'They'll be drownded in the tide'[1]: Reconsidering Coastal Boundaries in the Face of Sea-level Rise

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In New Zealand the coastal margins are contested spaces that provide a setting for conflict between the interests of private property owners, indigenous and customary rights holders, public users, and local and central governments. Public access, environmental protection and enhancement, and continuing coastal development are all legitimate but conflicting policy goals. Uncertainty about the movements of coastal boundaries exacerbates the conflict and adds confusion to coastal management. Coastal property conflicts are well established in case law, legislation and policy implementation, and they are likely to increase with the effects of climate change. This paper explores the tensions, anomalies and impacts of coastal boundaries as they respond to sea-level rise.

Keywords: *sea-level rise, coastal boundaries, erosion, planning law.*

In New Zealand, as in most other nations with a marine boundary, highly desirable and highly valued coastal property is increasingly subject to the threat of sea-level rise, but coastal owners remain very protective of their property. Public interests in the coastal marine area (including land parcels, foreshore and seabed) are similarly fervently defended; public access to the foreshore and seabed is a matter of national importance. Maori customary interests in the foreshore and seabed have recently been asserted which further confounds the division of interests. The application of common law doctrines of accretion and erosion and the interpretation of statutory assertions often casts doubt on the location and movement of coastal boundaries. This paper explores the tensions, anomalies and impacts of coastal boundaries as they respond to sea-level rise.

COMMON LAW

In New Zealand, the common law of England was imported and applied (but only subject to the applicable circumstances of New Zealand; English Laws Act, 1856) when New Zealand became a colony of Britain by the signing of the Treaty

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of Waitangi in 1840 – a treaty ceding sovereignty from the indigenous Maori to the British Crown. At the time, there was little acknowledgement that Maori customary law could affect the more civilised common law. Therefore, the special circumstances of New Zealand were not used to question the applicability of British based law in New Zealand. This enabled the Crown to maintain the assumption that the foreshore and seabed were held by the Crown to protect the public rights of navigation and fishing.[2] At the time of survey and settlement of New Zealand by European settlers there was also some consideration that public access to and along water margins was a desirable outcome; in other words, that there should be additional public rights attached to land bordering water. In spite of this, the actual setting aside of riparian and littoral land in public ownership was only done sporadically. Some public strips, in the form of (unformed) roads, and other reserve classifications extend along the sea boundary, but much of the coast margin upland of the foreshore of New Zealand is privately owned.

CUSTOMARY LAW

It was well recognised by early British arrivals in New Zealand that Maori were in full possession of the whole country. Maori had explored all the land areas, they had established overland trade and resource gathering routes, and often were seasonal migrants following food availability. But as might be expected in an island country, Maori settlements were primarily located on the coast. Maori were predominantly a maritime people, comfortable and proficient in voyaging, trading and fishing in the coastal waters, and they claimed territorial jurisdiction over their sea space in much the same way as over the land space.

The Maori land tenure regime, in this oral society, was not easily discernible to the European settlers; it was flexible enough to cater for different tribal needs, and the rules about occupation and use were not capable of codification. So while the settlers were attuned to Maori possession of the dry land, any possession of water and sea space was dismissed as incompatible with English property conceptions. While the Treaty of Waitangi (1840) clearly "confirmed and guaranteed [Maori] full exclusive and undisturbed possession of their lands estates, forests and fisheries", and colonial policy therefore required the Crown to undertake the acquisition of land for settlement, the Crown never purchased or otherwise extinguished Maori possession of their water and sea, but instead assumed that those areas automatically became Crown land with the imposition of the common law over the land.

