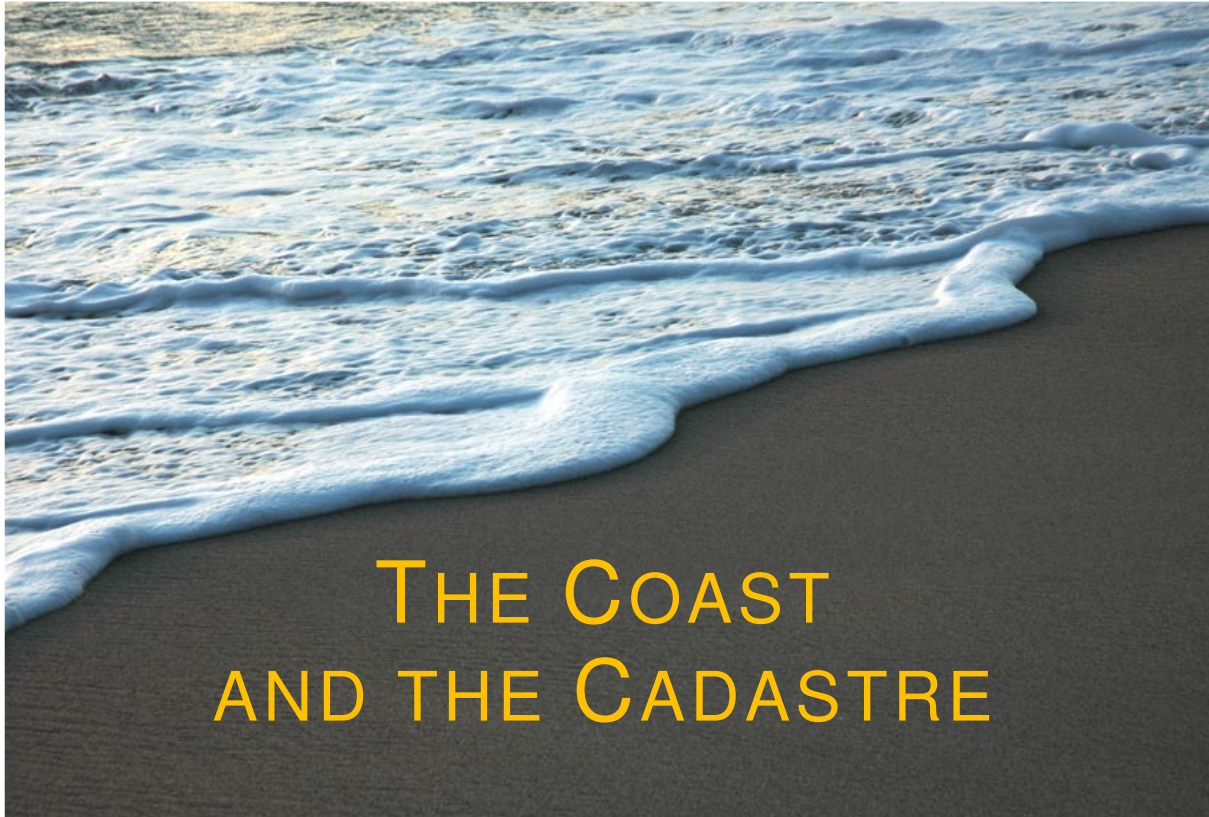


THE PUBLIC LAND CONSULTANCY

*Independent professional advice and support for managers and users of public land*



*A Report for the  
Victorian Environmental Assessment Council*

August 2019

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## The VEAC Assessment

The Victorian Environmental Assessment Council (VEAC) has been commissioned by the Minister for Energy, Environment and Climate Change to undertake an assessment of Victoria's Coastal Reserves.

The purpose of the assessment is to:

- a) review the number and types (reservation status) of coastal reserves in Victoria;
- b) identify reserves with high environmental, cultural heritage, social and economic values and identify values at risk from the impacts of climate change;
- c) identify current and emerging uses of the coastal reserves; and
- d) compile an inventory, including spatial distribution, of values and uses of the coastal reserves.

As a first step the Council is required to publish a definition of coastal reserves to be used in the assessment, including a diagrammatic representation and map of Victoria's coastal reserves.

The assessment and associated inventory will assist the Victorian Government's future planning and decision-making for Victoria's coasts.

## This Report

The Public Land Consultancy has been commissioned by VEAC to write this report.

VEAC is seeking a short report on the implications of the changing coastline for coastal Crown land boundaries (the cadastre) including the predicted impacts of climate change.

The report will be approximately 10-12 pages with a summary of 2-3 pages.

The report will include:

- a description of technical challenges for definition of a survey boundary using a dynamic criteria (high water mark or low water mark)
- discussion of the relevant parts of the doctrine of accretion and erosion in the context of coastal Crown land
- a summary of the predicted effects of the coastal Crown land boundary as a result of seasonal or tidal movements, man-made interventions such as beach-renourishment or breakwaters, storm damage / specific weather events
- the likely impacts of climate change on the cadastral definition of coastal Crown land including examples of accretion and erosion and the relationship with adjoining land tenure boundaries (including for example where erosion removes all coastal Crown land).

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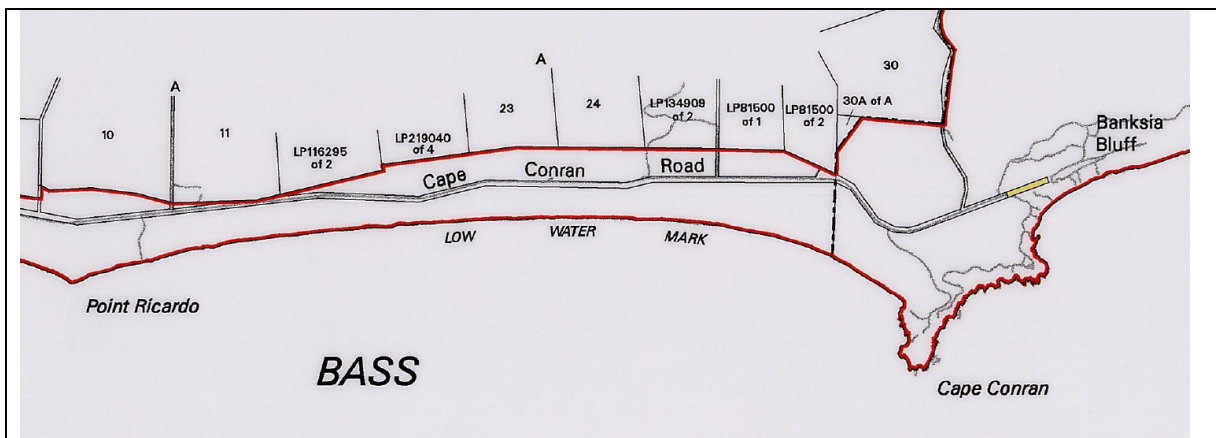
*This report has been produced independently by The Public Land Consultancy at the request of the Victorian Environmental Assessment Council (VEAC).*

