tidal boundary resurveyed and a first new plan of survey is created the tidal boundary will revert back to the natural feature identified by the SMI Act 2003, and the land between the feature and MHWS will be vested in the State as Unallocated State Land.

In this instance the owner of Lot 2 would not be entitled to relief or compensation even though the State is essentially resuming their land. This is despite previous decisions handed down by the Supreme Court of Queensland that acknowledged that the vested interest is with the private land holder, and that the land was legitimately granted up to MHWS. This deprivation in the interest in land can occur without the payment of damages due to ‘no compensation provisions’ that exist in the *Survey and Mapping Infrastructure*
Act, Land Title Act and Property Law Act. It is possible for these ‘no compensation provisions’ to operate at the State level due to the way in which the Queensland Constitution is constructed. The Queensland Constitution does not incorporate ‘Just Terms’ compensation, which is based on the principles that a dispossessed party be placed in a similar financial position to that which existed prior to the resumption of their legitimately granted land.

New section 521ZA of the Land Act 1994 deals with the situation of leases and permits over the water. If the circumstance exists that a seaward lot (lease) and a landward lot (freehold) are owned by the same person, and the common tidal boundary is repositioned after the commencement of the ‘Survey and Mapping Infrastructure Act 2003’ amendments, then the boundary of the lease will also move to match the new position of the freehold land. In this instance a strip of Unallocated State Land is not created as the intention of the lease was for it to have a corresponding boundary with the land lot.

4.1.2 Amendments to the Survey and Mapping Infrastructure Act 2003

Part 7 of the SMIA 2003 deals with matters associated with the definition of tidal boundaries in relation to tenure. It plays no role in the definition of land administration boundaries.

There are five subdivisions that have been created to deal with the registration of survey plans with tidal boundaries post moratorium. Subdivision 2 to 4 deal with location of the tidal boundary at law at different epochs in time, whilst subdivision 5 provides for the location of the boundary upon the creation of new source material, and subdivision 6 when there are matters relating to the location at law of esplanade boundaries. The following figure outlines the basic path of a registered instrument over time.
Subdivision 2

This subdivision applies from the 8th of May 2010 until the registration of the first new plan of survey. The tidal boundary at law under this subdivision is the natural feature adopted on the last registered plan of survey. This subdivision recognises previous registered instruments that had been resurveyed to the mean high water springs in line with the terms of the deed of grant. The ambulatory boundary principles should be applied under this subsection. In the situation where the evidence on the ground does not coincide with the most recent registered plan or the feature has been affected by sudden change, then it is necessary to identify the boundary through the application of subdivision 3.

Subdivision 3

This subdivision is used to deal with the position of the tidal boundary at law from the registration of the first new plan of survey. Unlike subdivision 2 this subdivision does not acknowledge the intersection of a tidal plane with land as being a natural feature. This subsection actually overrules previous case law with regards to the definition of HWM at the mean high water springs line. If land was originally granted to HWM but was referenced to a
natural feature on the original plan of survey, then the tidal boundary position under subdivision 3 will be the current position of the natural feature. If MHWS was previously used then on resurvey the boundary will revert back to the natural feature.

An exception to the original adopted natural feature rule exists under this subdivision. This allows the surveyor to nominate an alternative natural feature as the tidal boundary. The onus is on the surveyor to prove that the alternative natural feature is an acceptable feature for the definition of the tidal boundary. This is achieved through the application of the first four conditions of the tidal boundary location criteria.

In the event of the original old plan of survey not having nominated a natural feature to define HWM, it is necessary for the tidal boundary position to be fixed through the application of all of the tidal boundary location criteria.

Finally, this subdivision allows for the determination of the tidal boundary through a single lot declaration that is made by the chief executive. This exception to the original natural feature rule applies when evidence of the original natural feature, doesn’t correspond with the feature that exists on site. It can also occur where it is impossible to determine where the natural feature should be after the application of the ambulatory boundary principles.

Subdivision 3 serves its function once in relation to land and establishes the true position at law of tidal boundaries. Any future tidal boundary reinstatements (subsequent plans of survey) will refer back to the plans registered under this subdivision.

This subdivision sees the first application of the tidal boundary location criteria and the public interest test in the registration of tidal boundaries. This subdivision seeks to rectify previous accounts of public land being taken into private ownership, and is designed to prevent future application of common law rulings in positioning tidal boundaries.
Subdivision 4

Subdivision 4 is designed for subsequent plans of survey that relate back to the first new plan of survey, registered under subdivision 3, as this first new plan of survey is the tidal boundary at law under the new legislation. It explains that any subsequent plans of survey are required to use the natural feature or other descriptor registered on the first plan of survey, whilst still taking into consideration the ambulatory boundary principles of accretion and erosion.

This subdivision allows for subsequent plans of survey to be compiled over any portion of the boundary, as long as it uses the boundary information from the first new plan of survey.

Subdivision 5

This subdivision relates to the location of tidal boundaries at law when new source material is created for the land. This subdivision is applicable from the date of commencement of the new amendments to the Act.

“Source Material, for land, means any instrument forming the origin of the land’s identity for the system of land titling or land administration in place in the State under the registration Acts.” SMIA (2003, S62)

Examples of source material for freehold land would be the current Deed of Grant, or a registered instrument that occurred at the same period of time as the deed of grant with the intention of aiding in the interpretation of this deed. When dealing with leases, permits and licences over freehold land, the instrument registering those interests would be classified as relevant source material. As subdivision 5 comes into existence at the commencement of the Act, it will be necessary for the new source material and instruments to be in
accordance with the tidal boundary location criteria, and therefore aligned with the true position of the boundary at law therefore subdivisions 2 to 4 do not apply to the land.

**Subdivision 6**

Subdivision 6 clarifies the existing common law set out by *McGrath v Williams (1912) 12 SR (NSW) 447* in relation to esplanades and sets in statute well established survey practice. In essence the position of the esplanade boundary is fixed by the original source material at the nominated offset. If accretion or erosion impact upon the tidal boundary, it will not have an effect on the position of the esplanade boundary of the adjoining parcel of land as identified in Figure 6.

![Figure 6: Tidal Boundary effects on Esplanades](image)

**Non Application of new rules to land**

Under the new legislative amendments certain categories of land are exempt from the redefinition of their tidal boundaries. These land types have been set aside due to their roles in serving the public’s interest. The following is a list...
of land types with tidal boundaries that will not change upon commencement of the act or future resurvey of the land.

- “If the land has been designated a specified tidal boundary on the deed of grant.
- The land is classed as Indigenous land.
- The land is classified by the *Transport infrastructure Act 1994* as strategic port land
- The land is protected land under the *Nature Conservation Act 1992*; or
- If the land is state forest as defined by the *Forestry Act of 1959.*”

Adapted from SMIA (2003, S66)

With the exception of land with specified tidal boundaries a number of these categories of land concern themselves with land administration. It is therefore unnecessary to determine the exact location where the littoral zone interacts with the land.