MAORI CLAIMS TO THE FORESHORE AND SEABED

In 2003 the New Zealand Court of Appeal decision on *A-G v Ngati Apa*[3] was released to an apparently surprised government and public (Strack, 2004). The case was brought by a coalition of Maori tribes who were missing out on aquaculture licences in their tribal marine areas. They therefore asserted their customary title over the foreshore and seabed, initially at the Maori Land Court – which was established in 1863 to identify the owners of customary land and to convert such ownership to a title derived from the Crown. The case was sent up to the Court of Appeal to determine whether the Maori Land Court had jurisdiction to hear the case (and it did), and to determine whether the foreshore and seabed could be recognised as customary land (which it was – there had been no process by which customary title to the foreshore and seabed had been extinguished in favour of the Crown). Given the widely held belief by the government and many citizens in New Zealand, that the foreshore and seabed was public space, there was considerable concern that the court's ruling would allow for the privatisation of the foreshore in the hands of Maori iwi (tribes). The government reacted hastily and controversially by passing the Foreshore and Seabed Act 2004. This Act had the effect of halting all Maori claims to customary title to the foreshore, and provided for Crown ownership of the **public** foreshore and seabed. Because of previous grants and title definitions of coastal land, there were many areas of **private** title to the foreshore. The fact that these previous grants were not extinguished while Maori title was extinguished was evidence that the Act was discriminatory. After much protest and political manoeuvring, the Marine and Coastal Areas (Takutai Moana) Act 2011 repealed and replaced the Foreshore and Seabed Act. Under this legislation, the public foreshore and seabed is no longer owned by the Crown but held as common space for all New Zealanders; Maori may still be able to claim some customary rights in the foreshore and seabed; but the private foreshore remains private. There are over 13,000 parcels, about 33% of New Zealand's coastal margin (LINZ, 2003) under private title that are either fully or partially encroaching on the foreshore.

COASTAL CADASTRAL BOUNDARIES

Natural boundaries are, by definition, ambulatory - they are not fixed by bearings and distances, or coordinates, but by the actual natural feature stated - they therefore, are susceptible to changes in position subject to changes in the natural feature. Many parcels of land adjoining the sea coast were surveyed and recorded as having the sea as a natural boundary. Given that the common law assumes that the foreshore[4] is held by the Crown, the corollary is that the upland parcels are bounded at the Mean High Water Mark (MHWM). Statutory law soon confirmed this assumption by stating: "Whenever in any grant, the ocean sea or any sound bay or creek or any part thereof affected by the ebb or flow of the tide shall be described as

forming the whole or part of the boundary of the land to be granted such boundary or part thereof shall be deemed and taken to be the **line of high water mark at ordinary tides**" (Crown Grants Act, 1866). However, it remained possible for land to be granted seaward of MHWM and for some other boundary to be surveyed; e.g. MLWM, Lowest Astronomical Tide (LAT), or any other position defined offshore from the foreshore.

The expectations of the New Zealand cadastre is that boundaries are accurately defined and depicted on the database and on the ground. The actual surveyed definition of any of these tidal lines presents a dilemma for the surveyor: how accurately can the line (say of MHWM) be defined? Much effort has been undertaken to be accurate: installing tide gauges, measuring successive high tide lines at various times throughout the lunar phase cycle, and monitoring sea level throughout the 18.6 year lunar nodal cycle (Baker & Watkins 1991). It is the contention of this paper that this level of accuracy is misplaced. In most cases the shoreline is loose material affected by the forces of the sea – sand, gravel, etc. The topography here will change day to day and this will affect the horizontal positioning out of all proportion to the vertical level determination.

The natural boundary is fixed by the natural feature, not by the surveyed measurement. The purpose of surveying a fixed artificial boundary is to place a monument in the ground that becomes definitive of the legal boundary. The purpose of surveying a natural boundary is to provide a representation of the natural boundary on a map, for graphical convenience. No matter how precise, particular and careful is the survey, the boundary remains the ambulatory natural feature (MHWM). The line on a plan is just a meander line; a convenient indication of the location of the natural boundary at the time of survey.

There is therefore some continuing uncertainty about the exact position of coastal boundaries. This uncertainty is exacerbated by the application of the accretion and erosion doctrines as described below.

ACCRETION AND EROSION

The common law doctrine of accretion and erosion is the legal response to the ambulatory nature of natural boundaries. There are several characteristics of this doctrine. Firstly it recognises the mutuality of effects; in other words, if a parcel has a natural boundary and the natural feature moves, then if land can be lost, land can also be gained. Secondly, such boundary movement should be the result of natural processes: the movement cannot be induced by direct human agency.[5] Thirdly, because the law is not concerned with trifles or matters that cannot be readily observed, the legal boundary will follow the movement of the natural feature (usually the line of MHWM) as long as the movement is slow, gradual and imperceptible.[6]