*VEAC does not express an opinion as to the accuracy or completeness of the information provided, the assumptions made by the parties that provided the information or any conclusions reached by those parties.*



The description of any parcel of land requires, at some point, a definition of its boundaries. This is true for parcels of Crown land just as it is for parcels of freehold land.

Most boundaries are geometrically well-defined. They may be described in terms of lengths and bearings, and are fixed in position. Other boundaries may be defined by reference to some topographic feature, such as High Water Mark (HWM), Low Water Mark (LWM) or the edge of a waterway. These boundaries may move, and are described as ‘ambulatory’<sup>1</sup>.



*Detail of the plan defining Cape Conran Coastal Park<sup>2</sup>.*

The inland boundary follows geometrically well-defined lines, and is fixed in position. North of the inland boundary is freehold land.

The seaward boundary of the Park is ‘Low Water Mark’ and hence is ambulatory. South of the seaward boundary (*i.e.* Bass Strait) is unreserved Crown land.

<sup>1</sup> Literally ‘capable of walking’

<sup>2</sup> Central Plan Office – Plan NP 103



The body of data which includes boundary definitions (the cadastre) is administered by cadastral surveyors. In Victoria, they practice under the authority of the Surveyor General<sup>3</sup>.

For freehold land, parcel boundaries define the spatial limits of interests held by private landowners, tenants, mortgagees etc. For Crown land (including Crown reserves, national parks, and reserved forest) boundaries may define the spatial extent of the relevant governance regime – for instance, the extent of the jurisdiction of a Committee of Management, or the applicability of regulations made under the *Crown Land (Reserves) Act 1978*.

Topographic features may move, and ambulatory boundaries may move in response under the common law doctrine of accretion. The doctrine is well established internationally, but has resulted in very little Australian case law, so we have come to accept Surveyor Generals' rulings as being *de facto* expressions of the common law.

Movement of coastal topographic features may be in either direction: landward or seaward. Change may be 'gradual and imperceptible' or rapid, even catastrophic<sup>4</sup>. It may be caused by natural forces or by human intervention. The doctrine as it has evolved responds to these parameters in different ways: in some circumstances the relevant ambulatory boundary is deemed to have moved, in others it is deemed to remain unchanged.

The spatial extent of most coastal reserves in Victoria is defined, in part at least, by ambulatory boundaries – most commonly Mean High Water Mark, wherever it may be from time to time. Other ambulatory boundaries may be designated as Low Water Mark, or some given distance from High Water Mark, or by some geographic description such as 'Port Phillip Bay.'

For these reserves, the impact of the doctrine can be dramatic, and may result in effects unanticipated by the legislators and policy makers who originally defined the reserve. In some cases, the width of a reserve may be increased; in others it may be narrowed – and, in the extreme, it may be lost completely.

A related issue is the mechanism by which boundaries of Crown reserves are set, and by which they may be altered. In general, the *Crown Land (Reserves) Act 1978* provides for a 'temporary' reserve to be altered by administrative action whereas a 'permanent' reserve (many coastal reserves are 'permanent') may be altered only by a new, purpose-specific Act of Parliament. There are exceptions: it is held that some ambulatory boundaries may move, thereby changing even a permanent reserve. However, if the landward boundary of a permanent reserve is defined as being a fixed distance from

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<sup>3</sup> Section 42, Surveying Act 2004

<sup>4</sup> *The Doctrine of Accretion*, 1993, Department of Sustainability and Environment

say, HWM, that landward boundary is fixed and does not move in concert with the seaward boundary.

There are further subtleties: the Surveyor General may deem that a 'metes and bounds' boundary was originally intended to be, and therefore is, an ambulatory boundary. A band of unreserved Crown land between a landward ambulatory boundary and nearby freehold boundary may be deemed to be within the permanent reserve. It is held that although a permanent reserve can be abolished only by Parliament itself, its gazetted purpose may be narrowed (not broadened) by administrative action. Thus Crown land permanently reserved for public purposes may, by administrative action, be declared to be a road reserve.

Insofar as this is a problem, responses to it have been *ad hoc* and reactive. To the best of our knowledge, no relevant case has come before the Victorian courts. The Surveyor General made rulings in several cases (notably, the Lindsay Fox case<sup>5</sup> of 2009) – rulings which went untested in the courts. Parliament resolved one set of problems by enacting the *Chelsea Land Act 1981*. There certainly has been no attempt at State-wide statutory response – akin to the 1881 decision<sup>6</sup> to reserve the State's riparian Crown lands, or the 1905 decision to rescind centre-of-the-waterway freehold boundaries<sup>7</sup>. In 1995 the *Local Government Act 1989* was amended to cause the boundaries of coastal municipalities to move seaward from HWM to LWM, but no parallel change was made to coastal Crown reserves.

It must be acknowledged that ambulatory boundaries (whether associated with coastlines or with rivers and lakes) will become increasingly problematic. It has been predicted that climate change will result in sea level rises of 0.8 metres by 2100<sup>8</sup>, with an increased likelihood of storm surges and movements of coastal sediments. Problems would arise even without climate change: population increase, usage patterns, and capital investment will all intensify. We can expect more human interventions – beach renourishments and coastal infrastructure such as jetties and breakwaters.