**Specified Tidal Boundaries**

Specified Tidal Boundaries occur when the source material for a parcel of land identifies an exact position for the tidal boundary. The types of boundaries that could be shown in the deed of grant or on registered instruments are identifiers such as Mean High Water Springs or Highest Astronomical Tides. Land with specified tidal boundaries, such as the above mentioned, are not impacted by the rules detailed by the new Act as the State intended for that land to be located at that precise boundary.

**Tidal Boundary Location Criteria**

Section 72 of the *Survey and Mapping Infrastructure Act* introduces a series of ‘Tidal Boundary Location Criteria’ for the identification of tidal boundaries, where previous registered plans of survey do not correspond with the evidence that exists on the land. These criteria stipulate that the adopted
tidal boundary must be located on the landward side of beaches, dunes and mangroves etc, must not be affected by tidal inundation, must be a natural feature with long term sustainability and must be consistent with the Public Interest. The public interests bearing on the tidal boundary definition can be determined through the use of the ‘Public Interest Test’, which is outlined in the latest revision of the Cadastral Survey Requirements V 6.0. The Public Interest Test concerns itself with the Cultural, Environmental, Heritage, Land Protection, Planning, Recreational, Social and Strategic interests of the State and the public. This is the first time that the broader administrative objectives of stability and sustainability; conservation and protection are interwoven with tenure boundary determination.

When it is necessary for these criteria to be applied for the determination of a tidal boundary, the onus rests on the surveyor to prove that the boundary position appropriately meets these provisions.

**Other Relevant Sections of the Act**

**Multiple Lot Declarations** – The power to declare a tidal boundary over multiple lots has been retained by the Chief Executive. This occurs for situations where there is no possible way for a surveyor to determine the original position of any natural feature. This boundary declaration will be defined as a right line tidal boundary.

**Administrative Notation** – Section 69 of the Act reserves the right for either, the Chief Executive or Registrar of Titles, to place a note on the freehold and leasehold land registers. This is done when future survey works will result in the tidal boundary reverting back to a more landward natural feature or a line defined under a multiple lot declaration. This section has been designed to protect future purchasers of land where a survey had previously defined the tidal boundary at MHWS when the deed of grant did not specify that to be the boundary identifier.
4.2 Field Study

4.2.1 Case Study 1 – Beachmere (Lot 11 on RP89329)

Case study 1 was a 2074m$^2$ parcel of land with a 20m wide frontage directly onto the beach on Deception Bay. The site has relatively flat topography that rises slightly towards the beach end of the site. A small sandy bank covered in grass distinguishes the mainland from the beach, where it drops down approximately 400mm to the sand. The site is free from trees of any type.

The original plan of survey RP89329 (Refer: Appendix C) was registered in 1957 and defined the tidal boundary as being HWM with no mention of existing natural features. The use of HWM at this time was guided by Clause 81 of the 1916 Surveyors Directions that stated that sandy beaches are considered to be below HWM.

If a new plan of survey was completed prior to 2005 when the stay on the registration of survey plans commenced, it would have been within the word of the law to determine HWM as being MHWS. The use of MHWS as a determinant for HWM would have positioned the tidal boundary a further 7m into the bay on the northern end of the boundary, and a further 8.5m into the bay on the southern end of the boundary. This determination would have added a further 156m$^2$ to the deed area shown on the old plan of survey completed in 1957. (Refer: Figure 7). The positioning of the tidal boundary at MHWS would have acknowledged that the owner of lot 11 held 156m$^2$ of white sandy beach on their title. Private property rights would have accompanied this additional land holding and entitled the owner of lot 11 to manage their land and exclude others from the section of beach down to the MHWS line. It is this type of scenario with regards to private beach ownership that DERM was trying to rectify with the implementation of the new legislative changes.

A plan of resurvey under the new legislative amendments would create a ‘first new plan of survey’ over lot 11. The boundaries determined under the guidance of the Survey and Mapping Infrastructure Act would be the position
at law. A plan of resurvey in this instance would operate under Section 80 (Original adopted natural feature rule (tidal provision) of the SMIA (Reprint 7th May 2010). Under this section ‘the adoption of the line of intersection of a tidal plane with land is not sufficient to have achieved the adoption of a natural feature’. In essence, the ‘first new plan of survey’ would resume the sandy beach in this hypothetical scenario and would revert the tidal boundary back to the natural feature.

Survey of the parcel of land determined the top of the bank in relation to the cadastral boundaries and its position was plotted on the adjoining plan (Refer: Figure: 7). It can be seen in this instance that the top of bank generally mimics the original tidal boundary described on RP89329. This highlights that the surveyor in 1957 adopted a natural feature that was in agreement with the Directions of the day. This also emphasises that there has been minimal erosion over the tidal portion of this site in the last 53 years, and that the new legislation is closely modelled from the historical Directions of the Department.

There was an expectation that the application of the new legislation to this site would result in some loss of land in this scenario. However, the impacts of the legislative changes on this site will be minimal. The resurvey of the lot has determined that any land loss due to the adoption of the natural feature in this case is negligible (less than 1%). This could be attributed to a mild case of erosion. This Case study does conversely draw attention to the potential for the legislation to protect Queensland beaches from private ownership. The effect of the tidal boundary redefinition would also have an insignificant impact on market value of the land in this instance. The size of the parcel of land and the 100m frontage to Falcon Street lends itself to the possibility of future subdivision. There are a number of sites in the vicinity with similar characteristics that have been approved for such development. The legislative changes to tidal boundary determination do not hinder this development potential.
The following are the reviews against the legislative objective assessment standards:

**ASSESSMENT AGAINST LEGISLATIVE OBJECTIVES**

- *Does the legislation create a permanent solution to the problem of beach and significant coastal land being taken into private ownership in this scenario?*

In this case study a “first new plan of survey” would determine the tidal boundary to be at the top of bank (natural feature). This determination at law limits the ownership of land to be on the landward side of the sandy beach. This therefore is a permanent solution to private ownership of the beach adjoining this lot.

- *Does the feature based methodology resolve uncertainty in determining the location of ambulatory boundaries?*

The adopting of a natural feature in this instance creates certainty with regards to the tidal boundary. The feature clearly demarcates the boundary and future surveyors will be able to see that the “first new plan of survey” adopted the top of bank. Ambulatory boundary principles would apply to the tidal boundary determination in the future.

- *In this case does the legislation create certainty about the ambulatory boundary in the mind of the landholder and the State?*

The adoption of a natural feature in this situation gives an obvious physical feature that the land holder can clearly see and that suitably respects the public interest in the beach. The registration of a first new plan of survey over this lot under the new legislation would define the tidal boundary at law.
This would provide certainty for both the landholder and the state over the position of the tidal boundary and for the future creation of “subsequent new plans of survey”.
Tidal Boundary Comparison Plan of 177 Bishop Road Beachmere (Lot 11 on RP89329)
4.2.2 Case Study 2 – Kangaroo Point (Lot 325 on SP138356)

The Kangaroo Point case study is a 1.823 ha site located on the Brisbane River. The subject property forms part of the first stage of a five stage Community Title residential development. The land along the tidal boundary of the site is to be used to construct a public river walk that will connect existing river walks to the north and the south of the subject site. A public thoroughfare easement will be registered over the river walk upon completion of works. Through interpretation of the new legislation and guidance from the Department, it was apparent that it would be necessary to define the tidal boundary at law by registering a ‘first new plan of survey’. The tidal boundary determined on this plan could then be used on subsequent new plans of survey during the progressive staged development of the site in the coming years.