In 1919 the case *AG v Findlay* examined the fact of erosion on a coastal boundary. Cooper J. referred to the case *AG Nigeria v Holt*[7] which was appealed up to the Privy Council, and which confirms the law of accretion applying to a coastal boundary including the condition that the accretion be slow and gradual (*AG v Findlay*, 515-516). Furthermore, their Lordships referred to previous case law that asserts "No authority is needed for this position, but only the known principle which has obtained for the mutual adjustment and security of property" (*Attorney-General of Southern Nigeria v Holt*, 614 quoting judgement of *In re Hull & Selby Railway*. 5 M.&W. 327). It is worth noting here the mutuality of the loss and benefit of the application of this law. As was quoted in *AG v Chambers* (1854)[8]: "the owner of the lands does not derive benefit alone, but may suffer loss from the operation of this rule; for if the sea gradually steals upon the land he lose so much of his property, which is thus silently transferred by law to the proprietor of the foreshore."

The interaction of land and water produces an inexorable and perpetually dynamic process of gains and loss, that never reaches any static state, although there may be some expectation of a large scale natural balance between what is lost and what is gained. The law sits comfortably here in recognising mutuality; the application of the doctrine balances somehow, in accepting loss for some while allowing gain for others. However, the conditions resulting from climate change—sea-level rise and increasing storm events in many areas, suggest that in fact most future change will result in a loss of land by erosion or inundation.

The rate of future sea-level rise is unknown and speculative, but historic trends suggest a rate that by any legal interpretation must fall within the definition of slow, gradual and imperceptible (not changing during hour to hour, day to day observation). However, the effect of storm events on coastal topography (and boundaries) is often readily observable in its progress in taking land and encroaching upon boundaries.

While the legal implication of the doctrine of accretion and erosion is explicable, logical and provides appropriate resolution to some ambulatory boundary situations, the alternatives to the rules provide confusion, anomalies and inconvenience. So, for example, what happens to natural cadastral boundaries when the natural feature moves quickly and observably? What happens when there is human intervention in the change process; whether that is direct or indirect action? Is sea level rise a natural or a human induced effect, and therefore it is defined as 'natural'?[9] Will the rules still apply when there is just land loss and no opportunity for land gain?

When storm events erode coastal property and the boundary, therefore, does not move with the feature; the upland parcel is physically diminished, but the legal definition (the boundary) remains unchanged; the newly created foreshore land remains in private title; and public access to this space may be excluded and subject to trespass provisions. Such results are contrary to common sense and to public policy; that the public should have full, free and open access to the foreshore.

It can be seen that the application of the common law of accretion and erosion, while perhaps providing acceptable solutions in the past, is bound to throw up more anomalous and inappropriate resolutions of property boundary issues in a climate change future.

COASTAL JURISDICTIONAL BOUNDARIES

In contrast to cadastral boundaries, jurisdictional coastal boundaries are not so directly related to land law influences, and such boundaries are interpreted rather differently. One reason for this may be that land property boundaries are interpreted from a land-based private property rights perspective, while space washed by the tides is viewed from the Crown or public rights perspective. It seems to be widely accepted that the foreshore and seabed is defined by the various tidal lines, and those lines produce administrative and jurisdictional boundaries that are not governed by the same property law as are the upland parcels. So: "A grant of the foreshore will convey not that which at the time of the grant is between lines of high and low-water mark, but that which from time to time is between those lines" (Brookfield, 2014, para 17). In other words, it is irrelevant how the alignment of (for example) Mean High Water Mark has changed, the extent of that space shifts with the feature.

The Resource Management Act 1991 (RMA) established a new definition of the foreshore: between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS), and therefore administrative boundaries now are at this higher tide position. Since 1991, all subdivisions of coastal land under the RMA normally require an esplanade reserve to be set aside 20m upland from MHWS, to provide for conservation, recreation and public access along and to the foreshore and seabed (RMA, 1991 s230).[10] The conflict between these 3 purposes does not need to be dealt with herein, but clearly, often the conservation needs of this coastal reserve may require some controls over free public access, or conversely, the demands for public access and use for recreation may adversely affect the conservation of coastal ecosystems.

Environmental protection is becoming a very significant requirement of central and local governments, for example, maintaining the natural character of coastal environments. The protection of navigation and fisheries is more in the nature of a regulatory intervention and not a component of a property right. Nevertheless, if the coastal marine area is public (or common, or Crown owned) the ability of governments to implement policy for environmental protection is theoretically less inhibited than it is when dealing with private property rights.