This environment of uncertainty may well foment disputes<sup>9</sup>. Private landowners may challenge accepted views of ambulatory boundaries, and established interpretations of the doctrine of accretion. Policy matters, which should be the prerogative of parliaments, may be tested and settled in the courts. Fundamental to any such dialogue will be achieving a balance between private property rights and public society-wide obligations.

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<sup>5</sup> Office of the Surveyor General, 2009, *Examination Report AP127352H*

<sup>6</sup> Government Gazette, 23 May 1881

<sup>7</sup> Section 5, *Water Act 1905*

<sup>8</sup> Intergovernmental Panel on Climate Change, quoted in DPCD *Coastal Planning Fact Sheet*, 2008

<sup>9</sup> Corkill, J, *Principles and Problems of Shoreline Law*, 2012

Simultaneously, society's view of the coast is certain to evolve. Independently of climate change, coastal usage will intensify. Patterns of activity, value-systems, and infrastructure footprints will put increasing pressure on cadastral boundaries. On the inland side of Crown reserves the Crown-freehold boundary will welcome or resist permeability on a case-by-case basis. On the seaward side the boundary between reserved and unreserved Crown land will become increasingly meaningless – as has already been acknowledged by the seaward extension of many planning schemes. Indeed the beds of the Gippsland lakes have been reserved – so there is no boundary between reserved and unreserved Crown lands.

Fortunately, Victoria now has an opportunity to conduct a fundamental review of these matters. Following VEAC's 2017 Statewide assessment of public land, the Government is committed to rewriting much of the legislation governing Crown land<sup>10</sup> – including the *Land Act 1958* and the *Crown Land (Reserves) Act 1978*. These impending reforms offer a unique opportunity to reform (or at least to codify) the law relating to coastal boundaries.

The Public Land Consultancy believes that, if Victoria is not to go forward with an uncertain coastal cadastre, this is an opportunity which should not be missed.

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<sup>10</sup> *Victorian Government Response to the VEAC Statewide Assessment of Public Land*, DELWP, 2017





### **The meaning of HWM and LWM in the context of the Victorian coastline**

Various terms have been used for coastal boundaries in Victorian legislation:

- High Water Mark at Spring Tides (HWMS).
- Mean High Tide (MHT), Mean High Water Mark (MHWM), High Water Mark (HWM)
- LWM – Low Water Mark (LWM), Mean Low Water Mark (MLWM).
- Coast, Coastline, Shore, Shoreline, Margin

Although such terms are used in various Acts and regulations, they do not have statutory definitions. The following section discusses their accepted or common law meanings.

### **The Tides**

In order to understand tidal terms and the doctrine of accretion/diluvion it is necessary to have some understanding of tidal movements. Below is an extract of a presentation made at a surveyors' conference in 1976:

*The shoreline of the sea in Victoria is defined by the common law line known as Mean High Tide (MHT) or Mean High Water (MHW) both terms referring to the average of all high tides. In Victoria, the sea rises and falls twice a day with a general tidal range of one metre. However in bays open to the Sea such as Western Port, Anderson's Inlet, Waratah Bay (with Shallow Inlet) and Corner Inlet the tidal range is greater (2.5 metres) because of the effect of resonance analogous to the soprano shattering the wineglass or the bridge collapsing when soldiers march across it in step. Obviously MHT at Frankston cannot be transferred by levels to get MHT at Hastings*

*The height of the tides also varies according to the phases of the moon. The maximum limit is at full and new moon and is called springtide and the minimum limit is at first and last quarters and is called neap tide.*

*When a high is in an almost stationary pancontinental system lasting about a week, the effect is to dampen high tide.*

*When a fast moving storm system with gale force winds and moving in cadence with a tide wave, the effect is a dramatic boosting of high tide by resonance.*<sup>11</sup>

### Low Water Mark

This means the lowest level reached by water in one tidal cycle also known as low tide. Mean Low Water Mark, can be defined as the average of all Low Water (low tides) over a sufficiently long period.

The *Local Government Act 1989*, section 3(3A) states:

*“if a boundary of a municipal district is described by reference to the seacoast (regardless of whether it is referred to as the Sea shore or the waters of the sea or a bay or in any other way) that boundary is to be taken to be the line for the time being of the Low Water Mark on that sea coast”.*

The important words here are “for the time being” so regardless of how any movement of Low Water was caused whether natural or artificially the Municipal boundary is Low Water Mark.

### High Water Mark

This means the highest level reached by water in one tidal cycle also known as high tide.

Mean High Water Mark, can be defined as the average of all High Water (high tides) over a sufficiently long period. Various jurisdictions have defined MHW as:

- Mean line between the approximate high water at Spring tides and Neap tides
- Mean high water after excluding Spring tides and Neap tides
- Mean ordinary high water mark at Spring Tides.

The Victorian Surveyor General has in the past interpreted the common law boundary as being the mean of all high tides, including the spring and neap high tides (MHW).

No matter which definition is used both ordinary tides and those caused by storm surges will over-top High Water Mark intrude into the land from time to time.

### Intertidal Zone

For an example of the uncertainties and ambiguities associated with such terms, we turn to a phrase used in the *Fisheries Regulations 2009*:

*“Intertidal zone means the area of Victoria commencing at the maximum high water mark and continuing to a point where the water is 2 metres deep at that time”*

The Maximum High Water mark could be the High Water Mark at Spring tides level or could be the highest level following a storm surge. What is important is that the definition refers to where the water is 2 metres deep at that time (in other words at the time of the Maximum High Water).

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<sup>11</sup> At the seaside – J D Sherwood, LS, 9 August 1976

However, in the *Victorian Recreational Fishing Guide 2016* the wording has been changed to “continuing to a point where the water is 2 metres deep at any time” which was what was presumably intended.

### **How their position may be ascertained by cadastral surveyors**

It is usual for a Licensed Land Surveyor to perform a survey when a sea boundary is required to be defined on the ground. This is generally referred to the Surveyor General of Victoria for consent.

There are a number of ways in which this is done. However the Surveyor General of Victoria has accepted the observations and measurement of the tides, at the particular location, by physical observation over a period of a month (one lunar cycle). This is done either by Global Navigation Satellite System (GNSS) techniques or by standard survey practice and this is the most common method. However this does not take into account the passages of highs and lows that form our regular weather pattern of a change every three to five days.