In 2002 SP138356 was registered over the site (Refer: Appendix E). This old plan of survey amalgamated three lots and was the first plan to clearly define the tidal boundary over the land’s history. The site was subsequently purchased by developers in 2002 with the understanding that the site had an ambulatory boundary defined by HWM. SP138356 took a conservative approach with regards to the definition of HWM and did not subscribe to the use of MHWS in defining the tidal boundary. Field notes did not exist for the survey, but inquiries made to the surveyor revealed that the HWM was defined using the top edge of an old rock retaining wall where it was well defined, and in places where it was not well defined, a top of earth bank was adopted. Further investigation into the tabulated radiations on the face of the plan showed that the reinstated tidal boundary emulated to some degree the previous feature based tidal boundary position from 1942. The full analysis into the tidal boundary history of the lot can be viewed as an appendix to this paper. (Refer: Appendix H)

Prior to the stay on the registration of survey plans with tidal boundaries and the commencement of the new legislation it would have been a simple
process of progressively staging the development. This would have been achieved using the lot as a base parcel and compiling the tidal boundary as per SP138356. As the staging of the development does not actually intersect the tidal boundary, it would not have been necessary to redefine the tidal extent of the lot. The tidal boundary could have been compiled for every stage of the development, and the public access easement could be registered over the extent of the new river walk.

The amendments to the legislation placed an element of uncertainty in the mind of the developer over the position of the parcel’s tidal boundary. The land had been affected by a long history of human interference, meaning that determining the tidal boundary under the new legislation’s Section 80 [Original adopted natural feature rule (tidal) provision] would not be possible. It was decided that application of Section 82 [applied criteria exception] was the basis for the location at law of the tidal boundary. To complicate matters, granting of Development Approval for tidal works and the commencement of these works removed any remaining features from the 2002 and 1942 surveys. The demolition of these features meant that the argument for Section 82 [applied criteria exception] would need to be made based on features that no longer existed and could not be physically assessed by the Department. An argument was developed based on historical and recent; photographic evidence, digital survey information and plan history. Application for a ‘chief executive single lot declaration’ was not in the client’s best interest. This was due to the time considerations of the development and because there was limited control over the nominated tidal boundary position declared by the chief executive.

After extensive study into the surveyed history of the site, and the current circumstances with regards to the recent demolition of the features in the tidal zone, it was decided that the proposed tidal boundary for the first new plan of survey would be the position nominated on SP138356. Section 82 of the Act necessitates the compliance of the proposed tidal boundary with all six of the tidal boundary location criteria stipulated in Section 72 of the Act. The location criteria included an element of assessment against the ‘Public
Interest Test’ that was outlined in the Cadastral Survey Requirements Version 6.0 May 2010. The justification for the decision to adopt the tidal boundary on the old plan of survey, and the responses to the six tidal boundary location criteria including the public interest test, can be viewed in the appendix (Refer: Appendix H). The following plan of resurvey is the resultant first new plan of survey that is to be lodged for registration with the DERM (Refer: Figure 8).

In this scenario there was no apparent impact on the extent of ownership. This is due to the fact that the tidal boundary on the old plan of survey was adopted as the tidal boundary determination for the first new plan of survey. The plan and its field notes are yet to be assessed by the department for registration as a first new plan of survey. The results of this case study highlight the administrative overheads to land holders and developers in determining the tidal boundary at law, even though there is sometimes no objective effect on the land itself. One major impact that was revealed in this case study was the importance of creating a first new plan of survey at the right moment in the development process. For instance, if the plan that creates the principle scheme was to be the first new plan of survey that redefined the tidal boundary at law, there would be the potential for hold ups due to the lengthy period of assessment for the tidal boundary. This would have further flow on affects on the registration of the first Building Format Plan (BFP), which would cause delays in the settlement and finalisation of purchases. Any hindrances like this at the later stages of the development timeline would be costly to a developer, as it is a point where there is maximum exposure to debt, and extremely large interest repayments being amassed on a daily basis.

As part of the investigation it was also necessary to assess the legislation against its own objectives in relation to this case study. The appraisal against these legislative objectives follows:
ASSESSMENT AGAINST LEGISLATIVE OBJECTIVES

- *Does the legislation create a permanent solution to the problem of beach and significant coastal land being taken into private ownership in this scenario?*

At this point in time there is no sandy beach that exists along this stretch of the Brisbane River. The application of the new legislation, and the registration of the first new plan of survey over this site, will ensure that any future accretion of sand; forming a beach in this area will stay in the ownership of the State. Registration of the tidal boundary in this position will allow unhindered access and use by the public of any future sand deposits along the base of the new porphyry rock wall.

- *Does the feature based methodology resolve uncertainty in determining the location of ambulatory boundaries?*

Determining the location of the tidal boundary using the new legislation was an onerous task in this instance. This may have had to do with the application of the legislation and the desired outcomes of the developer, rather than the legislation itself. The new porphyry rock wall destroyed any natural features that were used to determine the tidal boundary on the lodged first new plan of survey. Due to this, it is most certain that any subsequent new plans of survey that do not compile this tidal boundary will require either a single lot declaration from the minister.

- *In this case does the legislation create certainty about the ambulatory boundary in the mind of the landholder and the State?*
Until a first new plan of survey for this site is registered, there will be an element of uncertainty over the tidal boundary position held by the landholder. This uncertainty is amplified due to the long history of human interference along the banks of this site. The whole purpose of the State and the Department developing this legislation was to create certainty in their minds about the position of ambulatory boundaries. So the position that is registered on the first new plan will be the position that meets their specific desires.
4.2.3  Case Study 3 – Hope Island (Lot 308 on RP81555)

The 27.42 ha Hope Island case study is a site that will be impacted greatly by a plan of resurvey under the new legislation. The original plan of survey RP81555 (Refer: Appendix G) was registered in 1954 and defined the tidal boundary as creek. It made no reference to HWM over this section of Saltwater Creek. Annotation on the face of the old plan of survey identifies two tidal marshy patches which are demarcated by hatching. A detail survey of the site showed that the eastern and western stretches of the 1954 tidal boundary correlate with the top of an existing vertical bank. However, the central section is dominated by low lying dense mangrove growth that extends from Saltwater Creek through the centre of the site. Clause 81 of the 1916 Rules and Directions states that:

“mangroves, bare mud flats, and salt swamps are generally to be considered as being below HWM, but land that can be easily reclaimed, small patches of mangrove, or mud flats, nearly or quite isolated from the general contour of HWM, may be dealt with as above it, and may be included within the boundaries of portions.”

It is difficult to determine what natural feature was used to establish the tidal boundary ‘Creek’. There are three possible features that ‘Creek’ could be interpreted as: (1) Top of Bank, (2) Toe of Bank & (3) Edge of mangrove/marine vegetation. It is also difficult to verify the density or even the existence of the mangrove growth through the centre of the site when the original plan of survey was completed. It was necessary for the sake of this case study to assume the surveyor used discretion and experience in deciding to define the tidal boundary where it is shown on the plan.