NEWLY CREATED COASTAL PARCELS

The line of MHWS becomes the cadastral boundary when the coastal parcel is subdivided and new parcels are created under the RMA. This process also triggers the requirement for a 20m esplanade strip to be set aside (s231 RMA, 1991). Case law has clearly recognised this MHWS line (at least for consent purposes under the RMA) as being defined as it lies from time to time (irrespective of whether the line of MHWS has moved over time, slowly and gradually, or as the result of sudden avulsion), in other words, not where it may have been defined or drawn on the survey plan and upon which the title will have been issued.[11] It is logical therefore to expect that the cadastral boundary will similarly shift with the actual position of MHWS, especially given the Crown's and public's interest in the foreshore, and that both sides of the boundary are effectively Crown land. The legal test therefore of whether the coastal cadastral boundary shifts or not (that the movement must be slow gradual and imperceptible) is irrelevant and not applied in this situation.

It is not so clear however, that the inland boundary of the esplanade reserve (the boundary with the adjoining private parcel) is also ambulatory with the changing alignment of the coastal boundary. It is logical that the boundary and the reserve should be ambulatory.[12] However, the parcel upland from the esplanade reserve is not a littoral parcel and its boundary is therefore, not a natural boundary subject to loss or gain by accretion or erosion.[13] So if, for example, the sea encroaches all the way across the 20m reserve and onto the private freehold parcel, that parcel does not become a littoral parcel; i.e. having the rights of a littoral owner, although in fact it becomes part of the foreshore and seabed.[14] This situation illustrates another example of how parts of the foreshore and seabed may be private rather than public.

COASTAL POLICY STATEMENT

The recent Coastal Policy Statement (NZCPS) 2010 provides added strength to the Resource Management Act (RMA) Matters of National Importance (s6): "the preservation of the natural character of the coastal environment ... and the protection of them from inappropriate subdivision, use, and development; and the maintenance and enhancement of public access to and along the coastal marine area." Coastal hazard risks should be managed by "locating new development away from areas prone to such risks; considering responses, including managed retreat, for existing development in this situation; and protecting or restoring natural defences to coastal hazards" (DoC 2010,10).

Several policies focus on coastal hazard risk, including the need to identify potential hazards over at least 100 years. Coastal hazard risks are to be assessed having regard to "the physical drivers and processes that cause coastal change including sea level rise" and to "the effects of climate change on … storm frequency, intensity and surges; and coastal sediment dynamics" (DoC 2010, 23). Further policies seek to

avoid increasing the risk by further subdivision and development, to allow for managed retreat by relocating development, and to discourage hard protection structures (such as sea walls and engineered interventions, which adversely affect the natural character of beaches) in favour of enhancing natural defences.

In public perception, the rights of the public to access and use coastal land is part of natural law for New Zealanders. However, private property owners are similarly adamant that private rights should be protected and provide for (reasonably regulated) freedom of use of land, including the right to exclude others. Some legislation and policy would suggest that in advancing the cause of sustainability, emphasis should shift from the private property protections to considerations of environmental enhancement and public benefits. The NZCPS could have led a change toward this perspective, but it is (perhaps disappointingly) somewhat ambiguous on this matter. There are well rehearsed statements about preserving and restoring natural character and protecting natural features and landscapes, and also enhancing public access and open space. However, the NZCPS also explicitly recognises the social, economic and cultural needs for development in the coastal marine area, including providing for the demands of a growing population, and especially including infrastructure for energy supply and transport, mineral extraction, and other activities that have a functional need to occupy the coastal marine area. The NZCPS has been described as a 'damp squib' (Peart, 2009, 237) with respect to putting any effective controls on coastal development.