It should be realised that this does not change the fact that the boundary still remains ambulatory and the surveyed sea boundary is defined only at that date. The sea boundary is still subject to change due to gradual and imperceptible movement.

### **How such topographic features have been used as parcel cadastral boundaries**

In Victoria, two types of topographic feature have been used as cadastral boundaries: watercourses, and coasts.

As for watercourses – early in the nineteenth century parcel boundaries were often set at the centreline of abutting rivers. Later in the century riparian boundaries were more likely to be set some distance back from the edge of the watercourse. In 1881 virtually all riparian frontages still unalienated at that date were permanently reserved. Then, in 1905 the *Water Act 1905* caused centre-of-the-river boundaries to be arbitrarily withdrawn to the edge of the water.

Policy relating to coastlines went through a similar evolution. Early in the history of the Colony grants of freehold may have gone to the water's edge. Notable was the 1841 grant to Henry Dendy of all the land now known as Brighton Beach, between North Road and South Road. At later dates boundaries were likely to be set some distance back from the shoreline. Then, in 1873 all foreshore land around Port Phillip still unalienated at that date was permanently reserved for ‘public purposes.’ In some cases this reservation was of a specified width (150 links), in other cases it was of an unspecified width – the assumption being that the landward boundary would be the nearest freehold land.

Likewise, the ocean foreshore was permanently reserved for ‘public purposes’ at various dates in the late nineteenth century. The twentieth century saw much of this reserved

Crown land re-reserved under the *National Parks Act 1975*, or re-reserved under the *Crown Land (Reserves) Act 1978* for 'protection of the coastline'. At various times, Crown land in ports was vested in the relevant port authority.

Coastal Crown reserves are generally defined by a seaward boundary and a landward boundary. The seaward boundary may be HWM or LWM. The landward boundary may be defined by a surveyed line (a metes and bounds boundary) or as some given distance from the seaward boundary – at the time of the reservation. What is important is that the landward position of the reserve boundary is fixed at the date of reservation or survey although the seaward boundary is ambulatory (See *Chelsea Land Act 1981*).

The beds and certain distances from the shore (sea boundary) of the Gippsland Lakes are all permanently reserved. The shore for each lake is generally defined as high water mark at spring tides and in the case of Lake Wellington from the contour line of the water at winter level.

### **How such features may move in response to natural or artificial events**

In numerous places including Anderson's Inlet, Altona and Somers, the sea has intruded into these coastal reserves and has even extended over the coastal reserve and into the abutting freehold. It is very likely that as a result of climate change with the expected rise in sea level that the sea will intrude further than it has done in the past. This ambulatory boundary takes precedence over any surveyed line, and the land lost to the sea (*i.e.* the land which becomes seabed) generally becomes unreserved Crown land – or in the case where the seabed is reserved such as in the Gippsland Lakes or some 'protection of the coastline' reserves, the land lost is added to that reserve.

In addition, there are numerous reserves generally taken up to the freehold along the shores of the coast and these lakes with various descriptions.

It should be noted that no compensation is payable for land (freehold) lost due to the gradual and imperceptible movement of the sea.

In the case of catastrophic events however, the doctrine of Accretion/Diluvion would not apply as the movement would not be gradual and imperceptible. Likewise, the doctrine does not apply to deliberately-caused artificial changes. The sea boundary would remain where it was before the catastrophic or artificial event (discussed further below).

### **Impact on abutting freehold**

In the extreme case, inundation of a coastal reserve may reduce its width to zero, and then continue to erode the abutting freehold. In these cases it is held that if that further erosion is gradual and imperceptible, then the freehold is lost to the sea – even if the boundary had not been ambulatory. However, if the erosion was due to catastrophic or artificial causes, then the freehold boundaries remains unaffected – part of the freehold has simply become inundated.

### **The common law doctrine<sup>12</sup> of accretion and diluvion**

The shoreline in Victoria is in a constant state of change - movement by either erosion or a build up of sediment, artificial intervention and much more. Changes to the shore and the foreshore are likely to occur in a more dramatic fashion due to climate change with resultant sea level rises and catastrophic storm surges.

Common Law defines the boundaries of tidal waters as ordinary high water and the Victorian Surveyor General has in the past interpreted this as being the mean of all high tides, including the spring and neap high tides (MHW).

Any boundary bound by a moveable natural feature such as water is called an ambulatory boundary and is subject to the Common Law doctrine of Accretion and Diluvion.

Accretion is where the land size has been increased due to the deposit of sediments and soil. Diluvion is where land is lost by erosion

**Accretion** can be of two types:

- alluvion, where sand and soil is washed up to make an addition to existing land
- dereliction, where land is left dry by lake or sea shrinkage, or a river changing its bed.

**Diluvion.** The loss of land by the encroachment of water is called "diluvion" or sometimes "divulation" and is the opposite of accretion. Land may also be lost by erosion.

In the decision of the Privy Council<sup>13</sup> in *Southern Centre of Theosophy Inc. v. South Australia* the doctrine has been expressed as:

*This (accretion) is a doctrine which gives recognition to the fact that where land is bounded by water, the forces of nature are likely to cause changes in the boundary between the land and water. Where the changes are gradual and imperceptible . . . the law considers the title to the land as applicable to the land as it may be changed from time to time. This may be said to be based on grounds of convenience and fairness. Except in cases where a substantial and recognisable change in boundary has suddenly taken place. It is manifestly convenient to continue to regard the boundary between land and water as being where it is from day to day or year to year. To do so is also fair. If part of an owners land is taken from him by erosion, or diluvion it would be most inconvenient to regard the boundary as extending into the water; the land owner is treated as losing a portion of his land. So, if an addition is made to the land*

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<sup>12</sup> A 'doctrine' is a body of common law (as against statutory law such as Acts of parliament) built up of successive judgements of the courts – perhaps dating back centuries. In general, the common law cannot nullify or contradict statutory law.