Section 82 (applied criteria exception) was used to define a new tidal boundary position for this case study. This section required the application of all six tidal boundary location criteria to the newly proposed tidal boundary. Employing these six criteria was challenging in this scenario. Satisfying Criteria (1) meant that the proposed boundary needed to be positioned beyond the line of inundation of HAT. This immediately reduced the land holding by
65% and created stranded assets throughout the site (Refer: Figure 10). Stranded assets in this context are areas of land that have been separated from the main parcel of land due to the redefinition of the tidal boundary. The owner can no longer directly access these areas without passing onto either State owned land, or land held by adjoining property owners. Criteria (2) required that the proposed tidal boundary be on the landward side of any sandy beaches, fore dunes, mangroves, sea grasses, salt marshes etc. Any tidal boundary position adopted above HAT in this instance would be on the landward side of the mangroves and salt water couch grasses. Application of the Public Interest Assessment under Section 4.14 of the Cadastral Survey Requirements V6.0 (June 2010) showed that a tidal boundary above HAT would be consistent with the public interest under criteria (3). Criteria (4-6) required that the adopted tidal boundary be a natural feature that has long term sustainability. The only definitive natural feature that exists above HAT, is a line in the change of vegetation from low lying scrub/ saltwater couch to thick Sheok and Gum Trees. Adoption of this feature further reduced the land holding down to 21% of its original size. A number of the stranded assets that were created due to HAT would need to be sold to adjoining property owners or dedicated as either park or creek.

The impact of any plan of resurvey over this lot would have substantial effects on the size of the land holding. The low lying nature of the land and the impact of tidal inundation virtually caused the land to be unusable in terms of future development. This fact would have existed regardless of the application of the new legislative changes.

ASSESSMENT AGAINST LEGISLATIVE OBJECTIVES

- Does the legislation create a permanent solution to the problem of beach and significant coastal land being taken into private ownership in this scenario?
The land in this scenario was never taken into private ownership, as it has always been privately owned up to the tidal extent shown on original plan RP81555. A first new plan of survey dispossesses the owner of approximately 71% of the land holding and classifies the resumed land as creek. Yes the legislation would create a permanent solution to the private ownership of this significant coastal land, but the burden and cost of the public’s interest in this land would be carried solely by the current land owner.

- Does the feature based methodology resolve uncertainty in determining the location of ambulatory boundaries?

Adopting a feature based methodology in this case study was difficult. A number of different vegetation types existed over topography that didn’t contain sharp fluctuations in grade. Difficulties arose when trying to nominate a natural feature that was wholly clear of HAT. In this situation, the limit to the saltwater couch was wholly contained by HAT so this would not satisfy the tidal boundary location criteria. In some instances there was no natural feature clear of HAT and even in the situation where there was a change in vegetation type from couch to Thick Sheok & Gum trees, the HAT still encroached to a minor degree on this potential boundary position. This case study highlighted some of the uncertainty that could arise with regards to using a natural feature to redefine the tidal extent of land. Nonetheless, implementation of a feature based methodology today will aid in the determination of tidal boundaries for subsequent new plans of survey in the future.

- In this case does the legislation create certainty about the ambulatory boundary in the mind of the landholder and the State?
The legislation has created a large amount of uncertainty in the mind of the landholder with regards to the ambulatory boundary position at law. Yes, if a first new plan of survey was registered for this site, the ambulatory boundary position would be better described. But there will be uncertainty endured by the current landholder up until the registration of the plan of resurvey.
Area Vide Title
27.417 ha

Area Vide First New Plan of Survey
5.824 ha

Area of Stranded Assets
3.158 ha
Chapter 5 Discussion and Conclusions

5.1 Introduction

This project considered the impacts the legislative amendments to the *Surveying and Mapping Infrastructure Act 2003* and the *Land Title Act 1994* would have on tidal boundary determination in Queensland. The dissertation sought to investigate the effectiveness of the legislation in finding a balance between the public’s right to access and use sandy beaches and other significant tidal areas, and the private land holder’s rights that come with land that was legitimately granted, paid for and recognised by the Court of Law. The project also considered the effects changes to tidal boundary positions would have on landholders, developers and other interested parties.

To ascertain whether the legislation created a system that provided clarity, certainty, consistency and fairness in the determination of tidal boundaries, the project was separated into two main components. First; the history of common and statutory law, the fundamental concepts of the intended limits to land ownership and the concept of the public interest were researched to form a foundation for the understanding of the new legislative changes. Second; the new legislation was applied against a series of different case studies to discover the effects on tidal boundary positions, and the subsequent impacts these movements in the boundary at law have on owners and developers.

Two fundamental questions are addressed in this chapter. (1) Does the new legislation meet its own objectives (outlined by Queensland Parliament) in creating a system for tidal boundary determination that is clear, certain and consistent? And (2) what is the impact of the legislation and the significance of the public interest on tidal boundary determination?
5.2 Provision of Clarity, Certainty and Consistency

The major objectives of the legislative amendments were laid out before the 53rd Parliament in March of 2010. These objectives were in addition to the major aim expressed by DERM, of creating a permanent solution to the private ownership of sandy beaches and other significant tidal areas in Queensland. It was identified that the legislation was to provide a system of clarity, certainty and consistency for the determination of tidal boundaries.

The application of the new legislation to determine new tidal boundary positions for three case studies allowed the Act amendments to be assessed against these objectives. This study identified that in all three case studies the legislation was effective in creating a permanent solution to beach and significant coastal land being taken into private ownership, both prospectively and retrospectively. This was achieved by limiting private ownership to suitable natural features located on the landward side of areas with significant public interest. The creation of the legislation clarifies the States position on the limit of tidal tenure boundaries, and the application of the legislation simplifies the manner in which subsequent plans of survey delineate the tidal boundary.

A feature based methodology for determining tidal boundaries in Queensland has been regulated, and practiced by surveyors effectively for almost 100 years. The divide between the common law and its definition of HWM, and the Departments directions on the limits to land ownership abutting tidal areas, have been the key cause for uncertainty in tidal boundary determination. The new Legislation and its standardised approach will put an end to this uncertainty by overturning previous common law rulings, and will effectively create a new foundation for the future of the cadastre in these tidal areas.
5.3 Impact of Legislation on the redefinition of Tidal Boundaries

The application of the feature based approach to the three case studies produced varied results. The cases emphasized the difficulties that could be faced when applying the legislation, and the impacts that could be faced by land owners or developers having tidal boundaries resurveyed.

Case study one was a rather simple situation, with basic morphological features that allowed for the easy utilisation of the methodology. This resurvey resulted in a clearly defined tidal boundary, with the registered instrument correlating appropriately with the natural features on site. In this instance, the new system created a foundation of clarity for subsequent plans of survey in which the ambulatory boundary principles could be accurately applied.