COASTAL DEVELOPMENT

With developing awareness of sea level rise, many local authorities are mapping areas of vulnerability. LiDAR surveys are commonly used to derive vulnerability maps (Boateng, 2010) that can identify where hazard areas exist. Most harbours and urban waterfronts are now highly modified with reclamations and sea walls protecting essential infrastructure and strategic assets (oil terminals, storage areas, service industries, and more recently, public social spaces). Ongoing investment in this area and maintenance of walls can relatively easily include incremental vertical additions to keep pace with any foreseeable sea level rises. The decision about whether to defend against sea level rise is fundamentally about costs and benefits. "In the case of high density developments (major cities) the value of defended infrastructure easily outweighs the costs of defence" (Cooper & McKenna, 2008, 294), but "the costs would escalate well beyond the benefits in many low-lying areas, even where there was some settlement in the form of villages or small towns" (O'Riordan et al. 2008, 147).

Beachside baches are the archetypal representation of New Zealand summers and holiday recreation, with the typical bach being a simply built structure used for essential shelter, while most of the living is done out on the beach or at sea. Greater

population demands and more affluent lifestyles today are changing that image. There is ever-growing demand for more beach-front property to be developed, and new luxury housing is taking over from the simple bach. Harker (2011) describes "an increase in both the scale and average cost of coastal development...." This more recent style of coastal development[15] suggests that "we have 'given up' on preservation and protection of natural character of much of our coast" (Brookes, 2001, 8). "A cohesive and informed community concerned about the health of their local coastal system becomes replaced (if it ever existed) by individuals concerned with the protection of private property and the effective removal of now hazardous coastal processes from their proximity" (Brookes, 2001,9). Baches were often able to be uplifted or even dragged and relocated away from the encroaching sea – retreat was a reasonable option. The newer housing, with concrete slab floors, cannot be uplifted; protection or demolition are the only options when the sea encroaches.

It has been recorded that coastal property values do not reflect the hazard threat (Turbott, 2006)[16] nor the temporary nature of that land. American research (cited in Dahm, 2003, 24) has found that coastal property owners find "the risk [of coastal erosion] acceptable because they 'want to be there', the amenities of an oceanfront location (e.g. view, easy access to the beach, water recreation, peace and quiet) appearing to meet deeply felt emotional needs of the people who owned property there." Property prices rise on the back of strong demand, and that demand often ignores the threat of loss due to erosion (Hiatt, 2008, 376). Coastal land still attracts a price premium over non-coastal land, yet it may be eroded away within 100 years, or require considerable additional investment (if allowed) in building coastal defences. Councils and planners are under pressure to consent to more development of the coastal land and current guidance from the Coastal Policy Statements, the Resource Management Act 1991 (RMA) and rules in the district plans do little to restrict future development.[17] Furthermore, as development proceeds, demands for protection become more insistent. While there is no direct case for the legal responsibility of councils to protect private assets, a case for protection can develop from the purposes of the RMA which seeks the sustainable management of natural and physical resources to provide for the social, economic and cultural wellbeing of people and communities.

Natural landscapes and character and public access are strongly held values, but they are not easily quantified in dollar terms. "The principles of maintaining and enhancing natural character are hard to apply to an environment where there are well established physical resources present" (*Mason v BoP* 1998 at para 81). Many local authorities therefore, have recognised the threat, have established hazard zones that restrict further development, and have implemented policies to abandon hard coastal defences, and are implementing a policy of managed retreat – allowing land to be lost to the sea and requiring property owners to retreat from the coast. The science behind such policies is strongly contested by affected coastal property owners; will the sea really rise to a threat level? Should 50 or 100 year time frame limit

current development? Are other protection solutions able to overcome the threat of land loss? Should coastal property owners be allowed to develop as they wish as long as they assume responsibility for risk?

In these situations there are several conflicting interests to consider: the proprietors who feel justified in protecting their property or demanding that the local authority undertakes protective works; the local authority who may feel that hard protection structures are both environmentally detrimental and financially prohibitive; and the public who expect the beach to retain its natural character and to provide access and recreation opportunities.

ACCEPTING EROSION

The assurances and protections that attach to a fee simple title in New Zealand suggest that title to land is forever, but this "ignores the reality that the underlying land may itself be impermanent" (Turbott, 2006,44). It is a logical response to the threat of coastal erosion to seek to protect property from loss, and huge efforts have been exerted to design and build coastal defences. Previous coastal management paradigms have seen this as a challenge: to defend against the natural forces of erosion; to assert mastery over nature and retain property as a core value. That paradigm is shifting in recent years towards an acceptance of nature and a desire to work with her forces.