<sup>13</sup> 1981 38 A.L.R. 587

*from what was previously water, it is only fair that the landowners title should extend to it... When land is conveyed, it is conveyed subject to and with the benefit of such subtractions and additions (within the limits of the doctrine) as may take place over the years.*

That is to say Riparian and Coastal boundaries are movable while undergoing changes in accordance with the doctrine but they cease to move where the change took place abruptly or artificially and the boundary would remain in the position it was immediately before such change took place. Also the doctrine would only apply where such a change is seen to be permanent.

The doctrine applies provided the change is not due to intentional interference to gain advantage. If the interference such as a lawfully constructed groin was for the purposes of preventing erosion then any resultant accretion or diluvion may be acceptable, provided it was gradual and imperceptible.

*The doctrine may also apply despite the fact that a gradual and imperceptible change was caused by the construction of a jetty nearby, provided that the change was not the deliberate reclamation by landfill or other methods.<sup>14</sup>*

The fundamental concepts underpinning the “Shoreline Law” which include the doctrine have been summarised into Nine Key Principles by John Corkill in his paper “Principles and Problems of Shoreline Law”<sup>15</sup>:

- 1 *The legal boundary between tidal waters and adjacent land is the High Water Mark (except where the sea boundary is otherwise defined).*
- 2 *Where land is bounded by water, the legal boundary of the land changes to reflect changes in the position of the water's edge, but only if certain conditions are met.*
- 3 *To be recognised in law, changes in a water boundary must be ‘gradual’ and ‘natural’.*
- 4 *The doctrine of accretion, includes gradual changes brought about by erosion, and by the advance or retreat of waters...*
- 5 *New land formed by accretion belongs to the adjoining owner (whether Crown or freehold).*
- 6 *Land below high water mark (or other sea boundary) belongs to the Crown....*
- 7 *Land “lost” to the sea, below high water mark (or other sea boundary) by gradual erosion or deluvion, cease to be real property and reverts to the Crown.*
- 8 *Ambulatory boundaries supplant and rescind surveyed boundaries.*
- 9 *No compensation is payable for either gradual loss or gain of land.*

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<sup>14</sup> DSE *The Doctrine of Accretion 2.1.2 – DSE guideline, 1993*

<sup>15</sup> Corkill, J., 2012, *Principles and Problems of Shoreline Law*, National Climate Change Adaptation Research Facility (Note: wording in parenthesis is attributed to the authors of this paper, not to J. Corkill).



### Meaning of ‘Gradual and imperceptible’ and ‘Natural’

The doctrine is based on the theory that “from day to day, week to week, and month to month a land owner cannot see where his old line of boundary was”. It does not mean imperceptible after the lapse of a period of time. Unfortunately this is a grey area which is open to interpretation.

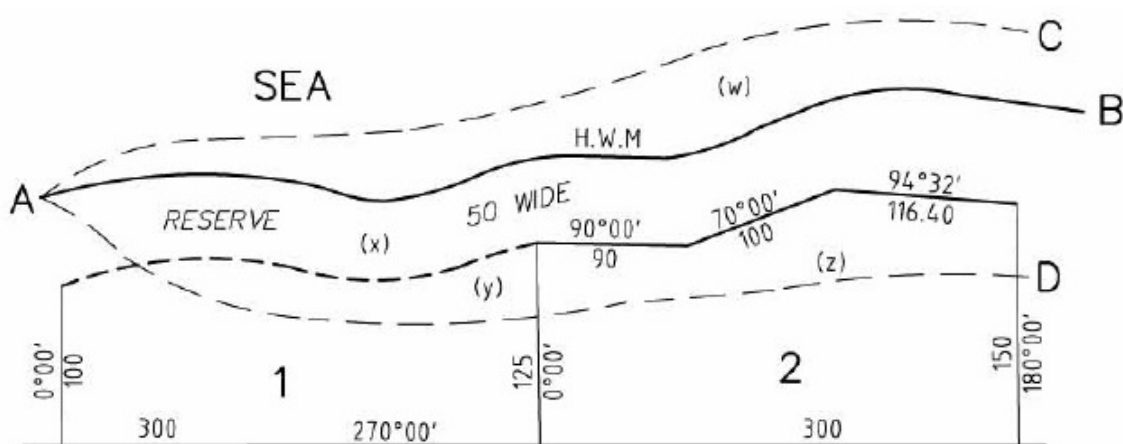
Obviously where land is reclaimed by the adjacent owner (whether it be the Crown, Council or freehold owner) for their benefit then the doctrine would not apply. However where the effect of such reclamation is to increase or diminish the land in another area then this could be deemed to be a natural process and the doctrine would apply. This is another grey area which is open to interpretation.

### Responses by the Surveyor General, the Registrar of Titles, the Courts, and the Parliament

The Surveyor General of Victoria has the authority to be responsible for the correct positioning of Crown boundaries of land whether or not the land has been alienated from the Crown or otherwise pursuant to Section 42(1)e of the *Surveyors Act 2004*.

Extract from DSE, 2011, *Guidance Note 6: Principles of Re-establishment*

#### Crown land – shorelines of seas or lakes



If, as shown in the diagram above, boundary A-B between the sea and the reserve retreats to A-C, the boundaries of properties 1 and 2 would not be affected but the reserve would be increased by the area marked (w).

If the sea boundary encroaches to A-D, the reserve would be reduced or even lost completely to the extent of the area marked (x); although, it would remain vested in the Crown.

Similarly, areas (y) and (z) would be lost to the owners and become unreserved Crown land.

*If a road on Crown land (government road) along the coast is lost by diluvion and the doctrine is applicable, the road loses its status and becomes unreserved Crown land.*

When application is made to amend the titles which have a sea boundary, the Registrar of Titles takes a conservative view and is loath to amend dimensions of a title without the Surveyor General of Victoria's consent.

The Victorian Surveyor General has in the past interpreted the common law boundary as being the mean of all high tides, including the spring and neap high tides (MHW).<sup>16</sup>

What is important is that no matter whether these ambulatory boundaries are defined by a modern survey, they still remain ambulatory and subject to change due to gradual and imperceptible movement.

As for responses by the courts, there have been numerous cases in other jurisdictions, but virtually none in Victoria<sup>16</sup>. In a couple of instances shoreline movements have been touched on by VCAT<sup>17</sup> and PPV<sup>18</sup>. Appendix 2 outlines a case at Point King in which an ambulatory freehold boundary was held to have moved seaward in response to accretion. At the time there were suggestions that the Surveyor General's ruling in this matter would be challenged, but no such challenge eventuated.