Case study two emphasized the difficulties that can be faced when trying to apply a simple method to a complex situation. A result was reached using the feature based approach. This case study also drew attention to the benefit provided by the Legislation of having a single lot declaration as an option for tidal boundary determination in areas with a lack of feature based historical evidence. The troubles experienced with this case study related to the unfortunate clash between the development timelines of the client and the timing of the new legislations enactment, rather than the feature based methodology itself.

Case study three was also a complex situation which highlighted the large impact that the legislation could have on land that is generally low lying. These impacts are irrespective of whether the old plan of survey was carried out in accordance with the original Department Directions for identifying tidal boundaries. The requirement for the tidal boundary to be unaffected by tidal inundation under any combination of astronomical or average meteorological conditions, will resume large sections of land in low lying areas. It will also create stranded land assets. Applying the legislation in this
case also drew attention to a situation that may occur regularly when applying the tidal boundary location criteria. Criteria five stipulated that a natural feature must be adopted unless there is no natural feature in reasonable proximity to where the tidal boundary must be located. Criteria six as a solution promotes the use a change in vegetation as the boundary, but this does not account for circumstances where no vegetation line exists in close proximity to the line of tidal inundation. It is unreasonable to expect the land owner to lose more land than is necessary when the boundaries are redefined. Clarification of this matter by the Department would clear up any uncertainty faced by a surveyor in these circumstances.

The registration of a first new plan of survey over any lot will create an undisputable definition of the tidal tenure boundary at law. This is one of the greatest benefits of the legislation as it provides certainty over tidal boundary positions in the minds of land holders and the State. Unfortunately, there will be a small proportion of land holders and developers who will pay the price for the establishment of a tidal boundary system that relies on broad land management criteria to attain its goals.

### 5.4 Significance of the Public Interest

The feature based methodology utilised by the Survey and Mapping Infrastructure Act 2003 has provided a standard for the redefinition of tidal boundaries at law in Queensland. The implementation of this system will form a reliable foundation for the future of the cadastre in tidal areas, and will underpin accurate and consistent tidal boundary determinations on subsequent plans of survey throughout the State. However the use of the Public Interest Test and its broad land administration criteria in tenure boundary determinations appear to have blurred the line between coastal management and the limits of private ownership.

Governments used constitutional powers to broadly designate where new rights, restrictions and responsibilities would take effect. Breddin (2007, pg 14). These rights, restrictions and responsibilities over coastal land are
continually developing and are important for the protection of the coastal environment and its ecosystems. Rights and restrictions although imposing a set of rules over the use of land did seem to coexist with private ownership rights, and the individual’s ability to enjoy and use the land and water’s edge. It appears these areas that were once principally independent of private property boundaries and broadly designated, are being more tightly mapped and are having a more specific impact on the extent of tidal boundaries.

The introduction of the public interest and its far reaching land administration criteria, have moved the agenda from unbundling private property rights to the resumption of land viewed as significant to the public. This emphasizes that the new legislation favours the interests of the State and the public over the interests of the private land holder.

Current planning conditions already take into consideration land with any great environmental or social importance when a future development is proposed. This normally results in the tidal strip of land being dedicated as park, esplanade or open space. In these circumstances the public as well as future private owners of adjoining lands would have shared access and use of these significant tidal areas, regardless of where the tidal boundary is. In fact the public value of tidal land appears to be enriched in areas where the use of dedicated open space or park is effectively applied in developments.

If it is possible to impose restrictions and responsibilities over the ecological features of the site and implement coastal building lines to control development then it should have been possible to allow private ownership in accordance with the courts HWM precedent, and then legislate in public use corridors from HWM up to a position defined by the natural feature rules. This would still recognise the legitimately granted extents of ownership along tidal boundaries and would protect the use and access of the beaches for the public.
5.5 Conclusion

The fundamental areas of research for this project were the history of legislative and common law tidal boundary definition in Queensland, the public interest as it related to the tidal zone and the impacts of changes to the Survey and Mapping Infrastructure Act 2003. The project identified that the application of the legislation delivered undisputable definitions of tidal tenure boundaries at law. It found that the registration of a first new plan of survey will provide certainty over the limits of land ownership in tidal areas. The three case studies also found substantial impacts that would be associated with the implementation of the legislation. These impacts were an increased administrative overhead when pursuing the development of a site, the potential for loss of land without compensation especially on low lying lands and the potential for adverse effects on development timelines. This project did not aim to be an exhaustive text on the new legislation, but was developed as a resource in the area of tidal boundary policy in Queensland.
References


Breddin, I.S. 2007, Property rights and the littoral zone in Queensland, University of Southern Queensland, Toowoomba, p.4 & 14.


Legislation

Australian Courts Act 1828
Fish and Oyster Act 1914
Forestry Act 1959
Harbours Act 1955
Integrated Planning Act 1997
Land Act 1994 (Act no.81 of 1994)
Land Act 1994 (Reprinted as in force on 7th May 2010) Reprint 10I
Nature Conservation Act 1992
Property Law Act 1974 (Reprinted as in force 4th October 2010) Reprint no. 10A
Survey and Mapping Infrastructure Act 2003 (Reprinted as in force 7th May 2010) Reprint 2C
Sustainable Planning Act 2009
Transport Infrastructure Act 1992
Cases

Attorney General v Chambers (1854) 43 ER 486

McGrath v Williams (1912) 12 SR (NSW) 447

Pukallus v Cameron (1982) 180 CLR 447

Svendsen v State of Queensland (1996) 32 (QLD)
Appendices

University of Southern Queensland

FACULTY OF ENGINEERING AND SURVEYING

ENG4111/4112 Research Project
PROJECT SPECIFICATION

FOR:  
BEN MADDEN-HOLMES

TOPIC:  PUBLIC INTEREST AND THE REDEFINITION OF TIDAL BOUNDARIES

SUPERVISOR:  Mr Glenn Campbell

ENROLMENT:  ENG 4111 – S1, X, 2010; ENG 4112 – S2, X, 2010

PROJECT AIM:  This project investigates the impact that changes to current Queensland legislation will have on the redefinition of tidal boundaries and the subsequent effects these changes will have on landholders and other interested parties.

PROGRAMME:  (Issue A, 11\textsuperscript{th} March 2010)

1)  Research the history of tidal boundary definition in Queensland.

2)  Research and define the Public Interest as it relates to the tidal zone.

3)  Identify proposed changes to the Survey and Mapping Infrastructure Act 2003 and other relevant legislation effecting tidal boundaries.

4)  Conduct 3 case studies on parcels of land with morphologically differing tidal areas and investigate the potential effects that the forthcoming legislative amendments will have on their boundary definition.

5)  Evaluate the significance of public interest and the impact this will have on tidal boundary location, freehold land owners and future development of land.

AGREEED  
(Student)  
(Date: / / 2010)  
(Supervisor)  
(Date: / / 2010)

Examiner/ Co-examiner:  

Appendix A – Project Specification
Falcon Street, Beachmere, QLD. 2010.


Appendix B – Site Plan of Lot 11 on RP89329
Kangaroo Point, Brisbane, QLD.


Appendix D – Site Plan of Lot 325 on SP138356
Appendix E – SP 138356
Hope Island, Gold Coast, QLD.