Erosion is not an evil – "Indeed erosion has several natural and societal benefits: it liberates sediment for the coastal system that leads to deposition elsewhere, thus maintaining beaches, barriers and dunes; it is a mechanism by which the coastal topography adjusts to minimise wave energy levels at the coast; it provides materials upon which coastal ecosystems depend and it creates the scenic cliffed coastal landscapes that are so valued by society for their aesthetic appeal as well as their geological interest" (Cooper & McKenna, 2008,296). Similarly "a whole new ecological, economic and societal arrangement would emerge on the new coastline" (O'Riordan et al., 2008,154) when new wetlands and conservation areas are created during the process of coastal inundation.

The engineering solutions that have often been the first response to coastal erosion have been shown to be non-sustainable; practically, economically, environmentally, and socially. Any interference with coastal sediment movement is likely to have adverse effects. Any intervention on the coast: groynes, walls, artificial reefs and dams on rivers, will have unintended effects on other parts of the coast. Changing the ways we develop near the coast may provide more enduring solutions.

RESPONDING TO EROSION

There are, of course, many methods and planning tools available to achieve the appropriate balance between private property rights, public rights, and environmental protection (Strack, 2011b). This may require new policies, new legislation, and a new desire to act proactively rather than just deal with the issue when the dramatic news pictures emerge of buildings collapsing into the sea.

Perhaps, most importantly, coastal property owners must be alerted to the threat of sea level rise and coastal property loss. Owners of coastal property need to be aware that the nature of their natural ambulatory boundary requires them to relinquish any claims to land lost by a landward movement of the sea. It is now common knowledge that coastal land is threatened by climate change (even by the climate change sceptics and deniers). But more direct notifications to owners may relieve governments of the responsibilities for protecting land. It is a clear component of the common law that the Crown is responsible for protecting the realm from invasion (both human invasion and the invasion of the sea over land). This has been accepted in New Zealand, but recent case law has observed that legislation has the effect of overriding this common law right. The *Falkner v Gisborne District Concil* (1995) case illustrates the conflicting arguments. The land owners held the position that the local authority should protect their private property from erosion (as they had done for many years previously) or allow the owners to build their own sea wall; while the local authority – having instituted a policy of managed retreat – argued that legislation (the RMA) gave them the power to withhold consent for any coastal structure. The court agreed that the managed retreat policy was a legitimate response to coastal erosion and the local authority was not required to continue protection, nor even allow for the land owners to build their own coastal defences.

Land owners must now be alert to their vulnerability,[18] but it may still be expected that additional mechanisms are put in place to warn owners. Many local authorities are preparing vulnerability maps and drawing lines that identify hazard zones. These areas will be shown on planning maps; they will be recorded on council property databases (LIMs – Land Information Memoranda) that all new purchasers should investigate prior to purchase; and there is a mechanism (although not compulsory) to record hazard notices on property titles (Harker, 2011,283-4).[19]

However, such notification, and therefore restriction on further development and limitation of the bundle of rights, will not go uncontested by the powerful property lobby. The trend for coastal property to pass into the ownership of wealthy, educated and influential people may force some local authorities to back down on their assessments, or at least ensure that their scientifically-based prediction of hazards is indisputable – a tough requirement. In some localities, the property taxes deriving from coastal property may make up a significant proportion of local authorities' operational budget, so the economic and political clout of coastal proprietors is similarly significant.

It remains a dilemma for government about how to deal with the reality of land loss. No matter how well policies and the law may override private property rights "it would seem unlikely that either local or central government would ignore their plight given the political repercussions" (Harker, 2011, 307).

In undeveloped coastal land there is more scope for local authorities to intervene. Planning instruments (as described in Strack, 2011b)[20] can be used to ensure that coastal development is well clear of erosion hazard zone or to otherwise regulate new development, and while this will affect any owner, it occurs before significant additional investment in land development has occurred. "It may be preferable to engage in land-use planning to avoid locating development in risky areas in the first place" (Harker, 2011, 320).[21]