As for statutory responses, the only Victorian case where parliament has intervened would appear to be the *Chelsea Lands Act of 1981*, enacted to retrospectively protect landowners who had been inadvertently misled.

### Cases discussed in the Appendices

Appendices 1 and 2 discuss two cases of accretion.

At Chelsea beach the seaward movement of the seaward boundary of a Crown reserve led to a misunderstanding about the position of the inland boundary and hence affected the abutting freehold – a misunderstanding that was remediated through an Act of Parliament.

At Point King it was held by the Surveyor General that, in response to accretion of the foreshore, a freehold ambulatory boundary had also moved seaward.

Appendix 3 discusses a case of erosion at Dutton Way, where freehold land has been lost to the sea, although title documents may not yet have been amended.

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<sup>16</sup> See, for instance, the very extensive footnotes in John Corkill *op cit*.

<sup>17</sup> Brighton Foreshore Preservation Association Inc v Bayside CC (1996/36311) [1996] VCAT 602 (28 November 1996)

<sup>18</sup> East Beach, Port Fairy (PCI) [2009] PPV 52 (16 June 2009)



### **Current Challenges**

With sea levels rise of 0.8 metres anticipated by 2100 together with an increase in storm surges, it is likely that coastal reserves will be severely impacted – even to their total loss in areas, as has happened in the past.

This will result in a significant loss of public access to the beach and recreational use of the foreshore and coastal waters as well as significant loss of vegetation and habitat along our coasts.

Loss of public land would be highly undesirable, but the more likely trigger for legal action will be the loss, or threat of loss, of private freehold land.

### **Coastal Change – Potential Responses**

Numerous studies have explored possible policy responses to sea level rise. Responses seem to range from large-scale engineering works to planned retreat and abandonment of inundated land.

Whatever the response from place to place, it would seem inevitable that the menu of governance regimes available for coastal land will need to respond. One of several parameters of this governance regime must be the law by which the corresponding cadastre is defined.

There would seem to be a powerful argument that any revision of the law in this area should be made by parliaments rather than the courts. In short, the common law which has defined the coastal cadastre for centuries must be overlaid by or superseded by statutory law.

### **Potential Legal Challenges**

Following inundation of freehold land whether by gradual or catastrophic movement of the sea, properties may become virtually uninsurable. Private land owners could regard the loss of their land, without compensation, as being contrary to the principles of indefeasibility, and unjust. They may challenge the interpretation of the doctrine of

accretion and initiate litigation against a coastal authority for either causing the loss or failing to prevent the loss.

As any works (whether intended to protect the land or otherwise) alter the natural processes along the coast, any remedial works by a coastal authority may be seen as being responsible or partly responsible for loss of private property and private amenity.

While the chance of success by freehold owners would appear to be slim at best, this will be a costly, time consuming, and divisive exercise. Rather than await litigation, the better strategy would be to embark on a course aimed at providing structured statutory tools for governments to apply as needed.

### **Topographic features as Coastal Cadastral Boundaries**

Topographic features such as High and Low Water Marks are increasingly irrelevant to land use patterns in the twentyfirst century – one exception being catchment boundaries which will continue to determine water flows in rivers.

It should be understood that apart from coasts, the other features of the Victorian cadastre affected by ambulatory boundaries are waterways. Across the whole of the State, many rivers and streams have been used as cadastral boundaries. The problems arising from the movement of watercourses are at least as complicated as those arising from the movement of shorelines.

Therefore, if any consideration is to be given to reviewing the doctrine insofar as it applies to the coastal cadastre, decisions will need to be made as to whether such a review applies to the coast alone, or also to riparian lands.

### **Relevance and utility of the Doctrine of Accretion**

Even if climate change were not occurring, pressures on the Victorian coastline would serve to marginalise the common law, or even render it pointless. These pressures are primarily population growth and urbanisation, changes to leisure patterns and disposable incomes, in parallel with increased awareness of coastal ecosystems and their conservation.

In these circumstances there would seem to be strong argument in favour of shifting cadastral matters into statutory law, governed by Acts of Parliament, regulations, and well-defined avenues of review and appeal.



## Appendix 1 Chelsea Beach

### Chelsea Beach – Accretion

When land has been set aside as a reserve of a set width between freehold land and the sea boundary, the landward boundary is fixed at the date of the original survey. The *Chelsea Lands Act of 1981* clearly reinforces this fact.

As the Minister informed Parliament<sup>19</sup>:

*(This Bill) is designed to remedy a situation which has arisen due to a change in the adopted position of the high water mark of the waters of Port Phillip Bay and resultant variations in titles from the original Crown grants from which the titles have derived. The lands in question are in the City of Chelsea fronting the Nepean Highway between the Mordialloc Creek and Keast Park.*