Appendix F – Site Plan of Lot 308 on RP81555
Appendix H – Survey Report to Accompany SP236824

(FIRST NEW PLAN OF SURVEY)
RESURVEY OF

LOT: 325

PLAN: SP236824

CANCELLING: Lot 325 on SP138356

PARISH OF: South Brisbane

COUNTY OF: Stanley

SURVEYED BY: B.B.H. PTY. LTD.
(ACN 010 427 531)
B.B.H. PTY. LTD. (ACN 010 427 531) hereby certify that these survey records are accurate records of the survey performed by Ben Madden-Holmes, Surveying Graduate, for whose work the corporation accepts responsibility, under the supervision of Christopher Terence Swane Cadastral Surveyor.

............................................................
Director

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Director

Date..............................................
SURVEY REPORT TO ACCOMPANY SP236824
FIRST NEW PLAN OF SURVEY S.M.I ACT PART 7

PREFACE

This report is intended to support the redefinition of the tidal boundary to an approved residential development by establishing a “First New Plan of Survey” which in turn will form the basis of “Subsequent New Plans of Survey”.

INTRODUCTION

The intent of SP236824 is to resurvey lot 325 on SP138356 to determine the location of the tidal boundary to the Brisbane River at law as defined by Part 7 of the Survey and Mapping Infrastructure Act 2003 (SMIA Reprint 7th May 2010). The location of the tidal boundary determined by this survey (first new plan of survey) will be adopted to define the subsequent tidal boundary in the progressive staged development of the site in the coming years. This report addresses the reporting requirements for surveys involving ambulatory boundaries as per section 4.13 of the Draft Cadastral Survey Requirements Version 6.0 May 2010.

LOCALITY

The subject property forms part of an approved Community Title residential development “Yungaba” and is bounded by Anderson Street (North), Wharf Street (South), the Story Bridge (West) and the Brisbane River (East). (Refer to Photo 1 – Locality Plan). The property contains a heritage listed building known as “Yungaba House” that functioned as an immigration depot and military hospital.
DEVELOPMENT OF THE SITE

The subject property forms part of the first stage of an approved five (5) stage Community Title Residential Development. It is intended to complete all works adjoining the Brisbane River in the first stage to enable construction of a Public River walk adjacent to the River to connect existing River walks north and south of the development. A public thoroughfare easement will be registered over the River walk in accordance with the development approval.

A resource entitlement currently exists, approved by the Department of Environment and Resource Management to construct a porphyry rock retaining wall along the River Bank. Initial construction of the retaining wall has resulted in removing a significant portion of the River Bank. (Refer to Photo 12 & 13 – River Bank (2010)).

POSITION OF TIDAL BOUNDARY (BRISBANE RIVER)

1. HISTORY OF RIVER BOUNDARY DEFINITION & DIRECTIONS APPLICABLE:

TIMELINE OF PLANS

1858 B1234.40 Surveyor: H Wade
Plan created the original Suburban Allotments in Kangaroo Point but is limited in the amount of survey information and dimensions shown. Line-work indicates an approximate position of the River shape including minor watercourses that appear to extend into Allotments 21 and 22. The plan does not describe the feature adopted for this line-work. The first Rules and Directions for the Guidance of Surveyors were published in 1878 (clause 18) by the Lands Department / Surveyor General. This survey was completed
before directions existed. Allotments 21 and 22 were later gazette as Reserve 780 to be used for Departmental and Official (immigration) purposes. No Field Notes Exist.

1935 B3867 Surveyor: Cyril Bennett
Plan created Portions 254 and 255 cancelling part of suburban Allotments 21 and 22 (Reserve 780). Whilst the line work representing the boundary has been clearly shown on the face of the plan the feature defining the River boundary is not described. A surveyed distance of 425 links along the northern boundary from the western end of Anderson Street has been measure to the River boundary. No Field Notes Exist.

1942 RP60571 Surveyor: Cyril Bennett
Plan creates new lots cancelling adjoining suburban Allotments 18, 19 and 20 north of the subject property. The intent of the survey is to realign the river boundary by adopting the outer edge of concrete topped rock wall to define the new HWM boundary. The rock wall is significantly landward of the original bank. Land on the river side of the rock wall is surrendered to the crown for harbor improvements. Notations to this effect are recorded on the face of plan B1234.40. The southern extent of the survey records a surveyed distance at 420.4 links from the western end of Anderson Street to the HWM boundary. Field Notes not searched.

1942 SL1653 Surveyor: Unknown
In 1971 plan sl1653 was redrawn from an original tracing of SL1653. The original survey intended to create portions 249, 260, 261 and 264 cancelling part of original Allotments 21 and 22 (Reserve 780), however new title was never created. The plan shows bearings and distances to the HWM on the northern boundary and southern boundaries of Portion 261. A Seabed Lease (SL18326) is shown on the plan adjoining the River boundary, annotated as existing below HWM. The rules and directions for the guidance of surveyors 1916 (clause 81) denote sandy beaches, bare mud flats and salt swamps are
generally to be below HWM. A notation is recorded on plan SL1653 to use SL2525 for survey information. The northern extent of the survey recorded a surveyed distance of 425 links from the western end of Anderson Street to the River boundary which is consistent with plan B3867. No Field Notes Exist.

1953 SL2525 Surveyor: Surveyor General
Plan SL2525 is a compiled plan which creates Portion 261 and is the first plan to clearly describe the feature (rock wall) defining the River boundary to the subject property. Original plans SL1653 and SL6860 used in the compilation do not refer to the rock wall nor identify the part of the rock wall dimensions on the north and south boundary of Portion 261 are measured to. It is likely the rock wall is an extension of the rock wall shown on RP60571 constructed for harbor improvements. The rock wall surveyed on RP60571 is clearly shown extending into Portion 261. No Field Notes Exist.

1979 SL9060 Surveyor: Bryan John Lynch
Plan resurveys the common boundary of Portions 324 and 261 to establish surveyed dimension for the “about” dimensions previously adopted. This plan does not survey the tidal boundary of portion 261.

1990 SL12848 Surveyor: Laurence Anthony O’Brien
Plan creates Lot 305, cancelling part of the Brisbane River. The lot adjoins Portion 261 and shares a section of the river boundary defined as HWM. The plan does not describe the feature defining the River bank. The eastern boundary of Lot 305 is a right line boundary along the river that will be shown on future plans of survey. No Field Notes Exist.

1993 CP856657 Surveyor: Raymond Terrence Pinkham
Plan cancels original Lot 324 on SL10781 and part of Portion 261 on SL2525. Distances along the northern boundary to the River boundary agree with the top of rock wall survey in 1942 on RP60571. Whilst a screw is
placed in the concrete topped wall at the River boundary the feature defining the River boundary is not described. No Field Notes Exist.

1993 CP856658 Surveyor: Raymond Terrence Pinkham

Plan CP856658 is a compiled plan that defines the balance of lot 261 on SL2525. Boundary information is compiled from CP856657, SL12848 and SL2525. The plan adopts the rock wall previously shown on SL2525 and the HWM defined on SL12848 as the River boundary. No Field Notes Exist.