Court decisions have not been consistent on this but some recent decisions have appeared to put limits on local authority power to plan and to regulate coastal development. The ability for council planners to decline consent for coastal development is critically compromised. In appeals against consent refusals, when local authorities have tried to ensure that their liability for coastal development is protected, some judgements have accepted that property owners can choose to develop at their own risk; in other words, to agree to a covenant that the owner (not the local authority) assumes responsibility for their own risk (*ORC v DCC* 2010; Strack, 2011a). Such concession, while dealing with the liability issue, ignores the planning purpose to avoid inappropriate and risky development and maintain a natural and publicly accessible coastline. In an appeal against a refusal of a coastal building consent, the Environment Court stated: "There comes a point where a consent authority should not be paternalistic but leave people to be responsible for themselves, provided they do not place the moral hazard of things going wrong on other people" (*ORC v DCC*, 2010, 265). This decision seems to miss the point of local authority planning "as it seems to contradict the statutory responsibilities of local Authorities under the RMA to control the use of land to avoid or mitigate natural hazards" (Harker, 2011, 307).

DISCUSSION

It is clearly in the Crown's interest to maintain the commonly accepted position that the Crown owns the foreshore and seabed up to the line of MHWS no matter how that line came to be. By the same logic, the statutory definition of the coastal boundary as the MHWM is logically in place to ensure that the coastal property remains in contact with the sea boundary, again no matter how that came to be. To apply the accretion and erosion rule that allows the private property owner to own and occupy the seabed (in the case of rapid erosion), is contrary to common sense. Similarly, to allow for the creation of a 'no-man's' land between some fixed land boundary, and the ambulatory sea boundary, and therefore making the owner no longer a littoral owner (in the case of rapid accretion) is nonsense,[22] and appears to

the author to be clearly not what the Crown proposed by the words of the Crown Grants Act.

This argument is not uniquely a New Zealand issue. In the USA, Kalo (2005, 1443-4) has stated:

> Discarding the original rule … conforms the law to the realities of the coastal environment and the reasonable expectations of oceanfront property owners. The foreshore and dry sand beach are very dynamic areas of the coast and are subject to continuous changes as a result of the forces of wind and water. There is no line drawn in the sand that visibly marks the location of the mean high tide line… There is only water moving up and down the foreshore. Although the dry sand beach is open to public use, the assumption of oceanfront property owners is that the oceanward boundary of their land is the mean high tide line, that it is an ambulatory boundary, and the boundary will remain mean high tide line, wherever that is physically located on the beach, even as natural forces change the contours of the beach itself. The common law avulsion rule is simply inconsistent with this reasonable assumption.

Boundaries remain crucial to rational decision making; who has jurisdiction; whose rights will be affected; how can the interests of all parties be accommodated? Ultimately land owners will have to accept land loss and governments will have to ensure equitable treatment of owners subject to loss, but this should not mean compensation liability.

The natural character of the coastal environment is an important theme and measure of sustainable development. However, the coastal environment is not defined or confined by either the cadastral or jurisdictional boundaries we use. Case law decisions have recognised that the coastal environment may extend to inland hills and catchments. For more distant examples, in Spain the public coastal domain includes the "beaches or areas where free and unattached materials are deposited" (SLC 2001, 10). This definition includes areas potentially well inland from the tidal zone, but may be less inclusive of other coastal forms: cliffs, rocky outcrops and solid land that may nevertheless be vulnerable to erosion. While property boundaries and jurisdictional boundaries are disconnected from the whole coastal zone then coordinated management and planning will be inefficient: too many overlapping private and public interests, and fragmented jurisdictional authority.

Demand for coastal development will continue to increase, with proprietorship and development styles based on demonstrations of status. Modern coastal development overlays and dominates the earlier development forms based on social equity. In this scenario, with high value properties (land and improvements) occupying the coastal margins, the pressure from these new ratepayers (who contribute more significantly to the public purse) puts local authorities at a disadvantage when trying to make decisions and assert the goals of sustainable development and public interest.

Coastal property owners have a valuable investment to protect and they may tend to defend their rights more assertively. They have often been successful in the courts in overriding sensible and justifiable local authority planning based on en-

hancing the natural environment or supporting public rights. They assert their private property rights: their supposed freedom to do what they wish on their own land; the freedom from local authority intervention and regulation. The interests of the public and the environment often do not attract strong advocacy defenders.[23] Public interest groups have to be very well resourced to fight court cases brought by well resourced, skilled and professional proprietors defending their private interests.