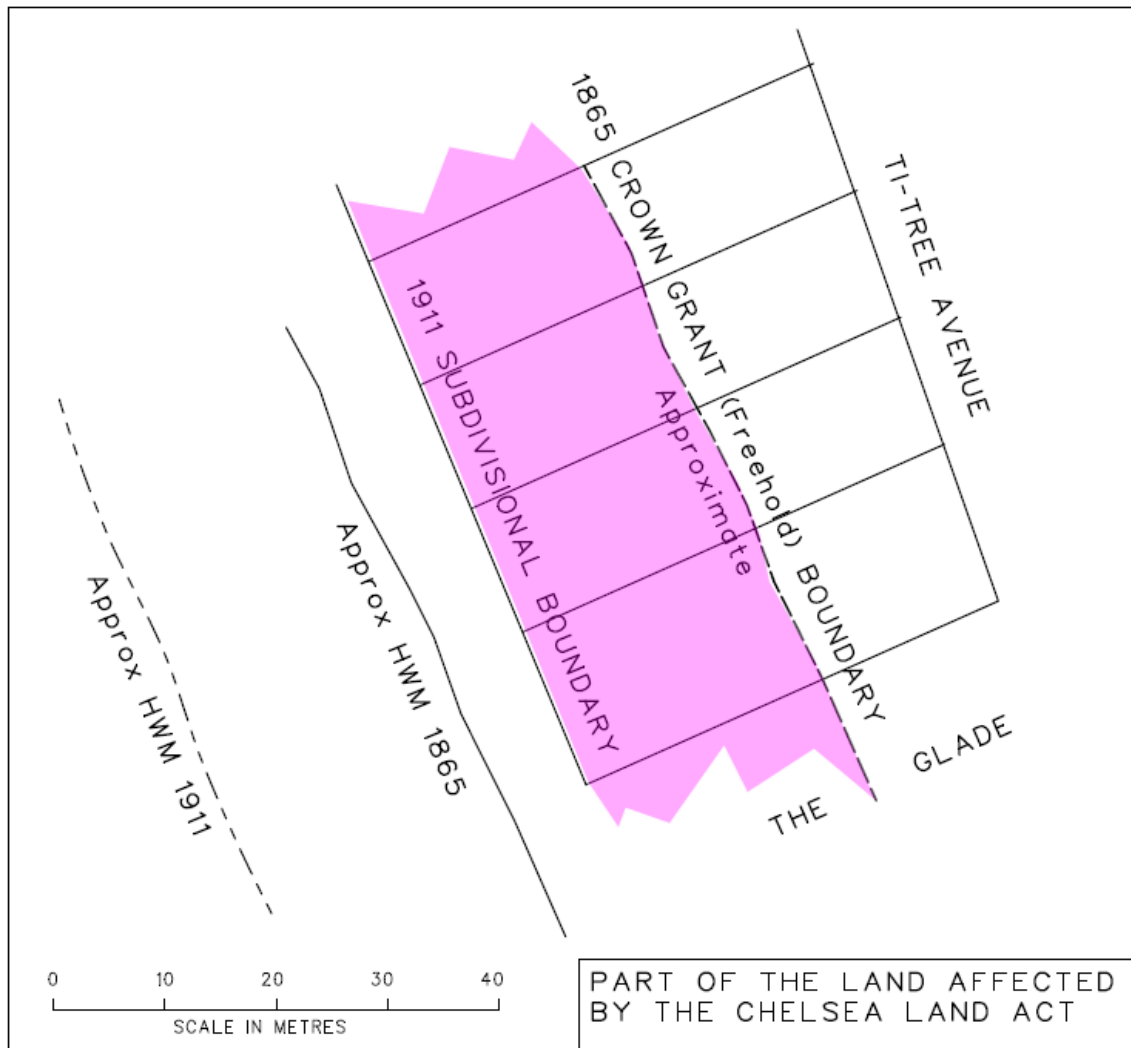
*These Crown grants issued in 1865 and 1866. There were nine grants for a total of twelve allotments. In each case the easterly boundary of the grant was the present highway and the westerly boundary was a reserve of 100 feet width between the land alienated and the high water mark adopted at the time.*

*In the following years the alienated land was subdivided and re-subdivided and the surveyors carrying out these subdivisions left a reserve of 100 feet. However, as the high water mark was regarded by them as having receded the reserve was, wrongly, also deemed to have moved, with the result that the subdivisions and the resulting titles encroached onto the Crown reserve. It is pertinent to note that the doctrine of accretion would apply only to widen the reserve and not to have any effect on the alienated land, which does not abut the water.*

*The proprietors of the subdivided allotments have, of course, occupied their lands in reliance upon the dimensions shown in the certificates of title. It is only proper that in view of the issue of these certificates the Crown take action to remove any doubt as to the validity of those titles.*

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<sup>19</sup> Hansard, Legislative Council, 15 Sept 1981



**Chelsea Beach.** In 1865 the Crown reserve was defined as being 100 feet wide, measured from HWM at that time. Between 1865 and 1911, HWM had moved seaward, and it was incorrectly assumed that the inland boundary of the reserve also moved seaward. The coloured area is the land erroneously granted as freehold.



## Appendix 2 Point King (The “Lindsay Fox’ case)

### The Lindsay Fox Case – Land at Point King- Accretion

This is included as it is probably the most publicised and controversial case of its type and demonstrates how loss of access and enjoyment by the public to the beach can occur.

The original Crown Grant was made in 1871. The coast boundary was shown as “the margin of Port Phillip”.

The land in the Grant was subdivided in about 1910 and re-subdivided into the two subject parcels in 1975. The surveyor’s 1975 field record shows coastal HWM as being about one metre seaward of the existing fence at that time.

Application was made to the Registrar of Titles in to amend the dimensions of the side boundaries for these parcels to the 1997 Mean High Water Mark pursuant to Sec 103 of the TLA. *“After due examination and legal advice these applications were rejected by the Registrar of Titles on 4 June 1998.”*<sup>20</sup>

A similar application to amend the titles was made in 2008 based on a new survey (2008). This application was withdrawn.

The land was resurveyed in 2009 and a new application similar to the previous ones was made in 2011 to amend the side boundaries of the titles to the 2009 Mean High Water Mark.

*The Registrar referred the applications to the Surveyor General of Victoria and the Solicitor General of Victoria for advice on certain issues and obtained further evidence from the applicant’s expert coastal engineer. Land Registry is satisfied that applications AP127352H and AP127353F may proceed on the basis that Vol 9115 Fol 603 and 604 have an abuttal to Port Phillip Bay being the mean high water mark. Therefore the doctrine of accretion applies as the movement is deemed to be gradual and imperceptible and is the result of natural processes vide the reports by Dr McCowan.”*<sup>21</sup>