1995 CP892423 Surveyor: Donald Thallon

Plan cancels the HWM boundary of Lot 305 on SL12848 that is common with Lot 261 and redefines it as a right line boundary. The eastern boundary of Lot 305 which was previously fixed as a right line boundary is unaffected by this plan. No Field Notes Exist.

1998 IS143721 Surveyor: John Craig Thomas

Plan of Identification which redefines the north and south extents of the tidal boundary of Lot 261 on CP856658 in accordance with positions surveyed in 1942 on RP60571 and in 1990 on SL12848 respectively. The survey records the existence of a rock wall on the northern section of the River boundary. No Field notes Exist.

2002 SP138356 Surveyor: Ken McDonald

Plan creates Lot 325 cancelling Lot 261 on CP856658, Lot 305 on CP892423 and Lot 324 on CP900757. This is the first survey to clearly define the tidal boundary of Lot 325. A report does not appear to have been lodged with this plan describing the feature surveyed to, however it is clear that the tabulated radiations on the face of the plan reinstated dimensions on the south boundary and northern extent of Lot 305 that agree with previous feature based survey positions of the Tidal Boundary in 1942 on RP60571, in 1990 on SL12848. Subsequent survey of the remains of the top of the rock wall and top of bank
undertaken by Bennett and Bennett in 2007 correspond with this position. Surveyor Ken McDonald has also confirmed the top edge of a rock retaining wall was located where well defined and in areas where rock wall was not well defined, a top of earth bank was adopted as the HWM (Refer Photo 7 & 8 – Former Top of Bank). Photo 9 taken by Bennett and Bennett in 2007 shows the remains of the rock wall. The boundary between stations (14) to (15a) was reinstated as a right line boundary as shown previously on lot 305 on CP892423 (See Photo 6 – Right Line Boundary of Subject Site).

2008 IS218588 Surveyor: Benjamin James Fortune

Identification survey reinstates the straight line boundary of the approved development site. The river boundary shown, identified the original position as per SP138356 which was suitable for the purpose of survey. The tidal boundary was not surveyed.

2. EVIDENCE OF HUMAN INTERFERENCE

- The feature defining the Tidal boundary has been affected by human activity since original development of the subject parcel. Significant alterations to the River alignment occurred between 1942 and 1953 involving construction of a rock wall and wharf to aid in the docking of ships. This is evidenced by plans SL1653, RP60571 and SL2525; also (Refer Photo 4 – Subject Site Circa 1946). Elements of the former rock wall and wharf pylons still exist today (Refer Photo 3 and Photo 12).

- The decommissioning of the wharf and subsequent lack of maintenance of the man made features has resulted in sections of the River Bank to revert back to a natural feature.

- Deed of Grant to create Lot 305 on SL12848 cancelled a portion of unallocated State land in the river and defined a right line boundary along this section of the river per instruction from the Government Department administering
this land. Ambulatory rights along this section of river have been forfeited as a consequence of this action. The subsequent construction of a concrete revetment wall along this boundary removed any remaining features of the bank in this area (Refer photo 12 & 13).

- The granting of a Development Approval for tidal works and the recent commencement of these works has removed any remaining natural features from 1942 (Refer Photo 12 and 13 – River Bank (2010)). The original concrete Pylons and sections of the original rock wall still remain today.

3. PROPOSED LOCATION OF TIDAL BOUNDARY

3.1 DESCRIPTION OF FEATURE ADOPTED FOR SP236824
Given that there is no remaining evidence of the original natural feature that defines the tidal boundary and that there are insufficient records of the River boundary definition from earlier surveys, it is proposed that the First New Plan of Survey for the subject Lot, adopt the Tidal Boundary position as shown on SP138356 between Stn’s 11-14. The southern section of the subject lot will maintain the right line boundary as shown on SP138356 between Stn’s 14 to 15a.

3.2 ASSESSMENT OF STABILITY & PERMANENCY OF THE FEATURE
The right line portion of the proposed river boundary is located spatially by metes and bounds and can be reinstated by its relationship to the cadastral framework and survey marks which define the boundary. The right line boundary position is undisputed and is not affected by ambulatory boundary principles.

The feature adopted to define the tidal section of the proposed boundary is the top of the grass bank and top of rock wall which existed as a vertical or steeply sloping embankment approximately above the water’s edge. The
boundary feature was adopted by the survey of SP138356 to define the ambulatory boundary. The feature no longer exists however is clearly recorded in photographs supplied by surveyor Ken McDonald dated 2002 (Refer Photos 2 & 3) and subsequent photos taken by Bennett and Bennett in 2007 pre construction (Refer Photos 7, 8 & 9).

Comparison of the proposed Tidal Boundary with the HWM boundary shown on Plan SL1653 (1942), indicates that both boundaries are generally coincident and that the boundary alignment has undergone very little change since 1942 (Refer: 03039-87 Tidal Boundary Comparison Plan). The Tidal Boundary Comparison Plan clearly identifies where the SL1653 HWM boundary deviates from the right line boundary which is consistent with the HWM boundary and right line boundary shown on SL12848.

Construction of a vertical concrete revetment wall along the right line section of the river frontage ensures that the position of the boundary will continue to be stable and permanent into the future.

3.3 REFERENCE TO RELEVANT PROVISIONS OF SMIA 2003

Section 82 SMI Act 2003:

- Previous plans of survey indicate that there is no conclusive evidence for a position of the feature that defines the tidal boundary. Whilst field note records don’t appear to exist there is consistency in the description of the feature that defines the tidal boundary and consistency in dimensions which define the north and south extents of the Tidal Boundary. Given the above consistency, photographic evidence and subsequent location of the River bank the former Top of Bank / Top of Rock Retaining Wall as shown on SP138356 has been adopted as the ‘Location at Law’ of the tidal boundary, in accordance with Section 82 (Applied Criteria Exception) rule.
The nominated top of bank satisfies the various tidal boundary location criteria as described in part 7 of this report. The owners of the subject land have also been consulted and have consented to definition of the nominated boundary as surveyed.

4. Tidal Boundary Location Criteria (Section 72 SMI ACT 2003)

First Criteria

- The first criterion is that the tidal boundary must not be subject to tidal inundation under any combination of astronomical conditions and average meteorological conditions.

Response

The former top of retaining wall /top of bank feature that was surveyed in 2007 which coincides with the tidal boundary adopted on SP138356 existed between RL 2.32m AHD and RL 4.77m AHD. The calculated Highest Astronomical Tide (HAT) in the vicinity of the tidal boundary is 1.57m AHD. Based on this evidence the adopted feature is not subject to tidal inundation in its former position. (Refer to plan 03039-87 – Tidal Boundary Comparison Plan). Note, the new wall under construction will be erected to join existing wall levels north and south of the development which are above HAT.

Second Criteria

- The second criterion is that the tidal boundary must be on the landward side of any sandy beaches, fore dunes, mangroves, sea grasses, salt grasses, salt marshes, saltpans, intertidal flats, tidal sandbanks and other similar features.

Response
The adopted tidal boundary as shown on SP138356 is landward of all of the above mentioned features.

**Third Criteria**

- The third criterion is that the location of the tidal boundary must be consistent with the public interest. See Cadastral Survey Requirements Version 6.0 May 2010. Sec 4.14 Public Interest Criteria.