Property and jurisdictional boundaries should be a minor feature of appropriate and informed planning decisions, but often boundary issues serve to fragment any coordinated coastal planning response. Unless we can accept the impermanence of coastal land and the ambulatory nature of boundaries in the face of climate change effects then boundaries will continue to be an impediment to effective coastal management.

NOTES

1. Bob Dylan. 1963. When the Ship Comes In. http://www.bobdylan.com/us/songs/when-ship-comes
2. Crown ownership is not actually a requirement for the protection of these rights; they are separate public rights that are supported by public recognition, by long established use, or because they are not rights that can be claimed as exclusively individual. In other words, it is unlikely that a proprietor may exclude the public right of navigation and fishing on a river lake or seabed in private title.
3. *Attorney-General v Ngati Apa* [2003] 3 NZLR 634.
4. By definition; the strip of land between the Mean High Water Mark and the Mean Low Water Mark – that land washed by the ebb and flow of the tides.
5. The law does not accept that a property land owner can unduly enrich him/herself by taking advantage of a rule that ultimately is at the expense of other interests. *AG Southern Nigeria v Holt* [1915] AC 599
6. See *AG Southern Nigeria v Holt*: "their Lordships … do not doubt its general applicability to lands like those of the respondents abutting on the foreshore. Nor do they, however, doubt the one condition of the operation of the rule – that is, that the accretion should be natural, and should be slow and gradual – so slow and gradual as to be in a practical sense imperceptible in its course and progress as it occurs."
7. *Attorney-General v Findlay* (1919) NZLR 513.
8. *Attorney-General v Chambers* [1854] 43 ER 486.
9. It is reasonable to argue that climate change and sea level rise is anthropogenic so is a result of human action, but not possible to argue that there is deliberate intention.

10. This esplanade reserve also serves as a surrogate set-back line to keep coastal development clear of the tide. The esplanade reserve is usually 20m but the local authority can require a wider strip if necessary.
11. Case law (*Ken Crosson v Rotorua District Council* with regard to a lake boundary, and *Aicken v North Shore City Council* with respect to a coastal boundary) supports the point that planning rules about building setbacks from a water edge are measured from the water edge at the time rather than from the cadastral boundary as originally defined.
12. Note the related situation of a fully ambulatory esplanade strip created along some rivers (RMA s232) and also similar to rolling easements in the USA, see: Titus, 1998.
13. Although the boundary is shown as a meander line parallel to the originally defined natural boundary (MHWS).
14. This was decided in a similar situation but with respect to a road adjoining a river: *AG & Southland County Council v Miller* 1906.
15. Recent development typically involves high value holiday homes dominating coastal landscapes, built to maximize view and proximity to the beach, and there are several examples of the creation of artificial waterways and canal-centered development on totally manmade shorelines.
16. And even when hazard warning notices are entered on the title document, values continue to increase (Turbott, 2006, 22). More recent anecdotal evidence suggests that the proposed delineation of a hazard zone at Waikanae by the Kapiti Coast District Council has halted coastal land sales and aroused objections from existing owners about loss of value in their coastal investment.
17. See discussion below re *ORC v DCC*.
18. In *Hemi v Waikato District Council* the Environment Court stated "we agree there is an element of voluntary assumption of risk by people who chose to live near the coast."
19. If Building Consent is granted under s72 Building Act, then the Registrar of Land will record that on the Certificate of Title with a description of the natural hazard. This frees the local authority with respect to that building and that hazard.
20. Including buy and lease back, rolling easements, coastal reserves, and development setback lines.
21. And the Ministry for the Environment's Quality Planning website makes the point; "pressure for high value development [in the coastal margin] makes it difficult for local authorities to use either land-use planning (land-use rules to control the direction of development) or market instruments (e.g. acquisition) to avoid the risk from such coastal hazards. The best options for managing coastal hazards are based on avoiding buildings and infrastructure in coastal hazard zones."

22. Kalo (2005, 1438) makes this same point: "In such circumstances, the ocean would no longer be the seaward boundary of the property and technically, the owner would no longer be a littoral owner and would not possess any common law littoral rights." And at 1440; "Logically, the consequences of avulsion should be no different than those of the natural processes of accretion and erosion."
23. In New Zealand, the Environmental Defence Society (EDS) is one of the most prominent advocacy NGOs defending environmental and public benefit decisions regarding the coastal environment.

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