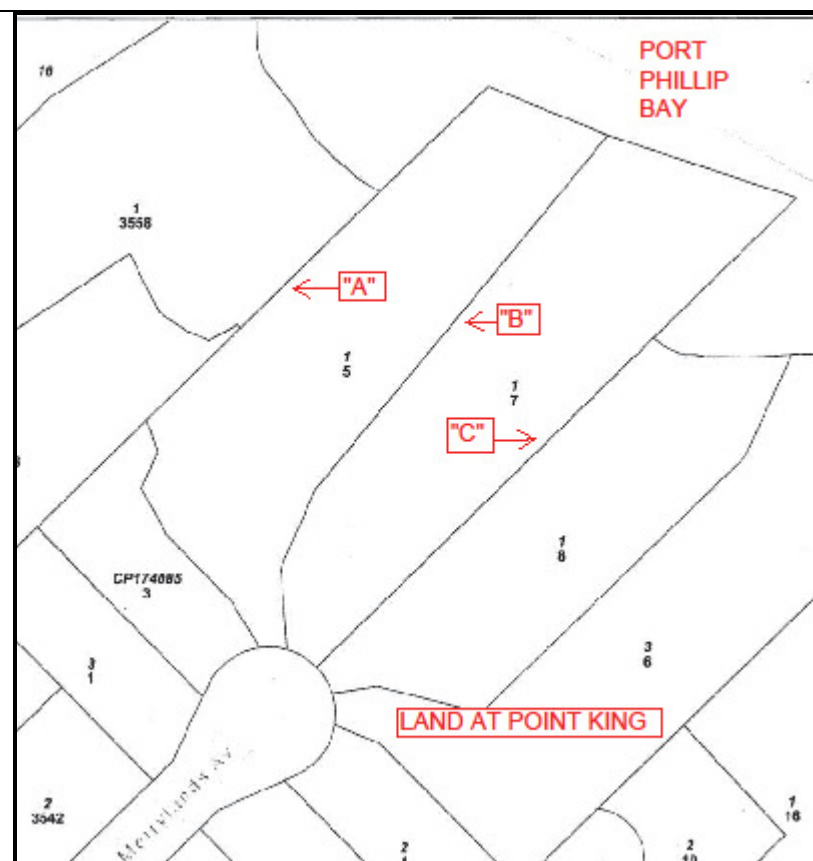
Application was granted and titles amended on 24 December 2013.

The effect on the boundaries of the freehold properties is shown below:

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<sup>20</sup> Memo to Surveyor General Victoria AP125603U.

<sup>21</sup> Examination Report AP127352H. Note Dr McCowan is believed to be the expert coastal engineer referred in the text.



Date of Survey	Side Dimension A	Side Dimension B	Side Dimension C
1975	60.75m	59.44m	105.28m
1997	90.65m	84.73m	124.98m
2008	115.09m	106.51m	146.89m
2009	108.01m	103.84m	151.81m

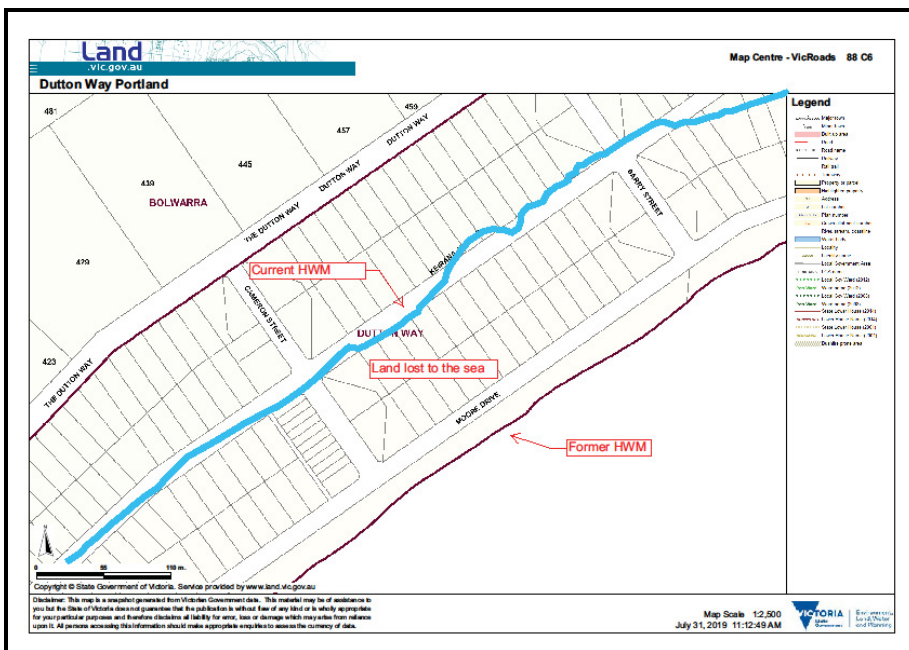
As can be seen from the above table the mean high water mark is very dynamic with a decrease in side dimension A of around seven metres and an increase in side dimension C of about five metres in the space of a year.

Whilst the side dimensions of the two titles have been amended to accord with the 2009 survey the coast abuttal is to mean high water which is still an ambulatory boundary and the abuttal takes precedence over surveyed dimensions.

Due to the dynamic nature of this area, the position of the ambulatory boundary in 2019 may be metres away from the boundary defined by survey in 2009 (either seaward or landward).

### Appendix 3 Dutton Way, Portland – Erosion

*“The foreshores to the east of the Port of Portland have been experiencing substantial erosion problems since the port breakwater was lengthened many years ago. The shoreline has receded several hundreds of metres and significant coastal property and infrastructure has been lost”.<sup>22</sup>*



<sup>22</sup> Project Description –Portland Coastal Processes and foreshore Management Strategy Victoria – Website Coastal Engineering Solutions

The land was originally granted to the sea boundary of Portland Bay and subsequently subdivided. In the example above, the land lost to the sea was freehold land which included Council owned land (foreshore), subdivisional roads and privately owned lots.

In this case, if the doctrine was applied, the whole of the land lost to the sea would revert to the Crown as unreserved Crown Land. However there is no automatic process to amend/cancel titles for land permanently lost to the sea and, in this case, erroneous freehold titles probably still exist for the land so lost.

It is inferred that the erosion was caused by structures constructed by the Port Authority. In the final coastal engineering study by AECOM Australia Pty Ltd to Glenelg Shire in 2010, it refers to the area being impacted by “*natural coastal processes*”<sup>23</sup> which lead to coastal erosion particularly along Dutton Way. Basically this depends on the interpretation of “natural” and the consequences of “natural processes” following a man-made intervention.

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<sup>23</sup> 2010 Coastal Spaces – Inundation and Erosion – Coastal Engineering Study by AECOM Australia Pty Ltd. A report to Glenelg Shire Council.