**Response**

The adopted location of the tidal boundary satisfies the relevant public interest tests as follows:

<table>
<thead>
<tr>
<th>Test</th>
<th>Public Interest Test</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The proposed boundary location cannot be adopted where it involves land that the public has previously enjoyed access to, or could reasonably expect to have access to.</td>
<td>It is reasonable to expect given the inaccessible nature of the rock wall / river bank and the proposed location of the boundary that, potential parties access would not be negatively impacted. The creation of a public thoroughfare easement in favour of Brisbane City Council and the relevant river walk works linking the existing, river walk to the North and South of the subject lot enhance public access in this area. The proposed boundary does not impact or alter the public access.</td>
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<tr>
<td>2</td>
<td>The proposed boundary location cannot be adopted where it is inconsistent with any planning provisions pertaining to the subject land, or land within the vicinity of the site, unless it can be demonstrated that the location of the boundary would not compromise the desired outcomes sought by these provisions.</td>
<td>The proposed boundary location is in the same location as the boundary referred to in planning provisions for this area. The planning provisions were taken into consideration when the Development Approval was granted for the</td>
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<td>Provision</td>
<td>Details</td>
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<tr>
<td>3  The proposed boundary location cannot be adopted where the subject</td>
<td>The proposed boundary location does not adversely affect public</td>
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<tr>
<td>land and / or adjacent land is proposed to be used for community</td>
<td>interest in the land. The proposed public thoroughfare easement in</td>
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<td>purposes as part of a current development application, unless it can</td>
<td>favour of Brisbane City Council will share a common boundary with the</td>
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<td>be demonstrated that the location of the boundary would not adversely</td>
<td>proposed boundary and will enhance the public interest in the land.</td>
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<td>affect the public’s recreational, social and strategic interests in the</td>
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<td>land.</td>
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<td>4  The proposed boundary location cannot be adopted where it would</td>
<td>The proposed boundary location is in accordance with the Development</td>
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<td>conflict with development conditions applying to the subject land and</td>
<td>Approval for tidal works (Retaining Wall) and Residential Development</td>
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<tr>
<td>or adjacent land, where such conditions have been designed to protect</td>
<td>Approval for the subject property.</td>
<td></td>
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<td>the public interest.</td>
<td></td>
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<tr>
<td>5  The proposed tidal boundary location does not encroach onto land that</td>
<td>The proposed tidal boundary location does not encroach onto any natural,</td>
<td></td>
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<tr>
<td>is associated with natural heritage or Indigenous or European cultural</td>
<td>indigenous or European cultural heritage land, and is in accordance with</td>
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<td>heritage, unless it can be demonstrated that the boundary location</td>
<td>the Heritage approved for this residential development.</td>
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<td>would not increase the vulnerability of heritage values to potential</td>
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<td>damage or loss.</td>
<td></td>
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</tr>
<tr>
<td>6  The proposed boundary location cannot be adopted where it would</td>
<td>The proposed boundary does not increase the risk of damage to or loss</td>
<td></td>
</tr>
<tr>
<td>increase the risk of damage to or loss of environmental values</td>
<td>of environmental values. The Development Approval for tidal works</td>
<td></td>
</tr>
<tr>
<td>associated with the subject land and / or adjacent land.</td>
<td>identifies existing mangrove vegetation clear of the proposed boundary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and within the river.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The proposed boundary location cannot be adopted where it would lead to decreased management of land degradation resulting from soil erosion, landslip, or weed or pest infestation.</td>
<td>The proposed boundary will not decrease the environmental management of the bank. Instead the approved river walk to be constructed will protect the river bank from soil erosion, landslip, weed or pest infestation.</td>
</tr>
</tbody>
</table>

**Fourth Criteria**

- The fourth criteria is that the tidal boundary –
  
  (a) Must be in a stable location that has been shown to have long term sustainability under normal seasonal events;
  
  (b) Must not require any construction to keep it free from complete or partial inundation or obliteration.

**Response**

The location of the top of bank / top of rock wall was located on SP138356 by Ken McDonald in 2002. A detail survey of the site was completed by Bennett and Bennett in 2007 prior to construction in the area. An overlay of the two surveys confirms that the position of the bank was stable and undisturbed over this period of time. Furthermore as stated in the response to the first criteria, the top of the bank is well clear of HAT and is therefore free from complete or partial inundation.

**Fifth Criteria**

- The fifth criteria is that a natural feature must be adopted as the tidal boundary unless there is no natural feature in reasonable proximity to where the tidal boundary must be
located, having regard to the description of the boundary in the source material for the land.

Response
The former top of bank / top of rock wall as surveyed on SP138356 has been adopted as the defining natural feature in this instance.

Sixth Criteria
- The sixth criteria is that if the fourth criterion cannot be complied with, and no natural feature can be adopted under the fifth criterion, the tidal boundary chosen must nevertheless be on the landward side of any sandy beaches or sand dunes and of any active erosion areas that have no natural vegetation.

Response
The proposed Tidal Boundary is landward of all sandy beaches, dunes and active erosion areas and is landward of the highest astronomical tide.

5. AMBULATORY BOUNDARY PRINCIPLES
- The Ambulatory Boundary Principles that are outlined in Section 62 of the Survey and Mapping Infrastructure Act 2003 do not apply in this instance because the site has had a history of human interference with regards to the tidal boundary.

6. AFFECT TO ADJOINING PROPERTIES
- There is no affect to properties on the other side of the River. The Brisbane River is approximately 270m wide in this location.
- The proposed boundary location has a negligible impact to the properties to both the North and South of the subject site. Its position coincides with the cadastral boundaries to the north.
and the south and completes the river walk alignment connection between both properties.

7. CONCLUSION

- The feature adopted for the Tidal Boundary at law under Part 7 of the Survey and Mapping Infrastructure Act 2003 is the top of bank / rock wall as shown on SP138356. This feature was clear, unambiguous, stable, clear of marine vegetation, beaches and mud flats and was free from tidal inundation.
- Development Approval has been granted for a river walk based on the tidal boundary identified in SP138356.
- The feature adopted passes all of the requirements stipulated by current Legislation and Cadastral Survey Requirements.

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DIRECTOR
B.B.H PTY. LTD
PHOTOS

Photo 1 – Locality Plan

Photo 2 - Full extent of subject site and adjoining northern retaining wall (2002)
Photo 3 – Blow up of subject site (2002)
Photo 4 – Subject Site (circa 1946) with current cadastral overlay

Photo 5 – Subject Site (circa 2007)
Photo 6 – Right Line Boundary of subject site (2007)

Photo 7 – Former Top of Bank (2007)
Tidal boundary vide SP138356 coincident with the top of bank in this vicinity.

Photo 8 – Former Top of Bank (2007)

Photo 9 – Former Rock Wall (2007)
Photo 10 – Existing wall to the south of the subject site (2010)

Photo 11 – Existing retaining wall to the north of the site (2010)
Photo 12 – River Bank (2010) (*Pink stakes highlight proposed boundary*)

Photo 13 – River Bank (2010) (*Pink stakes highlight proposed boundary*)